



Australian Government
Productivity Commission

National Water Reform

Productivity Commission Inquiry Report *Overview & Recommendations*

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The Productivity Commission

The Productivity Commission is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians. Its role, expressed most simply, is to help governments make better policies, in the long term interest of the Australian community.

The Commission's independence is underpinned by an Act of Parliament. Its processes and outputs are open to public scrutiny and are driven by concern for the wellbeing of the community as a whole.

Further information on the Productivity Commission can be obtained from the Commission's website (www.pc.gov.au).



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19 December 2017

The Hon Scott Morrison MP
Treasurer
Parliament House
CANBERRA ACT 2600

Dear Treasurer

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

Yours sincerely

A handwritten signature in black ink, appearing to be 'JD' followed by a long horizontal stroke.

Dr Jane Doolan
Commissioner

A handwritten signature in black ink, appearing to be 'JM' followed by a long horizontal stroke.

John Madden
Associate Commissioner

Terms of reference

I, Scott Morrison, Treasurer, pursuant to Parts 2 and 3 of the *Productivity Commission Act 1998*, hereby request that the Productivity Commission undertake an Inquiry into progress with the reform of Australia's water resources sector. The Inquiry should have a particular emphasis on the progress of all Australian governments in achieving the objectives, outcomes and timelines anticipated under the Intergovernmental Agreement on a National Water Initiative (NWI).

Background

State and Territory governments are primarily responsible for the management of water resources within their jurisdictions. The Commonwealth has played a role in funding the acceleration of reform, leadership and coordination, and management of some transboundary resources where agreed by relevant jurisdictions.

While Australia's water resources are generally regarded as well managed, our need to do so is also greater than most countries. There is scope to further improve the water sectors' effectiveness and efficiency, including through consistent and coordinated regulatory and management arrangements that are aligned with the NWI.

Reform of the water sector has been ongoing over several decades, reflecting the fundamental importance of water to our economy and the significant challenges involved in managing a shared natural resource often impacted by periods of scarcity. A national approach to water reform started in 1994 through the landmark COAG water reform framework and has continued through subsequent initiatives such as the NWI (2004), the *Water Act 2007* (Cwth) and the Murray-Darling Basin Plan (November 2012).

The Inquiry into the reform of Australia's water resources sector will also fulfil the statutory requirement for the first of the Productivity Commission's triennial assessments of progress towards achieving the objectives and outcomes of the NWI required by section 88 of the *Water Act 2007* and should be read in conjunction with that Act. The findings and outcomes of the 2014 Triennial Review of the NWI undertaken by the National Water Commission are also relevant to the Inquiry.

Under the *Water Act 2007*, the Productivity Commission is also responsible for five-yearly inquiries into the effectiveness of the implementation of the Murray-Darling Basin Plan and the associated Basin state water resource plans, with the first inquiry to be completed by 31 December 2018.

Scope of the inquiry

The Inquiry should assess progress towards achieving the objectives and outcomes of the NWI. The Commission should draw on published reports, available data sources and information requested from NWI parties. As the NWI was agreed in 2004, the scope of the Inquiry is broader than that explicitly required by legislation. The Inquiry should also examine whether the water reforms agreed in the NWI, along with any other subsequent reforms adopted by COAG, are achieving their intended outcomes.

In undertaking the Inquiry, the Commission should assess:

- progress in jurisdictional adoption of NWI principles
- the outcomes to date of the NWI and related water reform efforts, taking account of other drivers of reform
- progress against the recommendations in the National Water Commission's National Reform Assessment 2014, and
- the extent to which the NWI reforms are adequate to support government responses to emerging or changing water management challenges, including in the urban sector.

The Commission should also consider:

- the potential and realised benefits of NWI implementation
- the scope for improving the NWI, addressing current and future challenges
- broader water policy issues and the role of the NWI in improving outcomes, in particular:
 - the interaction of water policy with other policy areas such as energy, agriculture, planning, urban supply
 - whole-of-cycle water management
 - provision to regional, rural and remote communities, and
 - the economically efficient provision of water infrastructure.

The Commission should avoid any duplication between this Inquiry and the subsequent Inquiry into the effectiveness of the implementation of the Basin Plan and the state and territory water resource plans.

The Commission should make recommendations on actions that the parties to the NWI might take to better achieve the NWI objectives and outcomes, and recommendations for future reform priorities.

The prioritisation of areas for future reform efforts should reflect the Commission's view as to those areas where continued efforts are required to improve economic, social and environmental outcomes, maintain the gains achieved to date, or where improved outcomes will be delivered from further development of water resources. In doing so, the Commission may consider the effectiveness of water reforms adopted by COAG subsequent to the NWI,

such as the 2008 *Work Programme on Water* and the 2012 *Next Steps in National Water Reform: Preparation for the Future*.

Process

The Commission should undertake a comprehensive consultation process including establishing a stakeholder working group in accordance with section 89 of the *Water Act 2007*, holding hearings, inviting public submissions and releasing a draft report to the public. The Commission should consult with Commonwealth, state and territory governments, consumer representatives and industry stakeholders, including from the irrigated agriculture, mining and urban water supply sectors.

In conducting the analysis, the Commission should have regard to the submissions and reports of all relevant inquiries and government responses, including reports by the National Water Commission, Infrastructure Australia and the Harper Competition Policy Review. The Commission should also take into account reform initiatives at the jurisdictional level relevant to the scope of the inquiry.

The final report is to be provided to the Government by 31 December 2017.

Scott Morrison
Treasurer

[Received 1 February 2017]

Disclosure of interests

The *Productivity Commission Act 1998* specifies that where Commissioners have or acquire interests, pecuniary or otherwise, that could conflict with the proper performance of their functions during an inquiry they must disclose the interests.

Dr Jane Doolan has advised the Commission that she is:

- Deputy Chair, Western Water
- Independent Chair, Yarra Consultative Committee.

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Acknowledgments

The Commission has used a range of information sources in preparing the report. The Commission is grateful for the contributions made by stakeholders through their submissions and comments, and their participation in meetings, roundtables and workshops. The Commission also thanks the Stakeholder Working Group (members are listed in appendix A) for their input.

The Commissioners express their appreciation to the staff who worked on the inquiry report and underlying analysis.

Abbreviations

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABS	Australian Bureau of Statistics
ACCC	Australian Consumer and Competition Authority
ANAO	Australian National Audit Office
AWI	Aboriginal Water Initiative
Basin Plan	Murray-Darling Basin Plan
BOM	Bureau of Meteorology
CEWH	Commonwealth Environmental Water Holder
CEWO	Commonwealth Environmental Water Office
CMA	Catchment management authority
COAG	Council of Australian Governments
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CRC	Cooperative Research Centre
CSO	Community Service Obligation
DAWR	Department of Agriculture and Water Resources (Australian Government)
DENR	Department of Environment and Natural Resources (NT)
DEWNR	Department of Environment, Water and Natural Resources (SA)
DPI	Department of Primary Industries (NSW)
DPR	Direct potable reuse
EPSDD	Environment, Planning and Sustainable Development Directorate (ACT)
ERA	Economic Regulation Authority (WA)
ERRR	Economic real rate of return
ESC	Essential Services Commission (Vic)
GABSI	Great Artesian Basin Sustainability Initiative
GDP	Gross domestic product
GL	Gigalitre
GVIAP	Gross value of irrigated agricultural production
IVT	Inter-valley transfer
IPART	Independent Pricing and Regulatory Tribunal (NSW)
IWCM	Integrated water cycle management

IWIP	Improving Water Information Program
kL	Kilolitre
LLS	Local Land Services
MDB	Murray-Darling Basin
MDBA	Murray-Darling Basin Authority
MERI	Monitoring, evaluation, reporting and improvement
ML	Megalitre
MLDRIN	Murray Lower Darling Rivers Indigenous Nations
NAIF	Northern Australia Infrastructure Facility
NBAN	Northern Basin Aboriginal Nations
NCP	National Competition Policy
NRM	Natural resource management
NWC	National Water Commission
NWI	National Water Initiative
NWIDF	National Water Infrastructure Development Fund
NWILF	National Water Infrastructure Loan Facility
NWMS	National Water Market System
OEH	Office of Environment and Heritage (NSW)
OTTER	Office of the Tasmanian Economic Regulator
QCA	Queensland Competition Authority
QWRAP	Queensland Water Regional Alliance Program
RMC	River Murray Commission
RMO	River Murray Operations
SCA	State Constructing Authorities
TLM	The Living Murray
VEWH	Victorian Environmental Water Holder
WSUD	Water sensitive urban design
WSP	Water Sharing Plan

Glossary

Adaptive management	An iterative process of learning from experience and using new information to improve environmental management.
Bulk water services	The harvesting and storage of water using infrastructure (such as dams), and the transport of that water to users (primarily through natural waterways, pipes or channels) often over large distances. Bulk water infrastructure can supply water for both urban and irrigation use.
Capital bias	A bias in decision making towards capital expenditure and away from operating and maintenance expenditure.
Carryover	The option to hold a portion of unused seasonal water allocations for use at a later date. This typically involves storing the allocated water in physical storage, such as a dam.
Community Service Obligation	Obligations placed on businesses to provide services that cannot be funded entirely from user charges.
Complementary waterway management activities	Activities that protect or enhance waterways such as rivers, wetlands and estuaries, whether fed through surface water or groundwater. These include the management of land use, vegetation, fauna, recreational uses of water and water quality, but exclude the provision of environmental flows.
Consumption based pricing	Water pricing where a charge is applied to each unit of water consumed.
Consumptive pool	The amount of water resource that can be made available for consumptive use in a given water system under the rules of the relevant water plan.
Conveyance loss	Water that is lost in transit and not available for use due to evaporation or leakage.
Corporatisation	The creation of a separate legal entity (a corporation) to undertake specific functions.
Diffuse pollution	Pollution which originates from many sources, such as runoff from agricultural land.
Direct potable reuse	Mixing treated wastewater or stormwater directly into drinking water supplies.

Distribution services (irrigation)	Transporting water via a network of pipes and/or channels to properties serviced by the system and located away from a waterway.
Environmental flow	A flow regime applied to a river, wetland or floodplain to improve or maintain environmental outcomes (and other public benefit outcomes, where possible).
Environmental outcomes	Maintaining ecosystem function (for example, through periodic inundation of floodplain wetlands); biodiversity; water quality; and river health targets (defined under the National Water Initiative).
Environmental transfers	Water allocations owned by an environmental water holder that are transferred within or between water systems to achieve environmental watering objectives.
Environmental water	The water provided to achieve environmental outcomes (and other public benefit outcomes, where possible), which may derive from surface water or groundwater and be provided as planned environmental water or held environmental water.
Environmental watering	The delivery or use of held environmental water to achieve environmental outcomes (and other public benefit outcomes, where possible).
Externalities	The effects of consumption or production decisions on people other than those directly involved.
Extractive industries	Mining, petroleum, and unconventional gas (for example, coal seam gas) industries.
Financing	The manner in which capital is raised to pay for infrastructure. Financing can take the form of debt or equity raised from either the public or private sector.
Flow regime	The volume, location and timing of water provided by water managers.
Funding	Refers to who ultimately pays for infrastructure. In the case of water infrastructure this can be water users (such as irrigators), other beneficiaries of the infrastructure (such as towns protected from flood) and/or governments.
Gigalitre	One billion (1 000 000 000) litres.
Greenfields	Undeveloped or agricultural land being considered for, or undergoing, urban development.
Groundwater	Water located underground in permeable soil or rock. It includes both naturally occurring water and water pumped underground for storage. However, it does not include water held in underground tanks, pipes or other works.

