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GUIDE TO THE SUPPORTING PAPERS (AND DESCRIPTOR)

SP A Water entitlements and planning (*Entitlements and planning*)

SP B Water trading and markets (*Trading*)

SP C Environmental management (*Environment*)

SP D Securing Aboriginal and Torres Strait Islander people's interests in water (*Cultural access*)

SP E Ensuring the integrity of water resource management (*Integrity*)

SP F Urban water services (*Urban*)

SP G Urban water services: regional and remote communities (*Regional*)

SP H Water reform in rural Australia (*Rural*)

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Contents

Key points	4
1 Urban water reform progress under the NWI	5
1.1 How was urban water covered in the NWI and subsequent reforms?	5
1.2 Much of the NWI has been implemented for urban water services	6
2 Why is further reform needed in the urban water sector?	8
2.1 There are challenges affecting water supply and demand	8
2.2 Water service providers are responding to the challenges	12
2.3 More needs to be done	17
3 Best-practice system planning	19
3.1 An integrated approach to planning can bring many benefits	20
3.2 Least-cost water supply requires all water supply options to be considered	24
3.3 Clearly defined roles and responsibilities support optimal outcomes	28
3.4 Summing up	31
4 Improving pricing and service outcomes	31
4.1 There is scope for improvement in some pricing practices	32
4.2 The quality and application of economic regulation could be lifted	35
4.3 Monitoring and reporting on pricing and service outcomes	40
5 NWI Renewal	43
5.1 Best-practice urban water system planning	43
5.2 Improving pricing and service outcomes	44
References	46

Key points

- Under the 2004 National Water Initiative (NWI), all jurisdictions committed to: implement best-practice pricing and institutional arrangements for urban water services; pursue urban water reform; and undertake specific actions as part of these endeavours. COAG subsequently endorsed the *National Urban Water Planning Principles* (2008) and the *NWI Pricing Principles* (2010).
- The urban water reform effort has brought benefits, and good progress has been made towards improving urban water service outcomes, as well as efficient and financially sustainable service provision. But there are shortcomings in pricing and the application of economic regulation, and the case for NWI renewal is strong.
 - Climate change, population growth and changing community expectations will place pressure on urban water service providers, necessitating changes to business-as-usual water services provision. A failure to be proactive risks poor responses to extreme events and uneconomic supply augmentations. National principles may help the sector adjust and avoid imposing unnecessary costs on customers.
- A renewed NWI should include a significantly enhanced urban water reform element covering water supply, wastewater and stormwater management and including best-practice system planning, pricing and institutional arrangements, governance and regulation, guided by:
 - agreed levels of service that set long-term supply objectives for the urban water system, aligned with customer preferences through a transparent and consultative process
 - clear objectives for public health, the environment and urban amenity, set in line with community preferences and enforced through outcomes-focused regulation.
- Best-practice system planning should incorporate:
 - integrated water cycle management — the integration of water supply, wastewater management and stormwater management — through an integrated approach to planning
 - an ‘all options on the table’ approach, with rigorous and transparent assessment of the full range of supply augmentation and demand management options
 - clear roles and responsibilities for governments, utilities, regulators, developers and land-use planners.
- A renewed NWI should recommit to cost-reflecting pricing and look to further improve pricing and institutional arrangements across all water service provision by:
 - including national principles to improve the quality of independent economic regulation
 - establishing an assessment framework to guide how decisions are made to apply different models of economic oversight, based on context
 - recommitting to (and improving) public monitoring and reporting on pricing and service quality.

Providing safe, reliable and affordable urban water services, which include water supply, wastewater disposal and stormwater management, is a key objective of the water sector. This goal is often achieved, but emerging pressures — including climate change, population growth and changing community expectations — are reducing the availability and reliability of some water sources, while increasing demand for water. Failure to adequately prepare to address these pressures risks poorer service outcomes and unnecessary costs for water users.

The National Water Initiative (NWI) has contributed to reform in the urban water sector, but provided relatively little guidance for the sector. Renewal of the NWI presents an opportunity to develop high-level guidance that supports jurisdictions in positioning the urban water sector to meet the challenges of the future.

This paper presents:

- background on developments in urban water reform under the NWI (section 1)
- the case for further reform (section 2)
- an integrated framework for best-practice system planning (section 3)
- suggestions for improvements to pricing and service outcomes (section 4)
- a summary of advice on the content of the urban water sector element in a renewed NWI (section 5).

The terms of reference for this inquiry asked the Commission to consider ‘the provision of reliable water services to regional, rural and remote communities’. While the high-level guidance for the urban water sector presented in this paper applies in these communities, more specific reform priorities of relevance to them are considered in *SP G Regional*.

1 Urban water reform progress under the NWI

National urban water reform commenced during the 1990s, with the 1994 Water Reform Framework agreed to by COAG.¹ The Framework, combined with the subsequent National Competition Policy reforms, was focused on water supply and wastewater management and drove initiatives in these areas to achieve: cost-reflective and consumption-based water charges; institutional separation of service delivery and policy-making; and corporatisation of government-owned service providers (to encourage commercial behaviour).

1.1 How was urban water covered in the NWI and subsequent reforms?

The 2004 NWI built on the COAG 1994 reforms with a continued focus on urban water supply and wastewater management. The agreement recognised the need to service rural and urban communities as part of its goal,² outlined a role for independent economic regulation,³ and included a high-level objective to facilitate water use efficiency and innovation in urban and rural areas.⁴

¹ Chapter 6 of the Commission’s 2017 inquiry into *National Water Reform* provides more detail on the history and benefits of urban water reform in Australia (PC 2017a).

² NWI paragraph 5.

³ NWI paragraph 77.

⁴ NWI paragraph 23(viii).

NWI signatories committed to urban water reform under two elements of the agreement.

- *Best practice pricing and institutional arrangements*, through which jurisdictions agreed to promote the economically efficient and sustainable use of water resources, infrastructure and government resources devoted to water management.⁵
 - Jurisdictions agreed to specific actions on pricing (to facilitate efficient water use), investment in new infrastructure, institutional separation, performance benchmarking and independent economic regulation.
- *Urban water reform*, through which jurisdictions agreed to provide healthy, safe and reliable water supplies, encourage water use efficiency and innovation, achieve improved pricing, and facilitate water trading between the urban and rural sectors.⁶
 - Jurisdictions agreed to specific actions on demand management, innovation and capacity building.

Jurisdictions undertook more work to guide reform

Subsequent work, undertaken by COAG, expanded the NWI urban water reform commitments (box 1). Key pieces of work were the:

- 2008 *National Urban Water Planning Principles* (DAWE (Cth) 2019)
- 2010 *NWI Pricing Principles* (NRMMC 2010).

The *National Urban Water Planning Principles* were designed to help governments and water utilities plan the development of urban water and wastewater services in a sustainable and economically efficient manner (DAWE (Cth) 2019). However, there is no formal requirement for jurisdictions to comply with them (PC 2017a, p. 187), and a departmental review found that some principles were more widely adopted than others (DOE (Cth) 2015, pp. 16–17).

The *NWI Pricing Principles* provided technical guidance to improve how jurisdictions set water charges; particularly regarding recovery of capital costs to comply with the NWI. All State and Territory Governments agreed to use them as the basis for setting water charges (NRMMC 2010, p. 5). The principles have been generally adopted by jurisdictions, but there are still issues with pricing and economic regulation in some jurisdictions (*Assessment*).

1.2 Much of the NWI has been implemented for urban water services

In its 2017 inquiry into *National Water Reform*, the Commission found that jurisdictions had made good progress against their NWI commitments for urban water, but also identified unfinished business (box 2) — mainly relating to pricing practices. Issues were related to the application of economic regulation and capital subsidies for small providers, as well as a risk

⁵ NWI paragraph 64.

⁶ NWI paragraph 90.

of some governments backsliding on their commitments (PC 2017a, p. 180). The Commission’s latest assessment has found that much of this unfinished business remains (*Assessment*). Pricing processes and outcomes, as well as the application of economic regulation, are inadequate in some jurisdictions, with poor application of economic regulation contributing to poor pricing processes and outcomes. Further, subsidies for some regional providers in New South Wales and Queensland are still structured as capital grants instead of community service obligations.

Box 1 COAG expanded on the 2004 National Water Initiative

In 2008, COAG developed a water work program, with actions to progress urban water reform. As part of this work program, COAG adopted the *National Urban Water Planning Principles* as an approach to best-practice urban water planning. The principles are listed below.

1. Deliver urban water supplies in accordance with agreed levels of service.
2. Base urban water planning on the best information available at the time and invest in acquiring information on an ongoing basis to continually improve the knowledge base.
3. Adopt a partnership approach so that stakeholders are able to make an informed contribution to urban water planning, including consideration of the appropriate supply/demand balance.
4. Manage water in the urban context on a whole-of-water-cycle basis.
5. Consider the full portfolio of water supply and demand options.
6. Develop and manage urban water supplies within sustainable limits.
7. Use pricing and markets, where efficient and feasible, to help achieve planned urban water supply/demand balance.
8. Periodically review urban water plans.

Subsequently, COAG developed the *National Water Initiative Pricing Principles* to assist jurisdictions in implementing the National Water Initiative pricing commitments in a consistent way. The principles provide guidance on:

- cost recovery, including capital recovery and legacy asset valuation
- urban water tariff structures.

The principles also provided high-level guidance on pricing for recycled water and stormwater reuse (covering stormwater only as an alternative water source, but not all elements of stormwater management).

Sources: COAG (2008); DAWR (2019); NRMCC (2010).

Outcomes of NWI urban water services reform

Although there are still some shortcomings, urban water reforms (undertaken as part of COAG 1994, the NWI and subsequent reforms) have overall provided significant benefits to water users and taxpayers. Institutional separation — the separation of policy-making, service delivery and regulation — has improved accountability and transparency in the sector. Corporatisation and the introduction of independent economic regulation have

supported institutional separation while encouraging commercial behaviour; promoting efficient investment and lower prices for the benefit of water users (PC 2017a, p. 10). And the widespread adoption of consumption-based pricing has provided better signals, changing water user behaviour, resulting in more efficient water use, better signalling of investment needs and facilitating a more financially sustainable sector.

Box 2 The Commission’s 2017 NWI assessment found substantial progress on urban water reform, but some shortcomings

In 2017, the Commission highlighted the progress that had been made towards best-practice pricing and institutional arrangements for urban water, but also observed material shortcomings in several areas, noting that:

- there was scope to extend the use of independent bodies to set or review prices, or price-setting processes, as supported by the National Water Initiative (NWI)
- improvements to pricing practices were required in some jurisdictions to achieve the pricing requirements of the NWI
- governments were still providing grants rather than Community Service Obligation payments for economically unviable services to regional and remote communities.

The assessment also highlighted evidence of backsliding against earlier reforms by some jurisdictions, particularly regarding institutional separation of policy-making and service delivery.

The Commission also found shortcomings in the application of economic regulation. While jurisdictions met the specific action required by the NWI, those actions did not achieve the outcomes required by the NWI. The Commission recommended that jurisdictions agree to national principles to raise the standard of economic regulation, in order to better align with the outcomes required by the NWI.

Source: PC (2017a).

2 Why is further reform needed in the urban water sector?

2.1 There are challenges affecting water supply and demand

Urban water supplies are under pressure from a changing climate

A changing climate threatens the long-term urban water security of Australian cities and towns. As Infrastructure Australia (2019, p. 601) has noted, ‘of all the forms of infrastructure, the potential risks and costs of climate change are greatest in the water sector’.

Rainfall and streamflow are already falling across much of southern Australia, while temperature and the incidence of extreme heat events are increasing across most of Australia (BOM and CSIRO 2018, pp. 4–7, 9). The security of climate-dependent water sources (such as dams and aquifers fed by rainfall and streamflow) is becoming less certain (WSAA 2020,

p. 10), but they still accounted for 80 per cent of Australia’s water usage in major urban regions in 2018-19 (BOM 2020a, p. 21).

Projections of rising temperatures and more variable rainfall highlight the need to ensure that urban water systems can contend with more frequent extreme events, such as droughts and floods. For example, Greater Sydney’s average dam levels fell from 96 per cent in April 2017 to just above 50 per cent in May 2019 due to drought. Rainfall during 2020 returned average dam levels to close to 100 per cent (Sydney Water, sub. 94, pp. 11–12), and extreme flooding events in March 2021 caused Warragamba Dam to overflow (WaterNSW 2021).

