



Government  
of South Australia



# SA Water 2040 Directions

Exploring possible long-term directions to ensure the continued delivery of safe, sustainable and affordable water and sewerage services to South Australia.

# 2040 Directions

Our long-term directions look at the big picture - where we think we could be in two to three decades given our present knowledge. We take into account the profound impact that globally recognised megatrends and other possible future scenarios will have on a water utility in South Australia.





## Foreword

**SA Water's 2040 Directions outline the trends likely to influence our organisation, their implications, and the capabilities required to achieve our Outcomes for Success.**

**It will guide future decision making to ensure our sustained success in meeting all challenges the future holds to align with our vision.**

We cannot predict the future but there are significant changes that need to be addressed when considering the long-term external environment. These include changes for individuals, in the economy and the physical environment.

While the implications of the broad trends and drivers are varied, they provide a rigorous context for SA Water's future strategy development.

By embracing change and considering a range of possible directions for our long-term future, we are encouraged to create robust yet flexible plans. We have considered the most likely and influential changes for South Australia and how they will shape our business.

We will strengthen the capabilities that will enable our future success in ensuring we support a high quality of living, maintaining important public health and environmental standards, and helping to underpin the prosperity of our state.

**These insights will have a significant effect on how we do business. They will shape business planning and inform decisions to ensure we become more agile and resilient within the dynamic environment in which we operate.**



*Lew Owens*

**Lew Owens**  
Chairman  
SA Water Board



*John Ringham*

**John Ringham**  
Chief Executive

# Purpose and Overview



## OUR VISION

Meeting all challenges.

## OUR MISSION

To deliver safe, sustainable and affordable water services for the community.

**2040 Directions identifies the key challenges and opportunities most likely to influence the water utility sector and SA Water over the next 25 years and articulates the enablers critical for our ongoing success.**



## Positioning ourselves for future success

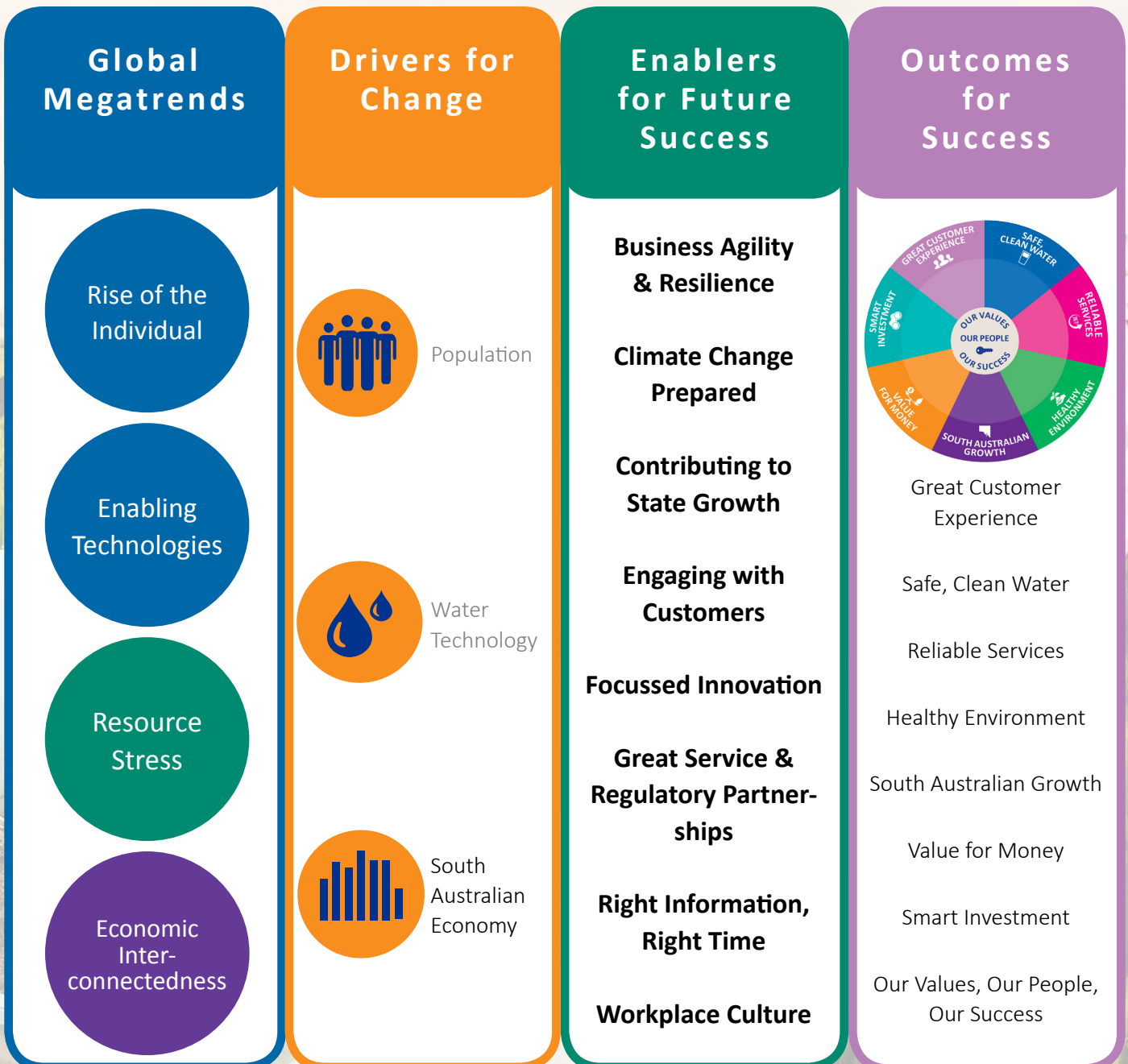
There are recognised trends, known as megatrends, that will shape the world on a global scale in the coming decades. Our challenge is to interpret the impact of these trends in the context of a water utility in South Australia.