Held environmental water	Water entitlements held and used (usually by governments) for the purpose of achieving environmental outcomes (and other public benefit outcomes, where possible).
Indigenous Australians	The term ‘Indigenous’ is used throughout the report to describe Aboriginal and/or Torres Strait Islander people of Australia.
Indirect potable reuse	When treated wastewater or stormwater is added to a water body such as a dam, with the intention that it will mix with other sources and be used to supply drinking water. It differs from ‘direct potable reuse’ by being stored in a water body before reuse.
Integrated water cycle management	A range of approaches to supplying or managing water that considers all aspects of the water cycle. These include reusing wastewater or stormwater, or managing stormwater using ‘water sensitive urban design’.
Interception	The interception of surface water or groundwater that would otherwise flow, directly or indirectly, into a waterway, lake, wetland, aquifer, dam or reservoir.
Liveability	The extent to which a place meets the social, environmental and economic needs of its inhabitants.
Long-term average annual yield	The expected average annual allocation for a water entitlement over the long term. Often used to compare entitlements that have different degrees of reliability.
Lower bound pricing	A pricing definition used under the National Water Initiative whereby water services recover their ongoing costs and an allowance for future asset replacement and refurbishment.
Megalitre	One million (1 000 000) litres.
Merits review	Reconsidering an administrative or regulatory decision, where the review body has the ability to impose a preferable decision in place of the original decision, and has the same powers and discretions as the original decision maker.
Outcomes-focused regulation	Regulations that specify the outcome to be achieved without prescribing the means to achieve that outcome.
Other public benefit outcomes	Mitigating pollution, public health (for example, limiting noxious algal blooms), Indigenous and cultural values, recreation, fisheries, tourism, navigation and amenity values (defined under the National Water Initiative).
Overallocation	Where the total volume of water able to be extracted by entitlement holders at a given time exceeds the environmentally sustainable level of extraction for that system.

Overuse	Where the total volume of water actually extracted for consumptive use in a particular system at a given time exceeds the environmentally sustainable level of extraction for that system. Overuse may arise in systems that are overallocated, or it may arise in systems where the planned allocation is exceeded due to inadequate monitoring and accounting.
Planned environmental water	Rules contained in water plans that constrain the volume and timing of extractions, in order to ‘leave water behind’ for the environment. Examples of rules-based provisions include minimum stream flows, cease-to-pump rules and groundwater access rules.
Planned potable reuse	The deliberate reuse of wastewater or stormwater to augment drinking water supplies. It can either be ‘direct’ or ‘indirect’. It contrasts with unplanned potable reuse, which occurs when treated wastewater enters a natural water system from which other users draw drinking water.
Point source pollution	Pollution originating from an identifiable source, such as a pipe or other conveyance.
Potable water	Water that is safe to drink or use for food preparation.
Regulated system	A surface water system in which water can be stored and flow levels can be controlled through the use of structures such as dams or weirs.
Retailer-distributor	A water service provider that purchases bulk water from a separate provider, and then transports (‘distributes’) and sells that water to end users. A retailer-distributor is not ‘vertically-integrated’ as it does not provide bulk water services.
Riparian	The land next to a river or stream.
Surface water	Water that flows over or collects on land and in natural or artificial waterways.
Sustainable Diversion Limit	The limit on quantities of surface water and groundwater that can be taken for consumptive use from Murray Darling Basin water resources, having regard to environmental, social and economic impacts.
Unbundling	The separation of historic water entitlements (which bundled together water, land, water use, delivery and works approvals) into entitlements or licences.
Unregulated system	A surface water system that is not controlled through the use of infrastructure to store and release water.
Upper bound pricing	The definition of full cost recovery under the National Water Initiative. It involves recovering all of the costs of providing water services, including a market-reflective return on the

	capital used to provide them and the full recovery of that capital.
Vertically integrated	Where one provider undertakes the entire water supply chain, sourcing bulk water, treating, transporting and retailing water to customers, and then transporting, treating and disposing of wastewater.
Water access entitlement	A perpetual or ongoing entitlement to exclusive access to a share of water from a specified consumptive pool as defined in the relevant water plan (also known as a ‘water entitlement’).
Water accounting	Identifying, recognising, quantifying, reporting and assuring information about water, the rights or other claims to that water and the obligations against that water.
Water allocation	The specific volume of water allocated to water access entitlements in a given season, defined according to rules established in the relevant water plan.
Water planning processes	A planning process that establishes rules for sharing surface water or groundwater between the environment and consumptive water users, and also between different types of consumptive water use such as town supply, rural domestic supply, stock watering, industry and irrigation.
Water recovery	The acquisition of a water access right for the purpose of achieving an environmental outcome.
Water sensitive urban design	Designing buildings and landscapes to reduce or slow stormwater runoff (including by increasing the extent to which water infiltrates the soil) and providing opportunities for stormwater reuse.
Water system	A system that is hydrologically connected and described at the level desired for management purposes, such as a catchment, basin or aquifer, or sub-components of these.
Water use right	A right to use water at a specific location and/or for a specific purpose.

OVERVIEW

Key points

- It is crucial that Australia persists in managing its water resources well, given our dry and highly variable climate, and the importance of water to our economy. Some jurisdictions have become complacent.
- Since its creation in 2004, the National Water Initiative (NWI) has made a significant contribution to this objective.
- While much of the attention has been on reform within the Murray-Darling Basin, the NWI remains nationally relevant and the principles it contains are sound.
- There has generally been good progress by States and Territories in implementing the NWI, and most of its objectives and outcomes have been met.
 - Legislative and policy frameworks are in place for water entitlements, planning, trading, accounting and the provision of water for the environment in most jurisdictions.
 - Urban water and irrigation infrastructure services have been improved through institutional and pricing reforms.
- Water reform has delivered substantial benefits to irrigators, other water users and the broader community.
 - The expansion of water trading has provided irrigators with greater flexibility to manage change and has encouraged greater efficiency.
 - There is emerging evidence of improved ecological outcomes from increased environmental water, but it will take time for the full benefits to be realised.
- However, there remains further work to do. Governments need to:
 - complete unfinished business from the NWI, including fully implementing entitlement and planning reforms, and economic regulation in some jurisdictions
 - respond to the challenges posed by population growth, climate change and changing community expectations.
- Reform priorities include:
 - maintaining the key foundations of water management, preventing the re-emergence of outdated policies and avoiding the erosion of hard-won reforms through backsliding
 - revising national policy settings in a range of areas, including entitlement and planning arrangements for extractive industries, and the water needs of Indigenous Australians
 - significantly enhancing national policy settings in:
 - ... urban water management, including clearer roles and responsibilities for supply augmentation planning, improving economic regulation, enabling decentralised solutions and more outcomes-focused environmental regulation
 - ... environmental water management, including better integration with waterway management, strengthened and streamlined institutional, governance and management arrangements, and improved monitoring and evaluation for adaptive management
 - ... new infrastructure, where the focus needs to be on ensuring environmental sustainability and financial viability *before* any government resources are committed for construction.
- Water reform requires perseverance, continuity and long-term commitment from governments. To ensure that Australia's water resources are managed sustainably to meet changing community needs, the priorities above should be incorporated into a renewed NWI by 2020.
- Failure to act now risks the gains made to date and means opportunities for greater efficiency, improved liveability and more sustainable environments would be lost.

Overview

Australia's water sector is viewed internationally as a world leader in water management. We live in one of the driest countries in the world with a highly variable climate. We, more than most countries, need to manage our water resources well because of the fundamental importance of water to our economy and the environment, and the significant challenges we face in managing a natural resource often impacted by periods of extreme scarcity.

Our reputation on the world stage is the result of forward thinking and, for the most part, co-operation by the Australian, State and Territory Governments in developing a national water reform agenda that has been pursued over the past 20 years. The cornerstone of Australia's most recent phase of water reform efforts is the 2004 National Water Initiative (NWI). The NWI is a shared commitment by governments to increase the efficiency of Australia's water use, provide investment confidence and supply security for rural and urban communities, and provide greater certainty for the environment. The NWI is backed by regular reporting and independent assessment of progress.

The efforts of the Australian, State and Territory Governments in water reform have delivered more sustainable water use and efficient provision of water services. Key foundations have been built in the areas of water entitlements and planning, water markets, water accounting and compliance, water quality, water pricing and institutional arrangements. As a result of the NWI and its predecessor policies, we have seen the value of water to the Australian economy first understood and then significantly increase over time. These reforms also enabled Australia to weather the effects of the Millennium Drought (1997 to 2009) — the longest and most severe drought on record — with economic, social and environmental impacts that were less severe than would otherwise have been the case.

However, perseverance and continuity in the process of water reform is required to ensure these gains can be maintained and built upon. The relatively benign climate conditions in most parts of Australia over the past few years are not expected to last — it is time to move into the next phase of water reform so that we are prepared for the challenges that lie ahead.

The Productivity Commission was tasked with the role of monitoring the progress of the NWI, formerly undertaken by the National Water Commission. This review is the first activity in an ongoing program of work for the Commission, which will include assessing progress against the objectives and outcomes of the NWI every three years. For this first review, the Australian Government broadened the terms of reference to consider future reform priorities and the scope for improving the NWI to enable necessary reform.

Australia needs a new phase of water reform

Australia is now facing the dual challenges of population growth and climate change. In many areas, water managers will need to meet the demands of significantly more people with potentially less water available from existing sources. Added to this, community demands on water managers are growing as the contribution of water management to liveability, amenity, recreation and regional tourism is increasingly recognised.

Reliance on past reforms will not be enough to manage these challenges. Further reform is required in three priority areas.

In the urban water sector, we need to ensure that the demands of growing cities can be met efficiently and that water services remain affordable over the long term. The infrastructure used to provide water to our cities generates value to customers worth billions of dollars. Our cities are the key drivers of economic activity — 80 per cent of Australia's GDP is produced in cities, while 80 per cent of Australia's population growth to 2050 is expected to occur in capital cities. Further, given the size of the urban water sector (box 1), even small improvements in the efficiency of the sector will provide substantial gains.

