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The Australian Water Association and Deloitte are pleased to present the State of the Water Sector Report 2015. The Report is the only one of its kind, reporting on the trends and insights of water sector professionals about their own industry.

The survey results reveal attitudes and behaviours relating to a range of topics affecting the industry. This year marks the fifth year that the survey has been run and, as such, a summary of trends across the five years has been included in this year’s report.

**Trends observed over the last five years**

Operational efficiency first emerged as an issue affecting the water sector in 2013, due to growing concerns about the need to control costs and demonstrate value for money, both within the sector itself and for customers. This rose to become the primary issue and area of concern in 2014 as operational costs continued to rise and new capital investment costs were being passed on to customers. In 2015 operational efficiency remains the second biggest issue for the industry, with efficiencies still to be gained through asset management, process improvement and works management and systems improvement.

Skills shortages, and talent attraction and retention were of significant concern when the survey commenced five years ago, with the issue of ageing workforces in particular seen by many as a looming threat for the industry. However, in more recent years these concerns have almost halved due to a reduction in demand for additional staff and the greater availability of skilled labour, given construction activity in the mining industry has eased.

Unconventional gas came onto the industry’s radar in 2012. Last year, 70% of respondents stated that they believed unconventional gas had a significant to moderate effect on the overall management of ground- or surface water. In 2015, 55% of respondents stated that produced water from unconventional gas activities can be treated to a suitable quality for irrigation and other purposes, nevertheless highlighting some concerns in relation to the oil and gas sector impact.

Although climate change was identified by 86% of respondents last year as posing a significant or moderate risk to sustainable management of water, sustainability is rated as less important than in previous years, with it being ranked as one of the top issues for the sector in 2011. This may be due to broader changes in community sentiment regarding environmental issues, and more benign weather conditions. While the sector believed security of supply was being managed well, climate change, as well as population growth, is viewed as one of the greatest challenges over the next five years.

From a price and regulatory perspective, satisfaction with the role of economic regulators continues to increase slowly, and an increasing proportion of respondents support regulators making deterministic decisions on prices, rather than just monitoring prices. However, a price monitoring role is still favoured by more than three times as many respondents as deterministic pricing.
2015 Key issues

While there are a number of key issues listed in the Report, the following five have been identified as the most significant in 2015.

The price of water and water regulation

In line with the 2014 findings, more respondents believed urban water prices were too low (32%) than too high (25%). However, findings differed significantly across jurisdictions. For example, despite Western Australia having among the highest bills in the country, more than 50% of WA respondents considered the price of water was too low.

It is clear that views on whether prices are too high or too low are not solely dependent on the level of the bill and that other factors – including water scarcity and perceived value – are also important.

Respondents who considered economic regulation to be effective increased (to 55%), continuing an upward trend exhibited in every year of the survey.

This year, the survey included new questions on pricing, private sector involvement and economic regulation. Some of the most interesting results included that 70% of respondents considered it beneficial to harmonise the regulation of water across jurisdictions; 72% of respondents considered there was potential for more private sector involvement in the sector – although 53% of respondents considered private sector involvement would lead to cost reductions, 58% thought it would increase prices.

Water sector professionals’ perceptions of customer beliefs

Customer expectations of their water utilities in recent years have shifted significantly, led by the changing way in which customers engage with other businesses and utilities via digital technologies and self-service options.

Nearly 60% of respondents believe customers are satisfied with the type and amount of communications they receive from their water provider along with a general consensus that customers understand their bill and the make-up of their charges (63%).

The finding that customers are satisfied with their current level of service reliability (87%) is consistent with Deloitte’s customer research, as is the finding that the majority of customers would not be willing to decrease that level of reliability (66%) or increase it (68%) for a variation to their water account.

Sources of water

While there is agreement around most ‘sources of water’ issues, including customer engagement and satisfaction levels, respondents held mixed views on the potential to develop aquifers in the north of Australia, with 48% believing there is potential and 19% being of the view there is none. Although most considered dams an effective way to manage water security, the majority were undecided or against the construction of more big dams, particularly in the south of Australia.

Most respondents agreed that recycled water, urban stormwater and desalinated water can all provide a sustainable source of non-potable water and also be treated and managed to a level sufficient with safe potable supplies in an environmentally sustainable manner. However, there were concerns around the cost-effectiveness of the latter two as potable water supplies.
Digital technology

Respondents overwhelmingly believe the objective of digital technologies is to drive improvements in operational efficiency (over 84%) and service delivery (over 71%), and more than half identified a need for improvements in efficiency within asset management, process and systems improvement (where investment in digital capabilities can directly improve processes), customer channels and operations management.

The use of digital technology to improve the customer and stakeholder experience is important in both regulated and non-regulated businesses. Improved digital channels, the use of social media and the personalisation of a customer’s experience (supporting different customer segments) are important to enhance the perception of the service. This has been recognised through this year’s survey with 57% of respondents stating that investment in digital technology is critical to support the immediate and future business needs of the water sector.

Water businesses generate and have access to rich customer, asset and external data sets. Among these businesses there is increasing emphasis to improve operational efficiency via enhancing the levels of discipline and rigour in the insights that underpin strategic decision-making processes, with many opting to develop their own internal analytics function. This recognises the importance of taking an integrated approach to decision-making, complementing existing organisational knowledge with new sources of insight. For instance, analytics could be applied to gain a rapid quantification of the customers impacted by a network failure and then use this insight to inform both urgency grading as well as outbound customer communications.

Asset management and operational efficiency

Nearly 70% of respondents considered improving the efficiency of water operations to be critical to the ongoing success of the sector, with a further 29% agreeing it was an important consideration (but not a top three priority). This is reflected in 40% confirming their organisation has an internal operational efficiency business unit responsible for driving continuous improvement.

Areas in which respondents thought the industry could drive greater efficiency included asset management (57%), process improvement and works management and delivery (56%), systems improvement (49%), workforce optimisation (31%) and procurement/contract optimisation (28%).

It is not surprising that these areas of focus align to the common major investment areas in an organisation and there has been a clear shift over recent years for water businesses to look at optimising these areas, particularly with the ability to leverage technology and data to create efficiencies and improve decision-making – for example, moving to risk-based asset management using granular asset data, or increasing workforce mobility. Procurement and contract optimisation is considered a real opportunity area in the context of the resources sector slow-down, creating a tough market for a number of suppliers who are seeking opportunities in other asset-intensive industries such as water utilities. This creates an advantage for water businesses to further capitalise on as the downturn continues.

More than 60% of respondents use benchmarking and comparators to look at areas for improvement and to define targets, while 39% use both external and internal benchmarks. Despite improving the efficiency of water operations being ranked as a critical issue, measurement around operations efficiency doesn’t rank highly; with 39% of participants not knowing what savings have been realised in their business in the last 12 months, or considering this question to be not applicable to their business.

Of those who do measure savings, nearly 30% have realised savings of up to 10% of total expenditure. It’s one thing to set targets to drive continuous improvement and operational efficiency, but unless these targets have defined measures and timeframes and are embedded into the culture and even individual performance plans, it is hard to ensure that the full potential is realised.
Key water sector reform priorities

In 2015 respondents identified investing in asset maintenance, upgrades and augmentation as the top issue for reform in the water sector (50%), followed closely by increasing operational efficiency of water services (46%) and research in sustainable water management (35%).

Investing in asset maintenance, upgrades and augmentation

Investing in asset maintenance, upgrades and augmentation was identified as the top issue of 2015.

Increasing operational efficiency of water services

In recent years the sector has invested significantly in assets and there is a key need to focus on improving operational efficiency. Operational efficiency includes a reduction in costs for existing service levels. The sector must now consider the use of technology and innovation to drive down costs and would benefit from taking a collaborative approach to achieve this outcome.

Research in sustainable water management

Water sector professionals identified research in sustainable water management as the third highest priority for reform in the water sector. This is likely due to the fact that government funding in water research was high during the Millennium drought of 1995 to 2009, but has dropped off and is expected to continue to decline with the closing of some research institutions including the National Centre of Excellence in Desalination Australia and Australian Water Recycling Centre of Excellence. As new and emerging industries grow, such as energy and resources, there is an important need for continued research in sustainable water management.
The price of water

Water pricing still remains a ‘hot topic’ in the water industry. As in previous years, a high percentage of water sector professionals have described the price of water as about right for both urban (38%) and rural (20%) water prices. More people think the urban price is too low than think it is too high. Thirty-two per cent said the price was a little too low or much too low and 25% said it was a little too high or much too high. These sentiments are even stronger for rural water (Table 1).