We have looked through the lens of several scenarios and determined three drivers for change that will have a significant impact on our business and the state. We then developed a set of enablers that will

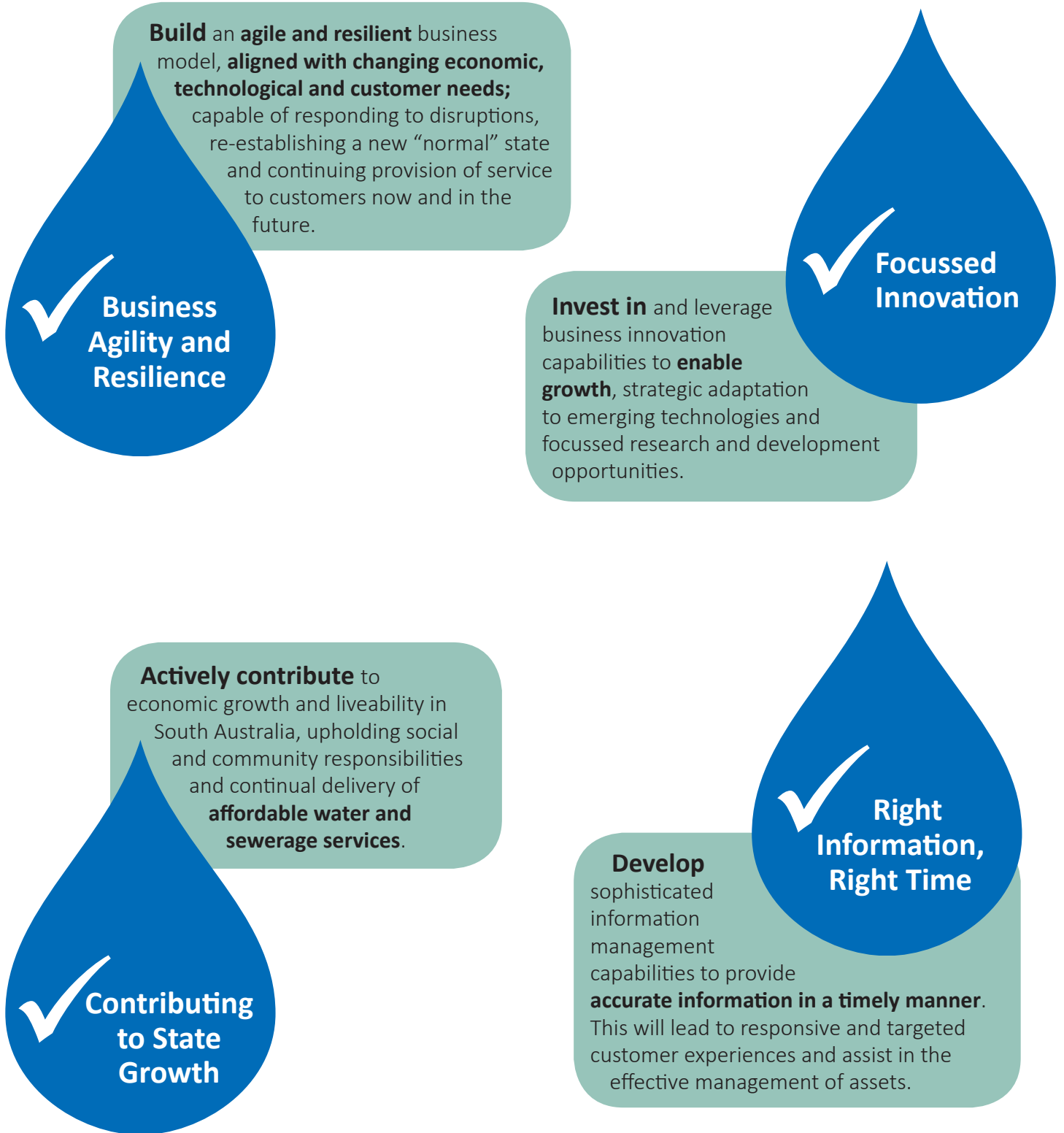
be critical for our future success and ensure our people are all facing in the right direction.