During the Millennium Drought some costly and highly contentious decisions to expand water supply were made in Australia's major cities, and these substantially increased costs to water customers. Improvements in planning and decision-making processes for urban water supply are needed to avoid late, rushed or inefficient investments and ensure that all options for expanding water supply are considered fully and transparently, including emerging decentralised options. Unless we refocus water reform in this way, we risk imposing excessive water bills on customers and we may also miss opportunities to improve liveability when planning our urban environments.

Governments are committed to making significant investments in new water infrastructure in rural and regional areas through programs such as the Northern Australia Infrastructure Facility. These investments need to be preceded by robust project selection processes. Poor past project selection processes have resulted in the construction of economically unviable infrastructure that has created substantial legacy costs for taxpayers, industry, communities and the environment, and there is no excuse for repeating these mistakes.

It is also important that governments focus on generating the greatest possible benefits from the billions of dollars they have invested in environmental water provision, and ensure environmental sustainability in a changing climate.

These three priority areas, together with a renewed commitment to maintaining and improving the key foundations already established, should form the next phase of national water reform. It is critical that governments act now given the urgency of the challenges facing the water sector and the opportunities for increased productivity and efficiency. Doing nothing, or waiting until the next drought, could create a major legacy of future problems.

Box 1 **Key facts about the water sector**

Overview

- In 2015-16, 18 per cent of harvested water was supplied for urban use and 72 per cent was supplied for agricultural, industrial and other uses (the remaining 10 per cent was supplied for environmental purposes).
- Expenditure on services provided by the water sector was about \$17 billion in 2014-15. About 60 per cent of this expenditure was by households, and about 40 per cent by industry and agriculture.

Urban water services

- The urban water sector provides Australian cities and towns with potable (drinking quality) water, wastewater services and stormwater management.
- In 2014-15, the average household spent \$1100 on urban water, wastewater and drainage services and consumed 189 kilolitres of potable water.
- The urban water sector is capital intensive — water and wastewater assets were valued at more than \$160 billion in 2015-16, and investment in these assets has averaged about \$5 billion over the past five years.
- Estimated revenue for water and wastewater service providers was about \$16 billion in 2015-16.

Water services for agriculture

- The asset base providing water services for agriculture was valued at almost \$11 billion in 2012-13.
- Expenditure on rural distribution services was over \$600 million in 2014-15.
- These services contributed to irrigated agriculture production worth \$15 billion in 2015-16, comprising 27 per cent of total agricultural production.
- In 2015-16, the value of entitlements on issue in the southern Murray-Darling Basin was at least \$13 billion.

Water for the environment

- Governments have provided water for the environment through water plans ('planned environmental water') and have also acquired entitlements that are managed for environmental benefit ('held environmental water').
- The total volume of held environmental water entitlements (of varying reliabilities) in the Murray-Darling Basin in 2015-16 was 4315 gigalitres, or 24 per cent of all entitlements on issue. The Commonwealth Environmental Water Holder held 56 per cent of this water (2432 gigalitres) on behalf of the Australian Government.
- The Commonwealth holdings have since grown to 2638 gigalitres and may be valued at up to \$5 billion once water acquisition is finalised under the Basin Plan.

Water reform and the National Water Initiative

Until the 1980s, governments took a development-oriented approach to the management of water, with the focus on expanding irrigated agriculture and supplying the needs of growing cities and towns. Governments invested in dams and other water infrastructure without requiring that user charges recovered costs. Water rights were issued relatively freely, without always respecting the limits of water resources. While this approach served Australia reasonably well at the time, by the 1980s a range of pressures and problems were emerging. These included environmental problems (such as salinity, algal blooms and deteriorating river and wetland health) and a growing awareness that traditional approaches to providing water infrastructure services were costly and lacked incentives to improve service delivery over time.

In response, some State and Territory Governments began reforming aspects of water policy, with a comprehensive national approach commencing in 1994 with COAG's Water Reform Framework. This set out an ambitious agenda covering: pricing; institutional reform (including ensuring that government-owned water utilities have a commercial focus, achieved through corporatisation); the clarification of property rights; allocation of water to the environment; and the development of water trading. The reform agenda also incorporated improvement of health outcomes through provision of high quality drinking water achieved through the development of the Australian Drinking Water Guidelines.

The NWI was developed in 2004 as an extension of the 1994 reforms, to maintain the momentum of reform, respond to overallocation, and address water scarcity issues arising from the early years of what was later to become known as the Millennium Drought. The aim of the NWI is to provide greater certainty for investment and the environment (box 2).

In 2007, the Australian Government introduced the *National Plan for Water Security*, which led to a range of reforms to the management of the Murray-Darling Basin (MDB), including the commencement of the Basin Plan in 2012 and a process for returning water to the environment. COAG also agreed to a range of specific measures in 2008, 2009 and 2013 to clarify and provide more detailed policy guidance on several aspects of the NWI, including urban water, water markets, and knowledge and capacity building.

Box 2 Objectives and elements of the National Water Initiative

The NWI aimed to create a nationally-compatible market, regulatory and planning based system of managing surface and groundwater resources for rural and urban use that optimises economic, social and environmental outcomes by achieving the following objectives:

- clear and nationally-compatible characteristics for secure water access entitlements
- transparent, statutory-based water planning
- statutory provision for environmental and other public benefit outcomes, and improved environmental management practices
- complete the return of all currently overallocated or overused systems to environmentally-sustainable levels of extraction
- progressive removal of barriers to trade in water and meeting other requirements to facilitate the broadening and deepening of the water market, with an open trading market to be in place
- clarity around the assignment of risk arising from future changes in the availability of water for the consumptive pool
- water accounting which is able to meet the information needs of different water systems in respect to planning, monitoring, trading, environmental management and on-farm management
- policy settings that facilitate water use efficiency and innovation in urban and rural areas
- addressing future adjustment issues that may impact on water users and communities
- recognition of the connectivity between surface and groundwater resources and connected systems managed as a single resource.

To fulfil these objectives, the NWI included eight key elements for which there were agreed outcomes and actions:

1. Water access entitlements and planning frameworks
2. Water markets and trading
3. Best practice water pricing and institutional arrangements
4. Integrated management of water for environmental and other public benefit outcomes
5. Water resource accounting
6. Urban water reform
7. Knowledge and capacity building
8. Community partnerships and adjustment.

What has been achieved through water reform?

Overall, good progress has been made

Most jurisdictions have made good progress in meeting the objectives and outcomes of the NWI. A summary of progress is in table 1. Most of the objectives and outcomes have been

met. However, there are some areas where further work is required or where there is potential for improvement.

Table 1 Summary of progress

1. Water access entitlements and planning frameworks

- All jurisdictions, except Western Australia and the Northern Territory, have created statutory-based, clear and secure long-term water rights for consumptive uses.
- Water planning arrangements have been established for the majority of areas of intensive water use across Australia. Most jurisdictions have more than 80 per cent of water use managed under water plans. This means the sharing of water resources between consumptive uses and the environment has been established in consultative processes, informed by scientific and other assessments.

2. Water markets and trading

- Water markets have been established that have allowed water to be traded to higher value uses and other steps have been taken to improve the efficiency of water markets, most notably in the Murray-Darling Basin (MDB).

3. Best practice water pricing and institutional arrangements

- Urban service providers are generally pricing at the levels required by the NWI, despite some instances of underpricing.
- Independent economic regulators set prices or revenues for major urban water service providers in New South Wales, Victoria, South Australia, Tasmania and the ACT. Western Australia, the Northern Territory, Queensland and regional New South Wales do not have independent economic regulation.
- Cost-reflective pricing is generally being used for most *existing* irrigation infrastructure, but *new* irrigation infrastructure has tended to be underpriced. Queensland, Western Australia and Tasmania could make better use of economic regulation.
- There is inconsistent recovery of water planning and management costs from users across Australia.

4. Integrated management of water for environmental and other public benefit outcomes

- Environmental sustainability has been supported by formal provisions of water for the environment and progress has been made on rebalancing overallocated systems.
- All jurisdictions have managers with responsibility for environmental water provision, and some arrangements are in place to coordinate water use for water resources shared across jurisdictions.

5. Water resource accounting

- Water metering, accounting and compliance systems are in place in all jurisdictions.
- Evidence of poor compliance arrangements in some MDB jurisdictions has come to light.

6. Urban water reform

- Water reuse, water use efficiency, water sensitive urban design and innovation have improved since the introduction of the NWI.
- Drinking water quality generally meets existing guidelines. Issues remain, particularly in some remote communities, but action is being taken.

7. Knowledge and capacity building

- There have been advances in knowledge and capacity across areas identified in the NWI.

8. Community partnerships and adjustment

- All jurisdictions have set in legislation, or policy, minimum requirements for stakeholder engagement and consultation when developing and reviewing water plans.
- State and Territory Governments have delivered improved decision making through open and timely consultation with stakeholders. This has been supported by the publication of supporting information at key decision points.

Past water reform has been beneficial

National water reforms have appreciably improved the way in which water resources are managed and water services are delivered, and this has resulted in large benefits for the community.

Water resource management

The introduction of NWI-consistent *water entitlements and planning frameworks* has created secure property rights and established transparent processes for deciding how water is shared between environmental and ‘consumptive’ use (that is, use by people and businesses), thereby capping consumptive use and providing water for the environment. These have been the fundamental prerequisites to establishing water markets and trading. The system of property rights and water planning has also underpinned the move towards improved environmental sustainability.

There is widespread agreement that these reforms have produced significant financial benefits for entitlement holders. Water entitlements are now valuable business assets, with financial institutions accepting them as collateral for loans. The capacity to trade water has provided incentives for more efficient water use and infrastructure investment. Water trading has allowed water to move to higher value uses and has become a business management tool for irrigators, giving them flexibility to respond to changing climatic and market conditions. The benefits have been greatest during drought as it has allowed the limited water supply to move to higher value uses, such as keeping perennial plantings, like fruit trees and grapevines, alive. One estimate is that water trading in the southern MDB increased Australia’s GDP by \$220 million in 2008-09 (a drought year).

The southern MDB is the most important water market in Australia. The value of entitlements on issue in the southern MDB was over \$13 billion in 2015-16 and annual turnover in the entitlement market was about 8 per cent of market value. The removal of trade barriers, quicker and easier trade approval processes, and better market information have enabled rapid growth in water trade, including across state borders. Consequently, new industries, such as nut growing, have developed rapidly and established industries have become more efficient. Reforms have contributed to improved water efficiency and economic growth. Over the 10 years to the late 2000s, on-farm irrigation efficiency in the cotton industry increased from 57 to 70 per cent.

While most trading occurs within the southern MDB, reforms have also opened up trade in other regions, including the northern MDB, cane growing areas of Queensland, groundwater systems in South Australia, and in southern Victoria. Trade between the irrigation and urban sectors is still restricted in various ways, but it has benefited the community when it has occurred.