Twenty per cent of respondents said the price of rural (irrigation and bulk) water in their state was about right, while 26% said it is a little too low or much too low and 10% said it was a little too high or much too high. A high percentage of respondents answered ‘don’t know’ to this question.

<table>
<thead>
<tr>
<th>Table 1: Is the price of rural (irrigation and bulk) water in your state/territory...</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don’t know</td>
<td>496</td>
<td>43%</td>
</tr>
<tr>
<td>About right</td>
<td>234</td>
<td>20%</td>
</tr>
<tr>
<td>A little too low</td>
<td>169</td>
<td>14%</td>
</tr>
<tr>
<td>Much too low</td>
<td>144</td>
<td>12%</td>
</tr>
<tr>
<td>A little too high</td>
<td>86</td>
<td>7%</td>
</tr>
<tr>
<td>Much too high</td>
<td>38</td>
<td>3%</td>
</tr>
</tbody>
</table>
Water regulation

Regulation has a key role in protecting consumers, public health and the environment. However, there are costs associated with regulation, particularly when there are multiple regulators with differing objectives. These costs can be minimised with transparency in following good regulatory practice. Effective regulation also creates incentives for water service providers to find innovative ways to meet consumer demands while complying with public health and environmental requirements.

Eighty-three per cent of respondents said health regulation was quite or very effective, compared to 66% for environment regulation and 55% for economic regulation.

Harmonisation of regulation

Competition for the supply of bulk water services is limited in Australia, principally due to the existence of natural monopolies, the scale of investment that is necessary to supply these services, and regulatory constraints. Each state, as well as the Commonwealth, has agencies whose role is to ensure that the water utilities do not abuse their dominant market position (i.e. monopoly). Presently these agencies operate independently of each other, which leads to differences in their approach to economic regulation.

The State of the Water Sector Report sought water sector professionals’ views on whether harmonisation of these disparate approaches should be pursued and what they believe the role of the economic regulator should be.

Respondents were asked whether they think it would be beneficial to better coordinate the regulation of water across economic, health and environmental areas within their jurisdiction. In every jurisdiction the majority response was over 65% saying yes. In the NT 82% of respondents said they do think it would be beneficial, followed by 81% in the ACT, followed by 80% in NSW.

When asked if they thought it would be beneficial to harmonise the regulation of water across economic, health and environment Australia-wide 70% of respondents said yes, while 20% said no.
Economic regulation

The Australian urban and non-urban water industry is subject to economic oversight by a number of regulators, with differing degrees of independence. One of the reasons independent regulation for water was implemented was to provide a response to the risk that the water services sector may seek to exploit their monopoly power. Good economic oversight promotes the attractiveness of investment in the water sector by securing long-term returns, while poor economic oversight will have an adverse effect. Long-run investment certainty is the central characteristic that must be aligned to promote investment in the water industry’s long-lived assets.

The majority of respondents in all jurisdictions said that they thought that economic regulators in their state/region operated with levels of political intervention that slightly or significantly compromised independence. The jurisdictions that reported the highest perceived levels of political interference were the NT, with 76% reporting slightly or significantly compromised independence, followed by 73% in SA and 69% in Vic.

Tasmania reported the least level of political interference compromising independence, with 35% of respondents reporting that their economic regulators do not compromise independence, followed by 19% in NSW and 15% in WA.

Most water sector professionals (71%) believe that economic regulators should periodically review the prices charged to ensure that monopoly power is not abused (price monitoring), while a significant portion of respondents (21%) believe that they should determine the prices charged by utilities (direct price regulation).

Table 2: Economic regulators should:

<table>
<thead>
<tr>
<th>Economic regulators should:</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periodically review the prices charged to ensure that monopoly power is not abused (price monitoring)</td>
<td>824</td>
<td>70.61%</td>
</tr>
<tr>
<td>Determine the prices charged by utilities (direct price regulation)</td>
<td>240</td>
<td>20.57%</td>
</tr>
<tr>
<td>No opinion/don’t know</td>
<td>103</td>
<td>8.83%</td>
</tr>
</tbody>
</table>
Water sector professionals’ perceptions of customer beliefs

Improved customer engagement in the water sector has the potential to capture significant opportunities for innovation and economic efficiency, and ensure engaged customers’ values inform how services are delivered.

Customer engagement includes both individual choice – a situation where individual customers can choose between alternative tariffs, services or providers; and collective choice – where customers as a group can have an impact on the choice between the costs and benefits of different levels of service, e.g. via surveys, willingness to pay studies, customer panels or other forms of customer engagement.

In the survey, respondents were asked a series of questions relating to what they believed customers thought about water services. Most water sector professionals (57%) believed that customers are satisfied with the type and amount of communications from their water provider. Most believed that customers were not willing to pay less for decreased levels of service and reliability (66%) or more for increased levels of service and reliability (68%). The majority of respondents also believed that customers were satisfied with their current level of service (81%) and the reliability of their service (87%).
The charges on water bills are often complex and can be difficult for customers to understand. Respondents were asked if they think customers understand how their bill is made up, in particular the fixed and variable portions. Most water sector professionals (63%) believed that customers somewhat understand their bill, 10% believed they have a sound understanding and 20% believed they don’t understand their bill.

In 2015 the Australian Water Association launched a survey of customers to gauge customer perceptions of the water sector. The outcomes of this survey will be released in October 2015 in a report, the National Water Consumer Outlook.
Sources of water

Australia’s climate is highly variable and is facing increased pressures, including population growth and changing demand from mining and industrial clients, which will affect the security of water supplies in ways that are difficult to predict. There are a large range of supply side sources of water, including groundwater, water from dams or reservoirs, recycled water, urban stormwater and desalinated seawater to ensure security of supply, and opportunities to achieve greater water efficiency must always be part of these solutions. This section delves into water sector professionals’ perceptions of key sources of water.

Groundwater

Developing the north of Australia has been a topical issue that was high on the political agenda in 2015. Included in this is a discussion about whether there is potential to develop the aquifers in the north of Australia. There is a large variation across jurisdictions as to whether respondents believe there is potential to develop existing aquifers in Northern Australia for irrigation and drought-proofing. All the jurisdictions that make up Northern Australia, the Northern Territory, Western Australia and Queensland said that it was possible to develop the existing aquifers at percentages at or higher than the national average of 48%. In WA this figure was 64%, followed by 61% in the NT and 48% in Qld. There were a large number of respondents outside these jurisdictions who answered ‘don’t know’, in particular in Tasmania (46%), the ACT (43%) and Victoria (40%).

Dams

The focus on Northern Australia in 2015 also extended to renewed attention on building more dams in the region. The White Paper on Developing Northern Australia¹ was released, in which several proposals for dam construction were suggested.

Figure 9 shows that 36% of water sector professionals strongly agree or agree that we should have more big dams in the north of Australia (e.g. north-west WA, NT, Far North Queensland), while a large portion of respondents remained neutral on this question (34%). Fewer respondents (27%) believed we should have more big dams in the south of Australia (e.g. in the Murray-Darling Basin and the SE coastal areas). More respondents oppose more dams in this area (39%) than support them. For this question also a large sample of respondents remained neutral (37%). At the same time, 78% strongly agreed or agreed that dams are an effective way to manage water security where they live.

Recycled water

In Australia there has been strong growth of water recycling infrastructure over the last 20 years. Most respondents (94%) strongly agree or agree that water recycling can provide a sustainable source of non-potable water for municipal and industrial use. The majority of respondents (77%) also believe that water recycling can be treated and managed to a level that is suitable for potable supply.