Our Outcomes for Success crystallise the results we seek to deliver. They embrace the likely characteristics of the future environment and outline our focus areas.

**To secure our future success it is imperative that we become strong in each one of these enablers.**



## The following enablers are critical for a



## successful South Australian water utility



✓  
**Engaging  
with  
Customers**

**Build** a mature relationship and a **sense of ownership** with customers and the community to generate great customer experiences.

**Ensure** the security of our water supply. Position the business for climate change and variability through mitigation and adaptation.



✓  
**Climate  
Change  
Prepared**



✓  
**Great  
Service and  
Regulatory  
Partnerships**

**Maintain** safe, high quality water supply and reliable sewerage services.  
Collaborate with regulators to achieve our mutual desire of addressing the evolving expectations of our customers and the community.

**Sustain** a high performing and **adaptable workforce** by providing the right employee value proposition.



✓  
**Workplace  
Culture**

# Megatrends

...are defined as the key trends likely to have relevance for at least the next 25 years and are important drivers shaping the world. This will undoubtedly affect our business.

**To be classified as a megatrend**, it must have significant impact worldwide to nations of different sizes, regions and levels of prosperity. The extent and nature of these disruptions vary from market to market.

Megatrends are not simply the important issues facing governments and businesses; rather, they are the global forces shaping future policy and investment choices.

The megatrends' impact on the water utility sector is made greater by a number of anticipated simultaneous disruptions involving customer behaviour, competition, distribution channels and government policy and regulation.