The provision of *water for the environment* is also a key achievement of the reforms. In less developed systems, water plans have capped consumptive use and specified environmental

water provisions that should ensure the sustainability of these systems. In overallocated systems, additional water is being recovered for the environment. Since the Australian Government commenced the recovery of large quantities of water for the environment within the MDB, its holdings have grown to 2638 gigalitres of entitlements, with a long-term average annual yield of 1811 gigalitres (as at 30 September 2017). These entitlements are managed by the Commonwealth Environmental Water Holder (CEWH). The recovery of large volumes of water for the environment in overallocated systems has occurred only in recent years and it will take some time for the full environmental benefits to be realised. However, there is already some evidence of improved water quality and ecological outcomes at the local scale. For example, provision of environmental water has mitigated some of the most severe impacts of the drought by enabling environmental managers to protect key refuges and prevent some species' extinctions.

Water service delivery

The modernisation of institutional arrangements for urban and irrigation infrastructure services has improved efficiency in water service delivery. Across both sectors, water pricing has played an increasing role in guiding investment decisions, and levels of cost recovery have improved.

Institutional and pricing reforms in the *urban water sector* have brought significant benefits. The separation of service delivery from policy making and regulation through the corporatisation of water utilities, and the introduction of independent economic regulation in many major urban areas, has improved efficiency, increased the transparency of investment decisions and promoted more efficient pricing. The Commission has previously estimated that Australia's GDP was about 0.35 per cent higher over the 1990s due largely to institutional and pricing reforms in the urban water sector. If gains of this magnitude have been maintained through to today, this would represent an annual economic gain of over \$5 billion (in today's dollars).

The widespread introduction of consumption-based pricing (along with restrictions and awareness campaigns during droughts) changed consumer behaviour and led to lower water use. For example, between 2000 and 2016 median annual water consumption in cities and towns decreased from 280 kilolitres to 182 kilolitres per residential property.

Drinking water quality generally meets existing guidelines. New South Wales, Victoria, South Australia and the ACT all achieve good water quality results, with New South Wales in particular having made significant progress in improving regional drinking water quality over several decades. Some issues remain in Queensland, Western Australia, Tasmania and the Northern Territory, particularly in remote areas, but these jurisdictions are all taking steps to address remaining concerns.

In the *irrigation infrastructure sector*, corporatisation and economic regulation of bulk water assets now cover the vast majority of water delivered, with prices set by the economic regulator in New South Wales, Victoria and Queensland. The corporatisation of bulk water

providers has delivered more efficient water services and a stronger commercial focus that has benefited both irrigators and governments. Separating service delivery from the broader role of government has allowed more focused policy making to occur.

Local ownership and management of distribution networks, which has been introduced in New South Wales, Western Australia, South Australia and parts of Queensland, has improved productivity, accountability, long-term planning and responsiveness to irrigators. For example, Coleambally Irrigation's user charges fell by 5 per cent in real terms between 2008-09 and 2016-17 due in part to improvements in operational efficiency.

Overall, water reform under the NWI has delivered significant benefits to irrigators, other water users and the broader community. The reforms are generally well accepted and supported by key stakeholders. However, the continuation of these benefits is dependent on governments maintaining their commitments to these reforms and not eroding or unwinding them. Reform is an ongoing process and requires perseverance and commitment by governments to ensure that gains are maintained and water management and service delivery continues to improve to meet emerging challenges.

Why is further reform needed?

Notwithstanding the benefits of the NWI water reforms, there are four strong reasons for governments to commit to a third phase of national water reform.

- There is still unfinished business from the NWI that needs completion.
- There is evidence of backsliding against early reform commitments, with some governments appearing to have forgotten the reasons for those reforms and taken for granted the benefits they generated. We are starting to see the re-emergence of outdated public policy.
- Reviewing the experience of implementation provides the opportunity to take an adaptive management approach to national water reform. This has already revealed some gaps and limitations in the NWI.
- Challenges, such as those posed by climate change and population growth, will have major implications in the future, particularly for the urban water sector.

Progressing unfinished business from the NWI

There are several areas of reform that remain unfinished in some jurisdictions. The most urgent and important of these are discussed below.

Western Australia and the Northern Territory should modernise their entitlement regimes

The NWI envisages clear and secure water rights that are separate from land, readily tradeable and defined as a perpetual or open-ended share of the resource. However, Western Australia and the Northern Territory have not yet introduced legislation to create the statutory-based entitlement and planning arrangements that provide for these features. Delay in adopting legislative reforms is likely to constrain economic activity in these jurisdictions, as investors will not have certainty about water rights and allocation arrangements. This may also undermine long-term environmental outcomes.

It is particularly important that these jurisdictions undertake these reforms now, given the prospect of new water infrastructure developments in northern Australia. As development increases, statutory-based entitlement and planning arrangements provide users with a secure, legally-defined water right, and transparency for everyone about how water will be allocated. Such arrangements also provide greater certainty that development will be environmentally sustainable in the long term.

Improving economic regulation for the urban water sector

The use of independent bodies to set or review water prices has been a driver of better outcomes for urban water service provision. Where independent economic regulation has been introduced, there have been improvements in the rigour and transparency of water utility decision making, and this has reduced the politicisation of water supply decisions. Moreover, there is broad support from the water industry for strengthening economic regulation across jurisdictions to provide certainty and encourage private investment.

Independent economic regulation should be applied to all urban water service providers of a sufficient scale. As such, it should be extended to retailer-distributors in south-east Queensland (though price-monitoring was in place up to 2014) and the main provider in the Northern Territory. There is also a need to strengthen existing processes in Western Australia and for bulk water in south-east Queensland — in these cases the occurrence of reviews is subject to ministerial discretion. Both of these issues need to be addressed to ensure there is robust independent economic regulation governing all major urban utilities across the country.

The performance of regional urban water utilities needs to improve in New South Wales and Queensland

Small regional water service providers may have higher costs because they serve small and highly-dispersed population centres, and can find it difficult to attract skilled staff. This makes it harder to provide affordable services that meet relevant health, safety and environmental standards. In New South Wales and Queensland, a number of smaller providers are dependent on government grants to maintain services, which can distort

decision making and reduce efficiency. Grants also increase the risk of underpricing, which is currently occurring in New South Wales.

One way to overcome some of the challenges faced by small regional providers is to amalgamate them into larger entities to achieve economies of scale. However, collaboration — which can range from knowledge sharing to joint planning and shared services — is an alternative, and more flexible approach to achieving economies of scale. It also avoids some of the problems with amalgamating local government owned water providers, such as loss of synergies with other services provided by local governments.

In some cases, even where collaboration allows small regional providers to operate as efficiently as possible, it will not be feasible to deliver services of an adequate quality at a price that consumers can afford to pay. The NWI recognises that such communities will require assistance in the form of transparent Community Service Obligation (CSO) payments (box 3). However, New South Wales and Queensland provide assistance through poorly targeted capital grants. The Australian Government has also provided capital grants for urban water projects, contrary to NWI principles. These capital grants should be replaced by CSO payments that are tightly targeted at high-cost service areas and not tied to capital expenditure. CSO payments should be made contingent on the recipient providers exploring all opportunities to improve the efficiency of their services, taking into account the future viability of services and alternative options.

Box 3**Community Service Obligation (CSO) payments**

Governments provide payments to service providers to provide non-commercial services in a range of contexts, including utilities and social services. These 'CSO' payments can be designed in a range of ways to suit the task at hand. For urban water services, CSO payments are typically:

- subject to minimal conditions and not tied to specific investments or operational decisions
- made by the relevant State or Territory Governments
- calibrated to make up the difference between the efficient cost of delivering the desired service (including compliance with relevant regulations) and the assessed ability of the community to pay for that service.

There is scope to better incorporate Indigenous cultural objectives in water plans

Ensuring that cultural values are recognised and provided for in water plans has been an ongoing aspiration for Indigenous communities, leading to the inclusion of provisions in the NWI to meet that goal. In recent years, some States and Territories have made progress in ensuring that water planning includes adequate consultation with Indigenous communities, but this is yet to translate into explicit detailing of cultural values and outcomes in water plans. To date, Western Australia has not yet established specific mechanisms for engaging Indigenous communities in water planning. The complementary issue of providing Indigenous communities with access to water for economic development is not explicitly

addressed by the NWI, although several States and Territories have established or are consulting on specific provisions in this area.

Evidence of backsliding

It is essential to maintain the achievements of hard-won reforms under COAG's 1994 Water Reform Framework and the NWI. The work on water entitlements and planning, water markets, water accounting and compliance, water quality, water pricing and institutional arrangements form the key foundations underpinning sustainable water resource management and efficient service delivery. It would be a mistake to assume that today's relatively benign climate conditions will persist indefinitely. There must be no backsliding if we are to retain the benefits of these past reforms and build on these gains.

Recent policy changes proposed in South Australia and Tasmania are cause for concern in this regard. The South Australian Government's proposal to decorporatise SA Water risks undermining the efficiency gains in service delivery achieved in that State through governance arrangements that give service providers a clear commercial focus and separate service delivery from policy development. The Tasmanian Government's proposal to constrain the role of the economic regulator could slow progress towards cost-reflective pricing in that State, and risks politicising the price-setting process.

There is also a risk of slow erosion of reforms. Confidence in accounting and compliance processes is critical to maintaining the integrity of entitlement systems and water markets. As such, concerns about non-compliance warrant close examination by governments. For example, recent unresolved allegations of non-compliance with water laws and regulations in New South Wales, and broader questions about the effectiveness of state-based compliance and enforcement regimes, risk undermining the benefits of water reform.

A number of reviews have been commissioned, including a Basin-wide review of compliance by the Murray-Darling Basin Authority and a specific review of the water compliance functions in New South Wales. To date these reviews have found a lack of comprehensive reporting on compliance, deficiencies in the compliance efforts of some water regulators (including the commitment to accurate metering and measurement of water take) and relatively low levels of resourcing for compliance in some MDB jurisdictions. In responding to the findings of these reviews, government actions should be proportionate and well-targeted, and the Commission will examine these issues in more detail in its inquiry into the implementation of the Basin Plan in 2018.

Learning from experience

The experience of 13 years of implementation has revealed some gaps and limitations in the NWI. This period included the worst years of the Millennium Drought, which proved to be a stress test for water management systems and the robustness of the NWI.

During this drought, each of the large capital cities made major investments in new infrastructure, including desalination plants. These decisions were made quickly and were often highly controversial, with questions raised about the efficiency of the investments. This highlighted areas where improvements to current water management practices are required. Most notably, improvements in planning and decision-making processes for major urban water supply augmentation are needed to ensure that decisions are deliberated, transparent and all options are considered.