Urban stormwater

Optimal use of stormwater increased in exposure with the 2015 Senate Inquiry into Stormwater. The survey highlighted strong support for utilising urban stormwater for municipal and industrial use, with 81% of respondents strongly agreeing or agreeing that it could provide a sustainable source of non-potable water for these purposes. In terms of potable supply, the majority also agreed or strongly agreed that it can be treated and managed to a level that is sufficient for safe potable supply (63%). Most respondents (68%) also strongly agreed or agreed that urban stormwater could provide an environmentally sustainable source of potable water supply augmentation in some circumstances. Opinions were more divided on whether it could provide a cost-effective source of potable water for Australian cities, with 43% agreeing or strongly agreeing, compared to 28% disagreeing or strongly disagreeing.
**Desalinated seawater**

With dam levels relatively high in a lot of capital cities and sufficient urban water supply being available, desalination again received a lot of media attention in 2014–15. Over 93% of respondents strongly agree or agree that desalinated seawater can be treated and managed to a level that is sufficient for safe and reliable potable supply. This fell to around 59% who strongly agree or agree that it can provide an environmentally sustainable source of potable water for Australian cities. Respondents were divided on whether they thought desalination could provide a cost-effective source of potable water for Australian cities. Approximately 38% of respondents strongly agree or agree that it could provide a cost-effective source, compared to 34% who disagree or strongly disagree.
Unconventional gas

There was considerable public and media attention on unconventional gas in 2015, in particular in relation to coal seam gas (CSG). Some of the key water risks of CSG extraction include water contamination, water pressure and connectivity, competing use of freshwater sources, managing co-produced water and other environmental impacts. One of the critical concerns of the public is in regards to the adverse effects unconventional gas mining may have on water resources both now and in the future.

In all jurisdictions the majority of respondents said that the level of regulation relevant to unconventional gas to manage water in their jurisdiction was about right, with the national average being 66%. Nationally, 28% of respondents believed there was not enough regulation, while 6% thought there was too much.

The three jurisdictions in which the largest proportion of respondents thought there was not enough regulation in their jurisdiction were the NT (39%), WA (38%) and NSW (29%).

The three jurisdictions in which the largest proportion of respondents thought there was too much regulation in their jurisdiction were the ACT (9%), NSW (8%) and Qld (6%).

Figure 13: Do you think the level of regulation relevant to unconventional gas to manage water in your jurisdiction is...

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While the majority of water sector professionals said they thought there was the right amount of regulation in all jurisdictions, a very large proportion (61%) believed there is inadequate scientific information on the impacts of unconventional gas on water. Many respondents (26%) were also unsure about this and chose to answer ‘don’t know’ (Figure 14).

A particularly prominent issue that is of importance to many water sector professionals is how water produced from unconventional gas activities is managed, which can include the beneficial reuse of water. Respondents were asked if they thought produced water from unconventional gas could be treated to a suitable quality for irrigation and other purposes. Most respondents (55%) believed it could. A large proportion of respondents (35%) answered ‘don’t know’, while 10% believed it could not be treated to a suitable quality for these purposes.
Australia’s national environment law, the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), was amended in June 2013 to provide that water resources are a matter of national environmental significance, in relation to coal seam gas and large coal mining development. The water trigger allows the impacts of proposed coal seam gas and large coal mining developments on water resources to be comprehensively assessed at a national level. This means that coal seam gas and large coal mining developments require Federal assessment and approval if they are likely to have a significant impact on a water resource.

While the water trigger is said to protect water resources from CSG, other types of unconventional gas are not included. Fifty-eight per cent of respondents believe that all unconventional gases should be covered under the water trigger, while 8% believed they should not. Again, many respondents did not know (34%).
**Digital technology**

In recent years the sector has invested significantly in assets, and there is a key need to focus on improving operational efficiency. The sector must now consider the use of technology and innovation to drive down costs and would benefit from taking a collaborative approach across industry to achieve this outcome. There are many applications of digital technology that are critical to the water sector and that drive outcomes for customers and utilities.

Extracting value and operational efficiency from digitising operations reaches right across a utility organisational structure and can significantly change the mode of design and delivery of functions including customer service, asset management, planning, billing, revenue collection, IT, operations and metering.

Most water sector professionals acknowledged the importance of digital technology investment in supporting the immediate and future business needs of the water sector. The largest proportion of respondents believed digital technology investment is critical to the ongoing success of the water sector (around 57%). Many others believed it is important but not one of its top three priorities (39%).

<table>
<thead>
<tr>
<th>Table 3: How would you rate the importance of digital technology investment in supporting the immediate and future business needs of the water sector?</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical to its ongoing success</td>
<td>665</td>
<td>56.98%</td>
</tr>
<tr>
<td>Important but not one of its top 3 priorities</td>
<td>460</td>
<td>39.42%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>25</td>
<td>2.14%</td>
</tr>
<tr>
<td>Not important</td>
<td>17</td>
<td>1.46%</td>
</tr>
</tbody>
</table>

Given the strong acknowledgment of the value of digital technology, it was important to delve into the reasons for its limited uptake in the water sector. Cost and organisation culture and change management stood out as the two biggest barriers to successfully identifying and/or delivering important digital technology project outcomes, with response rates of 21% and 20% respectively (Figure 17).
Industry consolidation and restructure

Improving operational efficiency

Improving operational efficiency has consistently featured as a key issue for water sector professionals in the State of the Water Sector Report over the past few years.

Respondents were asked what areas they thought the industry could improve to assist in driving efficiency, selecting all responses that applied. There were three standout responses: asset management (57%), process improvement and works management and delivery (56%), and systems improvement (49%).

Asset management – Asset management relates to how opex and capex is used to effectively manage assets across the asset management lifecycle (from strategy through to operations and maintenance and disposal) to effectively balance expenditure and levels of service required to meet obligations and manage risk.

Process improvement and works management and delivery – This relates to the management of work from an operations perspective, whether it be maintenance or operations or even capital delivery. It is about designing processes that are efficient and support streamlined workflow planning and execution, leveraging human and systems capability to drive optimised outcomes.

Systems improvement – This is about the use of systems, technology and data to drive improved decision making by better understanding the network and operations.

An internal operational efficiency business unit is important, as it can drive a culture of continuous improvement rather than accepting business as usual.

<table>
<thead>
<tr>
<th>Table 4: Does your business have an internal operational efficiency business unit that is responsible for driving continuous improvement?</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>473</td>
<td>44.58%</td>
</tr>
<tr>
<td>No, and no plans to do so</td>
<td>249</td>
<td>23.47%</td>
</tr>
<tr>
<td>N/A</td>
<td>171</td>
<td>16.12%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>168</td>
<td>15.83%</td>
</tr>
</tbody>
</table>
Private sector involvement

Australian governments are the primary investors, infrastructure owners and operators in the Australian water sector. Population growth, historic underinvestment in water infrastructure, water security, climate change and increasing environmental and public health regulation mean that considerable investment in the sector is needed in the future. Significant capital expenditure is required to renew ageing assets and expand networks.

Given the challenging fiscal environment for governments in the short to medium term, now is an opportune time for governments to consider where public investment in the water sector is most needed, where efficiency gains can be made and whether additional private investment in the sector could usefully free up current public investment for application in other sectors such as health and education.

Seventy-two per cent of water sector professionals believe there is opportunity for more private sector involvement, while 28% believe there is not (Figure 19).

When asked which entities, assets or functions water sector professionals believed were candidates for privatisation or long-term leases, there were three standout responses: desalination plants (49%); wastewater treatment plants (46%); and water treatment plants (44%).
There is often media speculation that if entities were privatised the price of water would increase. When asked if they thought the price of water would increase if entities were privatised more than half of the water sector (58%) answered yes, while 29% answered no.

<table>
<thead>
<tr>
<th>Table 5: Do you think the price of water would increase if entities were privatised?</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>682</td>
<td>58.44%</td>
</tr>
<tr>
<td>No</td>
<td>344</td>
<td>29.48%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>141</td>
<td>12.08%</td>
</tr>
</tbody>
</table>

When asked if they thought cost savings would be found if entities were privatised, most respondents (52%) believed there would be, while a much lesser proportion believed savings would not be found (36%).

<table>
<thead>
<tr>
<th>Table 6: Do you think cost savings would be found if entities were privatised?</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>618</td>
<td>52.96%</td>
</tr>
<tr>
<td>No</td>
<td>417</td>
<td>35.73%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>132</td>
<td>11.31%</td>
</tr>
</tbody>
</table>
Water markets

A very high proportion of respondents (514 individuals, or 44% of the total sample) indicated that they did not know what would most improve the functioning of water markets in their jurisdiction.

When the ‘don’t know’ responses were omitted to better glean the perceptions of those within the sector that were able to answer, the top three responses were: better information about water availability (22%); better information about the ownership of water entitlements (15%); and the removal of restrictions on trades (8%).

As discussed above, the removal of restrictions on trades featured as one of the top three things that would most improve the functioning of water markets. It was ranked as the top action to improve water markets in the ACT (15%). Of the other basin states, SA, Qld and Vic all ranked it as one of the top three issues, while it was ranked fourth in NSW.