Demand for water services is increasing because of population growth ...

Australia’s population has been growing rapidly, particularly in the major cities. As noted in chapter 2 of the report, capital cities accounted for 79 per cent of Australia’s total population growth in 2018-19, with net overseas migration a key driver (ABS 2019). And prior to the COVID-19 pandemic, in a medium-growth scenario, the ABS estimated that about 10 million additional residents would need to be accommodated in Australia’s capital cities by 2050⁷ (compared with 12 million and 7 million additional residents under a high- and low-growth scenario, respectively) (ABS 2018).

Projections from the Centre for Population (2020) suggest that COVID-19 will affect population growth in the short to medium term (over the next 10 years) — particularly in capital cities such as Sydney and Melbourne, where population growth is expected to be disproportionately affected by international border closures. In the long term, Australia’s population is still expected to grow significantly, particularly in capital cities (figure 1). COVID-19 could subdue long-term population growth, but uncertainty in other factors affecting long-term growth means that the rate of population growth could also bounce back to the level projected before COVID-19 or beyond.

Urban population growth increases demand for household water and places pressure on water supplies. Prior to COVID-19, population growth in Melbourne was projected to increase demand for bulk water by 50 per cent from 400 GL to 600 GL between 2017 and 2065 (Melbourne Water et al. 2017, pp. 10–11). And in south-east Queensland, demand for bulk water was projected to increase proportionally more, by about two-thirds, from 300 GL to 500 GL between 2017 and 2040 (Seqwater 2017, p. 44).

Population growth places similar pressures on wastewater services and other parts of the water cycle. As noted by the Water Services Association of Australia (sub. 88, p. 13):

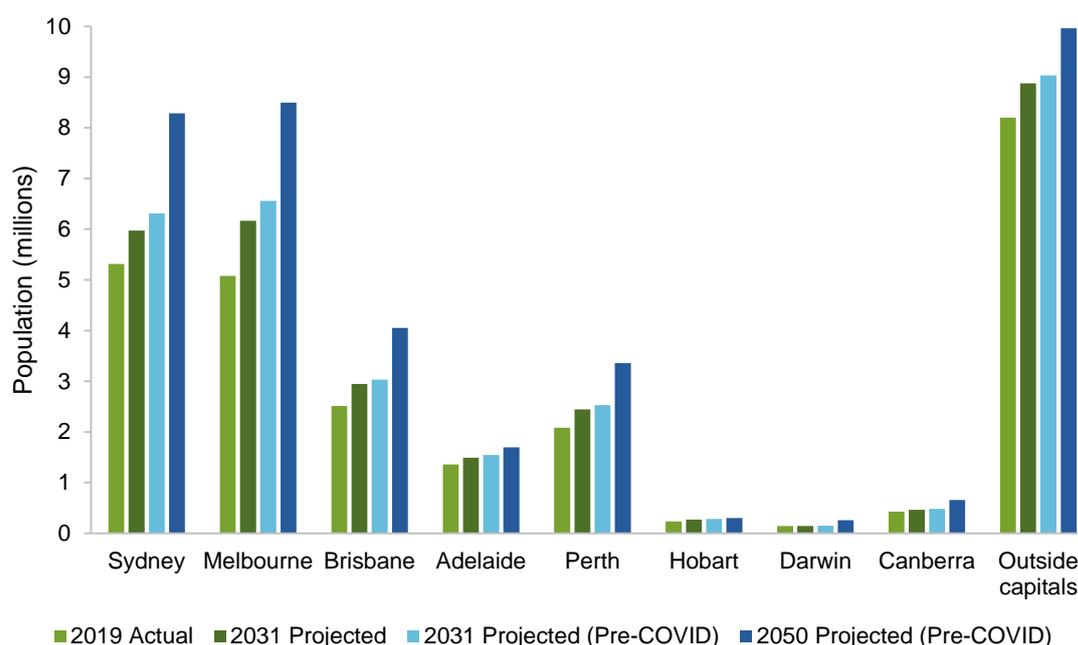
Growth impacts for the water sector include obvious needs like greater water supply, but it also means more hard surfaces, increased wastewater discharges to manage within environmental protection constraints, large and costly new treatment infrastructure, and considerations of stormwater and flood management as the urban footprint expands.

⁷ Population growth has been rebased from 30 June 2017 (used in the original 2017 to 2066 ABS population projections) to 30 June 2020.

Some regional centres are subject to similar growth trends. For example, the local government areas of Greater Geelong and Ipswich grew by 2.7 per cent and 4.1 per cent year-on-year, respectively, during 2018-19 (ABS 2019). But other regional and remote communities are experiencing population decline, affecting the viability of some regional water services (SP G *Regional*).

Figure 1 Australia’s population is expected to grow, particularly in the largest capital cities^a

Australia’s actual population in 2020 and population projections to 2031 (forecasted pre-COVID and post-COVID) and 2050^b (forecasted pre-COVID)



^a Greater Capital City Statistical Areas. ^b The ABS 2050 population projections reflect the estimated medium-growth scenario (Series B), but there are also high- and low-growth scenarios (Series A and C)

Sources: ABS (*Population Projections, Australia, November 2018*, Cat. no. 3222.0; *Regional Population Growth, Australia, March 2020*, Cat. no. 3218.0); Centre for Population (2020).

Higher demand can necessitate substantial increases in capital investment. For example, Seqwater (the bulk provider for south-east Queensland) determined that peak demand for wastewater services was set to exceed the capacity of the system by approximately 2023 (Seqwater 2017, p. 60). In response, Seqwater proposed a \$218 million increase to its capital expenditure for the 2018–21 period — 70 per cent higher than the 2015–18 period (QCA 2018, pp. 35, 52).

... as well as greater community expectations for water services

Urban communities are increasingly recognising the importance of liveability and urban amenity in contributing to community health and wellbeing — particularly during stressful or isolating

periods such as COVID-19 lockdowns. Previous research has found that increased urban liveability encourages a more active lifestyle, reduces illnesses related to heat, and improves air quality and mental wellbeing for residents (City of Melbourne 2012, p. 13).

Some aspects of steps to improve urban amenity place demands on urban water providers. WSAA (2019, p. 2) highlighted some of the sector's contributions to liveability and urban amenity. These include:

- the provision of fit-for-purpose water to ensure green open spaces, such as parks, to support active and healthy lifestyles
- integrating natural waterways with the urban landscape to create community and ecosystem benefits, including wetlands, urban habitat and connected green corridors
- enhancing waterways through reducing pollution and harmful flows
- supporting cool, healthy environments by using water and greening to reduce heat in the urban landscape.

Many inquiry participants commented on the importance of water services in supporting liveability and urban amenity.⁸ For example, WSAA (sub. 88, p. 3) noted the importance of investment in green open spaces to support physical and mental health. And the Cooperative Research Centre for Water Sensitive Cities (sub. 83, p. 4) noted the sector's shift toward liveability outcomes.

The 'browning' of our cities and towns during the Millennium Drought coincided with a sustained period of rapid population growth in Sydney, Melbourne and south east Queensland. This heightened the awareness of the importance of water for the liveability of these cities, particularly in maintaining green open spaces for recreation and protection from extreme climate events. New policy directions emerged that shifted the focus towards liveability.

Sydney Water (sub. 94, p. 10) recognised the value of liveability to the community, particularly throughout the COVID-19 pandemic.

The community will maintain its desire for high quality open space, interaction with healthy waterways, and preservation of bushland and the natural environment as they seek opportunities for local recreation, and seek refuge from increasing threats, such as urban heat. We note recent survey figures by the NSW Department of Planning, Industry and Environment showing that 46% of people are spending more time in public spaces now than before coronavirus restrictions.

However, demand for liveability and urban amenity increases demand for urban water and imposes costs on users. For example, Infrastructure NSW estimated that, on average, an additional 47 GL of water per year will be required to achieve the 'Parkland City' vision for Western Sydney, which is 35 per cent more water than if business-as-usual urban development was pursued (PC 2020, p. 18).

⁸ Cooks River Alliance, sub. 10, p. 1; VPA, sub. 20, p. 2; qldwater, sub. 47, p. 23; Engineers Australia, sub. 63, p. 18; CRCWSW, sub. 83, p. 4; WSAA, sub. 88, p. 24; Sydney Water, sub. 94, p. 10; Local Government NSW, sub. DR147, p. 8; WSAA, sub. DR187, p. 10; Melbourne Water sub. DR190, p. 2.

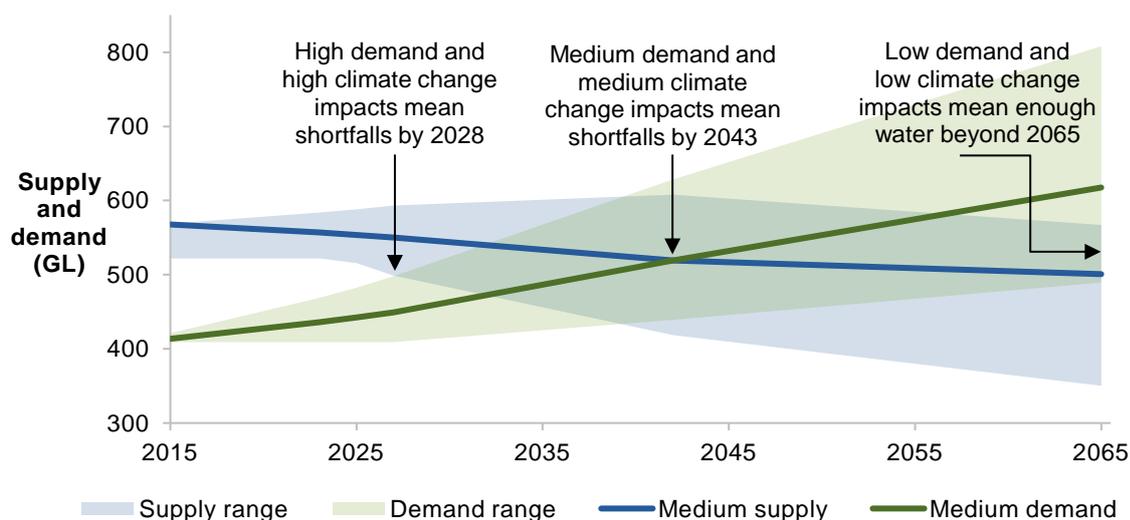
2.2 Water service providers are responding to the challenges

Urban utilities recognise the importance of water supply and demand planning

Governments and urban water utilities are aware of the challenges placing pressure on water supply and demand, and many are undertaking long-run forecasting to understand those trends. However, there is marked uncertainty over the magnitude and timing of potential shifts in demand and supply. Melbourne Water, for example, has forecast yield estimates under four climate change scenarios and combined them with long-term demand forecasts provided by water retailers (figure 2). Under a high demand, high climate change scenario, Melbourne could face water supply shortfalls as soon as 2028; under a lower demand and climate scenario, current supplies may be adequate until beyond 2065.

Figure 2 **Demand for water may outstrip supply without action**

Melbourne Water supply and demand forecasts 2015–2065

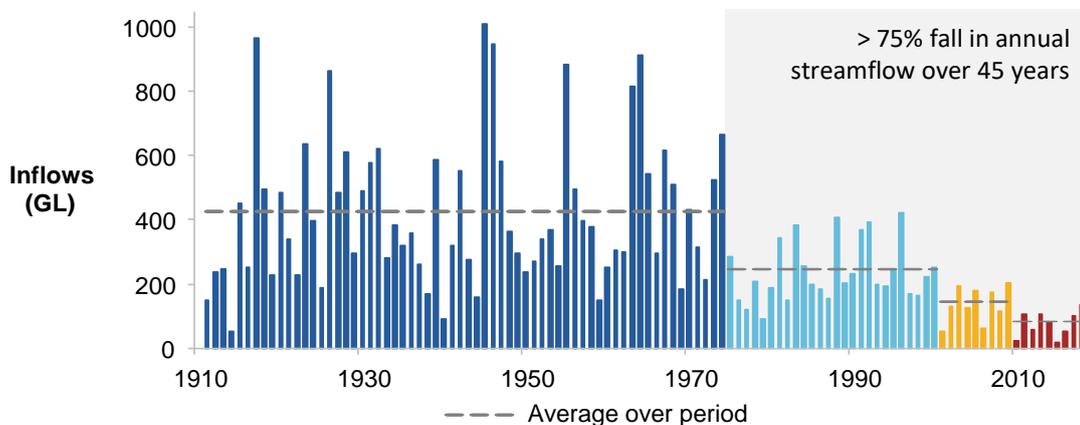


Source: Melbourne Water et al. (2017, p. 15).