Experience in implementing the NWI showed that adaptation was also needed in other areas of water management. For example:

- as extractive industries (such as mining, petroleum, and unconventional gas) grew significantly over this period, there were fears that they could adversely affect the environment and consumptive water users if not properly accounted for in water entitlements and planning frameworks
- as water utilities increased their use of recycled water and stormwater, there was concern that these new sources needed to be brought into water entitlement frameworks to provide additional security for these investments and to protect other entitlement holders
- as significant volumes of water were recovered for the environment, it became clear that the NWI does not provide adequate direction on the contemporary issues faced by environmental water managers in managing a large and growing portfolio of environmental water
- while the NWI provides high-level outcomes for urban water management, it provides little policy guidance to the sector on issues other than pricing.

Water sector policy has been enabled by a strong commitment to community and stakeholder engagement in all areas of water management, and to building knowledge and capability. These will need to be maintained to ensure that we learn from experience when delivering future reforms.

Key challenges

There are significant challenges facing the water sector that have emerged or intensified since the NWI was signed. Policy frameworks must address these challenges if they are to continue to serve the Australian population into the future. The key challenges are:

- population growth and urbanisation — by 2050, there is expected to be an additional 8.3 to 13.3 million people living in Australia's capital cities and the Australian population is expected to be between 34.3 and 41.9 million people
- climate change — rainfall and runoff have already declined in some regions, and CSIRO predicts future decreases in runoff across much of southern Australia as well as an increase in the frequency of extreme droughts

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- changing community expectations — these have changed significantly in recent years, in many cases, reflecting community experience during the Millennium Drought. The drought highlighted the social dependence of urban and rural communities on water and water environments when many of these environments dried up and the related services ceased. Accordingly, there is now far more appreciation of the contribution that water management and water environments can make to amenity, liveability, recreation and regional tourism.

In essence, water managers in the future will have to manage potential reductions in water in key parts of Australia to meet the demands of a rapidly increasing population for a wider range of water services. Our national policy settings will need to adapt and change to ensure these challenges can be met.

Priorities for future reform

The Commission has identified three key priorities for the next phase of water reform. Progressing these key priorities requires:

- maintaining the key foundations
- revising policy settings in a number of areas, including planning and entitlements frameworks, water trade and adjustment assistance
- significantly enhancing policy settings for urban water, environmental management and new infrastructure investment.

Maintaining the key foundations

As discussed above, it is important that the key foundations of water reform in the areas of water entitlements and planning, water markets, water accounting and compliance, water quality, water pricing and institutional arrangements, are maintained. Failure to do so will result in erosion in stakeholder, investor and community confidence in our water management system.

Revising existing policy settings

There are areas where revisions to current policy settings are required to deal with contemporary issues and concerns. These revisions should be made by State and Territory Governments as quickly as possible.

Arrangements for extractive industries

Since 2004, the growth of extractive industries has increased competition for water resources in many parts of Australia. The NWI is ambiguous about how it applies to extractive industries. In some cases, alternative water rights arrangements for extractive industries exist outside the water entitlements and planning frameworks, raising concerns about risks to the supply to other water users and the environment. There are also concerns that alternative water rights arrangements may inhibit water trading.

Water entitlements and planning frameworks should more fully incorporate major water uses. Governments should remove entitlement exemptions for extractive industries (unless there is a compelling reason otherwise), so that they are issued entitlements under the framework applying to other consumptive users.

Transparent water planning processes provide a more effective means of considering the management of water use by extractive industries than relying on separate (and in some cases non-transparent) management arrangements.

Incorporating alternative water sources

Water entitlement frameworks should enable inclusion of recycled water and stormwater to facilitate their use in situations such as managed aquifer recharge and streamflow enhancement. This will protect other entitlement holders and reduce barriers to investment in these supply options. For example, without arrangements in place to allow for extraction of managed aquifer recharge, any water injected into the aquifer would simply add to the pool available for all groundwater users. This could undermine the incentive for any party to invest in a managed aquifer recharge project.

Developing contemporary water entitlements and planning frameworks

Contemporary guidance on water planning is needed to underpin the second and third generation water plans now being developed across Australia. One important addition should be a process for regularly assessing the impact of climate change on water resources. Where this impact is significant and detrimental, the next water plan review should re-examine the fundamental objectives of the plan (including environmental objectives and those for consumptive use). The consequent balance between environmental and consumptive uses of water should ensure that the plan is suited to a drier climate.

Water quantity and water quality management are both critical for maximising the economic, environmental and social benefits the community derives from Australia's water resources. Currently water planning is more heavily focused on water quantity. Water planning provisions should be updated to more explicitly provide for water quality and the interaction with water quantity.

More fully recognising the water needs of Indigenous Australians

Accommodating the cultural water needs of Indigenous Australians is a key feature of the NWI. However, all governments must undertake further work to achieve clear, measureable and well-informed Indigenous cultural objectives in water plans, tangible actions in support of the achievement of those objectives, and monitoring and reporting arrangements that promote accountability and foster learning about what does (and does not) work. Environmental water managers should also take into account the protection of cultural values wherever this is compatible with their primary objectives.

The provision of water for Indigenous economic development is not specifically covered by the NWI. It is important that where State and Territory Governments provide access to water for Indigenous economic development, they source water within existing water entitlement frameworks, such as by purchasing water on the market or as part of transparent processes for releasing unallocated water. They should also ensure adequate supporting arrangements (such as training and business development) are in place to maximise the value of the resource for Indigenous communities, involve Indigenous communities in program design, and carefully consider governance arrangements.

Removing remaining barriers to trade

Trade restrictions designed to protect production, water infrastructure utilisation or employment in particular locations or industries are not permitted under the NWI, and considerable progress has been made in removing them. However, some restrictions still remain. Of these, restrictions on trading, or otherwise transferring, water between the irrigation and urban sectors are the most costly to the community. Gains from trade in water between the two sectors can be significant — the current household capacity to pay for water can be between 10 and 100 times more than the willingness of irrigators to pay. Restrictions on trade between the two sectors have instead resulted in the development of higher-cost sources of urban water — for example, desalination plants.

There are concerns that promoting urban-rural trade would adversely affect communities reliant on irrigation. However, the Commission has assessed that these effects are likely to be modest, and more easily addressed with today's much larger trading volumes and market. Given the potential gains from trade, State and Territory Governments should continue to remove trade rules, policies (whether or not explicitly stated) and other barriers that prevent water being traded, or otherwise transferred, between the irrigation and urban sectors.

Improving the quality and consistency of economic regulation

There is scope to improve the quality and consistency of economic regulation through the adoption of a set of national principles including:

- the objective of regulation should be to promote the long-term interests of consumers

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- regulatory decisions should include transparent customer engagement
 - prices should reflect the full efficient cost of service provision
 - utilities should have incentives to innovate and improve their efficiency
 - regulatory decisions should consider the long-term viability of utilities
 - regulatory frameworks should be adaptable and flexible, and allow the economic regulator to incorporate feedback into its approach
 - the economic regulator should be transparent and detail the rationale underlying their decisions
 - regulatory decisions should facilitate effective competition in potentially contestable parts of the industry.

Addressing future knowledge and capacity building needs

Ongoing research and capacity building will be central to Australia's ability to deliver sustainable management of water resources, and efficient and affordable water services, into the future. There are sound reasons for government funding of water research, and value in maintaining knowledge and capacity in the public sector. To achieve the greatest benefits from investment, governments, water utilities and research institutions should work collaboratively on areas where new knowledge is most needed, such as:

- adjusting water resource management to respond to climate change
- facilitating an adaptive approach to managing environmental water
- supporting the adoption of outcomes-based environmental regulation for the urban water sector.

Better targeting adjustment assistance

Programs and measures to assist individuals and communities to adjust to water-related structural change have been largely focused within the MDB. This is due to a combination of overallocated water resources and a past dependence on water within many regional economies.

Since 2008, the Australian Government has spent over \$8 billion on infrastructure and water efficiency measures to minimise the adverse impacts on individuals and communities from rebalancing under the Basin Plan. It has also recovered water for the environment through the direct purchase of water entitlements on the water market (as opposed to through the uncompensated attenuation of water rights). MDB jurisdictions have also funded projects focused on adjustment assistance and regional development.

In addition to government spending on water recovery, a combination of the ability to trade water and the extended implementation time for the Basin Plan has given entitlement holders the tools and support to respond to reduced water availability.

Looking forward, governments should focus assistance programs on developing the capacity of communities to deal with the impact of structural adjustment. Doing so will require governments to avoid broad industry assistance measures and consider all factors affecting communities (not just water reform).

Enhancing national policy settings

There are three priorities for inclusion in a future national water reform agenda. These areas require a significant enhancement of current policy settings and, associated with this, considerable effort by all governments to make the necessary changes.

Making urban water management more robust and responsive

Future urban water management will have to provide water supply and sewerage services for rapidly growing cities and towns, while being efficient and affordable. Accompanying this will be expectations of improved urban amenity and liveability in a potentially drier climate.

More robust major supply augmentation planning is one imperative. Australia's experience during the Millennium Drought showed that bulk water augmentation decisions can be very costly and highly contentious. Past Commission analysis indicates that decisions to invest in expensive desalination plants to supply Sydney, Adelaide, Perth and Melbourne were potentially unnecessary or ill-timed. Given the plants in question cost over \$9 billion to construct (in today's dollars), alternatives to some of these investments could have significantly reduced the cost of water services in some cities. Jurisdictions should improve arrangements for major supply augmentation planning in cities by:

- ensuring that roles and responsibilities are clearly allocated between governments and utilities, recognising that ultimate accountability rests with government
- requiring that decision-making processes are consistent with good planning principles — which require transparency, early adaptation to new information, and consideration of all options for augmentation. In the latter case, this would encompass both centralised systems (such as dams and desalination plants) and decentralised approaches (such as indirect and direct potable reuse and use of stormwater).

Decentralised approaches to providing water and wastewater services include onsite wastewater treatment and reuse, stormwater harvesting, and managing stormwater locally through water sensitive urban design measures, such as rehabilitating wetlands. These approaches are collectively referred to as integrated water cycle management (IWCM). IWCM can offer social, environmental and liveability benefits at the local level, and these are becoming increasingly important to the community. However, it can be difficult to

measure and value some of these benefits and therefore identify appropriate funding arrangements for these projects. As population increases and cities grow, there may be opportunities to implement IWCM cost-effectively at the local level. If implemented widely, their combined effect on the urban water system and liveability of towns and cities may be significant. Governments should ensure that these approaches can be considered alongside conventional centralised approaches by developing IWCM plans for major growth corridors and significant infill developments, accompanied by evaluation of costs and benefits.

Implementation of decentralised IWCM approaches can sometimes be constrained by current environmental regulations for the management of wastewater and sewerage. These may not be flexible enough and may preclude the adoption of alternative approaches that can achieve environmental objectives more cost effectively. Prescriptive regulations can also forgo opportunities to make cities more liveable — for example, by using IWCM to provide the water needed to sustain parklands, ponds and street trees, or to supplement environmental flows. The Commission considers that there is potential for greater community benefits by taking a more outcomes-focused approach to environmental regulation.