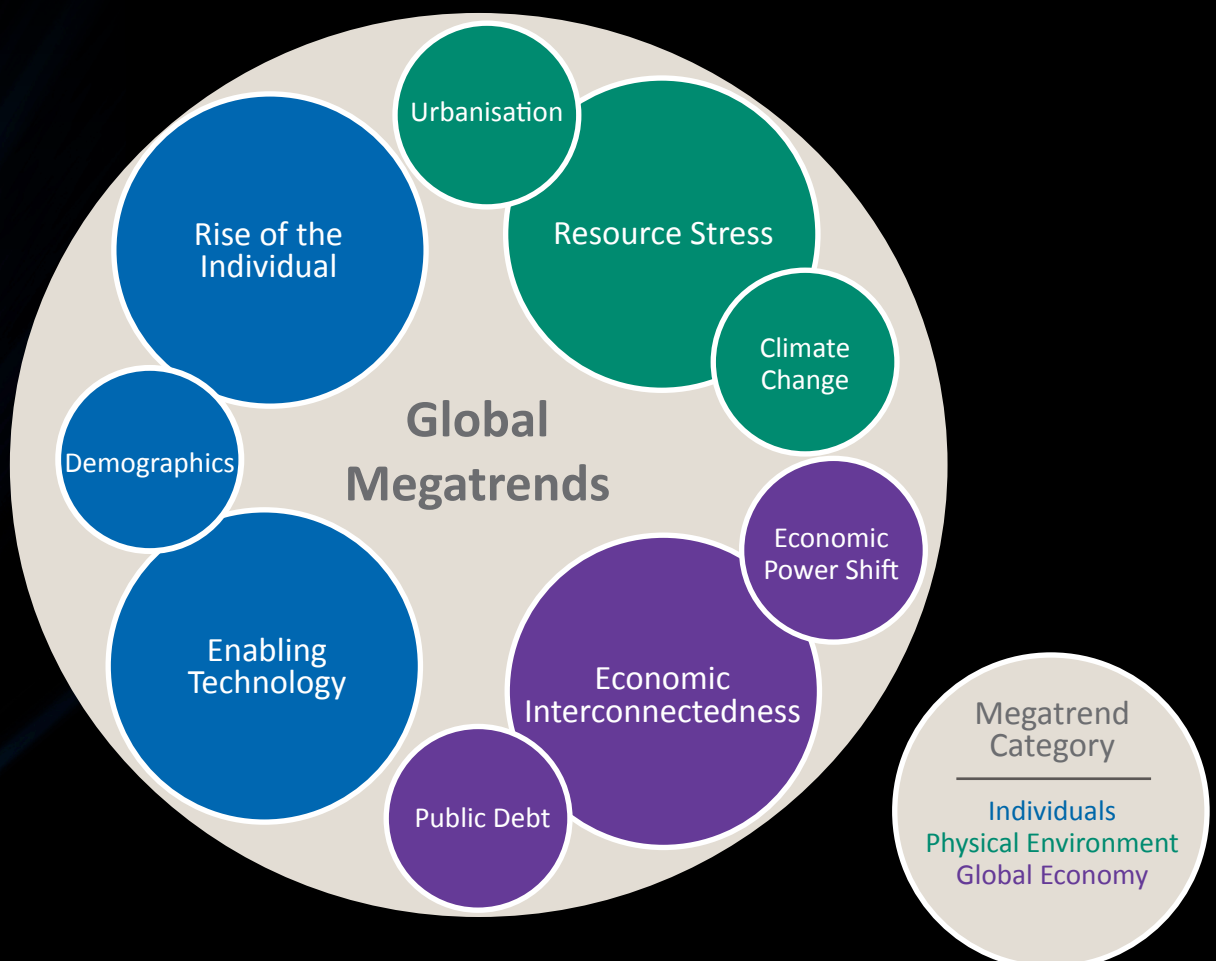


**In 2040 South Australia will be a significantly different place from today. It is also likely to have a state population of over 2.2 million.**

The “Future State 2030” review by KPMG in 2013 identified nine global megatrends. The four megatrends especially important to SA Water’s future consider how our external environment is shaping change.

Attention must be given to increasing individualism, the uptake of enabling technology, the increasing importance of international trade to economic growth, and resource stress created by population and economic growth in a time of increasing climate change.

Trends indicate significant growth and densification in urban areas as well as population increases in “sea and tree change” cities.





# Megatrends that will have a profound effect on SA Water

## Rise of the Individual

Advances in global education, health and technology are empowering individuals like never before. This has led to increased demands for transparency and choice in government and public decision making processes. It is generating an era of customer centricity, with individual consumers and businesses demanding higher quality and customised products and services.

The global middle class is expected to grow from 1.8 billion in 2009 to 3.2 billion in 2020. The consequent consumption patterns would put considerable strains on global freshwater resources and open up opportunities for South Australian agriculture and tourism products.

**Demographics** Higher life expectancy and falling birth rates are increasing the proportion of elderly people across the world, challenging the solvency of social welfare systems, including pensions and healthcare.

SA's population is older and slower growing than the Australian average, with the so-called baby boomers making up approximately 25% of the population. This has implications for labour markets, growth of apartment dwellings and reduced water usage. In this new world there will be a growing sense of entitlement.

### Implications

**Rising customer expectations** Individuals and businesses expect customised, high quality services.

**Competitive market influence** Customer choice is expanding and will be increasingly expected.

**Social media effect** People will seek communication via their preferred channels and increasingly express positive feedback, concerns and displeasure via social networks.

**Innovative labour management** The structure and function of the workforce is changing. Innovation in the acquisition and management of skills will be essential.

**Changing consumption patterns** Growing global middle class will demand more clean water and fresh produce.

## Enabling Technologies

Technological change has created a new wave of opportunities. Current and emerging technologies are changing the ways in which water providers operate and compete. Network equipment and management tools are becoming more sophisticated, with increasing remote network monitoring and management through sensors and other technology.

New technologies in nutrient recovery and energy management are making significant improvements to operations, and new technologies such as graphene could transform filtration methods.

Customers are increasingly able to access high quality information where and when they want it, creating the need for greater customisation. Larger customers in particular will require sophisticated demand management capabilities.

### Implications

**The digitised workforce** Increasing requirement for staff to have data and analytics skills, including field force staff who will use computing as a workplace tool.

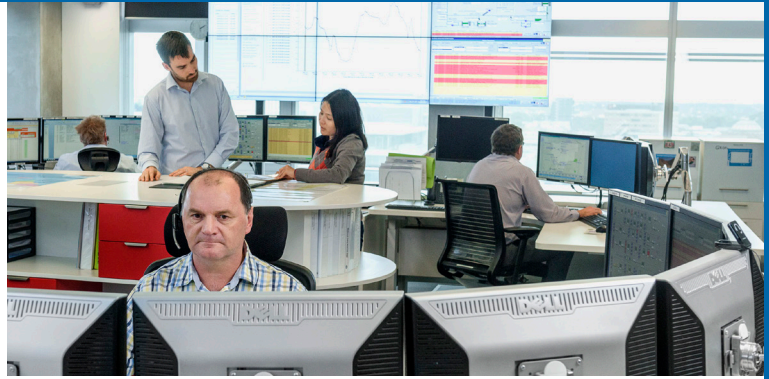
**The big data revolution** Greater efficiency by analysis of available data will allow optimisation of asset operations and investments.