Developing scenarios, and assessing the probabilities of these scenarios eventuating as more information becomes available, helps utilities plan for the most appropriate suite of supply augmentation decisions and demand management strategies to ensure urban water security.

In some parts of Australia, significant supply augmentation decisions have already been undertaken to adjust to major changes in water supply. In Perth, surface water has become less reliable since the 1970s (figure 3). In response, Water Corporation, Perth’s major urban utility, assessed a range of water supply options, eventually incorporating groundwater, desalination and groundwater replenishment into Perth’s water supply network. In 2019-20, Water Corporation sourced 47 per cent of its water from desalination, 45 per cent from groundwater and only 6.9 per cent from surface water (Water Corporation 2020a, p. 30).

Figure 3 **Perth stream inflows have declined significantly**
Perth annual mean stream inflows 1910–2018



Source: Water Corporation (2020b).

In other cases, events have overtaken planning processes. The Millennium Drought across eastern Australia (1997 to 2009) posed water security risks to most of the major cities, but a lack of effective planning and poor execution resulted in rushed investments into desalination and water recycling (BOM 2015; IA 2019, p. 623).

Decisions were made to fund desalination and water recycling schemes in Sydney, Melbourne, south-east Queensland and Adelaide at a combined cost of \$10 billion (IA 2019, p. 623). Many of these water supply schemes sat idle in the years directly following the Millennium Drought, ‘fuelling backlash against what was widely perceived as unnecessarily expensive water infrastructure’ (CRCWSC, sub. 83, p. 4).

However, the recent drought has put some of these schemes into action. Melbourne’s desalination plant provided 205 GL of potable water between 2016 and 2020, and the Victorian Government has ordered a further 125 GL for use in 2020-21 (DELWP (Vic) 2021). Sydney’s desalination plant commenced restarting procedures in January 2019 when total dam storages in the region fell below 60 per cent, and recommenced water delivery in March 2019 (SDP 2021).

That these investments are being utilised could be seen to justify them — but this does not mean that planning could not have been better, nor that they were necessarily the best options.. While the schemes improved water security, lower cost alternatives could have been pursued, and investments better timed, to achieve the same outcomes.

Significant investment has been planned

Utilities and State and Territory Governments have developed and published medium- and long-term supply augmentation plans which aim to ensure water security (table 1). The depth

of analysis and detail presented varies between plans. For example, Seqwater’s *Water for Life* plan contains in-depth supply and demand modelling for south-east Queensland, detailing the methodology, analysing multiple population and climate scenarios, and analysing the impact of incorporating various supply augmentation and demand management options (Seqwater 2017, pp. 39–72). In contrast, while the New South Wales *Metropolitan Water Plan* for Greater Sydney also contains supply and demand modelling, there are fewer population and climate scenarios, the methodology is not outlined and the effect of incorporating various options is not presented (NSW Government 2017a, pp. 26–29).

While the nature, timing and extent of proposed augmentation varies between cities, significant financial investment is required in almost all cases (box 3). This spending is additional to the ordinary investments undertaken by utilities to maintain, repair and replace infrastructure. Some participants have suggested that ageing infrastructure will also drive greater capital investment in the future in order to maintain water service quality. Tasmania’s urban water service provider, TasWater (sub. 11, p. 7), noted that:

... like many other urban water authorities, TasWater operates an ageing asset base which is expected to require significant investment over the coming decades to meet community expectations with respect to service reliability and availability.

Pricing determinations for regulated water service providers reveal that large investments are already planned, covering both planned augmentations as well as ordinary asset renewal and refurbishment. For example, economic regulators have approved water supply and wastewater disposal capital expenditure for:

- Sydney Water, worth \$1146 million a year over the 2020–24 period (IPART 2020b, p. 25)
 - The Independent Pricing and Regulatory Tribunal (IPART) also noted that Sydney Water’s proposed expenditure on infrastructure maintenance implies that the highest level of activity over the past 10 years would be sustained over the entire 2020–24 determination period (IPART 2020b, p. 43)
- Melbourne Water, worth \$318 million a year over the 2016–21 period (ESC 2016, p. 40)
- SA Water, worth \$411 million a year over the 2020–24 period (ESCOSA 2020, p. 112).

Table 1 Key urban supply augmentation documents

<i>Region</i>	<i>Document(s)</i>	<i>Date</i>	<i>Author</i>
Sydney	Metropolitan Water Plan	2017	NSW Government
Hunter	Lower Hunter Water Plan	2014	NSW Government
Melbourne	Melbourne Water System Strategy	2017	Melbourne Water
Victoria	Urban Water Strategies for each Victorian Utility (3 Melbourne metro and 13 regional) in accordance with the Department of Environment, Land, Water and Planning Urban Water Strategy Development Guidelines	2017	Various
Victoria	Central Region Sustainable Water Strategy ^a	2006	Victorian Government
South-east Queensland	Water for Life: South East Queensland's Water Security Program	2015	Seqwater
Adelaide	Water for Good	2010	SA Government
	Water Forever: Towards Climate Resilience	2009	Water Corporation
Perth	Water Forever: Drought-Proofing Perth	2011	Water Corporation
Hobart	Greater Hobart Strategy	np ^b	Tasmanian Government
Darwin	Darwin Regional Water Supply Strategy	2013	Power and Water Corporation
Canberra	Source Water Strategy 2018–2030	2018	Icon Water

^a Reviewed in 2016 and a final report for the review was released in 2018. ^b Not published.

Sources: Barwon Water (2017); City West Water (2017); DSE (Vic) (2006); Icon Water (2018); Melbourne Water (2017); NSW Government (2014, 2017a); Power and Water Corporation (2013); SA Government (2010); South East Water (2017); South Gippsland Water (2017); Water Corporation (2009, 2011); Western Water (2017); Westernport Water (2017); Yarra Valley Water (2017); Responses to State and Territory information requests.

While medium- to long-term investments are less certain, Sydney Water (sub. 94, p. 5) forecasts capital expenditures of \$25 billion over the next 25 years (excluding bulk water investments).

Although anticipated capital expenditure for water supply and wastewater is well-understood, rising to over \$6 billion a year by 2022-23 (WSAA, pers. comm., 10 December 2020), the same cannot be said for stormwater services, which often fall under the purview of local government. However, the capital requirements are likely to be significant; in its most recent pricing submission, Melbourne Water (which provides waterway and drainage services), estimated that \$244 million would be required for waterway and drainage services each year from 2021-22 to 2026-27 — 57 per cent of that expenditure is to accommodate population growth (Melbourne Water 2020b, p. 197).

Box 3 **Anticipated urban water supply augmentation**

The nature, timing and extent of anticipated investment in urban water infrastructure varies between cities depending on both current and unfolding circumstances.

- In Sydney, the 2017 *Metropolitan Water Plan* assessed that the maximum supply of the city's current water supply portfolio was sufficient to meet business-as-usual demand until 2036, although augmentation would be required by approximately 2024 under higher demand scenarios (NSW Government 2017a, p. 29). After that plan was published, the New South Wales Government triggered planning for the construction of Stage 2 of Sydney's desalination plant during the recent drought (NSW Government 2019), although it has since delayed construction indefinitely due to improved rainfall.
- In Melbourne, as noted in the text, supply augmentation will be required by 2028 under a worst-case scenario (high per capita demand, high climate change impacts) (Melbourne Water 2018, p. 4; Melbourne Water et al. 2017, p. 15).
- In south-east Queensland, population growth and higher water consumption will necessitate further investment — depending on the approach chosen, Seqwater estimates that this will cost between \$2 and \$4.5 billion over the next 20 years (Seqwater 2017, p. 112).
- In Adelaide, an additional 68 GL of annual supply would be required by 2050 under a significant dry scenario, equivalent to one-third of Greater Adelaide's annual water consumption. Under the worst-case supply and demand scenarios and without further investment, Greater Adelaide may experience water shortages in dry years from 2029 onwards, even taking into account output from Adelaide's desalination plant (SA Government 2010, pp. 50–51, 2013, p. 24). SA Water is mitigating the shortfall, with approved capital expenditure of \$1.2 billion in the 2016–2020 determination period (ESCOSA 2016, p. 114), and over \$1.6 billion in the 2020–24 determination period (ESCOSA 2020, p. 112).
- In Perth, projections undertaken in 2009 estimated that the gap between the demand for water services and existing supplies would be 120 GL by 2030 and grow to 365 GL by 2060. Water Corporation anticipated that it will need to invest in 235 GL of new water sources, and employ demand management strategies, such as water efficiency savings and water restrictions, to reduce demand by 135 GL (Water Corporation 2009, p. 22). While current water supply yields are unclear, Water Corporation invested over \$6.5 billion between 2008-09 and 2015-16 to mitigate the supply risks (ERA (WA) 2013, p. 43), and is expected to invest an average of \$536 million every year between 2016-17 and 2022-23 (ERA (WA) 2017, pp. 26–27).

Even when large utilities manage stormwater, there can be unclear objectives for this activity. For example, Sydney Water provides stormwater services to over 500 000 customers, but in their submission to this inquiry, noted that there are no clear waterway health or flow goals for the stormwater assets and waterways they manage (sub. 94, p. 26). In the absence of clear objectives, it is difficult for utilities to estimate how much investment might be needed to maintain, renew and construct additional stormwater assets to the desired standard. Once clear objectives are established, the revealed investment requirements may be higher than had been anticipated.

2.3 More needs to be done

The overall objective of the urban water sector is not just to provide water services to meet the needs of customers, but to do so efficiently, minimising costs for customers. Operational and investment decisions, therefore, must be made well. The billion-dollar capital investment pipeline in major cities presents opportunities and risks — opportunities to improve water service outcomes, as well as broader community outcomes like liveability and urban amenity; but with the risks of inefficient investments imposing legacy costs on water customers, or failing to secure an adequate level of service.

Planning processes that ensure that utilities' decisions about levels of service reflect community preferences would contribute to maximising the benefits of these investments, as would governance and institutional arrangements that promote efficient pricing and utility operations.

The current NWI does not provide much guidance to the sector

As mentioned in section 1, the NWI does not provide much guidance to address the key challenges facing the urban water sector — an inadequacy noted by several submissions to this inquiry.

For many in the sector, and governments more broadly, the National Water Initiative (NWI) has become an irrelevant factor in planning and investment decisions. Lessons from the Millennium Drought, which exposed poor planning and an absence of accountability, remain largely unaddressed, and progress in water pricing reform is inadequate. (Infrastructure Partnerships Australia, sub. 71, p. 2)

Governments no longer refer to or feel bound by the NWI and there is decreasing awareness of the NWI's existence as a policy instrument and [it] is viewed as disproportionately weighted towards rural water issues. (WSAA, sub. 88, p. 14)

The urban water reform element of the NWI (section 1) included very few specific actions for jurisdictions — and these are now largely completed or outdated. Furthermore, although the 2008 *National Urban Water Planning Principles* established guidance for system planning, these principles have been unevenly embedded by utilities (DOE (Cth) 2015). And the pricing and institutional arrangements element:

- provided little specificity on how to achieve cost recovery
- required only a minimal commitment to independent economic oversight
- only applied to water supply and wastewater management (largely ignoring stormwater).

The subsequent *NWI Pricing Principles* improved the guidance on cost recovery, urban water tariffs, and stormwater pricing. But there are still issues with pricing and economic regulation under the NWI and the *NWI Pricing Principles* in some jurisdictions (section 1). And there are other gaps within the NWI pricing and institutional arrangements element that

were not addressed by the *NWI Pricing Principles* (and need to be). These are discussed in further detail below.