Urban water management can also benefit from the introduction of competition to promote efficiency and innovation. Jurisdictions have adopted a range of reforms to promote competition, such as removing obstacles to private sector investment in the water and wastewater industries, and allowing third party access to existing infrastructure. The most advanced is New South Wales, which legislated the *Water Industry Competition Act 2006* (NSW). There is likely to be scope for other jurisdictions to take further action through enhancing regulatory frameworks to enable new ideas to promote alternatives.

The Commission has previously highlighted the potential for more flexible pricing, such as ‘scarcity pricing’, to achieve greater efficiency in balancing water supply and demand. While current policy does not preclude going beyond long-run marginal cost pricing, there may be value in considering the case for further policy guidance on this issue. It will be too late to do this once we again enter into a drought phase.

Consideration should also be given to pricing for different levels of service and approaches to pay for other worthwhile benefits of projects — for example, the use of developer charges.

Improving environmental management

Governments have invested significantly in providing water for the environment through water plans and by acquiring entitlements. To get the best possible environmental, social and economic outcomes from that investment, water for the environment needs to be managed efficiently and effectively. This requires additional work in three key areas.

- Integrated management of environmental water and waterways.
- Strengthened governance and streamlined institutional and management arrangements for entitlement-based environmental water.

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- Monitoring, evaluation, reporting and adaptive management of water for environmental outcomes.

Providing water for the environment is not necessarily sufficient to achieve improvements in environmental health. Other complementary waterway management activities — for example, water quality improvement, habitat restoration and the management of pest species — have a direct impact on these outcomes. Efforts to deliver environmental water and manage rivers, wetlands and floodplains must therefore be coordinated and aimed at common objectives at the local scale.

These activities are usually managed by separate bodies, which can lack the authority or incentives to coordinate the development of their priorities. Better coordination could be achieved by integrating planning responsibilities from the bottom up and having the same local organisation set objectives for environmental water and waterway management. Where this is not feasible due to the scale and cost of change, State and Territory Governments should amend their legislation, policies and planning frameworks (as relevant) to ensure objectives are consistent and planning processes are coordinated to deliver improved environmental outcomes at the local scale.

As a result of water recovery efforts in overallocated systems, environmental water managers have entitlements worth billions of dollars. They make decisions on the use and trade of water that can affect regional environments and communities, and are of significant interest to other water users. It is critical that the community has confidence in the objectivity of the body making these decisions and that decisions are free from real or perceived political influence. To ensure this, decisions on water use and trade should be made by independent bodies at ‘arm’s length’ from governments, and governments should ensure that the logic and rationale for decisions are easily accessible to the public.

The need for independence is particularly relevant to the CEWH given the scale of (and public interest in) its holdings. Greater independence in arrangements in New South Wales also merits consideration. Governments should primarily exercise their undoubted responsibility by setting clear legislative and policy frameworks to guide the operation of these bodies, but should not then interfere in operational matters.

The Commission proposes streamlining planning and delivery arrangements for environmental water and removing duplication in roles and responsibilities. This is particularly important given that organisations at three scales (local, state and territory, and national) are involved in these activities. In that context, there would be significant efficiencies in winding down The Living Murray program. Now that the Basin Plan provides a framework that seeks to benefit the entire system, the program adds unnecessary complexity to an already difficult task.

There will be further opportunities to streamline management arrangements over time as environmental water managers learn from experience. Where the CEWH’s involvement is not required to achieve whole-of-system outcomes and local capability exists, decision making should be devolved to the local or state level. Management should initially be

devolved where an environmental asset has well-specified, relatively routine water requirements, but arrangements could evolve to encompass more complex management needs. The New South Wales, Victorian and South Australian Governments should also devolve the management of held environmental water where equivalent conditions apply.

Effective and efficient management of environmental water also requires adaptive management to ensure continuous improvement over time. This particularly applies to held environmental water, which requires decision making in the face of uncertainty. Timely information is critical to learning. Governments need to improve efforts to monitor and review the environmental and other public benefit outcomes from water provision.

The Commission recognises that this is not easy to do, so effort should be commensurate with the risk to these outcomes and their value to the community. Improvement will require better coordination (particularly for water resources shared across jurisdictions), more consistent methods, and long-term investment. Governments should also provide for independent auditing to increase accountability.

Delivering new infrastructure that is viable and sustainable

With over \$4 billion of Australian Government grants and loans available for water infrastructure projects, and funding also available from State and Territory Governments — the majority of which is likely to be sought for irrigation projects — it is crucial that poor past decisions and outcomes are not repeated. As set out in the NWI, the focus needs to be on ensuring the environmental sustainability and financial viability of new infrastructure *before* any government resources are committed for construction. Without this focus there are risks that public funds will be wasted, water users left with assets they cannot afford and costly environmental damage imposed on future generations.

Provision of government funding for infrastructure in the past has been justified by benefits that have overwhelmingly been captured by private individuals, without requiring capital costs to be recovered from them. An important check on the viability of those projects — users' preparedness to pay — was therefore missing.

Where governments wish to provide funding for water infrastructure they should ensure that:

- NWI-consistent entitlement and planning frameworks are in place *before* any new infrastructure is considered, including in northern Australia where such structures are often weak or nonexistent
- an independent analysis is completed and made available for public comment *before* any government announcement on new infrastructure is made. The analysis should:
 - assess the economic and financial viability of the new infrastructure
 - quantify the economic benefits delivered and the recipients of those benefits
 - assess users' willingness to pay for the infrastructure through a combination of ongoing infrastructure charges and the purchase of water entitlements

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- they do not provide grant funding for infrastructure, or that part of infrastructure, that is for private benefit. Government grants should be limited to those projects, or parts of projects, delivering a clearly articulated and evaluated public good
 - the financial risk of new infrastructure is reduced by requiring the presale of water entitlements as a precondition for commencing construction.

Governments need to exercise caution in any decision to provide finance (such as loans) for new infrastructure where the private sector is unwilling to accept the same risks. That unwillingness may be a commercially and economically sound decision. Governments should only provide loans (or financial support) once robust decision-making frameworks are in place that, in addition to the points above, provide for:

- a selection of projects on merit, without favour or bias
- ongoing monitoring against agreed performance measures and the implementation of remedial action should the investment underperform
- public reporting of investment performance.

The imperative for reform

The issues discussed above show the imperative to continue with national water reform. Relying on our past efforts will not be enough to meet our future challenges. Unless we ramp up our efforts on water reform and take the next steps, we will see many of the hard-won economic and environmental benefits erode over time and the cost to water customers and taxpayers will rise. Governments should act now to establish the next phase of water reform, rather than wait for the next severe drought.

Progressing reform

The NWI has served Australia well. It has spurred difficult reform across the water sector, produced sizable benefits and been widely supported by the water sector, industry and stakeholders. Understanding why is important for considering the next steps in water policy.

The design and implementation of the NWI is likely to have been an important contributor to its effectiveness. First, it is an inclusive national agreement involving all governments with material responsibilities for managing water resources and providing water. In signing up to the NWI, all governments agreed the objectives for water management and committed to a clear agenda and rationale for water reform that was visible to all water users and stakeholders. In establishing the process for independent review of progress, they showed they were willing to be held accountable for their actions.

Second, the objectives, outcomes and actions of the NWI are generally clear and measureable, and progress against reform commitments has been independently monitored

and scrutinised regularly. Third, the agreement provides jurisdictions with sufficient flexibility to progress reform in least-cost ways, given local conditions.

Finally, in establishing the NWI, governments not only worked on water reform within their jurisdictions, but established systems for working together on the mechanics of reform. They have developed principles and guidelines for key elements of the NWI. They have jointly responded to the independent reviews of progress. In doing so, they have shared information and ensured greater coordination across jurisdictions and greater consistency in management arrangements. This has provided stakeholders and investors with greater certainty.

The Commission considers that retaining and renewing the NWI is the best approach to progressing national water reform.

The NWI — recommit, revise and enhance

Progressing the new areas for reform through a renewed NWI would build on its strengths as a blueprint for national reform. It would also mean that the national water reform agenda is consolidated. Renewing the NWI would ensure existing reform commitments remain on the agenda, while providing an opportunity for new reforms to come into prominence.

Progressing reform through a renewed NWI would also allow governments to capitalise on the considerable goodwill and buy-in associated with the NWI, potentially smoothing the way for future reform efforts.

The Commission recommends that the Australian, State and Territory Governments recommit to a revised and enhanced NWI that:

- maintains gains to date
- progresses the unfinished business
- provides guidance on new reform priorities that have emerged as a result of current and future challenges facing the water sector.

However, the development of a renewed NWI is not a prerequisite for — and need not hold up — jurisdictions implementing the Commission’s recommendations. The Australian, State and Territory Governments should get on with progressing reform.

Negotiating a new agreement

Implementation of the new reforms proposed by the Commission variously involve the commitment of the Australian, State and Territory Governments. While this means that not all governments need to be involved in progressing reforms in all areas, it is still important to have agreement led at a national level. The Commission recommends that a renewed NWI be negotiated through COAG.

As State and Territory Governments stand to benefit from the reforms proposed in this report through improvements in the efficiency of water service delivery and better water resource management practices, this should be the primary reason for undertaking further reform. However, where the Australian Government provides any funding and financing of water-related projects, this should be made contingent on States and Territories complying with the current, and any future renewed, NWI. This should apply *now* to the current infrastructure development programs (such as the Northern Australia Infrastructure Facility) and any funding made available as part of City Deals (an initiative to create partnerships between the three levels of government, the community and the private sector to support future development in our cities).

Where specific issues exist with the capacity of individual jurisdictions to comply with their reform commitments, targeted funding to address the underlying resourcing and/or information gap, may be warranted. There may also be a case for the Australian Government to provide support for activities that encourage reform in areas of national interest — for example, by funding pilot programs of IWCM approaches (supporting more liveable cities), or building the capability of States and Territories to fulfil Indigenous water commitments through skills development and knowledge sharing.

A renewed NWI to be in place by 2020

The Commission considers that a renewed NWI could be negotiated within three years — in time for the 2020 inquiry into progress towards achieving the objectives and outcomes of the NWI. Jurisdictions should update the actions they commit to after six years to ensure that they remain relevant. Jurisdictions should develop a renewed NWI in a public manner. Indigenous communities should be directly involved in developing provisions relevant to them. As such, the Commission recommends that an Indigenous working group be established to provide advice on the development of relevant provisions.

Monitoring and reporting on progress

Ongoing audit and assessment of progress against reform commitments by an independent body lifts public confidence. Moreover, it provides each government with greater confidence that others are playing their part. A three year cycle of assessment of progress against a renewed NWI would give jurisdictions sufficient time between reviews to make meaningful progress (for example, by passing new legislation or undertaking a comprehensive consultation exercise), while also maintaining reform momentum.