**Water technology** New technologies such as graphene could transform filtration and treatment methods and generate more self-sufficient consumers.

**Remote sensors** This new technology will dominate our control centre and provide instant information on statewide network status e.g. pressurisation and failures.

**Customer empowerment** Increasing use of smart water technologies to manage usage, particularly by large customers, could further reduce demand.

**Cyber-security** The increased level of connectivity must be accompanied by robust cyber-security.



## Resource Stress

Climate variability and change, along with population and economic growth will increase stress on essential resources including water, food, arable land and energy. This will place sustainable resource management at the centre of our business.

In comparison to other Australian water utilities, SA Water has relatively limited access to rainfall catchment storages and sources much of its water from the River Murray, particularly in drought years and for many regional areas. This makes us vulnerable to climate variability and change, especially in an era where less rainfall is forecasted.

**Climate Change** Rising greenhouse gas emissions are driving unpredictable alterations to the environment and taxing the resilience of natural and built systems. Rising sea levels, even if quite small, will present significant challenges for sewage and water treatment plants located at sea level.

**Urbanisation** Significant opportunities for social and economic development and sustainable living are created through urbanisation, but this is also putting pressure on infrastructure and resources, particularly energy.

### Implications

**Continuity of supply planning** This requires ongoing vigilance in both internal water processes and external access to sufficient water resources.

**Serving the regions** A focus on security of supply is needed in rural regions to address anticipated demographic change.

**Energy disruptors and energy costs** Energy costs through mainstream networks may increase, leading to an increased focus on energy self-sufficiency.

**Chemicals** Demand and limited supply may increase chemical prices which may be increasingly needed to provide safe, clean water from lower quality resources.

**Treatment plant locations** Rising sea levels will have a major impact on existing infrastructure and the selection of appropriate sites for new treatment plants.

## Economic Interconnectedness

The interconnected global economy will see an increase in international trade and capital flows. The export of water-intensive commodities such as food and mineral resources will raise national water demand. Australia has recently ratified a number of bilateral trade agreements with major trading partners including China and Japan. In addition, the Australia-India economic trade agreement is being negotiated.

**Public debt** This is expected to operate as a significant constraint on fiscal and policy options. Governments' ability to bring debt under control and find new ways of delivering public services will affect their capacity to respond to major social, economic and environmental challenges.

**Economic powershift** Emerging economies are lifting millions out of poverty and influencing the global economy. As global power shifts, international institutions and national governments must focus on maintaining transparency and inclusiveness. Developing economies are predicted to contribute to 57% of global GDP by 2030. Despite strong growth, these countries are likely to face serious water shortage and contamination challenges, and may need to rely on water rich countries to meet their water and food requirements.

### Implications

**Fit-for-purpose product offerings** Different domestic, industrial and agricultural product offerings will provide efficiencies in supply.

**Consolidation and specialisation** A greater ability to combine with other national and international service providers will allow an increase in efficiencies.

**Supply opportunities** Source inputs through new models (e.g. trading partners) and markets (e.g. energy spot market).

**Premium food bowl** Opportunities for South Australia to be a premium food supplier for the world, particularly Asia, with consequent increase in demand for water.