Table 7: Some bans and limitations have reduced the opportunity for urban areas to purchase water entitlements from rural areas. To what extent are these bans and limitations beneficial?

<table>
<thead>
<tr>
<th></th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don’t know</td>
<td>605</td>
<td>51.84%</td>
</tr>
<tr>
<td>Not very</td>
<td>209</td>
<td>17.91%</td>
</tr>
<tr>
<td>Quite</td>
<td>188</td>
<td>16.11%</td>
</tr>
<tr>
<td>Not at all</td>
<td>127</td>
<td>10.88%</td>
</tr>
<tr>
<td>Very</td>
<td>38</td>
<td>3.26%</td>
</tr>
</tbody>
</table>
**New South Wales**

**Private sector investment**

Consistent with the national view, more water sector professionals in NSW believed the prices of both urban and rural water were too low rather than too high. While 43% of respondents said the price of urban water in NSW was about right, 36% said the price of water was much too low or a little too low, and 15% thought it was much too high or a little too high (Figure 22).

![Figure 22: Is the price of urban water in your state/territory?](image)

More respondents (48%) answered ‘don’t know’ when commenting on rural prices in NSW compared to only 5% for urban prices. Of those who expressed an opinion, 20% of respondents believed it was about right, while 23% thought it was a little too low or much too low and 9% thought it was a little too high or much too high.

<table>
<thead>
<tr>
<th>Table 8: Question 4.7 Is the price of rural (irrigation and bulk) water in your state/territory?</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't know</td>
<td>133</td>
<td>48%</td>
</tr>
<tr>
<td>About right</td>
<td>54</td>
<td>20%</td>
</tr>
<tr>
<td>A little too low</td>
<td>30</td>
<td>11%</td>
</tr>
<tr>
<td>Much too low</td>
<td>34</td>
<td>12%</td>
</tr>
<tr>
<td>A little too high</td>
<td>19</td>
<td>7%</td>
</tr>
<tr>
<td>Much too high</td>
<td>5</td>
<td>2%</td>
</tr>
</tbody>
</table>
Water regulation

Participants were asked to rate the effectiveness of the economic, health and environmental regulation of water in their jurisdiction. Sixty-two per cent of NSW respondents said economic regulation was quite or very effective, compared to the national average of 55%. Eighty-six per cent of NSW respondents said the regulation of health was quite or very effective, compared to 83% nationally. Sixty-eight per cent said environment regulation was quite or very effective in NSW compared to 66% nationally (Figure 23).

Water security and supply

Unconventional gas was a key issue for the NSW community in 2015. Responses in NSW were similar to the national average (Table 9), with most respondents (63%) believing that the amount of regulation relevant to unconventional gas to manage water was about right, and 29% thinking there was not enough. Sixty-three per cent of NSW respondents believed water produced from unconventional gas activities can be treated to a suitable quality for irrigation and other purposes, higher than the national average of 55%.

<table>
<thead>
<tr>
<th>Question 2.1</th>
<th>NSW Percentage</th>
<th>National Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>About right</td>
<td>63.27%</td>
<td>66.41%</td>
</tr>
<tr>
<td>Not enough</td>
<td>28.73%</td>
<td>27.93%</td>
</tr>
<tr>
<td>Too much</td>
<td>8.00%</td>
<td>5.66%</td>
</tr>
</tbody>
</table>

Industry consolidation and restructure

Private sector involvement

Seventy-five per cent of NSW respondents believed there was opportunity for more private sector involvement in the water sector; this is comparable with the national average (72%). When asked which entities/assets/functions (if any) they thought should be candidates for private sector investment the three highest rated responses in NSW were desalination plants, wastewater treatment plants and water treatment plants.

When asked if they thought the price of water would increase if entities were privatised 56% of NSW respondents said yes, 35% said no and 9% did not know.

When asked if they thought cost savings would be found if entities were privatised 59% of NSW respondents said yes, 33% said no and 8% did not know.
Queensland

The price of water

The most common response from Qld respondents, as consistent with the national view, was that the price of urban water in Queensland was about right (28%). Unlike the national response, more Qld respondents thought urban prices were too high rather than too low, with 36% believing they were much too high or a little too high, while 28% said they were too low or a little too low.

Forty-four per cent of respondents answered ‘don’t know’ when commenting on rural prices in Queensland, compared to 7% for urban prices. Of the Qld respondents who expressed an opinion about the price of rural water, 15% believed it was about right, 26% thought it was a little too low or much too low, and 15% thought it was a little too high or much too high.

<table>
<thead>
<tr>
<th>Table 10: Is the price of rural (irrigation and bulk) water in your state/territory...</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don’t know</td>
<td>96</td>
<td>44%</td>
</tr>
<tr>
<td>About right</td>
<td>33</td>
<td>15%</td>
</tr>
<tr>
<td>A little too low</td>
<td>31</td>
<td>14%</td>
</tr>
<tr>
<td>Much too low</td>
<td>26</td>
<td>12%</td>
</tr>
<tr>
<td>A little too high</td>
<td>21</td>
<td>10%</td>
</tr>
<tr>
<td>Much too high</td>
<td>12</td>
<td>5%</td>
</tr>
</tbody>
</table>

Water regulation

Participants were asked to rate the effectiveness of the economic, health and environmental regulation of water in their jurisdiction. Qld respondents rated all forms of regulation less favourably than their national counterparts. Forty-four per cent of Qld respondents said economic regulation was quite or very effective, less than the national average of 55%. Unlike in other jurisdictions, slightly more Qld respondents rated economic regulation as not very or not at all effective (45%), rather than quite or very effective (44%). Eighty per cent of Qld respondents said the regulation of health was quite or very effective, compared to 83% nationally. Sixty-four per cent said environment regulation in Queensland is quite or very effective, compared to 66% nationally (Figure 25).
Water security and supply

Qld respondents were more supportive of building dams in Northern Australia than the national average, with 54% of respondents agreeing or strongly agreeing that we should have more big dams in that region (Figure 26). Interestingly, when all Northern Australia jurisdictions are compared, 54% of Qld respondents agree or strongly agree, compared to 25% of WA and 73% of NT respondents.

Unconventional gas was a key issue in Queensland in 2015. Most respondents believe the amount of regulation relevant to unconventional gas to manage water in their jurisdiction was about right (71%). Sixty-seven per cent of Queensland respondents believed produced water from unconventional gas activities can be treated to a suitable quality for irrigation and other purposes, higher than the national average of 55%.

Industry consolidation and restructure

Private sector involvement

Seventy-three per cent of Qld respondents believed there was opportunity for more private sector involvement in the water sector. When asked which entities/assets/functions (if any) they thought should be candidates for private sector investment, the three highest rated responses in Queensland were desalination plants, water treatment plants and wastewater treatment plants.

When asked if they thought the price of water would increase if entities were privatised, 61% of Qld respondents said yes, 28% said no and 11% did not know.

When asked if they thought cost savings would be found if entities were privatised, 59% of Qld respondents said yes, 31% said no and 11% did not know.
South Australia

The price of water

While in most other jurisdictions (except for WA) the most common response was that urban water prices in their jurisdictions were about right, in SA the highest-rated response was that urban prices were a little too high (33%), followed by much too high (26%) and about right (26%) (Figure 27). Only 12% said the price of water was much too low or a little too low.

More respondents answered ‘don’t know’ when commenting on rural prices (30%), compared to only 3% for urban prices. Of the SA respondents who expressed an opinion about the price of rural water, 34% of respondents believed it was about right, while 17% thought it was a little too low or much too low and 17% thought it was a little too high or much too high.

<table>
<thead>
<tr>
<th></th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don’t know</td>
<td>27</td>
<td>30%</td>
</tr>
<tr>
<td>About right</td>
<td>30</td>
<td>34%</td>
</tr>
<tr>
<td>A little too low</td>
<td>12</td>
<td>13%</td>
</tr>
<tr>
<td>Much too low</td>
<td>4</td>
<td>4%</td>
</tr>
<tr>
<td>A little too high</td>
<td>12</td>
<td>13%</td>
</tr>
<tr>
<td>Much too high</td>
<td>4</td>
<td>4%</td>
</tr>
</tbody>
</table>

Water regulation

Participants were asked to rate the effectiveness of the economic, health and environment regulation of water in their jurisdiction. Only 47% of SA respondents said the economic regulation in their jurisdiction was quite or very effective, less than the national average of 55%, with 40% saying it was not very or not at all effective. However, 83% of SA respondents said the regulation of health was quite or very effective, and 66% said environment regulation in SA was quite or very effective. In both cases this is the same amount as the national average (Figure 28).
Water security and supply
Sources of water
Significantly more SA respondents (75%) agreed or strongly agreed that seawater desalination can provide an environmentally sustainable source of potable water for Australian cities than the national average (59%) (Figure 29).

