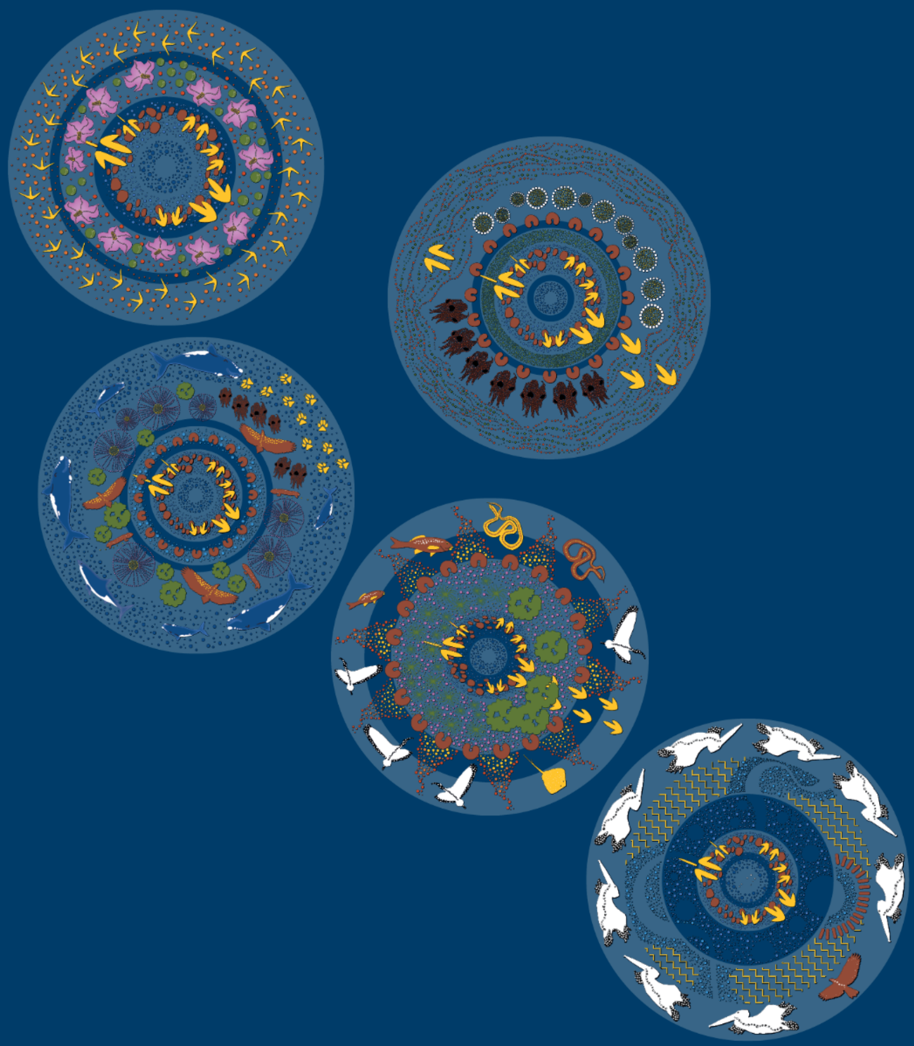
SA Water

2024-28 Regulatory Business Plan

Government of South Australia

Acknowledgement of Country

SA Water acknowledges the Traditional Owners of Country throughout South Australia. We recognise their unique and continuing connection to lands and waters. We pay respect to Elders past and present and extend that respect to all Aboriginal and Torres Strait Islander peoples visiting or living in South Australia.



Contents

Executive summary

SA Water delivers water and sewerage services for more than 1.7 million South Australians by managing the largest water network and one of the largest sewerage networks in the country.

As a public utility, it is responsible for delivering a reliable supply of safe, clean, water and dependable wastewater services.

This requires ongoing investment.

It is proposed that SA Water will invest $462 million in water services and $245 million in wastewater services on average to maintain the current services standards through each year of the regulatory period. This is estimated to impact a residential customer's quarterly SA Water bill with typical water use and average property value by $10.20 (excluding inflation or $17.80 where inflation of 2.5 per cent is assumed in 2024-25).

In real terms, SA Water's bills remain lower than what they were 10 years ago as the Corporation has continued to operate as one of the most efficient major water utilities in the country even while serving the most dispersed customer base with the lowest densities, as reflected in Figure A below.