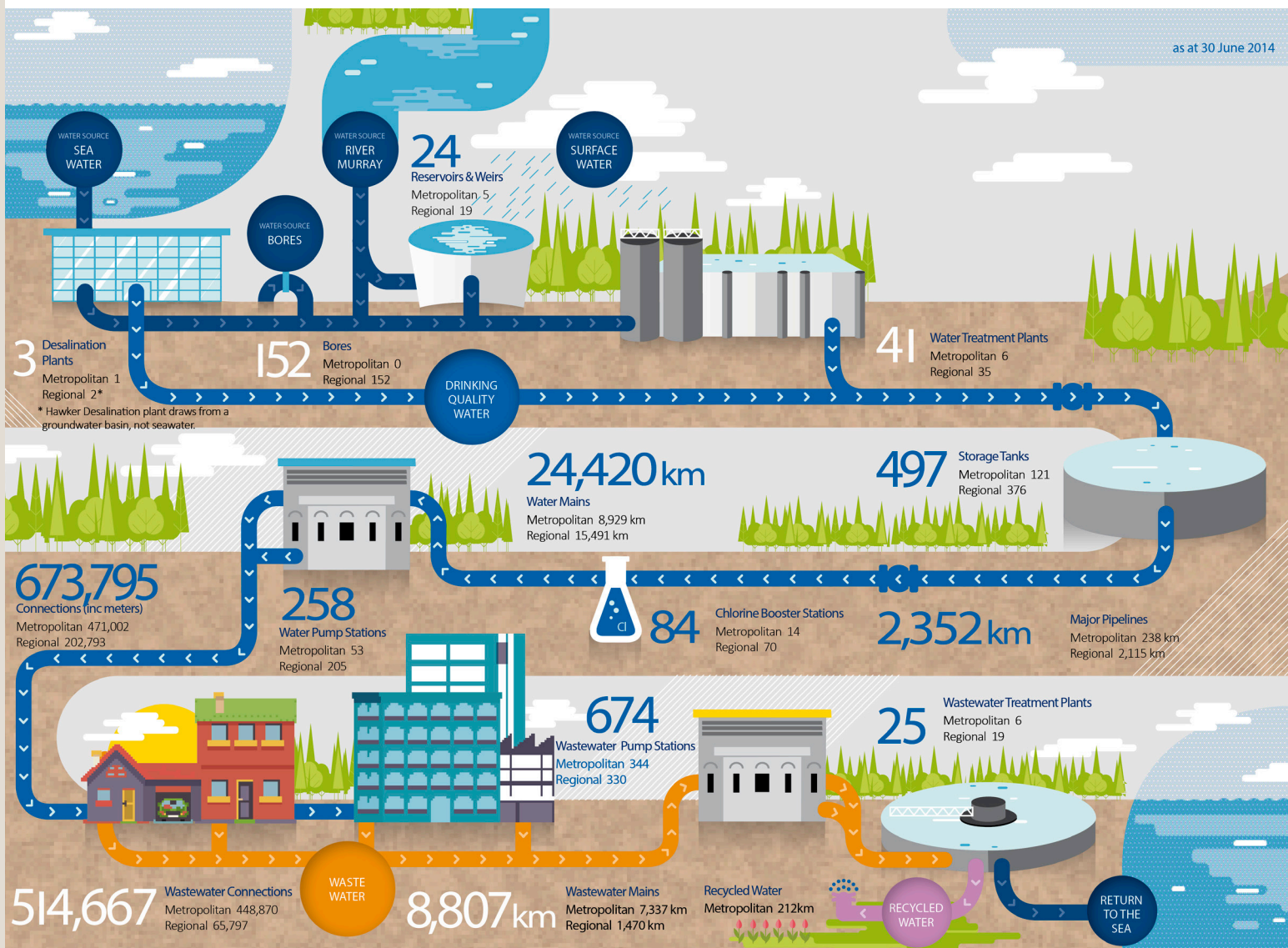
**Water for industry in SA** This will be required to support growth of specific industries that are water intensive, e.g. resources, agriculture and food processing.

# Now...

Operating since 1856, SA Water is a public corporation that is wholly owned by the Government of South Australia.

SA Water employs more than 1,400 South Australians in a diverse range of disciplines so that we can deliver safe, sustainable and affordable water and sewerage services to the state.

We maintain and operate over \$14 billion worth of assets. This includes 10 major reservoirs, bore fields, strategically located pumping stations, wastewater treatment plants and over 35,500 kilometres of pipework. We deliver water and sewerage services to more than 750,000 premises and 1.6 million people in South Australia each day, including 18 remote Indigenous communities.



# by 2040... life will be significantly different



## Population Density

2015 1.6 million      2040 2.2 million

## Point of Use Treatment

This could be a widespread reality especially in rural and regional areas.



## Housing

Further urbanisation and densification results in smaller blocks and more apartments.



## Sea/Tree Change

Significant growth in sea/tree change cities within a 100 km radius of Adelaide and along coastlines across the state.

## Smart Pipes

These are commonly used across the state and add value by allowing us to generate our own power and minimise our environmental impact.



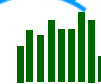
## Technology

SA Water routinely deploys drones to remotely monitor and maintain assets and water quality.



## Sea Levels

Sea levels have risen and there are more frequent extreme weather events.



## Data

SA Water analyses data to measure when essential asset maintenance is necessary.

2040

2032

2024

2016

# Future Scenarios – Drivers for Change

SA Water has considered the globally recognised megatrends. We looked through the lens of several scenarios and identified three drivers for change that would have significant impact on our business and the state.

*Image features a design of the proposed Dubai Promenade "Icon Hotel" (Nakeel Property Developments)*

## Population changes



**Population growth** and the changing **age profile** in South Australia will substantially influence SA Water's future.

By 2040 our state's population will have likely **increased to 2.2 million** people (Source: Australian Bureau of Statistics, Population Projections Australia, 2015).

Significant changes will place pressures on SA Water given its larger geographic footprint and lower water storage capacity than our interstate peers.

**Economic and urban development** will potentially transform how Adelaide and regional centres look in 2040.

We will need to consider the different priorities of **mixed use precincts** consisting of business, residential and other users, as well as **urban densification** in the North South Corridor. This may result in a reduction of water and energy consumption rate per capita.