Industry consolidation and restructure
Private sector involvement
Eighty-two per cent of SA respondents believed there was opportunity for more private sector involvement in the water sector. When asked which entities/assets/functions (if any) they thought should be candidates for private sector investment, the three highest rated responses in SA were desalination plants, wastewater treatment plants and water treatment plants.

When asked if they thought the price of water would increase if entities were privatised, 46% of SA respondents said yes. This is much lower than the national average of 58%.

When asked if they thought cost savings would be found if entities were privatised, 61% of SA respondents said yes, 27% said no and 12% did not know.
**Victoria**

**The price of water**

Consistent with national trends, water sector professionals in Victoria believed the prices of both urban and rural water in their jurisdiction were too low rather than too high. Forty-two per cent of respondents said the price of urban water in Victoria was about right. Thirty per cent said the price of water was much too low or a little too low, while 22% thought it was much too high or a little too high (Figure 30).

More Victorian respondents answered ‘don’t know’ when commenting on rural prices in their jurisdiction (46%) compared to only 6% for urban prices. Of those who expressed an opinion about the price of rural water in Victoria, 20% of respondents believed it was about right, while 25% thought it was a little too low or much too low and 10% thought it was a little too high or much too high.

<table>
<thead>
<tr>
<th>Table 12: Is the price of rural (irrigation and bulk) water in your state/territory?</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don’t know</td>
<td>46%</td>
</tr>
<tr>
<td>About right</td>
<td>20%</td>
</tr>
<tr>
<td>A little too low</td>
<td>16%</td>
</tr>
<tr>
<td>Much too low</td>
<td>9%</td>
</tr>
<tr>
<td>A little too high</td>
<td>7%</td>
</tr>
<tr>
<td>Much too high</td>
<td>3%</td>
</tr>
</tbody>
</table>
Water regulation

Participants were asked to rate the effectiveness of the economic, health and environment regulation of water in their jurisdiction. The regulation of water across all these three sectors was rated more highly in Victoria than the national average. Sixty-six per cent of Victorian respondents said the economic regulation of water was quite or very effective, compared to the national average of 55%. Eighty-six per cent of Victorian respondents said the health regulation of water was quite or very effective, compared to 83% nationally. Seventy-two per cent of Victorian respondents said the environment regulation of water in Victoria was quite or very effective compared to 66% nationally (Figure 31).

![Figure 31: How effective is the regulation of water in your state/territory?](image)

Water security and supply

The use of urban stormwater for water supply was an important issue in Victoria in 2015. Forty-five per cent of Victorian respondents strongly agreed or agreed that urban stormwater can provide a cost-effective source of potable water for Australian cities, slightly higher than the national average of 43%. Seventy per cent of Victorian respondents agreed or strongly agreed that urban stormwater can provide an environmentally sustainable potable water supply augmentation in some circumstances, slightly higher than the national average of 68%. Sixty-five per cent of respondents agreed or strongly agreed that urban stormwater can be treated and managed to a level that is sufficient for safe potable supply, higher than the national average of 63%.

Some bans and limitations have reduced the opportunity for urban areas to purchase water entitlements from rural areas. Respondents were asked to what extent they thought these bans and limitations were beneficial. A large proportion of respondents answered that they did not know (46%). Thirty-two per cent said they were not very or not at all beneficial and 22% said they were quite or very beneficial.

Industry consolidation and restructure

Private sector involvement

Sixty-nine per cent of Victorian respondents believed there was opportunity for more private sector involvement in the water sector. When asked which entities/assets/functions (if any) they thought should be candidates for private sector investment the three highest rated responses in Victoria were desalination plants, wastewater treatment plants and water treatment plants.

When asked if they thought the price of water would increase if entities were privatised 63% of Victorian respondents said yes, 27% said no and 10% did not know.

When asked if they thought cost savings would be found if entities were privatised 45% of Victorian respondents said yes, 44% said no and 12% did not know.
Western Australia

The price of water

Western Australia was the only jurisdiction in which the most common response from respondents was that the price of urban water in their jurisdiction was a little too low. Fifty per cent said the price of water was much too low or a little too low, while 15% thought it was much too high or a little too high. Thirty-one per cent of WA respondents said the price of urban water in their jurisdiction was about right (Figure 32). In most other jurisdictions the top rated response was that the price of water was about right.

![Figure 32 - WA Is the price of urban water in your state/territory?](chart)

More WA respondents answered ‘don’t know’ when commenting on rural prices in their jurisdiction (29%) compared to only 3% for urban prices. Of those who expressed an opinion about the price of rural water in WA, 22% of respondents believed it was about right, while 44% thought it was a little too low or much too low and 6% thought it was a little too high or much too high (Table 13).

<table>
<thead>
<tr>
<th>Table 13: Is the price of rural (irrigation and bulk) water in your state/territory...</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don’t know</td>
<td>34</td>
<td>29%</td>
</tr>
<tr>
<td>About right</td>
<td>26</td>
<td>22%</td>
</tr>
<tr>
<td>A little too low</td>
<td>26</td>
<td>22%</td>
</tr>
<tr>
<td>Much too low</td>
<td>26</td>
<td>22%</td>
</tr>
<tr>
<td>A little too high</td>
<td>3</td>
<td>3%</td>
</tr>
<tr>
<td>Much too high</td>
<td>3</td>
<td>3%</td>
</tr>
</tbody>
</table>
Water regulation

Participants were asked to rate the effectiveness of the economic, health and environment regulation of water in their jurisdiction. WA results followed a similar pattern to national results. Fifty-one per cent of WA respondents said the economic regulation of water in their jurisdiction was quite or very effective, compared to the national average of 55%. Eighty-three per cent of WA respondents said the health regulation of water in their jurisdiction was quite or very effective, which was the same as the national average. Sixty-two per cent said the environment regulation of water in WA was quite or very effective compared to 66% nationally (Figure 33).

Water security and supply

Respondents were asked if they believed we should have more big dams in the north of Australia (e.g. north-west WA, NT, Far North Queensland). Unlike the other northern jurisdictions in which most respondents agreed or strongly agreed (54% in Queensland and 73% in the Northern Territory), in Western Australia this figure was just 25%, with 59% disagreeing or strongly disagreeing and 15% remaining neutral.
Respondents were asked if they believed there is potential to develop existing aquifers in Northern Australia for irrigation and drought-proofing. Of the Northern Australian jurisdictions WA had a significantly higher percentage of respondents who thought there was potential for this (Table 14).

<table>
<thead>
<tr>
<th>Table 14: Do you believe there is potential to develop existing aquifers in Northern Australia for irrigation and drought-proofing?</th>
<th>WA Percentage</th>
<th>NT Percentage</th>
<th>QLD Percentage</th>
<th>National Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>63.56%</td>
<td>60.56%</td>
<td>48.40%</td>
<td>48.33%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>24.58%</td>
<td>12.68%</td>
<td>32.42%</td>
<td>33.50%</td>
</tr>
<tr>
<td>No</td>
<td>11.86%</td>
<td>26.76%</td>
<td>19.18%</td>
<td>18.17%</td>
</tr>
</tbody>
</table>

**Industry consolidation and restructure**

**Private sector involvement**

Seventy-five per cent of WA respondents believed there was opportunity for more private sector involvement in the water sector. When asked which entities/assets/functions (if any) they thought should be candidates for private sector investment the three highest rated responses in WA were desalination plants, wastewater treatment plants and water treatment plants.

When asked if they thought the price of water would increase if entities were privatised 56% of WA respondents said yes, 29% said no and 15% did not know.

When asked if they thought cost savings would be found if entities were privatised 47% of WA respondents said yes, 39% said no and 14% did not know.
**Northern Territory**

**The price of water**

Consistent with national trends, water sector professionals in the NT believed the prices of both urban and rural water in their jurisdiction were too low rather than too high. Thirty-two per cent of respondents said the price of urban water in the NT was about right. Forty-one per cent said the price of water was much too low or a little too low, while 24% thought it was much too high or a little too high.