Recommendations and findings

Chapter 2 — Water reform — past, present and future

FINDING 2.1

Water reform has brought about significant benefits to communities and stakeholders; however, further work remains. There is unfinished business in some areas of the National Water Initiative, and in some jurisdictions, that should be progressed. There is also a range of future challenges facing the water sector that will require further reform.

Chapter 3 — Water entitlements and planning

FINDING 3.1

Entitlement and planning reforms have provided economic benefits and promoted certainty through more transparent and inclusive decision making. They have also enabled a significant move towards improved environmental outcomes.

However, further reforms and/or ongoing efforts are required to meet the outcomes and objectives of the National Water Initiative. These include the failure of Western Australia and the Northern Territory to enact the legislation required to create secure, National Water Initiative-consistent water access entitlements.

RECOMMENDATION 3.1

State and Territory Governments should ensure that entitlement and planning reforms are maintained and improved.

Priorities are:

- a. Western Australia and the Northern Territory should establish statutory-based entitlement and planning arrangements that provide for water access entitlements that are long-term, not tied to land and tradeable
- b. State and Territory Governments should ensure that water entitlement and planning arrangements explicitly incorporate extractive industries, including ensuring that entitlements for extractive industries are issued under the same framework that applies to other consumptive users (unless there is a compelling reason otherwise)
- c. State and Territory Governments should develop a process to regularly assess the impact of climate change on water resources. Where this is considered to have been significant and detrimental, they should ensure that the next water plan review fundamentally reassesses the objectives of the plan (including environmental and consumptive) and the consequent balance between environmental and consumptive use of water, to ensure it is suited to a drier climate
- d. State and Territory Governments should ensure that, as water plans reach the end of their planning cycle, review processes are undertaken that allow optimisation of water use and system operation across all users, include explicit consideration of Indigenous cultural values, and involve adequate community and stakeholder engagement
- e. State and Territory Governments should explore opportunities to better incorporate water quality issues in water planning, particularly as water plans come up for review and renewal
- f. State and Territory Governments should ensure that their entitlement frameworks can incorporate alternative water sources, such as stormwater, wastewater and managed aquifer recharge, so they do not present a barrier to efficient investment in these supply options.

Australian, State and Territory Governments should revise relevant provisions in the National Water Initiative to align with recommendations 3.1 (b) to 3.1 (f).

FINDING 3.2

Access to water resources to achieve cultural values is increasingly being addressed by using specific mechanisms for engaging with Indigenous communities in the development of water plans — the exception is Western Australia.

The Northern Territory Government is also taking steps to provide Aboriginal landowners with increased opportunity to access water resources for economic development.

There is evidence that environmental water managers have used held environmental water to achieve Indigenous cultural objectives, without forgoing environmental benefits.

RECOMMENDATION 3.2

State and Territory Governments should ensure that:

- a. Indigenous cultural objectives are explicitly identified and provided for in water plans
- b. progress in achieving Indigenous cultural objectives is regularly monitored and reported publicly
- c. there is public reporting of how Indigenous cultural objectives have been considered in the management of environmental water — both held and planned.

RECOMMENDATION 3.3

Where State and Territory Governments provide access to water for Indigenous communities for economic development they should:

- a. source water within existing water entitlement frameworks, such as by purchasing water on the market or as part of transparent processes for releasing unallocated water
- b. ensure adequate supporting arrangements (such as training and business development) are in place to enable Indigenous communities to maximise the value of the resource
- c. involve Indigenous communities in program design
- d. specify and implement future governance arrangements
- e. regularly monitor and publicly report on these provisions (such as the volume of entitlements sourced, water used and supporting arrangements) and their outcomes.

Australian, State and Territory Governments should revise relevant provisions in the National Water Initiative to align with recommendations 3.3 (a) to 3.3 (e).

Chapter 4 — Water trading

RECOMMENDATION 4.1

Australian, State and Territory Governments should maintain trade reforms to date and improve arrangements to facilitate open and efficient water markets.

Priorities are:

- a. State and Territory Governments should remove those residual trading rules, policies (whether or not explicitly stated) and other barriers that prevent water being traded, or otherwise transferred, between the irrigation and urban sectors
- b. the Australian Government should commission an independent review of the effectiveness and efficiency of service standards for trade approvals. The review should consider whether the standards should require shorter approval times
- c. the role of governments in providing water market information should be focused on ensuring the quality and accessibility of water resource, market rules and basic trade data. In fulfilling this role, State and Territory Governments should improve the quality and accessibility of trade data in water registers.

Australian, State and Territory Governments should revise relevant provisions in the National Water Initiative to align with recommendation 4.1 (a).

Chapter 5 — Environmental management

RECOMMENDATION 5.1

Australian, State and Territory Governments should ensure that their policy frameworks provide for the efficient and effective use of environmental water to maximise environmental outcomes and, where possible, provide additional community outcomes relating to water quality, Indigenous values, recreation and economic benefits.

Australian, State and Territory Governments should enhance the National Water Initiative to align with this recommendation.

RECOMMENDATION 5.2

State and Territory Governments should ensure the management of environmental water is integrated with complementary waterway management at the local level.

To achieve this:

- a. State and Territory Governments should ensure that consistent management objectives govern the use of environmental water and complementary waterway management activities
- b. where possible, one planning process should be used to set objectives for both activities but, if not, State and Territory Governments should ensure planning at the local level is aligned and coordinated. Planning processes should also provide explicitly for other public benefit outcomes where these are compatible with environmental outcomes.

Australian, State and Territory Governments should enhance the National Water Initiative to align with recommendations 5.2 (a) and 5.2 (b).

RECOMMENDATION 5.3

Where governments own significant environmental water that can be actively managed, they should ensure that decisions on the use of this water are made by independent bodies at arm's length from government.

The Australian and New South Wales Governments should review current governance arrangements to ensure that held environmental water and environmental contingency allowances are managed:

- a. independently of government departments and political direction
- b. by statutory office holders with an appropriate range of expertise.

Australian, State and Territory Governments should enhance the National Water Initiative to align with this recommendation.

RECOMMENDATION 5.4

Australian, State and Territory Governments should ensure there are clear roles and responsibilities for managing environmental water in water resources that are shared across jurisdictions, with no duplication.

Consistent with this principle, The Living Murray program should be wound down as there is no clear rationale for its continued existence in the context of the Basin Plan. Each Basin jurisdiction should manage its share of former Living Murray entitlements as part of its broader portfolio of held environmental water. The Murray-Darling Basin Authority should complete the divestment of its holdings.

RECOMMENDATION 5.5

Over time, the Australian Government should devolve the management of Commonwealth environmental water to the lowest practicable level in situations where:

- the environmental water could be effectively managed by an accountable local or state and territory partner
- the involvement of the Commonwealth Environmental Water Holder is not required to achieve whole-of-basin outcomes, including by managing trade-offs between catchments and jurisdictions.

Management should initially be devolved where an environmental asset has well-specified, relatively routine water requirements, but arrangements could evolve to encompass more complex management needs.

The New South Wales, Victorian and South Australian Governments should also devolve the management of held environmental water where equivalent conditions apply.

Australian, State and Territory Governments should enhance the National Water Initiative to align with this recommendation.

RECOMMENDATION 5.6

Australian, State and Territory Governments should improve monitoring, evaluation, auditing and reporting to demonstrate the benefit of allocating water to the environment, build public trust in its management, keep managers accountable and make better use of environmental water over time.

Priorities are:

- a. Australian, State and Territory Governments should increase their focus on monitoring environmental and other public benefit outcomes — not just water provision — where additional effort would be commensurate with the risk to, and value of, those outcomes
- b. monitoring and evaluation should involve collaborative and complementary partnerships, consistent approaches that enable the synthesis of outcomes across different temporal and spatial scales, and long-term investment. In the Murray-Darling Basin, governments should develop a strategy to coordinate monitoring and evaluation of the outcomes of environmental water provision, both planned and held
- c. all managers of environmental water should publicly report on outcomes that are not achieved, in addition to those that are, and the reasons why
- d. to improve transparency, Australian, State and Territory Governments should establish arrangements for independent auditing (at least triennially) of environmental water outcomes and supporting management arrangements
- e. managers of held environmental water should use the results of monitoring, evaluation and research to improve water use as part of an adaptive management cycle. To achieve this, responsibility for adaptive management should be clearly allocated and adequately resourced.

Australian, State and Territory Governments should enhance the National Water Initiative to align with recommendation 5.6 (e).

Chapter 6 — Urban water

RECOMMENDATION 6.1

State and Territory Governments should:

- a. ensure that roles and responsibilities for system and major supply augmentation planning are clearly allocated between governments and utilities, recognising that ultimate accountability rests with government
- b. require that decision-making processes are consistent with good planning principles, in particular that they consider all options fully and transparently, including both centralised and decentralised approaches (including indirect and direct potable reuse, and reuse of stormwater), and are adaptive in response to new information.

Australian, State and Territory Governments should enhance the National Water Initiative to align with recommendation 6.1 (b).

FINDING 6.1

In some cases integrated water cycle management projects will be justified by their benefits to a single beneficiary. In other cases the multiple potential benefits of these approaches, such as improved liveability and ecological health of urban waterways, mean that collaboration across multiple beneficiaries will be required to capture these benefits.

FINDING 6.2

Governments should ensure that any significant barriers to the adoption of integrated water cycle management approaches are removed from the general policy framework.

RECOMMENDATION 6.2

State and Territory Governments should ensure that decentralised integrated water cycle management (IWCM) approaches are considered on an equal footing alongside other water supply and management approaches, particularly in the planning of new developments to support urban growth.

Priorities are:

- a. ensuring that place-based IWCM plans are developed for major growth corridors and significant infill development locations
- b. ensuring that options identified in IWCM plans are considered in water system planning, including both high-level system-wide planning and detailed investment planning, and in land-use planning
- c. ensuring that IWCM projects are implemented when they are shown to be cost-effective (considering their full range of benefits)
- d. reviewing the role that developer charges play in planning for new developments.

Australian, State and Territory Governments should enhance the National Water Initiative to align with recommendations 6.2 (a) to 6.2 (d).

FINDING 6.3

Environmental regulations applying to wastewater treatment plants and sewer overflows can be overly prescriptive in many cases, and so can exclude alternative approaches that achieve the desired environmental outcomes at lower cost. Further, some alternative approaches can offer better environmental and social outcomes, such as improved urban amenity and reuse of wastewater as environmental flows to improve waterway health.

RECOMMENDATION 6.3

State and Territory Governments should ensure that current environmental regulations protect urban waterway health as cost-effectively as possible, and do not prevent the achievement of other public benefits.

Priorities are:

- a. reviewing existing regulatory regimes for wastewater discharges, beneficial use of wastewater and sewer overflows to ensure that they are sufficiently flexible and outcomes-focused
- b. considering the need to amend relevant national policies and standards.

