PREPARED FOR MEMBERS

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“Australia is facing unprecedented challenges when it comes to how we plan and manage our water resources. The nation’s future prosperity is inextricably linked to how well our water resources will meet the needs of a growing population, diversified industries, and protection of the environment. Climate change and rainfall variability are placing increasing pressures on every aspect of the water industry as it grapples with aging infrastructure and increasing urbanisation.”

– AWA and Arup, Australian Water Outlook 2016¹

Australia’s water industry is vital to national prosperity, providing water and sewerage systems to millions of households and businesses across the nation. However, the volume of water consumed across the nation is expected to skyrocket over the coming years, placing greater pressure on the industry to meet national demand. The industry and the wider community have raised concerns around the lack of water security, with additional investment and improved efficiency needed in order to protect supply.

The size and scale of most water infrastructure, and the social responsibility that comes with operating and maintaining it, makes the water sector a challenging prospect. Balancing water security against cost has also posed a challenge. Privatisation has proven problematic, while many water authorities chased short-term cost savings while risking longer-term supply.

While dramatic demand growth will pose challenges for existing infrastructure, it will also provide great opportunities for industry improvement and workforce expansion, and will encourage greater investment in networks over the coming years.

¹Australian Water Association & Arup, Australian Water Outlook 2016, October 2016
Essentially a natural monopoly, the water industry is dominated by a small number of State Government corporations. Fixed infrastructure and regulation in water supply restricts the number of suppliers in the industry. Governments regulate prices to benefit consumers and the industry alike, with recent water price rises being implemented to cover the cost of additional infrastructure investment. Traditionally run by Local Government, authorities have been amalgamated and centralised into larger State Government corporations. The arguments for centralisation are primarily based on greater economies of scale, efficiency gains and building a solid skills base.

The water industry comprises all water capture, storage, treatment, and supply, including the systems that supply water for irrigation. The water industry expected to generate $11.1 billion worth of revenue in 2016-17, with the large majority of this revenue coming from households. The industry is also a major employment provider, with 20,590 employees and wages of $1.6 billion according to IBISWorld².
Current performance

The water industry faced mixed fortunes over the past five years, with investment fluctuating and water security fears continuing in some parts of the industry. While the nature of the sector ensures it remains profitable, weakening investment and higher usage pose future threats. A wider push to keep water prices down has restrained employment growth across the industry, while engineers in the water sector continue to receive lower salaries than their counterparts in other utilities such as electricity.

Water markets

Many of industries across Australia are heavily dependent on a reliable water supply. Water is used across agricultural industries and heavy industries in cooling equipment. The agricultural sector is the largest user of water in Australia, accounting for 57.0% of total volumes\(^3\). However, agricultural users contribute only 7.9% to total expenditure on water. This disparity reflects the additional subsidies provided to the agricultural sector, and the relatively cheaper infrastructure used to transport water for agricultural and industry use, compared with the infrastructure required for potable water. Households use just 13.8% of water by volume, with this figure falling over the past decade due to a greater focus on water efficiency.

However, households contribute 62.7% of total revenue. Households are a much easier source of revenue for water authorities, despite their relatively low level of water usage. While the topic of high water prices has received significant media attention over recent years, the ability to divide costs over each household is still vastly more acceptable than placing additional cost burdens of industry users.

\(^3\)ABS Catalogue 4610.0 – Water Account
Investment and prices

Rising consumption of water is expected to provide additional opportunities for industry participants over the coming years, as authorities invest further in water infrastructure. According to the Infrastructure Australia, water usage is expected to double over the coming years, rising from 7,641 gl in 2011, to a forecast 15,285 gl in 2031. The rapid growth in demand for water will place great pressure on the industry, as water authorities seek to meet rising consumption levels. The significant weather variation that Australia is prone to, will likely increase the threat to water security. While Australia’s water supply is able to keep up with demand during periods of normal weather, during droughts, the water supply is much less robust.

At present, most states have invested in some form of desalination operations, with many plants not currently at full use. However, even when fully operational, the capacity of these plants will not be adequate to cater for the full level of consumption, although they do provide a much needed safeguard. Desalination currently provides over half of Perth’s water supply in Western Australia, demonstrating the important role that this infrastructure plays in ensuring access to potable water.

While water security remains the highest priority for both the sector and most Australians, water prices have received significant media attention more recently. Investment in security often requires that costs are passed on to users, and rising living costs have placed the spotlight on prices. Consumers have responded to some degree, with higher prices pushing average household consumption down to a degree as consumers have learned to use water more wisely.

The ability of households to decrease consumption further is declining, and future price management will rely heavily on effective management from governments, regulators, and water authorities. Targeted investment, managed by skilled staff will be vital in this process, with greater efficiency required in the procurement process. An emphasis on maintenance will also minimise replacement costs where possible. Authorities will need to be careful. However, water authorities will need to avoid knee-jerk cost cutting, as a loss of skilled staff, an overreliance on outsourcing, and a lack of investment will likely have a negative effect on both efficiency and cost management, and lead to higher water prices in the future.