![Figure 35 - Northern Territory- Is the price of urban water in your state/territory?](image)

More NT respondents answered ‘don’t know’ when commenting on rural prices in their jurisdiction (25%) compared to only 3% for urban prices. Of those who expressed an opinion about the price of rural water in the NT, 15% of respondents believed it was about right, while 51% thought it was a little too low or much too low and 9% thought it was a little too high or much too high.

<table>
<thead>
<tr>
<th>Table 15: Is the price of rural (irrigation and bulk) water in your state/territory...</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don’t know</td>
<td>18</td>
<td>25%</td>
</tr>
<tr>
<td>About right</td>
<td>11</td>
<td>15%</td>
</tr>
<tr>
<td>A little too low</td>
<td>14</td>
<td>20%</td>
</tr>
<tr>
<td>Much too low</td>
<td>22</td>
<td>31%</td>
</tr>
<tr>
<td>A little too high</td>
<td>4</td>
<td>6%</td>
</tr>
<tr>
<td>Much too high</td>
<td>2</td>
<td>3%</td>
</tr>
</tbody>
</table>
**Water regulation**

Participants were asked to rate the effectiveness of the economic, health and environment regulation of water in their jurisdiction. NT results varied significantly from the national average, with regulation rated as less effective by NT respondents. Most NT respondents (62%) said economic regulation of water was not very or not at all effective. Only 28% of NT respondents said economic regulation was quite or very effective, compared to the national average of 55% (Figure 36). Sixty-five per cent of NT respondents said the health regulation of water in their jurisdiction was quite or very effective, compared to 83% nationally. The NT was the only jurisdiction in which respondents rated the environment regulation of water in their jurisdiction as not very or not at all effective (51%), higher than quite or very effective 41%.

![Figure 36: How effective is the regulation of water in your state/territory?](image)

**Water security and supply**

Respondents were asked if they believed we should have more big dams in the north of Australia (e.g. north-west WA, NT, Far North Queensland). Seventy-three per cent of NT respondents agreed or strongly agreed that we should have more dams in the north of Australia, much higher than the national average of 54%.

![Figure 37: We should have more big dams in the North of Australia (e.g. North-West WA, NT, Far North Queensland)](image)
Respondents were asked if they believed there is potential to develop existing aquifers in Northern Australia for irrigation and drought-proofing. NT and WA both had a significantly higher percentage of respondents who thought there was potential for this (Table 16).

<table>
<thead>
<tr>
<th>Table 16: Do you believe there is potential to develop existing aquifers in Northern Australia for irrigation and drought-proofing?</th>
<th>NT Percentage</th>
<th>WA Percentage</th>
<th>QLD Percentage</th>
<th>National Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>60.56%</td>
<td>63.56%</td>
<td>48.40%</td>
<td>48.33%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>12.68%</td>
<td>24.58%</td>
<td>32.42%</td>
<td>33.50%</td>
</tr>
<tr>
<td>No</td>
<td>26.76%</td>
<td>11.86%</td>
<td>19.18%</td>
<td>18.17%</td>
</tr>
</tbody>
</table>

**Industry consolidation and restructure**

**Private sector involvement**

Sixty-five per cent of NT respondents believed there was opportunity for more private sector involvement in the water sector. When asked which entities/assets/functions (if any) they thought should be candidates for private sector investment the three highest rated responses in NT were wastewater treatment plants, retail functions and water treatment plants. Interestingly, WA and ACT were the only jurisdictions in which desalination plants did not feature in the top three entities/assets/functions as candidates.

When asked if they thought the price of water would increase if entities were privatised 77% of NT respondents said yes (national average 58%), 10% said no and 13% did not know.

When asked if they thought cost savings would be found if entities were privatised 42% of NT respondents said yes (national average 52%), 46% said no and 11% did not know.
The State of the Water Sector Report 2015 was open to all water professionals from 5 June 2015 to 8 July 2015. The survey was facilitated using the Deloitte online survey system, Qualtrics, and was completed by 1,243 respondents.

Note: Where we identified duplicate entries from one respondent we used the respondent’s first successful submission only in our analysis of the survey results.
Respondents were asked to answer the following questions to enable analysis of trends by state and region, occupation, organisational sector and other criteria.

**What is your gender?**

<table>
<thead>
<tr>
<th>What is your gender?</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>886</td>
<td>75.92%</td>
</tr>
<tr>
<td>Female</td>
<td>281</td>
<td>24.08%</td>
</tr>
</tbody>
</table>

**Which state/territory do you live in?**

<table>
<thead>
<tr>
<th>Which state/territory do you live in?</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria</td>
<td>305</td>
<td>26.14%</td>
</tr>
<tr>
<td>New South Wales</td>
<td>275</td>
<td>23.56%</td>
</tr>
<tr>
<td>Queensland</td>
<td>219</td>
<td>18.77%</td>
</tr>
<tr>
<td>Western Australia</td>
<td>118</td>
<td>10.11%</td>
</tr>
<tr>
<td>South Australia</td>
<td>89</td>
<td>7.63%</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>71</td>
<td>6.08%</td>
</tr>
<tr>
<td>ACT</td>
<td>53</td>
<td>4.54%</td>
</tr>
<tr>
<td>Tasmania</td>
<td>37</td>
<td>3.17%</td>
</tr>
</tbody>
</table>
How would you describe the coverage of the role you work in?

<table>
<thead>
<tr>
<th>How would you describe the coverage of the role you work in?</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major city/urban</td>
<td>534</td>
<td>45.76%</td>
</tr>
<tr>
<td>National (I work across all jurisdictions)</td>
<td>356</td>
<td>30.51%</td>
</tr>
<tr>
<td>Regional centre (population of more than 5,000 people)</td>
<td>236</td>
<td>20.22%</td>
</tr>
<tr>
<td>Rural/small community</td>
<td>41</td>
<td>3.51%</td>
</tr>
</tbody>
</table>

How long have you worked in the water sector (or did you work, if retired)?

<table>
<thead>
<tr>
<th>How long have you worked in the water sector (or did you work, if retired)?</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>10+ years</td>
<td>686</td>
<td>58.78%</td>
</tr>
<tr>
<td>5-10 years</td>
<td>245</td>
<td>20.99%</td>
</tr>
<tr>
<td>3-5 years</td>
<td>118</td>
<td>10.11%</td>
</tr>
<tr>
<td>1-3 years</td>
<td>87</td>
<td>7.46%</td>
</tr>
<tr>
<td>Less than 1 year</td>
<td>31</td>
<td>2.66%</td>
</tr>
</tbody>
</table>
How long do you expect to remain in the industry?

<table>
<thead>
<tr>
<th>How long do you expect to remain in the industry?</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>10+ years</td>
<td>616</td>
<td>52.78%</td>
</tr>
<tr>
<td>5-10 years</td>
<td>253</td>
<td>21.68%</td>
</tr>
<tr>
<td>3-5 years</td>
<td>138</td>
<td>11.83%</td>
</tr>
<tr>
<td>1-3 years</td>
<td>118</td>
<td>10.11%</td>
</tr>
<tr>
<td>Less than 1 year</td>
<td>42</td>
<td>3.60%</td>
</tr>
</tbody>
</table>

Which category best describes your current role (or former, if retired)?

<table>
<thead>
<tr>
<th>Which category best describes your current role (or former, if retired)</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineer</td>
<td>237</td>
<td>20.31%</td>
</tr>
<tr>
<td>Consultant</td>
<td>198</td>
<td>16.97%</td>
</tr>
<tr>
<td>General management</td>
<td>170</td>
<td>14.57%</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>119</td>
<td>10.20%</td>
</tr>
<tr>
<td>Operations/maintenance</td>
<td>104</td>
<td>8.91%</td>
</tr>
<tr>
<td>Scientific/technical researcher</td>
<td>91</td>
<td>7.80%</td>
</tr>
<tr>
<td>Planning</td>
<td>69</td>
<td>5.91%</td>
</tr>
<tr>
<td>Policy analysis/regulatory oversight</td>
<td>67</td>
<td>5.74%</td>
</tr>
<tr>
<td>Marketing/sales/communications</td>
<td>62</td>
<td>5.31%</td>
</tr>
<tr>
<td>Finance</td>
<td>20</td>
<td>1.71%</td>
</tr>
<tr>
<td>Information technology</td>
<td>12</td>
<td>1.03%</td>
</tr>
<tr>
<td>Student</td>
<td>10</td>
<td>0.86%</td>
</tr>
<tr>
<td>Human resources</td>
<td>4</td>
<td>0.34%</td>
</tr>
<tr>
<td>Purchasing</td>
<td>4</td>
<td>0.34%</td>
</tr>
</tbody>
</table>
Which category best describes the size of the organisation for which you work (or worked, if retired)?