Growth will not be confined to Adelaide. We will likely see significant expansion within a 100 kilometre radius as people move from metropolitan areas to **sea change and satellite cities**, such as Murray Bridge, Mount Barker and Victor Harbor.

There will also be changes in regional South Australia driven by changing economic circumstances and lifestyle choices.



# Water Technology Changes

Technological change is accelerating in nearly all parts of society. Data storage is increasing with cloud and online market places; smart watches have **sophisticated health monitoring** potential, and electric and driverless cars are anticipated to be in mainstream use in the near future.

**Automation and computerisation** will continue to reshape the labour market and data analytics will provide far greater predictive capacity for operations management. A CEDA report found, 'almost five million jobs - almost around 40 per cent of the workforce - face the high probability of being replaced by computers in the next 10 to 15 years' (Australia's Future Workforce June 2015).

It is less clear how much **radical technological change** will be seen in the water sector itself.

One consideration in the future for SA Water may involve increasing application of **revolutionary water delivery** mechanisms. Further, the proportion of **self-sufficient**

**water customers** may increase, with a corresponding emergence of providers who will take advantage of innovative water technology advances such as graphene.

The water market's unique characteristics and significant public health issues associated with sewage treatment may limit the level of disruption in the market. However, the recent transformation of the energy market with widespread uptake of solar power, battery storage and **renewable energy technologies** is a clear example of the possible scale of change.

It is critical that SA Water continues to focus on innovation to embrace developments and to operate an agile and adaptive business model with a robust South Australian workforce so that technologies, systems and processes are optimised. It must also closely monitor any **revolutionary technological breakthroughs** that may impact the value chain, as has occurred in large parts of the energy sector.



## South Australian Economic Changes



South Australia is in a period of rapid economic transition, with significant job losses in the minerals and petroleum sectors and plant closures within the automotive and manufacturing industries.

South Australia may emerge from this transition as a **stronger, more resilient economy** as the nation did in the early 1990s. In this scenario, South Australia will have unlocked innovation in our small and medium enterprise sector, realised the potential of our abundant mining resources, and our premium agricultural sectors would be providing **high value food and wine to Asia** and the world. This would more than absorb manufacturing declines, and position South Australia well for future growth.

If poor economic conditions take hold, **high unemployment levels could increase** the number of hardship customers and there could be a shift in our customer mix, as people relocate from regional areas to metropolitan areas seeking employment.

If people become more self-sufficient, it will put pressure on existing revenue models and cost constraints could necessitate more focus on short term decisions, which could result in only essential asset replacement, and an increase in water recycling.

Despite economic conditions, **customer expectations are likely to increase**, with customers seeking service levels that are at odds with the fiscal environment. This may be particularly the case if economic regulators drive reduced costs to consumers while at the same time increase the focus on delivery of improved customer outcomes.

Alternative regulatory models may include a greater emphasis on the delivery of consumer outcomes and innovation, as is the case currently in the UK, or an increased emphasis on prescribing areas of cost reduction, as is currently the case in the Australian energy market.



# Outcomes for Success

SA Water has developed a picture of the Outcomes for Success which defines the results we seek to deliver.

Each outcome embraces the likely characteristics of the future environment and defines the main activities and focus areas for the coming decades.





## Great Customer Experience

Customers value our products and service experience.

**Considering the megatrends, we expect that:**

- Customers will demand more customised and personalised service levels
- About 2.2 million people will be living in South Australia, including 2 million in Greater Adelaide

**Future Direction:**

- Understand the specific wants and needs of our customers
- Continue to put customers at the heart of our products and services
- Promote a culture of service excellence
- Ensure that our brand is recognised and trusted
- Create personalised customer experiences



## Safe, Clean Water

To be the leading provider of safe, clean water that meets our customers' needs.

**Considering the megatrends, we expect that:**

- A greater percentage of drinking water is manufactured
- Improved energy efficiency and lower cost for desalination technology
- Customers expect good-tasting and quality water, and will turn to another source if the product does not meet their expectations

**Future Direction:**

- Deliver high quality drinking water to support healthy communities
- Continue to improve the aesthetic elements of our water
- Timely identification of emerging water quality issues
- Reduce reliance on chemicals in water treatment processes



## Reliable Services

To provide dependable and responsive water and sewerage services.

**Considering the megatrends, we expect that:**

- Data collection and analytic tools have matured and are able to measure, flag and predict maintenance needs
- Drones and sensors monitor remote networks and assets
- Customers are instantly alerted to service failures and we can efficiently deploy maintenance teams across South Australia including to remote communities

**Future Direction:**

- Optimise asset longevity and reliability
- Optimise our response time
- Improve water and sewerage services
- Energy self-sustainability
- Ensure a resilient water supply



## Healthy Environment

To be leaders in protecting the environment, using resources efficiently and respecting cultural heritage.