Priorities for NWI renewal

Renewal of the NWI presents an opportunity for jurisdictions to refresh their objectives for the urban water sector and include national principles for leading practice in the planning and pricing of urban water services. Committing to national reform could bring a long-term focus to the challenges facing the sector, improve transparency and help depoliticise decision making (WSAA, sub. 88, p. 15).

The Commission has proposed that one element of the overarching objective for a renewed NWI should be for the water services sector to ‘ensure effective, efficient and equitable water services that meet the needs of customers and communities in a changing climate’ (*Report*: chapter 3), by achieving a number of supporting objectives.

- Access to safe and reliable drinking water, including in remote communities.
- Clear objectives for the level and quality of water services which reflect customer preferences.
- In cities and towns:
 - integrated planning and management of water supply, wastewater and stormwater services
 - efficient water services that deliver desired community outcomes, including urban amenity and liveability, in line with customer preferences and willingness to pay.
- Cost-reflective pricing of water services wherever possible, with transparent subsidies to high-cost regional and remote community services.
- Institutional arrangements that:
 - ensure separation of policy setting, service delivery and regulation with clear roles for each
 - incentivise water services providers to be efficient and innovative, and to deliver services in ways that are cost-effective and in the interests of their customers.
- Processes that ensure that water resource infrastructure developments are ecologically sustainable, economically viable and culturally responsive.

This overarching objective should apply across all water services — urban, rural and bulk water. For rural and bulk water providers, maintaining and refining the existing pricing and institutional arrangements under the NWI is expected to facilitate improved outcomes. However, some of the Commission’s advice for a renewed NWI that has been motivated by issues in the urban water sector — including principles for best-practice economic regulation and modernised monitoring and reporting — should also apply to large bulk water providers. The Commission’s view on reform of water services as a whole is contained in *Report*: chapter 11.

The remainder of this paper develops principles for two key aspects of national urban water reform to underpin pursuit of all of these objectives as they relate to urban water services.

- Best-practice system planning, to maintain long-term urban water service quality by integrating water supply, wastewater and stormwater planning and management.
- Improved pricing and service outcomes, building on the pricing and institutional reforms sought through the existing NWI.

This advice applies to all urban water services: those supplying major cities, as well as those servicing regional, remote and rural communities. However, additional issues arise for regional, rural and remote communities, and more tailored reforms could support progress towards best-practice water service delivery in these areas. As noted above, discussion of these reforms is presented in *SP G Regional*.

3 Best-practice system planning

Water planning processes, undertaken by State and Territory Governments, allocate surface and/or groundwater to urban water service providers (among other consumptive users). The availability of these water sources then informs system planning, which determines how service providers deliver water to their customers.

Ideally, system planning optimises decisions to expand water supply, wastewater and stormwater infrastructure, within the constraints of water resource planning. It aims to achieve the full suite of water security, public health, environmental and amenity outcomes sought by the community, without imposing unnecessary costs on consumers. Although system planning is complex — requiring coordination between several planning entities — a high-quality plan will help a utility efficiently pursue the full suite of outcomes sought by the community it serves.

The *National Urban Water Planning Principles* were established in 2008 to bring utilities closer to best-practice system planning (section 1). An Australian Government review in 2015 found that current plans and planning process are consistent with the issues and the concepts covered by the principles, and that the principles are generally seen as a useful set of guidelines, pitched broadly enough to be appropriate in different contexts. But the principles had not been instrumental in advancing new approaches to planning (DOE (Cth) 2015, p. 21).

Building on the *National Urban Water Planning Principles*, the Commission has focused on three areas where nationally-agreed principles would support ongoing progress in system planning. This focus largely reflects the barriers to implementing integrated water management outlined in the Commission's 2020 report on integrated water cycle management (IWCM) (PC 2020). This includes:

1. an integrated approach that: aligns with community preferences; connects across scales and with land planning; and incorporates stormwater management

-
2. all water supply options being considered, with the options chosen supported by a consistent assessment
 3. clear roles and responsibilities in planning for utilities, State, Territory and local governments, regulators, urban planners and developers.

3.1 An integrated approach to planning can bring many benefits

In major cities, large utilities usually only manage water supply services (providing potable water to households and businesses), and wastewater services (removing and treating wastewater from households and businesses). Stormwater is often managed by a separate entity, with the primary focus on ensuring drainage of urban areas. And in some cities, bulk, distribution and retail services are delivered by different providers.

The Commission looked at the integration of these services in its recent work on IWCM, defining this concept as:

... the integrated management of water resources in the urban environment in a way that achieves the full suite of water security, public health, environmental and amenity outcomes that the community seeks. It encompasses all urban water, regardless of its source, and the provision of the full range of water services and water infrastructure, regardless of scale or ownership. (PC 2020, p. 28)

Potential benefits of IWCM include:

- meeting the demand for water by providing water of a quality that is fit for purpose — not just providing potable water for all uses
- managing wastewater to meet environmental objectives in ways that provide an alternative, climate-independent source of fit-for-purpose water that can meet a range of consumption, amenity and environmental demands
- managing stormwater for community safety objectives in ways that keep water in the landscape and contribute to urban amenity, create urban habitat, improve the health of rivers and wetlands, reduce localised flooding and provide alternative sources of water supply
- delivering lower cost solutions to multiple water management objectives
- enhancing the resilience of water systems by increasing the diversity of water supplies and potentially delaying the need to augment the water supply and transfer system (PC 2020, p. 23).

While there are potential benefits to IWCM, simply moving to the approach also has costs. IWCM is complex and may take substantial amounts of investment in planning and workforce capability over several years to implement. For smaller utilities, the costs may outweigh the benefits in the short term, particularly if there are challenges with existing service delivery. The system planning priorities for these utilities are discussed in *SP G Regional*.

The Commission found that most entities in the urban water sector supported shifting towards IWCM, and away from the traditional approach. However, implementing integrated water services planning is one impediment to making this shift.

Effective integrated system planning has a number of prerequisites including:

- clear and agreed objectives
- connecting water system planning across different scales and with land-use planning
- incorporating stormwater management.

These prerequisites are discussed in turn below.

Effective integrated planning has clear and agreed objectives ...

Effective integrated planning incorporates water supply, wastewater disposal and stormwater management services. Utilities, responsible for water supply and wastewater services, seek to provide customers with services that are safe and reliable, at fit-for-purpose quality and at the lowest cost. Stormwater managers (which may be local governments or utilities) seek to manage flooding and surface runoff within urban areas, while minimising impacts on the environmental health of receiving waterways and potentially providing an alternative source of water for water supply. Moreover, all providers are increasingly working to accommodate broader community desires, including urban amenity, liveability and a clean environment. This diverse set of outcomes establishes the objectives that utilities and governments look to achieve through integrated system planning.

In the first instance, integrated system planning establishes health, safety and environmental objectives in line with respective standards, which are generally imposed by other regulators. These standards apply individually across water supply, wastewater disposal and stormwater management. Where these regulations have a narrow focus (for example, by imposing strict standards on pollutant discharge) rather than a more holistic focus on the environmental outcomes sought, they can impose unnecessary costs on providers, and therefore customers, as well as impair the scope for integrated water management. Governments and regulators should ensure that those regulations are fit for purpose and focused on efficiently achieving desired outcomes.

Integrated system planning objectives should then be guided by levels of service for water supply, set by governments, but reflecting customer preferences for water security and other elements of service quality. Levels of service reflect a trade-off between service cost and reliability, and should be established through a transparent and consultative process — accepting that meeting all individual preferences is impossible.

Broader community objectives for integrated system planning, such as for urban amenity, need to be established by government as they guide not only urban water system planning, but also land-use and other development planning. However, these objectives should also have regard to community preferences and their willingness to pay, which can be

substantial — for example, WSA (2019, p. 8) estimated that the liveability-related benefits attributable to IWCM average in the order of \$94 per person per year.

... connects water system planning across different scales and with land-use planning ...

City-scale water system planning, local-scale water system planning and land-use planning are typically undertaken separately (box 4). At the city-scale, water system planning has traditionally focused on providing centralised infrastructure for water and wastewater services. At the local scale, water system planning has generally involved connecting the centralised infrastructure to end users; local wastewater management has provided fit-for-purpose recycled water for local uses; and stormwater management services are delivered by local governments (PC 2017a, p. 184). But this fragmented approach to planning — where city-scale and local-scale considerations are managed differently — means that supply augmentation options that require an understanding of the costs and benefits across both scales may be overlooked. Water system planning needs to incorporate both centralised and local systems to best effect.

Box 4 Water system and land-use planning are undertaken separately

City-scale (or 'centralised system') water system planning aims to optimise the use of, and investment in, centralised infrastructure such as dams, desalination plants and pipes to ensure reliable water supplies while managing affordability. This level of planning requires demand forecasts and recognition of the supply contribution of decentralised options emerging from local system planning. City-scale planning takes these factors into account to determine whether supplies will meet desired reliability levels and, if not, the timing and nature of supply augmentations.

Local water system planning focuses on the infrastructure needed to serve a local area, typically a greenfield or major infill development. This will usually involve extensions of the centralised system to supply water and remove wastewater, but increasingly also involves examining options for localised reuse of wastewater and stormwater, as well as localised stormwater use management. Decentralised options will tend to reduce demands on the centralised system, and so affect city-scale water system planning.

Land-use planning involves zoning and permitting land use in a localised area to determine the shape of development. This process will consider a range of infrastructure needs, including water infrastructure. Efficient supply of water services to a local area will require land-use planning to incorporate and facilitate detailed local water system planning that considers a full range of integrated water cycle management options.

Source: PC (2017a, p. 185).

Under an integrated approach that aims to achieve the outcomes sought by the community (at least cost), water system planning and land-use planning would be contemporaneous and linked at all spatial scales — city-scale, catchment, district/precinct, local and sub-division level. The approach is particularly valuable in growth corridors and major new developments, where the land and water system planning processes entirely define the

outcomes delivered to the community. (Outcomes in other areas are constrained by past decisions.) And land-use and water system planning processes should be updated in parallel with one another, such that all water system planning is up-to-date with land-use planning and vice versa. As detailed in the Commission’s research report on IWCM, Western Australia has a formal framework for integrating water planning with the land-use planning process (PC 2020, p. 48). But unfortunately there is a dearth of formal processes linking statutory land planning and water system planning at the relevant time and spatial scales across the rest of the urban water sector (PC 2020, p. 47).

... and incorporates stormwater management

A fully integrated approach to system planning requires stormwater management to be integrated with water supply and wastewater management. This is a significant shift from current arrangements in most cities, where stormwater management is often the purview of local governments, leading to siloed arrangements. And stormwater has, to date, received relatively little attention in national water reform (including the NWI).

Clear objectives for urban amenity and formal processes to link water system and land-use planning may help integrate stormwater into the planning process. But inconsistent local government arrangements for stormwater management and funding mean that management can remain siloed (PC 2020, p. 50), while the absence of arrangements for pricing (section 4) and entitlements (*SP A Entitlements and planning*) present further barriers. Clear institutional responsibilities for stormwater management, such as are seen in Melbourne Water’s role as a waterway manager in the Port Phillip and Westernport catchments, can provide an incentive for coordination to help overcome fragmentation (box 5).

In its recent report on IWCM, the Commission recommended that a review be undertaken to determine how stormwater should be managed (PC 2020, pp. 50–51), examining the following.

- The need to set clear environmental and performance objectives for stormwater management and ensure there is a framework for demonstrating they are being met.
- The processes for asset planning and management. Currently, these lack visibility, transparency and quality reporting. Publicly available information on the capacity, condition and age of stormwater assets is limited, and often is not presented to support aggregation or comparison between service providers. This makes it difficult to assess the extent to which significant investment in stormwater infrastructure will be required.
- The need to set clear service standards for stormwater management and have transparent processes for determining any trade-offs (such as between flood mitigation and protecting the environment).
- The development of a clear framework for charging for stormwater management.
- The role of regulation in stormwater management.

-
- How stormwater management and stormwater harvesting fit into the wider system of water entitlements, especially in the Murray–Darling Basin, that may restrict their operation.

Consistent with this recommendation, a holistic review of stormwater planning and management should be undertaken as part of NWI renewal (SP A *Entitlements and planning*).