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000+ employees</td>
<td>400</td>
<td>34.28%</td>
</tr>
<tr>
<td>501–1,000 employees</td>
<td>185</td>
<td>15.85%</td>
</tr>
<tr>
<td>101–500 employees</td>
<td>312</td>
<td>26.74%</td>
</tr>
<tr>
<td>10-100 employees</td>
<td>178</td>
<td>15.25%</td>
</tr>
<tr>
<td>Less than 10 employees</td>
<td>92</td>
<td>7.88%</td>
</tr>
</tbody>
</table>

Which category best describes your level within your organisation (or your level before retirement)?

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team member/front line employee</td>
<td>336</td>
<td>28.79%</td>
</tr>
<tr>
<td>Team leader/supervisor/manager</td>
<td>300</td>
<td>25.71%</td>
</tr>
<tr>
<td>Middle management</td>
<td>252</td>
<td>21.59%</td>
</tr>
<tr>
<td>Senior executive</td>
<td>171</td>
<td>14.65%</td>
</tr>
<tr>
<td>Owner/operator</td>
<td>46</td>
<td>3.94%</td>
</tr>
<tr>
<td>Board member</td>
<td>32</td>
<td>2.74%</td>
</tr>
<tr>
<td>Contractor</td>
<td>15</td>
<td>1.29%</td>
</tr>
<tr>
<td>Not applicable</td>
<td>15</td>
<td>1.29%</td>
</tr>
</tbody>
</table>
Which category best describes the type of organisation in which you are employed (or were employed, if retired)?

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water utility/local government</td>
<td>488</td>
<td>41.82%</td>
</tr>
<tr>
<td>Technical services provider/consultant</td>
<td>257</td>
<td>22.02%</td>
</tr>
<tr>
<td>Government department/regulatory agency</td>
<td>188</td>
<td>16.11%</td>
</tr>
<tr>
<td>Manufacturer/supplier</td>
<td>69</td>
<td>5.91%</td>
</tr>
<tr>
<td>Non-government organisation</td>
<td>60</td>
<td>5.14%</td>
</tr>
<tr>
<td>University/educational institution/research laboratory</td>
<td>45</td>
<td>3.86%</td>
</tr>
<tr>
<td>Building/construction</td>
<td>33</td>
<td>2.83%</td>
</tr>
<tr>
<td>Energy &amp; mining</td>
<td>16</td>
<td>1.37%</td>
</tr>
<tr>
<td>Primary producer</td>
<td>7</td>
<td>0.60%</td>
</tr>
<tr>
<td>Food &amp; beverage</td>
<td>4</td>
<td>0.34%</td>
</tr>
</tbody>
</table>
The following point is relevant to the interpretation of the data shown in this report:

There are questions where a ‘don’t know’ response is shown alongside responses provided by those who felt able to answer a question. On occasion the ‘don’t knows’ represent a significant percentage of the responses provided. Readers may be interested in recalculating the data represented to remove the ‘don’t knows’ in these instances. This would produce an enhanced picture of the opinions of those people who felt able to express a view.

Demographics

What is your gender?
- Male
- Female

Which state/territory do you live in?
- ACT
- New South Wales
- Northern Territory
- Queensland
- South Australia
- Tasmania
- Victoria
- Western Australia

What is your postcode?

How would you describe the coverage of the role you work in?
- National (I work across all jurisdictions)
- Major city/urban
- Regional centre (population of more than 5,000 people)
- Rural/small community

How long have you worked in the water sector (or did you work, if retired)?
- < 1 year
- 1-3 years
- 3-5 years
- 5-10 years
- 10+ years
How long do you expect to remain in the industry?
- < 1 year
- 1-3 years
- 3-5 years
- 5-10 years
- 10+ years

Which category best describes your current role (or former, if retired)?
- Consultant
- Engineer
- Finance
- General management
- Human resources
- Marketing/sales/communications
- Operations/maintenance
- Planning
- Policy analysis/regulatory oversight
- Purchasing
- Scientific/technical researcher
- Student
- Information technology
- Other (please specify) ___________________________________________________________________

Which category best describes the size of organisation for which you work (or worked, if retired)?
- Less than 10 employees
- 10-100 employees
- 101-500 employees
- 501-1,000 employees
- 1,000+ employees

Which category best describes your level within your organisation (or your level before retirement)?
- Board member
- Senior executive
- Middle management
- Team leader/supervisor/manager
- Team member/front line employee
- Contractor
- Owner/operator
- Not applicable
Which category best describes the type of organisation in which you are employed (or were employed, if retired)?

- Government department/regulatory agency
- Manufacturer/supplier
- Media
- Non-government organisation
- Primary producer
- Technical services provider/consultant
- University/educational institution/research laboratory
- Water utility/local government
- Energy & mining
- Building/construction
- Food & beverage

**Water reform**

**Question 1 What should be the top three priorities for reform in the water sector in your state/territory?**

- Clarifying governance of the sector (e.g. the role & objectives of utilities, regulators, etc.)
- Ensuring the financial viability of utilities
- Ensuring the independence of utilities
- Improving water trading
- Reducing utilities' debt levels
- Increasing operational efficiency of water services
- Reducing system costs
- Increasing competition in the sector
- Greater private sector participation
- Completing Water Resource Plans for each catchment
- Investing in asset maintenance, upgrades and augmentation
- Improving the delivery of water to the environment
- Improving the level of cost-recovery in water pricing
- Research in sustainable water management
- Other (please specify) ____________________________
- Don't know
Unconventional gas

Question 2.1 Do you think the level of regulation relevant to unconventional gas to manage water in your jurisdiction is...
- Too much
- About right
- Not enough

Question 2.1a If ‘not enough’ is selected, what further regulation is needed?

Question 2.2 Do you believe the amendment to the Environmental Protection and Biodiversity Conservation (EPBC) Act, the ‘water trigger’ should extend beyond coal seam gas to all unconventional gases?
- Yes
- No
- Don’t know

Question 2.3 Do you think produced water from unconventional gas activities can be treated to a suitable quality for irrigation and other purposes?
- Yes
- No
- Don’t know

Question 2.4 Do you believe there is adequate scientific information on the impacts of unconventional gas on water?
- Yes
- No
- Don’t know
Operational efficiency

Question 3.1 How would you rate the importance of improving the efficiency of operations in the water sector?
- Critical to the ongoing success of the water sector
- Important but not one of its top 3 priorities
- Not important
- Don’t know

Question 3.2 What areas do you think the industry could improve to assist in driving efficiency?
- Asset management
- Procurement/contract optimisation
- Systems improvement
- Process improvement & works management and delivery
- Insourcing/outsourcing or labour mix
- Workforce optimisation
- Private sector investment
- Other (please specify) ___________________________________________________________________

Question 3.3 Does your business use benchmarking and comparators to look at areas for improvement and defining targets?
- Yes, always use benchmarking, both internal and external
- Yes, use benchmarking within our organisation i.e. comparator to previous years
- Do not use benchmarking and comparators but would like to
- Don’t see benefit in benchmarking and comparators
- Don’t know
- N/A

Question 3.4 What savings has your business achieved in operational efficiency in the last 12 months? (Please note Totex = Total Expenditure)
- 0-5% of totex
- 5-10% of totex
- 10-15% of totex
- Greater than 15% of totex
- Don’t know
- N/A
Question 3.5 Does your business have an internal operational efficiency business unit that is responsible for driving continuous improvement?

- Yes
- No, but plan to
- No, and no plans to do so
- Don’t know
- N/A

Water regulation and pricing

Question 4.1 How effective is the regulation of water in your state/territory?

<table>
<thead>
<tr>
<th></th>
<th>Very</th>
<th>Quite</th>
<th>Not very</th>
<th>Not at all</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Health</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Environment</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Question 4.2 Do you think it would be beneficial to better coordinate the regulation of water across economic, health and environmental areas within your jurisdiction?

- Yes
- No
- Don’t know

Question 4.3 Do you think it would be beneficial to harmonise the regulation of water across economic, health and environment Australia-wide?