**Considering the megatrends, we expect that:**

- Government targets for the environment require high energy users to reduce emissions and energy usage
- Extreme weather events are more frequent, there with less rainfall and rising sea levels placing greater pressure on water availability and water and sewerage assets

**Future Direction:**

- Protect sites of cultural significance
- Manage our discharges to the environment
- Optimise reuse, recovery and efficiency of resources

## Outcomes for Success



### South Australian Growth

We are an enabler of the growth, prosperity and liveability of our state.

#### Considering the megatrends, we expect that:

- Adelaide will see significant densification within a 10 km radius of the city and around transport corridors
- South Australia's industry specialisations will have significantly shifted and our state will be providing premium food and wine to the world

#### Future Direction:

- Remain committed to creating South Australian jobs
- Serve the needs of metropolitan, regional and remote communities
- Provide fit-for-purpose products that enable state growth



### Smart Investment

Our plans are adaptable to meet the needs of current and future generations.

#### Considering the megatrends, we expect that:

- SA Water is competing in a market of providers that are successfully leveraging technological innovations with impressive capabilities

#### Future Direction:

- Invest in technical and analytic capability
- Invest in focussed innovation
- Optimise our asset renewal program
- Defer investments through detailed network monitoring
- Plan for managing impact of rising sea levels on treatment and networks assets



### Value for Money

We will be recognised as an efficient business: fairly balancing price, profit and risk.

#### Considering the megatrends, we expect that:

- Data enables water utilities to accurately measure and predict asset failure, improving asset-based capital expenditure
- The water utility market is diverse and consumers can easily switch between retailers
- Disruptive technologies enabling greater self-sufficiency are more likely to be adopted by our biggest customers

#### Future Direction:

- Provide fit-for-purpose products and services that demonstrate value for money
- Develop commercial product streams
- Continuously improve operational efficiency
- Robust governance and risk frameworks



### Our Values - Our People - Our Success

Our people are the key to our success and our values underpin what we do.

#### Considering the megatrends, we expect that:

- SA Water and other companies are engaging in a global search for talent
- Robotics and automation has led to fewer advanced, frontline field and office service positions
- Our workforce will require more advanced technical and soft skills

#### Future Direction:

- Ensure the safety of our people at all times
- Invest in the development of our people
- Introduce new technology in the business to enhance our people's effectiveness
- Empower an agile and diverse workforce
- Invest in building a high-performing culture of service excellence

## Our Commitment to a Better Future

SA Water is committed to being a key enabler of future South Australian growth. We will continue to embrace our role in supporting the state’s economy through the provision of competitive services. We will invest in projects that promote prosperity, liveability and sustainable environmental outcomes for South Australia.

We will meet unprecedented opportunities and challenges, including a significantly different South Australia with population growth, densification and a transformation in our state’s economic base.

Consumer expectations will be greater and they will look for customised services. South Australia will have significant trade opportunities and for many, water will be a vital input.

We will embrace the impact of growth, climate change and lack of global resources. There will be a considerable shift in the nature of our workforce and unprecedented technological innovations will occur. Asset management will be revolutionised with remote management and automation reshaping the activities of our diverse workforce.

SA Water is clear on the outcomes that will lead us to success. We will continue to refresh our knowledge and thinking to be in step with significant change.

2040 Directions provides the opportunity to generate alignment with our stakeholders. It informs the

development of plans and regulatory business proposals and ensures decisions are in line with SA Water’s long-term strategy.

To secure our future success it is imperative that we build an agile and resilient business model, invest in and leverage business innovation capabilities, actively contribute to economic growth and liveability in South Australia and develop sophisticated information management capabilities to provide accurate information in a timely manner. In addition to maintaining a safe, high quality water supply and reliable sewerage services we need to build a mature relationship and a sense of ownership with customers and the community. We must also position the business for climate change and variability, and sustain a high performing and adaptable workforce by providing the right employee value proposition and successfully harnessing talent and capability.

It is critical we succeed in these enablers to secure the future success of SA Water and South Australia.

## SA Water Strategic Framework

This document is part of SA Water’s strategic framework. It provides long term directional insights and principles that direct SA Water over the longer term to successfully identify and meet the needs of customers, staff and stakeholders far into the future. It will help inform SA Water’s short- and medium-term strategic pathways and decision making.

### What influences our strategy?

SA Water’s long-term direction is influenced by:

- Global Megatrends
- South Australia’s Strategic Plan
- South Australia’s Seven Strategic Priorities
- South Australia’s 10 Economic Priorities
- 30-Year Plan for Greater Adelaide



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Government  
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**SA Water**

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