Figure 1: Water infrastructure engineering construction work done

The outlook

Weather

Variable weather conditions have been identified by Infrastructure Australia⁵ as one of the greatest challenges for the water industry. The importance of a stable water supply to households and businesses across Australia means that the industry must be well-prepared to manage supply issues when hit by drought or natural disasters. Australia recently suffered one of the worst droughts in history, and parts of the nation remain under threat. This prompted changes in the way we use water and the way Governments and water authorities manage and invest in water supply.

Investment in additional supply and lower household demand have eased the threat — at least for the time being — of water shortages in major capitals. As a result, several major infrastructure projects have been completed and are being paid for by consumers but have yet to be used. However, the variability of rainfall patterns across Australia — from severe drought in 2009 to major floods in 2011 — means that additional safeguards are integral to the security of Australian water supply, effectively drought-proofing major cities. The importance of investment in supply has been highlighted by Western Australia, where more than half of Perth’s water supply is provided through desalination.

Desalination plants across Australia have come under criticism as most are currently not in use or are running at minimum levels. Governments have responded by highlighting the importance or pre-emptive solutions to drought conditions, with desalination likely to be very important if drought strikes a major city. The cost of projects has also been a major point of contention, with the major cost blowout at Victoria’s Wonthaggi plant highlighted as an example. The final project cost came in at double the budgeted $3 billion⁶, indicating that greater attention should be placed on ensuring a qualified and skilled workforce in the water sector to manage project delivery.

Despite recent investment, there are questions over whether the level of water infrastructure will be able to meet demand when consumption doubles as forecast, particularly if major drought were to strike again. The level of new water infrastructure investment has declined markedly since 2010-11, placing ongoing security at risk. In order to manage this risk, Governments will need to ensure that infrastructure investment remains strong and that skill levels in water authorities remain high.

Drought-proofing Australia’s water supply will remain a major challenge for water authorities over the coming years, and efficient, innovative solutions will need to be found to ensure that Australian businesses and households are not left high and dry.

Skilled engineering staff will be especially important in this process, as water authorities seek to manage their investment efficiently, ensuring that best-value outcomes are achieved.

Employment

Modest employment growth is forecast in the water industry over the coming years according to IBISWorld data, rising from 19,320 in 2016-17 to 20,290 in 2021-22. This growth follows similar increases over the past five years. As a result, there will be some additional opportunities available for skilled technical professionals, as water authorities look for innovative ways to deliver a better, more-efficient water supply. While overall employment growth is expected, outsourcing will pose an ongoing challenge to greater industry employment, as some authorities focus heavily on price and cost minimisation.

Historically weak investment in water infrastructure will restrain employment growth in the sector to a degree, with investment declining significantly since 2010-11.

The expansion of water networks to provide potable water to some previously uncovered regional areas may support employment, as authorities seek to keep up with a growing water network. An increased emphasis on maintenance will also ensure ongoing employment growth, as proper maintenance of water infrastructure is typically more cost effective that running assets to failure. As networks grow and as assets age, maintenance will increasingly become a topic of conversation for the industry.

Figure 2: Water industry employment

Source: IBISWorld Industry Report D2811 Water Supply in Australia
Wages in the industry account for a significant portion of revenue, at 14.7% of revenue[^7]. However, capital investment costs remain much higher than labour costs, signifying that the industry is primarily a capital intensive industry. Labour costs have fallen over the past five years as commercialisation of water authorities caused some operators to clamp down on costs. However, the effectiveness of reducing labour is questionable, with lower skill levels potentially resulting in decreased efficiency across other areas of the industry.

The Professional Engineers Employment and Remuneration Report, published by Professionals Australia in 2016, identified higher wages based on the level of experience. However, respondents from the water industry reported significantly lower wages than their counterparts in the electricity and gas industries. On average, technical professionals in the water industry reported 15-20% lower salaries than electricity and gas professionals. This trend poses the threat that professionals in the water industry may seek to leave the industry to find higher wages. The challenge for industry operators will be to improve the competitiveness of industry wages, as high skill levels and an adequate technical workforce will become increasingly important over the coming years as water authorities respond to rising water demand.

Figure 3: Average base salary - water vs electricity & gas

![Graph showing average base salary comparison between water and electricity & gas](image)

Source: Professionals Australia Salary Survey

Opportunities

1. Population growth and rising demand for water will drive the industry to expand over the coming decade.
2. Additional infrastructure investment will require skilled engineering staff to scope, design, manage and deliver additional capacity.
3. Water security concerns will encourage additional water investment over the coming years.
4. Skilled engineers in the water sector will be pivotal in managing rapidly rising water prices, as water authorities seek to improve efficiency.