Box 5 Melbourne Water's role in coordinating stormwater management

Melbourne Water and a number of local governments provide drainage services in the Port Phillip and Westernport catchments. Local governments provide direct drainage services within Melbourne (for catchments less than 60 hectares); Melbourne Water connects those council drains to regional drains which ultimately discharge into waterways.

Melbourne Water is also responsible for waterway management in the Port Phillip and Westernport catchments, which includes supporting the health of rivers, creeks, wetlands and estuaries.

Although Melbourne Water is not directly responsible for local stormwater management, all of the stormwater in the Port Phillip and Westernport catchments is discharged into waterways that fall under Melbourne Water's responsibility. Poorly managed stormwater adversely affects Melbourne Water, providing the utility with an incentive to engage with local governments on stormwater management.

To improve stormwater management, Melbourne Water provides local governments with:

- recommendations for water sensitive urban design, construction and maintenance
- guidance on stormwater treatment and harvesting
- regulatory considerations for stormwater management
- online tools and resources to plan and implement stormwater management.

Improving local government stormwater management should reduce pressure on Melbourne Water's drainage and waterway services, improve the condition of Melbourne waterways and potentially reduce the associated cost imposed on its customers by its drainage and waterway management function.

Sources: Melbourne Water (2013, 2020c, 2020a, 2021).

3.2 Least-cost water supply requires all water supply options to be considered

As part of the planning process, many water service providers will have to consider how to balance long-term supply and demand, usually through a portfolio of options to manage risk. Often, accommodating demand will require supply augmentation, and there may be several options for utilities to choose between including surface water, groundwater, stormwater harvesting, purified recycled water for drinking, non-potable recycled water, desalination or

transferring water between sectors or regions. Alongside supply augmentation, options to manage demand or to increase water supply distribution efficiency are also considered.

Selecting the best option (or options) to add to a portfolio is key to best-practice system planning. As Infrastructure Australia (2019, p. 623) has observed, ‘[e]nsuring all options are on the table, and can be deployed when required, is likely to be essential for governments and operators to effectively and efficiently ensure secure supply over the long term’.

To support selection, the costs associated with each option need to be evaluated. A recent report outlined the costs of options available to providers using a survey of 330 water supply projects across Australia (figure 4; WSAA 2020, p. 11). The analysis revealed substantial variation across projects — costs and benefits can be specific to cities and towns. What may be available and lowest cost for one area may not be for another, and the benefits will depend on the outcomes sought by the specific community and a project’s interaction with the surrounding environment (WSAA 2020, p. 12). Further, costs, communities and the environment change over time with climate, technology and other factors, and this needs to be considered. An effective planning approach looks for the options that best suit the local situation at a point in time.

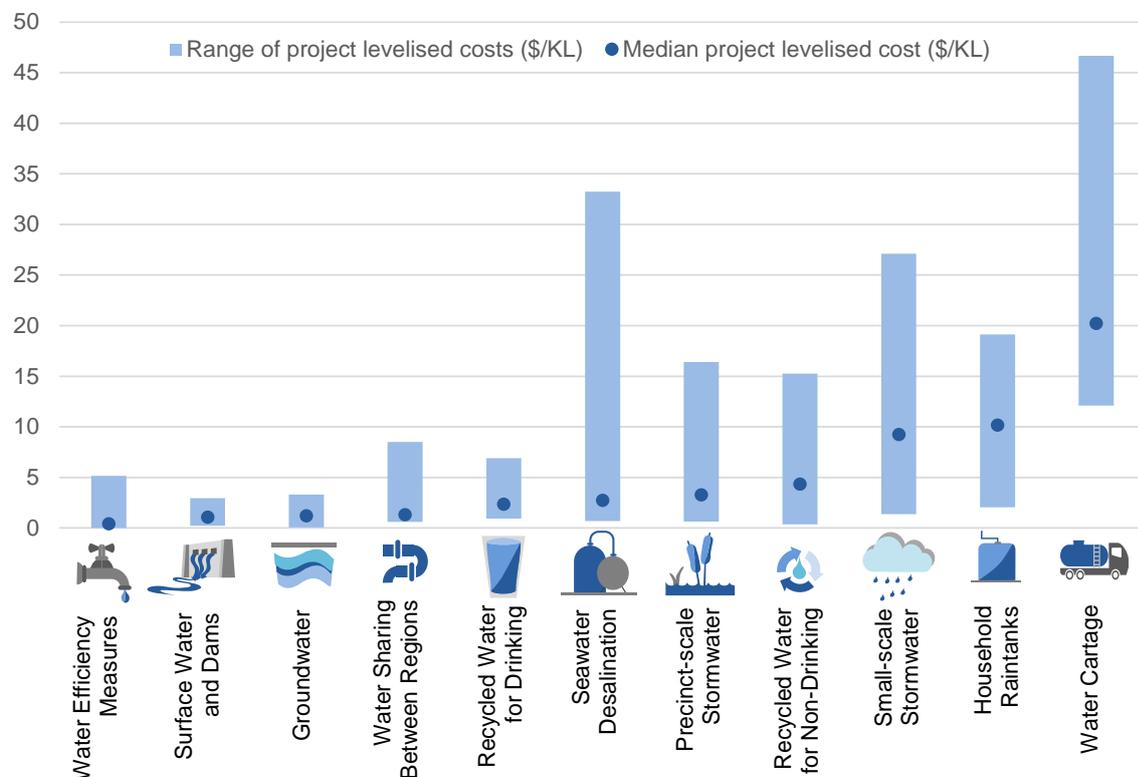
Demand management is another option that needs to be considered as part of a portfolio. This may be implemented in a number of ways, including dynamic pricing, water restrictions, mandates for water-efficient technologies, or information and education campaigns to encourage reduced water consumption. Like water supply options, demand management options impose costs on users, and their cost-effectiveness should be considered alongside supply augmentation options.

An integrated approach can be constrained by policy bans that rule out the use of some water sources despite them being fit for purpose. Bans may mean that the full suite of outcomes sought by a community cannot be achieved or that more expensive supply options need to be adopted. For example, as recognised in the Commission’s previous research (PC 2020, p. 53), supplying recycled water, if only permitted for non-potable use, requires an entirely separate distribution network (‘purple pipes’) from the potable water network — costing end users far more than with an integrated distribution network.

And although there are national guidelines that allow for recycled water to be used for drinking — the *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks*, part of the *National Water Quality Management Strategy* (EPA (Vic) 2021, p. 21; NRMCC, EPHC & AHMC 2006) — only Queensland and Western Australia use recycled wastewater to augment drinking water supplies (by allowing it to be returned to waterways that are drawn from as part of the drinking water distribution system) and Victoria retains an explicit ban on using recycled wastewater for drinking.

Figure 4 There is a range of water supply option costs

Levelised^a cost of water supply options (\$/KL 2019-20)



^a Levelised costs take account of the varying scales and timeframes of projects such that they are compared on an equivalent basis.

Source: WSAA (2020, p. 13).

Guidelines for water recycling should be kept up-to-date and regularly reviewed to keep pace with any new or emerging health risks, as guidelines that reflect the best available information will be necessary for jurisdictions to adequately consider the relative merits of recycled water sources on a case-by-case basis. This will become increasingly important, because as climate change increases the cost of traditional water supply sources, the cost of a continued reluctance to consider all options, including recycled water, increases too.

Credible supply augmentation decisions are supported by rigorous assessment

The choice of supply option (or options) is ideally made on the basis of a rigorous comparison of the relative costs and benefits of the alternatives — with the preferred option (or options) being the one with the greatest net benefit. There are several detailed guidelines on cost–benefit analysis at both the Commonwealth and jurisdictional level (DOFA (Cth) 2006; MJA 2013; NSW Government 2017b). No solution will align with everybody’s preferences. But if agreed levels of service, clear objectives for amenity and fit-for-purpose regulation have been established, and the cost–benefit analysis is rigorous and transparent,

the community can have confidence that the chosen solution is the outcome of a strong decision-making process.

An assessment should examine all options, subject to risk and uncertainty

When utilities perform an assessment of all water supply options to select the one with the greatest net benefit, they should consider the risks and uncertainties associated with options. For example, the benefits of a climate-dependent water source (such as a dam) will be riskier than the benefits of a climate-independent water source (such as desalination). Probability weighted climate forecasts can be used to assess the expected benefits of each option.

To quantify these risks, and thereby make a rigorous assessment that will lead to the best option being chosen, acquiring current information will be important. (It will be also be important for best-practice planning more broadly — this is reflected in principle 2 of the *National Urban Water Planning Principles*.) The more relevant, accurate and timely the information, the better the forecasts of potential climate outcomes will be. And better forecasts will lead to better estimates of expected benefits, increasing confidence in the results of the assessment and maximising the likelihood that the most efficient water supply option is adopted.

The assessment should also adopt a portfolio approach to help manage risks. A portfolio approach involves analysing the costs and benefits of various suites of potential water supply options to supplement existing supply, and then selecting the suite with the highest net benefit. Costs and benefits may be miscalculated if a portfolio approach is not taken, as the expected benefit of adding a single water supply augmentation option will depend upon the mix of other options being adopted at that time. For example, the most cost-effective new supply measure to increase yield may not be sufficient to protect water supply during prolonged dry sequences. The addition of measures (such as water recycling) to address supply at these times will also contribute to increasing yield, such that the initial supply measure being considered may not be needed.

A complete portfolio approach to the assessment will ensure that the suite of options that maximise the net benefits of the entire system will be chosen, recognising that the optimal solution may be multiple options with uncorrelated risks, rather than any single water supply option.

As well as dealing with risk, investment analyses must also deal with uncertainty. In the case of climate change, probability weighted climate forecasts will typically rely on a number of uncertain assumptions. One approach to deal with assessment uncertainties is through methodologies such as real options analysis, described by the Victorian Department of Treasury and Finance (2018, p. 4) as:

... an investment evaluation and decision making framework that builds on the traditional cost benefit framework. It encourages and guides practitioners to embed flexibility into an investment strategy to better structure and manage projects impacted by uncertainty. It incorporates a broad

range of methodologies and tools that vary in purpose and complexity, and can be deployed to best suit the requirements of a particular investment.

Evidence of best-practice decision making is often hard to find

It is unclear whether the current supply augmentation projects outlined in each of the metropolitan area supply augmentation plans (table 1) have undergone a rigorous cost–benefit analysis. For example, Sydney Water is reported to have conducted a detailed analysis across a broad range of options (NSW Government 2017a, p. 61), but the Sydney Metropolitan Water Plan does not contain any of the material, and there is no supplementary analysis on the NSW Department of Planning, Industry and Environment website.

To assure the community that decisions have been well made, the assessment of options and their associated costs and benefits should be transparent and publicly available. The Commission has previously recommended that a comprehensive cost–benefit analysis be undertaken and published for all public infrastructure proposals above \$50 million (PC 2014, p. 40). In this inquiry, the Commission has similarly recommended that the NWI should include a principle that the economic assessment of all major water infrastructure investments should be subject to independent and public scrutiny prior to commitment of public funds (SP I *Infrastructure*). Of course, the principles and application of cost–benefit analysis should be brought to infrastructure assessment of smaller projects as well, with the analysis available at least to allow subsequent independent assessment and accountability.

3.3 Clearly defined roles and responsibilities support optimal outcomes

An integrated approach to planning also requires clear assignment of roles and responsibilities for achieving the full suite of outcomes sought by the community, including urban amenity. Integrated system planning (as described above) involves a number of entities (including utilities, state and local governments, regulators, urban planners and developers), raising the risk that a task will ‘fall between the cracks’. Entities may neglect elements of the planning framework if responsibilities are not well defined or are poorly understood, potentially causing delays and ad-hoc solutions that are not in the long-term interest of consumers or the wider community. Clearly defined roles and responsibilities ensure that each entity understands their role and remains accountable to water users, taxpayers and the wider community.

Inquiry participants expressed concern about complicated roles and responsibilities inhibiting an integrated approach to planning.⁹ WSAA (sub. 88, p. 28) argued that:

Current institutional arrangements have resulted in complicated governance arrangements where no one party has full responsibility for managing all aspects of the urban water cycle.

⁹ VPA, sub. 20, p. 2; CRCWSC, sub. 83, p. 9; Urban Utilities, sub. 85, p. 8; WSAA, sub. 88, p. 28.