RECOMMENDATION 6.4

State and Territory Governments should ensure that independent economic regulation is in place for all urban water service providers of a sufficient scale, to further promote efficient service delivery.

Priorities are:

- a. extending independent price regulation to retailer-distributors in south-east Queensland and the Northern Territory's Power and Water Corporation
- b. establishing a standing reference for the Economic Regulation Authority in Western Australia and the Queensland Competition Authority to set or review prices
- c. establishing common national principles to raise the standard of economic regulation across all jurisdictions. These should include that:
 - ... the objective of regulation is to promote the long-term interests of customers
 - ... regulatory decisions should include transparent customer engagement
 - ... prices should reflect the full efficient cost of service provision
 - ... utilities should have incentives to innovate and improve their efficiency
 - ... regulatory decisions should consider the long-term viability of utilities
 - ... regulatory frameworks should be adaptable and flexible, and allow the economic regulator to incorporate feedback into its approach
 - ... the economic regulator should be transparent and detail the rationale underlying any regulatory decisions
 - ... regulatory decisions should facilitate effective competition in potentially contestable parts of the industry.

Australian, State and Territory Governments should revise relevant provisions in the National Water Initiative to align with recommendation 6.4 (c).

RECOMMENDATION 6.5

To promote competition by comparison, Australian, State and Territory Governments should ensure that performance monitoring data are publicly reported for providers of all sizes and subject to independent scrutiny.

Priorities are that:

- a. the Queensland Government extend the public reporting of financial information to service providers with fewer than 10 000 connections
- b. the New South Wales and Queensland Governments require appropriately qualified independent bodies to review financial performance frameworks to ensure that the pricing practices of regional service providers are monitored for consistency with National Water Initiative pricing principles
- c. State and Territory Governments, through the National Performance Report and state-based reporting processes, require providers to report a financial return metric that excludes developer charges and contributed assets alongside the economic real rate of return metric.

FINDING 6.4

The pricing practices of metropolitan and jurisdiction-wide providers are generally consistent with the requirements of the National Water Initiative. However, there is some evidence of underpricing in Tasmania.

Some providers in regional New South Wales are persistently pricing below the level required by the National Water Initiative. It is not possible to determine whether pricing practices among smaller regional Queensland providers are consistent with the National Water Initiative due to a lack of data.

FINDING 6.5

The New South Wales Government's definition of 'full cost recovery' is not consistent with the requirements of the National Water Initiative to achieve lower bound pricing.

FINDING 6.6

Many capital subsidies available for regional urban water and sewerage projects from the New South Wales, Queensland and Australian Governments are inconsistent with the National Water Initiative.

RECOMMENDATION 6.6

Governments should not use capital grants to address affordability concerns for urban water users. These concerns should be addressed through Community Service Obligation payments.

To give effect to this principle, the New South Wales and Queensland Governments should replace existing capital grants to regional water utilities with transparent Community Service Obligation payments that are not tied to capital expenditure, and that are targeted at unviable (high-cost) regional and remote services.

FINDING 6.7

About half of small providers (with fewer than 10 000 connections) in New South Wales participate in some form of regional collaborative arrangement or obtain services from a larger regional entity, and 18 of 50 small providers in Queensland participate in the Queensland Water Regional Alliance Program. Although these jurisdictions have made progress, there is likely to be further scope for them to capture economies of scale through collaboration.

RECOMMENDATION 6.7

Local water utilities and State Governments in New South Wales and Queensland should strategically examine opportunities to improve service delivery through collaboration. Contingent Community Service Obligation payments may provide an opportunity to promote this collaboration.

Chapter 7 — Water for agriculture

FINDING 7.1

The pricing of government-owned bulk irrigation and distribution services has tended toward lower bound outcomes in Queensland, Western Australia and Tasmania, where economic regulators have not been responsible for setting prices. In New South Wales and Victoria, where economic regulators have been responsible for setting prices, upper bound outcomes have generally been achieved.

RECOMMENDATION 7.1

State and Territory Governments should ensure that the delivery of government-owned irrigation infrastructure services is underpinned by full cost recovery and economic regulation that is proportionate to the scale of the regulated service.

Priorities are:

- a. any terms of reference issued to the Queensland Competition Authority by the Queensland Government for advice on the pricing of irrigation infrastructure services should be aligned to the National Water Initiative Pricing Principles. The reasons for any Government decision to diverge from price recommendations based on those principles should be published
- b. the Western Australian Government should amend the role of the Economic Regulation Authority (ERA) so that irrigation bulk water customers can request the ERA to review the infrastructure prices and/or services proposed by Water Corporation (WA) as part of bulk water supply contract negotiations
- c. the Tasmanian Government should amend the role of the Office of the Tasmanian Economic Regulator (OTTER) so that irrigation bulk water and distribution customers of Tasmanian Irrigation can request OTTER to review the infrastructure prices and/or services of Tasmanian Irrigation
- d. an equitable share of the cost of any price review requested by users should be treated as a regulatory cost and passed through to users at the discretion of the independent regulator in Western Australia and Tasmania.

RECOMMENDATION 7.2

Relevant jurisdictions should ensure that the efficient cost of joint state infrastructure, such as River Murray Operations (RMO) and the Border Rivers Commission (BRC), are recovered from water users. RMO and BRC costs should also be subject to a periodic independent review. Specifically:

- a. South Australia should improve transparency on how RMO costs are recovered in their jurisdiction by publishing information on how costs are apportioned between different users and the extent to which current mechanisms are achieving full cost recovery
- b. RMO should be subject to transparent and independent five-yearly efficiency reviews overseen by the economic regulators in New South Wales, Victoria and South Australia. The next review should be completed by 31 December 2019
- c. BRC costs should be subject to a coordinated review process conducted by economic regulators in New South Wales and Queensland to inform pricing decisions.

FINDING 7.2

The transfer of existing irrigation distribution networks to local ownership and management in New South Wales, South Australia, Western Australia and parts of Queensland has benefited irrigators. In exchange, irrigators have accepted responsibility for all the risks and costs associated with ownership — including the potential for, and costs of, a distribution network's financial failure.

Local ownership and management is the preferred model for any *new* distribution network. In contrast, the transfer of *existing* government-owned distribution networks to local ownership needs to be considered on a case-by-case basis.

There are rules in place to limit the exploitation of market power by distribution networks in the Murray-Darling Basin. Those rules and the approach to their enforcement:

- are proportionate to the risk posed and potential detriment
- are focused on outcomes and seek to avoid undue limits on the ability of networks to manage their business risks (such as declining water delivery volumes)
- have been subject to a transparent review process to ensure they remain fit for purpose.

Chapter 8 — Water infrastructure

RECOMMENDATION 8.1

Governments should not provide grant funding for infrastructure, or that part of infrastructure, that is for the private benefit of users. Rather, Australian, State and Territory Governments should ensure that:

- a. National Water Initiative-consistent water entitlements and planning frameworks are in place before any new infrastructure is considered (including infrastructure being financed under the Northern Australia Infrastructure Facility)
- b. government grant funding is limited to those projects, or parts of projects, delivering a public good. Grant funding should not be provided until after an independent analysis of the project has been completed and made available for public comment. This analysis should establish that the project will be:
 - ... environmentally sustainable
 - ... economically viable and deliver public benefits that are at least commensurate with the grant funding being provided
- c. government financing (such as loans) for infrastructure generating private benefits should only be provided after:
 - ... an independent assessment has confirmed the finance can be repaid on commercial terms. The assessment should be released for public comment before any announcement on new infrastructure is made
 - ... robust governance arrangements have been put in place to deliver merit-based decision making and the ongoing monitoring of, and public reporting on, the government's investment
 - ... sufficient water entitlements have been sold to reduce the project's risk profile and provide assurance the finance will be repaid.

Australian, State and Territory Governments should enhance the National Water Initiative to align with recommendations 8.1 (a) to 8.1 (c).

Chapter 9 — Key supporting elements of the NWI

FINDING 9.1

Ongoing research and capacity building will be central to Australia's ability to deliver the sustainable management of water resources in the face of challenges from climate change, population growth and increasing community expectations.

RECOMMENDATION 9.1

Australian, State and Territory Governments should:

- a. identify the key knowledge and capacity building priorities needed to support the ongoing implementation of the National Water Initiative (including the revisions and enhancements recommended in this report)
- b. develop mechanisms through which the jurisdictions can work cooperatively and share knowledge to build overall capability and capacity.

Australian, State and Territory Governments should revise relevant provisions in the National Water Initiative to align with recommendations 9.1 (a) and 9.1 (b).

FINDING 9.2

State and Territory Governments have delivered improved decision making through open and timely consultation with stakeholders on water planning. This has been supported by the publication of relevant supporting information for consultation at key decision points.

State and Territory Governments have taken steps to document the outcomes from water plans and whether plan objectives have been achieved.

The Murray-Darling Basin Authority has increased stakeholder consultation and engagement since 2011.

RECOMMENDATION 9.2

Where governments consider there are significant and rapid adjustment issues affecting communities as a consequence of water reform, the response should:

- a. avoid industry assistance and subsidies
- b. consider all the factors affecting the community (not just water reform)
- c. target investment to developing the capacity of the community to deal with the impacts of structural adjustment
- d. be subject to monitoring and publicly reported evaluation of outcomes.

Australian, State and Territory Governments should revise relevant provisions in the National Water Initiative to align with recommendations 9.2 (a) to 9.2 (d).

Chapter 10 — Progressing reform

RECOMMENDATION 10.1

Australian, State and Territory Governments should recommit to a renewed National Water Initiative through COAG by 2020. This should:

- a. maintain the achievements in water entitlements and planning, water markets, water accounting and compliance, water pricing and institutional reform, knowledge and capacity building, and community engagement delivered by the current National Water Initiative as the key foundations underpinning sustainable water resource management and efficient infrastructure service delivery
- b. revise a number of policy settings:
 - ... incorporating extractive industries and alternative water sources into water entitlement frameworks
 - ... water planning to take account of climate change and enable ongoing optimisation
 - ... Indigenous access to water for economic purposes
 - ... arrangements for water trading between irrigation and urban sectors
 - ... improving the quality and consistency of economic regulation
 - ... key knowledge and capacity building priorities
 - ... better targeted adjustment assistance
- c. significantly enhance policy settings relating to:
 - ... urban water management to ensure innovative and efficient provision of services in the future under the combined pressures of population growth and climate change
 - ... environmental water management to ensure maximum return on government investment in this area
 - ... decision making on building and supporting new infrastructure.

RECOMMENDATION 10.2

In developing the renewed National Water Initiative, Australian, State and Territory Governments should:

- a. consult with relevant stakeholders, including by establishing an Indigenous working group to provide advice on the development of relevant provisions
- b. ensure that progress with implementing a renewed National Water Initiative continues to be independently monitored and reported on every three years.