- Yes
- No
- Don’t know

Question 4.4 Economic regulators should:

- Determine the prices charged by utilities (direct price regulation)
- Periodically review the prices charged to ensure that monopoly power is not abused (price monitoring)
- No opinion/don’t know

Question 4.5 In your state/region do you think economic regulators operate with levels of political intervention that...

- Significantly compromise independence
- Slightly compromise independence
- Do not compromise independence
- Don’t know
Question 4.6 Is the price of urban water in your state/territory?
- Much too high
- A little too high
- About right
- A little too low
- Much too low
- Don’t know

Question 4.7 Is the price of rural (irrigation and bulk) water in your state/territory?
- Much too high
- A little too high
- About right
- A little too low
- Much too low
- Don’t know

Customers

Question 5.1 Do you believe customers are satisfied with the reliability of their water service?
- Yes
- No
- Don’t know

Question 5.2 Do you believe customers are satisfied with their current level of service?
- Yes
- No
- Don’t know

Question 5.3 Do you believe customers are prepared to pay more for increased levels of service and reliability?
- Yes
- No
- Don’t know

Question 5.4 Do you believe customers are prepared to pay less for decreased levels of service and reliability?
- Yes
- No
- Don’t know
Question 5.5 Do you believe customers are satisfied with the type and amount of communications from their water provider?
- Yes
- No
- Don’t know

Question 5.6 Do you think customers understand the make-up of their bill, in particular the fixed and variable portions?
- Yes, they have a sound understanding
- They somewhat understand
- No, they don’t understand
- Don’t know

Question 5.7 Do you think customers understand how the industry is composed and how this is reflected in their bill?
- Yes, they have a sound understanding
- They somewhat understand
- No, they don’t understand
- Don’t know

Question 5.8 Who do you think has a better understanding of their bill?
- Urban customers
- Regional customers

**Digital technology**

Question 6.1 How would you rate the importance of digital/technology investment in supporting the immediate and future business needs of the water sector?
- Critical to its ongoing success
- Important but not one of its top 3 priorities
- Not important
- Don’t know

Question 6.2 What are the three major objectives when assessing the benefit of potential digital/technology projects?
- Service delivery improvement
- Operational efficiency
- Cost reduction
- New or innovative products and services
- Product/service differentiation
- Customer satisfaction
- Other (please specify) ________________________________________________________
- Don’t know
Question 6.3 What do you see as your organisation's primary barrier to successfully identifying and/or delivering important digital/technology project outcomes?

- Translation of business strategy into supporting technology projects
- Organisation culture and change management
- Leadership buy-in
- Procurement of services which require a non-traditional approach
- Availability of in-house talent and experience
- Availability of supplier capability and experience
- Cost
- Regulatory barriers
- No barriers
- Don't know
- N/A

Industry consolidation and restructure

Question 7.1 Do you think there is the opportunity for more private sector involvement in the water sector?

- Yes
- No

Question 7.2 If you answered yes to question 7.1, do you think this should involve (tick all of those that are applicable)

- Greater contracting/market testing of individual cost items
- Long-term contracting of major activities (e.g. entire O&M programs, operation of major treatment plants, completion of capital works programs)
- Long-term leases of entities or assets
- Full privatisation of water entities through sale
- Mixed public private ownership

Question 7.3 Which entities/assets/functions (if any) do you believe should be candidates for privatisation or long term-leases (tick all of those that are applicable):

- Water treatment plants
- Desalination plants
- Wastewater treatment plants
- Distribution networks
- Retail functions
- Water irrigation assets
- Don’t know
- None
**Question 7.4** Do you think the price of water would increase if entities were privatised?
- Yes
- No
- Don’t know

**Question 7.5** Do you think cost savings would be found if entities were privatised?
- Yes
- No
- Don’t know

**Alternative sources of water**

**Question 8.1** Recycled water – what is your view on the following statements on recycled water?

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water recycling can provide a sustainable source of non-potable water for municipal and industrial use</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>“Purple pipe” dual reticulation water recycling systems can provide a sustainable source of non-potable water to households</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Recycled water can be treated and managed to a level that is sufficient for safe potable supply</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Potable water recycling can provide an environmentally sustainable water supply augmentation in some circumstances</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Water recycling can provide a cost-effective source of potable water for Australian cities</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Direct potable water recycling should be investigated as a potential future water supply strategy in Australia</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>
### Question 8.2 Urban stormwater – what is your view on the following statements on urban stormwater?

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban stormwater can provide a sustainable source of non-potable water for municipal and industrial use</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Urban stormwater can be treated and managed to a level that is sufficient for safe potable supply</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Urban stormwater can provide an environmentally sustainable potable water supply augmentation in some circumstances</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Urban stormwater can provide a cost-effective source of potable water for Australian cities</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

### Question 8.3 Desalinated seawater – what is your view on the following statements on desalinated water?

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desalinated seawater can be treated and managed to a level that is sufficient for safe and reliable potable supply</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Seawater desalination can provide an environmentally sustainable source of potable water for Australian cities</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Seawater desalination can provide a cost-effective source of potable water for Australian cities</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

### Question 8.4 Dams – what is your view on the following statements on dams?

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dams are an effective way to manage water security where I live</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>There is scope for more dams to provide additional water supplies</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>We should have more big dams in the north of Australia (e.g. north-west WA, NT, Far North Queensland)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>We should have more big dams in the south of Australia (e.g. in the Murray-Darling Basin and the SE coastal areas)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
**Water markets**

**Question 9.1** What would most improve the functioning of water markets in your jurisdiction?
- More timely information about water trades
- Removal of restrictions on trades
- Foster administrative approval for trades
- Better information about water availability
- Better information about the ownership of water entitlements
- Don’t know

**Question 9.2** Some bans and limitations have reduced the opportunity for urban areas to purchase water entitlements from rural areas. To what extent are these bans and limitations beneficial?
- Very
- Quite
- Not very
- Not at all
- Don’t know

**Groundwater**

**Question 10.1** Do you believe there is potential to develop existing aquifers in Northern Australia for irrigation and drought-proofing?
- Yes
- No
- Don’t know
ABOUT THE AUTHORS

Jonathan McKeown is the Chief Executive of the Australian Water Association, a position he has held since 2013. He commenced his career as a commercial lawyer with Mallesons solicitors, before transferring into business, gaining 25 years of commercial experience in establishing and consolidating businesses across Asia and the Middle East. His management experience in industry associations has been acquired in roles that include Director of Trade Business Services at the Chamber of Manufactures (now known as Australian Business Chamber) and Chief Executive of the NSW Farmers Association.

Amanda White is National Manager – Communications and Policy at the Australian Water Association. She has over 10 years’ experience in strategic communications in both the Federal Government and not-for-profit sectors. Prior to joining the Australian Water Association, Amanda worked for the United Nations, Safe Work Australia and the Civil Aviation Safety Authority. Amanda has an MBA from the Australian Graduate School of Management and a Bachelor of Science (Media and Communications) from the University of New South Wales.

Antonia Curcio is a Policy Analyst at the Australian Water Association. Antonia joined the Association from the National Water Commission where she worked on water markets and trading. Prior to this she worked at the Federal Government Department of Environment. Antonia has a Bachelor of Economics and a Bachelor of Social Science (Policy) from the University of Queensland, and is currently studying a Bachelor of Laws.

Matt Williams leads the Deloitte National Water Sector Group and is a Chartered Accountant with over 20 years’ experience in the area of assurance and advisory services. Matt’s focus is on the delivery of services to a number of water utilities within NSW and also provides advice and support to state-based teams.

Heidi Isreb is a Partner in Deloitte’s Strategy & Operations Consulting team and the Victorian leader of Deloitte’s water industry team. Heidi focuses on delivering transformational change in the water and broader utilities industries and specialises in business transformation and asset management, working collaboratively with clients to drive sustainable and tangible changes. Heidi is part of Deloitte’s national water and asset management leadership teams.

Paul Liggins is a partner in Deloitte Access Economics. He has 28 years of financial and economic experience in the water sector and has been involved in economic and pricing regulation of the Australian water sector since its inception. Prior to joining Deloitte in 2007, Paul spent nine years with another consulting business and 11 years in a variety of water regulatory and policy roles with the Victorian public service, including roles with the Essential Services Commission (formerly the Office of the Regulator-General) and the (now) Department of Environment, Land, Water and Planning.