The problem of unclear roles and responsibilities was identified in the Commission’s 2017 inquiry, and largely attributed to poor accountability between utilities and State and Territory governments. Governments are ultimately accountable for delivering the full suite of outcomes sought by the community, but utilities usually possess essential technical expertise — as well as being the entity that implements the plan. To overcome the issue, the Commission recommended that roles and responsibilities for system and major supply augmentation be clearly allocated between governments and utilities, recognising that ultimate accountability rests with the State or Territory Government (PC 2017a, p. 191).

The arrangements for agreed levels of service in Queensland exemplify clear roles and responsibilities. In south-east Queensland, the levels of service objectives (in terms of supply security) are legislated by the Queensland Government in the *Water Regulation 2016* (Qld) (Queensland Government 2020). Utilities in south-east Queensland are then required to undertake the necessary planning and investment to achieve those levels of service.

As mentioned above, an integrated approach to planning also requires clear assignment of roles and responsibilities for achieving urban amenity. The Commission’s recent research on IWCM recognised that overall responsibility for urban amenity resides with statutory land planners and local governments (PC 2020, p. 47). One participant in this inquiry, Urban Utilities (sub. 85, p. 8) — a utility in south-east Queensland — noted the importance of a formal relationship between water services and statutory land-use planning for effective community and economic outcomes.

There may be a larger role for utilities to play to contribute to urban amenity. As the entity responsible for developing water supply and managing demand, utilities may be well-placed to plan for and develop urban amenity in the communities they serve. This is opposed to their current enabling role; providing water to support or enhance amenity and providing information and expertise on possible options to support land-use planners.

But if utilities were to take a more clearly-defined role in achieving urban amenity, a number of enabling changes would likely be required. For example, utility legislation, operating licences and statements of obligations may need to be altered — items that may require significant resources, both to change now and to unwind in the future (PC 2020, p. 47). Expanding the role of utilities would also involve affordability trade-offs.

Some economic regulators provide workarounds for utilities to contribute to urban amenity in the absence of formally assigned responsibilities, allowing discretionary expenditure when there is evidence of customer willingness to pay. IPART has changed their pricing framework to allow for increased discretionary expenditure on this basis. This led to the approval of \$6 million in expenditure to irrigate public open spaces with recycled water and \$11.3 million to improve the amenity of stormwater channels (IPART 2020a, p. 129). But the evidence of customer willingness to pay must be sound — the Essential Services Commission recently found that the methodology used in Melbourne Water’s 2021 price submission was inadequate, and placed a low weighting on the methodology in its draft price determination (ESC 2021, pp. 5–9).

While this workaround provides utilities with some responsibility for pursuing urban amenity, governments should consider whether there are more effective solutions when defining roles and responsibilities. For example, changes to a utility's statement of expectations would provide an explicit signal to economic regulators concerning what additional expenditure may be allowable and passed through to customers. And solutions may go beyond the water sector: if a local government's role is defined effectively, and there are no barriers to collaboration with utilities, state governments and land-use planners, urban amenity may be funded through council rates.

Better coordination between planning entities would support an integrated approach

An integrated approach not only requires clear roles and responsibilities for each relevant planning entity, but also needs to enable effective coordination between entities. Utilities, governments, regulators, urban planners and developers cannot achieve the full suite of outcomes without relying on each other. Knowing where other entities have expertise and when to rely on that expertise leads to effective coordination and effective planning by extension.

But participants to this inquiry suggested that current planning processes do not always support effective coordination.

Key entities operate according to the obligations set for them by their enabling legislation and decision-makers. This necessarily diverse operating environment limits the ability to deliver integrated outcomes. (VPA, sub. 20, p. 2)

Integrating stormwater into the urban water cycle is fundamental to good outcomes, yet success on this front is characterised by ad hoc collaboration rather than a systematic approach. (WSAA, sub. 88, p. 24)

Redefining institutional arrangements could facilitate better coordination, and there are several different institutional models to consider. While informal collaboration can deliver improved outcomes in the absence of institutional reform, it is not a direct substitute for formalised coordination. Some models could be adopted within existing institutional settings, such as appointing a waterway coordinator to formalise collaboration between planning entities. Other models require more significant changes, such as establishing a waterway manager with ownership of drainage and waterway assets and bear ultimate responsibility for stormwater management (WSAA, sub. DR187, pp. 7–8).

Governments should consider the benefits, costs and risks associated with different institutional models in particular contexts. Although establishing a waterway manager could yield benefits, including better integration of stormwater management into water planning and improved urban amenity outcomes — less drastic reform to institutional responsibilities may be more appropriate where alternative water sources are less feasible, or where urban amenity outcomes apply to a small population or are less contingent on water. As highlighted in the Commission's 2017 inquiry, institutional reform to fully integrate all elements of urban planning (including water) within a single entity is likely to be costly, risky and may not deliver the outcomes sought (PC 2017a, pp. 193–194).

3.4 Summing up

Urban water system planning has developed significantly since the Millennium Drought, but challenges remain in a number of areas and impede progress towards integrated system planning. Under a renewed NWI, jurisdictions could commit to national urban water system planning principles to provide a best-practice standard for those areas.

The key principles that guide best-practice system planning are as follows.

- Integrated management of water supply, wastewater and stormwater is embedded in urban water planning and management systems.
- Planning decisions align with system objectives for levels of water security, service quality, the environment and urban amenity.
- System objectives are discovered through a transparent and consultative approach and are set in line with customer and community preferences.
- Urban water planning connects water planning across different scales and with land-use planning.
- All supply options are considered and their relative merits subject to a rigorous, transparent and consistent assessment of costs and benefits.
- Roles and responsibilities for major supply augmentations are clearly assigned between relevant governments, utilities and other planning entities.
- Utilities, governments, regulators, developers and land-use planners collaborate effectively in planning.

4 Improving pricing and service outcomes

The NWI includes a range of actions to support efficient pricing practices and ensure service delivery outcomes. Many of these have been broadly achieved, but some actions (such as those relating to institutional separation and independent economic regulation) were high-level and allowed for very different application across jurisdictions. The Commission's assessment of progress (*Assessment*) highlights a number of concerns with the inconsistent application of independent economic regulation in the urban water sector — reinforcing findings made in its 2017 assessment (PC 2017a). It also highlights some areas where the NWI pricing requirements are not being met (although large providers are generally meeting the requirements). In part, this outcome reflects the lack of specificity in the NWI's actions for independent economic regulation of the urban water sector.

Further, there are a number of areas where the NWI pricing requirements could be modernised to help enable integrated planning and management across the water cycle, as well as improve the efficiency of urban water service provision more generally. This section discusses ways in which the pricing and institutional arrangements aspects of the NWI could be enhanced.

4.1 There is scope for improvement in some pricing practices

Under the NWI, jurisdictions agreed to pricing policies that would ensure the prices charged to water consumers reflected the long-run cost of service delivery. This pricing commitment is designed to ensure that providers earn sufficient revenue to maintain service quality, fund routine maintenance and finance necessary capital investment to expand or replace infrastructure, as well as ensure that prices are cost reflective in order to encourage efficient water use. To support competitive neutrality, prices should also reflect a market rate of return to ensure efficient investment of capital (known as upper bound pricing).¹⁰

The overall principles of NWI pricing remain important, as these promote efficient water use and support the financial sustainability of providers. However, the NWI's treatment of water pricing could be extended to support integrated system planning and improve efficiency in urban water supply by:

- incorporating stormwater into pricing frameworks
- ensuring developer charges are cost reflective
- considering nodal pricing and other flexible pricing approaches.

Incorporating stormwater into pricing frameworks as part of broader reform

Under the NWI, jurisdictions agreed to develop pricing policies for recycled water and stormwater that are congruent with pricing policies for potable water, with the aim of promoting efficient water use no matter the source.¹¹ The *NWI Pricing Principles* provided guidance on recycled water and stormwater pricing, to enable their use as an alternative water supply source (in line with the NWI requirements), but there has been little progress in implementation. Further, the current pricing regime only covers stormwater as a water supply option as opposed to the entire stormwater management function.

A pricing regime for stormwater management (coupled with entitlement reforms; SP A *Entitlements and planning*) would help ensure that stormwater management services are efficient and effective and would also enable stormwater to be considered as a water supply option on a basis consistent with other water sources. This would allow for the lowest-cost source of fit-for-purpose water to be used, rather than treating stormwater 'as a burden to be quickly directed into drains' (Cooks River Alliance, sub. 10, p. 3). A price signal would also support efficient investment in stormwater infrastructure, particularly where institutional arrangements are fragmented. As submitted by Business NSW (sub. 36, p. 4):

Each of the participants in [stormwater management] faces only a partial set of incentives and accountabilities. Councils may underinvest if they face direct costs to improve infrastructure where benefits are likely to accrue to other councils further downstream. Sydney Water has

¹⁰ The NWI pricing commitments are outlined in more detail in *Assessment*.

¹¹ NWI paragraph 66 (ii).

limited authority to direct individual councils to make decisions that support the operation of its system as a whole.

As discussed above, the Commission's view is that a broad review of stormwater management is needed to improve institutional arrangements and enable integrated water management (SP A *Entitlements and planning*). This review should incorporate stormwater pricing, with a view to providing a clear framework for establishing the economic value of stormwater and overcoming the barriers to effective funding arrangements. New funding models and financial incentives may be necessary for improving stormwater management (Stormwater Australia, sub. 38, pp. 3–4), but any changes should only be implemented following that review.

Ensuring developer charges are cost reflective

Developer charges are designed to reflect the additional investment in both new and existing assets required to service a new development. They are generally levied on land developers to allow utilities to recover some of the additional costs of building infrastructure from those who benefit (the residents of the development) rather than the broader user base.

The calculation of developer charges, particularly in new growth areas, is important for two reasons.

- Developer charges affect the relative merits of different water supply options (PC 2017a, p. 197). Cost-reflective developer charges provide incentives to adopt (or develop) more cost-effective water supply approaches (Langford, sub. 91, p. 5), whereas charges that are not cost reflective may affect incentives to select localised supply options relative to connecting to the existing network.
 - For example, a precinct developer is less likely to select a local option like a small-scale water recycling scheme if the cost of connecting to the existing potable network is artificially suppressed — as is the case for water, sewerage and stormwater developer charges for Sydney Water and Hunter Water (where charges have been set at zero) (IPART 2018, p. 3). Non-zero charges are now being progressively phased in by the New South Wales Government (IPART, sub. DR168, p. 3).
 - Alternatively, if costs can be spread across the network rather than directly incurred by the developer, then higher-cost localised schemes may be developed even if they are not the most cost-effective option.
- Developer charges also, in part, determine who pays the costs of population growth. If developer charges are levied, the residents of the development pay for the costs (via higher property prices). In contrast, if developer charges are not levied, all infrastructure users pay.

In principle, the beneficiaries of the development should pay for the additional infrastructure attributable to it, consistent with the user-pays principle (SP I *Infrastructure*). But although the benefits of additional infrastructure are usually limited to the residents of the

development, there can be positive externalities that provide benefits to the wider community, such as maintaining downstream waterway health and improved urban amenity (VPA, sub. 20, p. 3). And in general, residents should not be double-charged for the infrastructure through both the cost of the property and utility rates (PC 2017b, p. 18).

The 2010 *NWI Pricing Principles* outline an agreed approach to setting, capping and using revenue from developer charges (NRMMC 2010, p. 11). This, however, has not prevented some jurisdictions from imposing mandates that represent a movement away from cost-reflective developer charges. For example, in 2008 the New South Wales Government set water, sewerage and stormwater developer charges for Sydney Water and Hunter Water at zero (IPART 2018, p. 3).

Capping developer charges at zero may reduce costs for homebuyers, as the development costs are not passed onto the final buyer. But housing prices are a function of many other factors, which are best addressed through other policy mechanisms. The policy may, therefore, not meaningfully improve housing affordability as intended, while passing on the cost of connecting the new development to the entire water user base.

Principles for setting developer charges for water services (across water supply, wastewater and stormwater) should be agreed to under a renewed NWI, to balance the incentives for fit-for-purpose infrastructure against imposing excessive costs on property purchasers.

Considering nodal pricing and flexible pricing approaches

Many urban water service providers adopt uniform pricing policies (also known as ‘postage stamp’ pricing), often in pursuit of an equity objective. Yet when applied across centralised networks, these policies can lead to inefficiencies and further inequities, because the price each customer pays does not reflect the cost of service delivery to their property. This creates opaque cross-subsidies between users which mean, like developer charges, that water supply costs are not cost reflective, potentially limiting the uptake of smaller-scale supply options.

Nodal pricing is an approach that is not new in the urban water sector, but it has not been widely adopted despite its merits. The approach overcomes the issues associated with uniform pricing policies by identifying the cost to service individual customers, or a group of customers within a given geographical area or supply node, and pricing accordingly. The Commission has previously discussed this issue, noting that there is scope for efficiency gains in moving to location-specific pricing, particularly when the cost differences between locations are large and easy to quantify (PC 2011, p. 166). And the current *NWI Pricing Principles* allow for nodal-based pricing. But use of the approach may create equity issues. High-cost locations may have many low-income residents, and creating geographical boundaries where prices reflect the average cost of service within a defined area may lead to some households paying higher prices than nearby households in another area, despite identical costs of service to those individual households. To enable providers to implement efficient pricing policies, there may be value in undertaking further research into the net benefits of nodal pricing compared with uniform pricing policies.

Providers should also consider flexible pricing mechanisms that enable greater efficiency in balancing supply and demand for water over the short and long term. The current *NWI Pricing Principles* state that water usage charges should ‘have regard to the long-run marginal cost of the supply of additional water’ (NRMMC 2010, p. 10). But long-run marginal cost pricing in itself does not send signals to consumers about the relative availability of water at specific times (PC 2011, p. 166).

As some utilities are already doing, multi-tiered water pricing such as increasing block tariffs can be used to promote resource conservation (PC 2011, p. 31). But multi-tiered pricing simply promotes lower consumption, and does not typically differentiate between instances of low or high water availability.

In contrast, dynamic pricing is a more direct way to reflect the opportunity cost of available water supply in the short term. Sydney Water is pursuing dynamic pricing that reflects the higher opportunity cost of using limited water supply during drought. In its 2020 price determination for Sydney Water, IPART approved a pricing proposal that allows the utility to vary its water usage charges to recover the costs of water service provision at different times — higher during and following dry periods due to the increased cost of developing water supply infrastructure for meeting demand, increasing the long-run marginal cost of supply (IPART 2020b, p. 5).

While the flexible water usage charge was approved to recover costs, the higher usage charge during dry periods should help to incentivise users to save water, requiring less infrastructure development to meet demand during dry periods and lowering the long-run marginal cost of water supply. And if customers do not adjust their water usage in response to increased water charges during drought, higher water prices help balance the increased costs of providing water during drought (Sydney Water, sub. 94, p. 9).

That said, dynamic pricing compounds the regressive nature of water prices. Increased water charges during dry periods will apply uniformly across all water users, costing lower-income households a higher proportion of their income. This represents a significant cost impost on some households for the provision of an essential service, and should be considered by utilities, governments and regulators when making pricing decisions.

There may be value in further investigating the application of flexible water usage charges and refining the *NWI Pricing Principles* on efficiency grounds.

4.2 The quality and application of economic regulation could be lifted

Best-practice independent economic regulation delivers transparent scrutiny of urban water providers. It supports customer preferences and protects their interests, while avoiding excessive costs on regulated entities, customers and taxpayers. It prevents urban water service providers from exercising market power by charging excessive prices and/or providing poorer quality services, while ensuring those providers can be financially sustainable. It also reduces the risk that government-owned corporations may be directed to

keep water prices low (meaning less resourcing for maintenance and renewals, and deferral of investment in ways that undermine long-term planning). And it drives governments to provide clear policy direction by outlining their expectations for service providers, while improving the transparency of planning, investment and management decisions.

Under the NWI, governments agreed to use independent bodies to set or review prices on a case-by-case basis.¹² This has allowed for significant diversity in both the quality and coverage of independent economic regulation across the urban water sector (*Assessment*: table 3.2).

High-quality independent economic regulation delivers transparent scrutiny of water service providers, forming a key part of sector governance. However, some participants to this inquiry have suggested shortcomings in the quality and independence of current economic regulation in the urban water sector.

- The Victorian Planning Authority (sub. 20, pp. 2–3) noted that the independent economic regulation model ‘constrained the overall funding available for innovative outcomes and the flexibility needed to pursue integrated solutions’, compounding other financial issues including ‘siloeled funding responsibilities and varying budget capacities and processes’ that make coordinated contributions to a shared outcome difficult.
- The Local Government Association of Queensland (sub. 32, p. 5) supported ‘price monitoring independent of government and service providers’ in principle, but considered that practical experience had shown that it can be ‘an expensive exercise which [adds] to retailer costs’, and which is not universally accepted as effective.
- The Queensland Water Directorate (sub. 47, p. 14) noted that ‘some form of regulatory alignment or harmonisation would assist in managing the reactive nature of State regulators’, as there is currently ‘a generic lack of mechanisms for clear communication among State agencies in Queensland’.
- WSAA (sub. 88, p. 35) noted that independent economic regulators need to make appropriate trade-offs between affordability and financial resilience and observed that some utilities subject to regulation had less financial resilience than other major utilities that were not, making them more vulnerable to shocks. It also noted that further improvements are needed to meet best practice (p. 38).

These concerns highlight the current problems with economic regulation in the urban water sector, reinforcing the importance of moving away from current practice to best-practice independent economic regulation.

Further, the importance of moving to best-practice economic regulation will only increase as urban water investment increases. Across the Australian urban water sector, data to 2022-23 show capital expenditure rising to over \$6 billion a year and a significant increase in renewals and maintenance capital expenditure, with much of this already approved by regulators as prudent and efficient (WSAA, pers. comm., 10 December 2020). If robust

¹² NWI paragraph 77.

economic regulation is not in place, utilities may make inefficient investments which, at this scale, can lead to sharp price increases and inadequate service delivery outcomes for water users. And trade-offs between affordability and the financial resilience of utilities will need to be made; high-quality and transparent scrutiny from an economic regulator will be critical to ensuring balanced outcomes.

The Commission included independent economic regulation as a prerequisite for assessing compliance with the NWI pricing requirements (*Assessment*: section 3.1). When independent economic regulation is in place, regulators undertake valuations of utility assets, making it possible to assess whether full cost recovery is being achieved. Without those valuations, it is impossible to be definitive on the degree of cost recovery.

There are two key ways in which the NWI could contribute to improving the quality and application of independent economic regulation:

- establishing the characteristics of best-practice independent economic regulation through a set of agreed national principles for the urban water sector
- establishing a framework for when and how to apply economic oversight in a fit-for-purpose manner, depending on the context of the water service provider.

What is best-practice independent economic regulation?

In 2017, the Commission proposed a set of national principles to guide best-practice economic regulation of the water sector (box 6). These principles still reflect best practice in supporting efficient service delivery to underpin the overall objective of promoting the long-term interests of consumers, and should form the basis of nationally consistent principles in a renewed NWI.

Adoption of the Commission’s principles would set the standard for independent economic regulation of the water sector — but regulators must also be supported by appropriate governance and institutional arrangements. Ensuring that economic regulation is transparent and independent provides accountability, better aligning regulatory decisions with long-term consumer interests. And institutional separation, with a clear relationship between utilities, their government shareholders and regulators, remains important and should be retained as a principle under the NWI. Institutional separation requires governments to clearly (and publicly) specify the standards that utilities are subject to, as well as ensuring any non-commercial obligations placed on those providers are transparent.

Furthermore, as discussed in section 3, best-practice economic regulation should facilitate integrated system planning by allowing utilities to pass through costs incurred in undertaking transparent policy directions from government (such as clear objectives for amenity). Where such policy direction has not yet been provided, regulators can allow utilities to undertake a certain amount of discretionary expenditure for projects with wider benefits (and recover that expenditure through user charges) if they can demonstrate customer willingness to pay.

Box 6 Principles for economic regulation in urban water

In its 2017 inquiry, the Commission proposed national principles to improve the quality and consistency of economic regulation in the urban water sector. These are expanded on below.

- *Decisions should be guided by the objective of promoting the long-term interests of consumers.* This will help utilities and regulators make trade-offs between potentially conflicting objectives by maintaining a focus on ensuring consumers receive services of the desired quality at the lowest sustainable cost, while encouraging innovation by utilities if consumers ultimately benefit.
- *Regulatory decision-making takes customer and community preferences into account, as determined through transparent engagement with those parties.* This will allow utilities to tailor their services to what customers value. For example, this will help utilities assess whether customers are willing to pay more for improved services.
- *Prices should reflect the full efficient cost of service provision.* While prices can be temporarily kept below the full cost of service provision, this will tend to impose higher costs on society in the future through inflating demand for water, imposing fiscal costs on governments or constraining the ability of utilities to invest sustainably to maintain and replace their assets.
- *Utilities should have incentives to innovate and improve their efficiency.* Regulation should not provide perverse incentives for increasing costs and should reward utilities for reducing their costs.
- *Regulatory decisions should consider the long-term financial viability of utilities.* While regulatory decisions typically constrain prices, they should not do so in a way that compromises the financial viability of utilities, as this could distort investment and operational decisions and increase long-run costs. Regulators should identify where the borrowing or dividend decisions of utility shareholders place a utility in a financially unsustainable position and refer those decisions to the utility and shareholders to address (IPART, sub. DR168, p. 3).
- *Regulatory frameworks should be adaptable and flexible.* In particular, the economic regulator should incorporate feedback into its approach.
- *Regulatory processes should be transparent to allow scrutiny.* In particular, the economic regulator should detail the rationale underlying any regulatory decisions.
- *Regulatory processes should facilitate effective competition in potentially contestable parts of the industry.* They should not affect whether services are delivered by incumbent monopoly utilities or alternative providers. They can do this by making the efficient costs of segments of the water supply chain transparent, allowing providers to compete on a level playing field to supply different components. This should include consideration of an access regime for private participants to access monopoly infrastructure.

Source: Based on PC (2017a, pp. 215–216).

How should economic regulation be applied in different contexts?

Some forms of economic regulation, such as setting maximum prices or revenues, are complex and costly processes that require a high degree of sophistication from both regulators and regulated entities. There are benefits and costs to each of these — but the scale of metropolitan and state-wide urban water service providers usually justifies

best-practice processes because scrutiny of expenditure, operational and investment decisions can have large benefits (or avoided costs).

Independent price setting is not a panacea, nor is it the only way to encourage service providers to operate efficiently and in the long-term interests of consumers. Regular price monitoring, public reporting and benchmarking can provide a degree of transparency that may lead to public or political scrutiny which (alongside the threat of more stringent regulation) can encourage providers to improve. Several different models of economic oversight exist, ranging from price or revenue setting, to price monitoring, to less onerous licensing, reporting and/or audit requirements.¹³ The relationship between owners (be it State, Territory or local government) and service providers can also influence outcomes.

In some cases, the benefits of price setting will not outweigh the costs imposed on service providers (and users), such as for a small regional utility servicing relatively few customers. As put by the Queensland Water Directorate (sub. 47, p. 14):

... the approach taken should be representative of the level of market power that can be exercised by the water business, countervailing market power of customers and competition.

Because of this, the NWI allowed jurisdictions to apply independent oversight ‘on a case-by-case basis’. In practice, this case-by-case application of oversight varies significantly across the country. This is not to say that independent economic regulation *should* be imposed symmetrically on all providers, but that the justifications for particular models of regulation are not consistent, and the basis of the inconsistent application of economic regulation is unclear.

- Unlike most major water utilities, jurisdiction-wide providers in Western Australia and the Northern Territory, as well as retailers in south-east Queensland, are not subject to independent price determinations.
 - The Commission’s assessment has highlighted poor outcomes in some of these cases: for example, based on an Economic Regulation Authority pricing review, the Western Australian Water Corporation charges above full cost recovery for wastewater services, but below cost recovery for water services (*Assessment*: section 3.1).
- Regional utilities in New South Wales and Queensland are not subject to any independent economic oversight, whereas economic regulators license smaller utilities in South Australia and Western Australia (*SP G Regional*).

Instead of the current patchy application of independent economic regulation, the NWI should incorporate a fit-for-purpose framework that guides where different models of economic oversight can be applied, based on context. It should recognise the diversity of water service delivery models, and ensure a transparent assessment guides the application of different forms of economic oversight.

¹³ Models of economic oversight for small or regional utilities are considered in *SP G Regional*.

In the Commission’s view, all large providers should be subject to best-practice independent economic regulation (including price or revenue setting), unless a transparent analysis of regulatory costs and benefits shows that economic regulation imposes net costs.

Where costs of price regulation are likely to outweigh benefits, jurisdictions should agree to a consistent assessment framework to inform decisions concerning the type of economic regulation to apply, based on the risk (and potential impact) of a provider exploiting market power, and the cost of regulation. Jurisdictions should also commit to ‘light touch’ independent oversight of small providers (*SP G Regional*).

Any assessment of whether to apply full price regulation, or a lighter-touch model of economic regulation, should consider:

- the risk of a utility exploiting its market power, based on the scope and costs of that abuse
- the costs of different economic oversight models (to regulated entities and taxpayers)
- ownership and governance of the utility (for example, State or Local government ownership)
- other forms of oversight imposed on the provider.

Irrespective of the model selected, the best-practice principles (discussed above) should guide regulatory processes wherever possible.

4.3 Monitoring and reporting on pricing and service outcomes

The NWI includes actions on benchmarking efficient performance¹⁴, which, for urban water services, are currently implemented through the National Performance Report (NPR) under the stewardship of the Bureau of Meteorology (BOM). Monitoring and reporting of pricing and service outcomes provides transparency in the absence of formal price-setting or price-monitoring processes. It can inform customers about how their provider compares with others, leading to scrutiny over apparent underperformance that can improve pricing and service outcomes. It can also inform a degree of ‘competition by comparison’, whereby the performance of water service providers can be compared against similar entities across the country. And it provides information to support State and Territory Government policy decisions and performance oversight, and the Commission’s triennial assessment of progress against NWI commitments.

The NPR, however, has shortcomings. It does not report on service providers with fewer than 10 000 connections, which means that the performance of smaller providers — which are not subject to formal economic regulation — is not transparent, limiting the benefits of competition by comparison for the key groups that would need it. The Commission previously recommended that performance monitoring data be publicly reported for urban water service providers of all sizes, with the data subject to independent scrutiny (recommendation 6.5; PC 2017a, p. 37). This

¹⁴ NWI paragraphs 75-6.

recommendation remains relevant, although the Commission understands it is currently being considered as part of the NPR Indicator Review (box 7).

Box 7 Recent and ongoing reviews of the National Performance Report (NPR)

The NPR Framework Review, published in 2019, aimed to ‘ensure that the set of data collected through the NPR framework meets the current and future needs of the urban water sector for regulation, benchmarking, planning, and policy development’ (BOM 2018). The review concluded that the NPR framework fulfilled a genuine need, and should be retained, but ‘its core rationale and value are sometimes obscure’ (Aither 2019, p. 6). The review recommended several changes to ensure the framework ‘remains relevant and beneficial to users and to the sector more broadly’ (p. 7).

Following a recommendation of the NPR Framework Review, the Australian Government initiated a further review into the NPR indicators, which commenced in October 2020. The NPR Indicator Review (BOM 2020b) aims to:

- ... identify an agreed set of lasting national outcome areas, associated indicators and definitions, and performance metrics that:
 - Reflect the NPR Vision, Objectives and Outcomes
 - Clarify and address definitional and interpretation problems and remove redundant indicators
 - Introduce new indicators (only as required) - noting that it is preferable that the total number of NPR indicators decrease.
 - Align with indicator selection principles.

The NPR is also not fit for purpose for assessing commitments made under the NWI. The Commission is required to assess the progress of urban water service providers towards full cost recovery against the requirements of the NWI and the *NWI Pricing Principles*. Previously, the Commission has used the economic real rate of return to undertake this assessment, although the measure is inconsistent with both the NWI and the *NWI Pricing Principles*. The BOM NPR Indicator Review should consider the merits of a return on asset measure that allows for an assessment of full cost recovery, as per the requirements of the *NWI Pricing Principles*. (This was also recommended by the Commission in 2017.)

For the return on asset measure to be compliant with the *NWI Pricing Principles*, both the income measure (the numerator) and the asset base (the denominator) must be compliant. As recommended by the Commission in 2017, the income measure should exclude contributed assets and developer charges. However, the asset base measure also needs to be consistent with the *NWI Pricing Principles*, and this is not always the case in the available data (*Assessment*).

Further, there are shortcomings in NPR data quality. Goldenfields Water County Council (sub. 25, p. 2) suggested that there are problems with data and information reporting in New South Wales.

... data referring to local water utility management within the NPR is either incorrect, very limited or not available ... Reported information from the State [Government] to other agencies such as BOM for the NPR, has been insufficient or neglected at times and this has posed a significant reputational problem for LWU’s [local water utilities] within NSW.

WSAA (sub. 88, p 52) also supported changes to the NPR, including greater commitment from jurisdictions.

The current National Performance Report (NPR) is out of date and no longer provides a fit for purpose data set for the industry ... The Bureau of Meteorology are reviewing the NPR, however, all jurisdictions should make a commitment to redeveloping a future focused national urban water dataset.

The NPR Indicator Review, which is scheduled for completion in March 2022, is the appropriate process to ensure that the current and future needs of the urban water sector (including future assessments of progress against the NWI) are met through the NPR, with indicators determined transparently with involvement from jurisdictions and service providers.

FINDING 12.1

The National Performance Report is not fit for purpose in reporting service quality, as envisioned under the National Water Initiative (NWI), nor is it adequate to assess progress against NWI commitments. The only measure for cost recovery, the economic real rate of return, is inconsistent with the NWI and the *NWI Pricing Principles*.

The current National Performance Report Indicator Review is well placed to address these inadequacies.

RECOMMENDATION 12.1: REPORT AN NWI-CONSISTENT FINANCIAL RETURN METRIC

State and Territory Governments, through the National Performance Report, should require urban water service providers to report a financial return metric consistent with the *National Water Initiative Pricing Principles*, alongside the existing economic real rate of return metric. This should include:

- an income measure that excludes developer charges and contributed assets
- an asset base measure determined by a methodology consistent with the *National Water Initiative Pricing Principles*.

Modernising performance monitoring and reporting under the NWI

Irrespective of the shortcomings of the NPR, there are sound reasons to maintain the requirements to monitor and report on service provider performance in a renewed NWI. These are to improve transparency and accountability, enable competition by comparison and assist in State and Territory government performance oversight. Performance monitoring should inform independent, public and annual reporting of key pricing and service quality indicators. The NWI could embed monitoring and reporting objectives across

all water services, and reinforce their importance for regional and remote urban services (SP G *Regional*). Monitoring and reporting should be designed to:

- increase transparency of service delivery
- enable performance comparisons to support continuous improvement by providers
- feed into economic oversight
- contribute to State and Territory government policy decisions and performance oversight)
- underpin regular assessments of progress of NWI implementation.

5 NWI Renewal

To improve the NWI, the Commission advises that a new agreement include significantly enhanced guidance for the provision of urban water services. The overall aspiration of the urban water sector, consistent with other water services, should be for effective, efficient and equitable provision that meets the needs of customers and communities in a changing climate. A set of new objectives should be established towards that end.

Aspects of the renewed NWI could be implemented differently for small utilities and for regional and remote services, acknowledging that the benefits of best-practice regulation may not outweigh the costs, necessitating a fit-for-purpose approach for smaller utilities in some areas. These issues are considered in SP G *Regional*.

5.1 Best-practice urban water system planning

Urban water system planning should be guided by customer- and community-agreed levels of service that establish the objectives of the water system — including broader amenity and liveability benefits, where relevant. Utilities should then focus on delivering those objectives efficiently, with a focus on integration across the water cycle and collaboration with land-use planners and other entities.

Many of the relevant principles build on those in the *National Urban Water Planning Principles*, which have been endorsed by jurisdictions but are non-binding. Jurisdictions should formally commit to principles for system planning in the renewed agreement. The principles would also form a yardstick for reviews of major utility planning.

Expansion of the principles in key areas would:

- better enable integrated water management and planning
- support consistent assessments of all water supply options
- clarify roles and responsibilities for system planning.

5.2 Improving pricing and service outcomes

There is more to do to improve pricing and service outcomes. In the first instance, jurisdictions should recommit to institutional separation, as well as the core principle of cost-reflective pricing, as currently under the NWI.

However, the *NWI Pricing Principles* could be updated in key areas to support integrated water management and improve pricing signals across the water system. This should be enforced by higher quality independent economic regulation, guided by best-practice principles. Public monitoring and reporting of pricing and service outcomes should be updated to further encourage competition by comparison and enable assessments of progress against the NWI.

NWI RENEWAL ADVICE 12.1: BEST-PRACTICE URBAN WATER SYSTEM PLANNING

Updating the *National Urban Water Planning Principles* and formally embedding them within the National Water Initiative would establish a standard for best-practice urban water system planning. A renewed National Water Initiative should include the following principles:

- Integrated management of water supply, wastewater and stormwater is embedded in urban water planning and management systems.
- Planning decisions align with system objectives for levels of water security, service quality, the environment and urban amenity.
- System objectives are discovered through a transparent and consultative approach and approved by governments in line with customer and community preferences.
- Urban water planning connects water planning across different scales and with land-use planning.
- All supply options are considered and their relative merits subject to a rigorous, consistent and transparent assessment of costs and benefits.
- Roles and responsibilities in the planning and management process are clearly assigned between relevant governments, utilities and other planning entities.
- Governments enable effective coordination between utilities, regulators, developers and land-use planners.

To support efficient service delivery by smaller providers, jurisdictions should consider developing national guidelines for both long-term system planning and contingency planning for regional and remote water systems.

NWI RENEWAL ADVICE: IMPROVING PRICING AND SERVICE OUTCOMES^a

Jurisdictions should maintain the core principle of cost-reflective, consumption-based pricing in a renewed National Water Initiative (NWI), with cost recovery from users. Jurisdictions should also update and recommit to the *NWI Pricing Principles* to provide guidance on achieving those pricing requirements, with direct reference to the pricing principles included in a renewed NWI. In doing so, they should:

- develop improved, practical guidance on funding stormwater management and incorporating stormwater into pricing frameworks
- recommit to the principle that developer charges are cost reflective.

Jurisdictions should maintain institutional separation of water resource management, standard setting and regulatory enforcement from service delivery.

The following national best-practice principles would improve the quality and consistency of independent economic regulation of water service providers.

- Regulatory decisions are guided by the objective of promoting the long-term interests of customers.
- Utilities have incentives to innovate and improve their efficiency.
- Regulatory decision-making processes include effective customer and community engagement.
- Prices reflect the full efficient cost of service provision.
- Regulatory decisions consider the long-term financial viability of utilities.
- Regulatory processes facilitate effective competition in potentially contestable parts of the industry.
- Regulatory processes are transparent to allow scrutiny.
- Regulatory frameworks are adaptable and flexible.

The NWI should include a framework to guide where different models of economic oversight can be applied, based on context. All large providers should be subject to best-practice independent economic regulation, unless a transparent analysis of regulatory costs and benefits shows that economic regulation imposes significant net costs. Where costs do outweigh benefits, jurisdictions should agree to a consistent assessment framework to inform decisions concerning the type of economic regulation to apply, based on the risk (and potential impact) of a provider exercising market power, and the cost of regulation.

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NWI RENEWAL ADVICE: IMPROVING PRICING AND SERVICE OUTCOMES (continued)^a

Through the NWI, jurisdictions should recommit to independent, public and annual reporting of key pricing and service quality indicators at a national level for all major urban water service providers. Monitoring and reporting should aim to:

- increase transparency of service delivery
- enable performance comparisons to support continuous improvement by providers
- feed into economic oversight
- contribute to State and Territory government policy decisions and performance oversight
- underpin regular assessments of progress of NWI implementation.

^a The following box incorporates renewal advice from chapters 11 and 12 of the summary report, specifically advice 11.1, 11.2, 11.3, 11.4, 12.2 and 12.3.

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