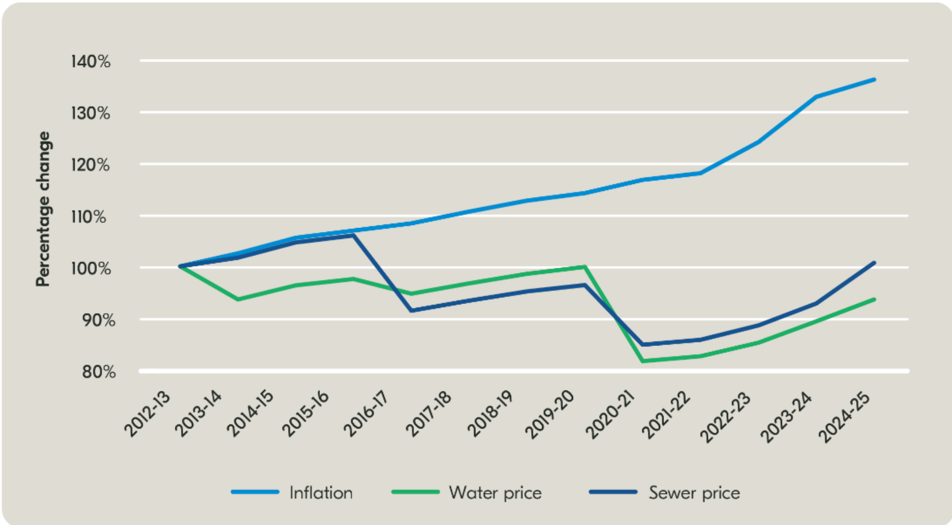


Figure A – SA Water price changes 2012 to 2025 and consumer price index

The current regulatory period has been challenging for SA Water, as it has for most utilities and large companies. Disruptions arising from COVID-19, compromised supply chains, cost escalations above the consumer price index and natural disasters have required the use of innovative approaches and solutions to continue to deliver services for customers. These disruptions have affected current operations, and preparations for the next regulatory period.

This submission seeks to balance managing customer affordability with efficiently delivering the services they rightly value and expect. Maintaining and replacing ageing assets needs to be weighed against future growth and needs to respond to the impacts of climate change in a way that has regard for the 2020s, 2030s and beyond. These are themes that emerged from SA Water engagement with its Customer Challenge Group (CCG) and Peak Bodies Engagement Forum (PBEF), which have strongly influenced the submission by helping develop and refine the suite of initiatives. SA Water acknowledges their fundamental contributions in this process.

To continue to meet core deliverable requirements while managing affordability, many initiatives that were supported through engagement, including willingness to pay studies, have not made the final submission. This decision followed discussion with the CCG and PBEF who advised SA Water to prioritise meeting obligations and delivering core services rather than progressing discretionary initiatives at this time.

This regulatory business plan seeks to strike a balance between numerous priorities and outlines how SA Water proposes to invest in the period 2024 to 2028 to deliver services at the lowest immediate cost. Noting that, there will be a need for growing capital investments in future periods to manage the impacts of ageing infrastructure while maintaining expected levels of service.

Under investment in capital during the 2020 period, exacerbated by cost escalations has resulted in some risks not being able to be addressed within the proposed investment in RD24 because proposed investment has been limited to better manage customer affordability. Consequently, SA Water projects additional investment incremental to that proposed in RD24 will be required in future regulatory periods to address infrastructure and service risks.

Changes to projected operating costs are also affecting the proposed levels of investment, noting decisions made by SA Water following a formal request from the State Government to reduce the operating revenue it seeks through the regulatory submission process. This will see SA Water seeking to reduce some of its operating security investments, sought expenditure on metropolitan service contracts and recovery of electricity expenditure by around $35 million per annum.

Electricity costs are estimated to rise through the regulatory period by more than 75 per cent when compared to the electricity allowance set by the Essential Services Commission of South Australia as part of the 2020 final regulatory determination. This is a primary driver of operating cost increases, together with providing services to additional customers and meeting external obligations.

Proposed capital investments of $2.8 billion will largely be driven by work programs to maintain services to current customers (47 per cent), meet external obligations (26 per cent) and meet growth (22 per cent), with the balance spent on improving services.

Higher costs of managing debt, which form part of the weighted average cost of capital calculated by ESCOSA, are being offset through policy decisions of government where it has forgone revenue to manage customer affordability.

SA Water has proposed to commit to a flat 2 per cent capital efficiency and additional operating efficiencies in the next regulatory period, recognising that more than $350 million in total efficiencies have already been achieved in the current and prior regulatory periods.

Major capital investments proposed for the period include:

- the Eyre Peninsula desalination plant, following extended consultation that saw works deferred from the current regulatory period
- continuing investment in the Tea Tree Gully sustainable sewers program
- replacing more than 200 kilometres of water mains and more than 40 kilometres of wastewater mains
- continuing Mount Bold dam safety upgrade works which are being managed over multiple regulatory periods to reduce costs to customers
- replacing SA Water's billing system that is scheduled to occur over 2 regulatory periods to reduce costs to customers

Major operating expenditure initiatives include:

- delivering services to an additional 30,000 water customers and an estimated extra 10 gigalitres of water involving additional operating investments
- increased electricity costs through the regulatory period
- the Eyre Peninsula desalination plant commencing operation
- external obligations related to the Superannuation Guarantee, reservoir-related health obligations, and government directions.

1 Introduction

Every 4 years, SA Water develops a regulatory business plan (RBP) for the Essential Services Commission of South Australia (ESCOSA) detailing proposed expenditure over the forward regulatory period.

SA Water's RBP for the 2024-28 regulatory determination (RD24) has been developed during a period of uncertainty, firstly affected by COVID-19, and then by global and domestic shocks related to conflict in Ukraine, supply chain disruptions and rapid cost escalation. Responding to this uncertainty has required considerable process and system innovation by SA Water to find new ways of delivering services to its customers.

Several natural disasters in Australia have also affected SA Water's operations. These have included flood and fire events that have disrupted operations and access to supplies, with the flooding in the Murray-Darling Basin in the summer of 2022-23 having the greatest single impact. In any given year, most water supplied to South Australian communities is sourced from the River Murray and, because of this, extraordinary efforts were required to continue to provide services to customers and minimise damage to infrastructure during the flood. This state emergency also delayed the development of SA Water's RD24 submission by about 3 months, affecting lodgement timelines to ESCOSA.

The RBP seeks to logically and transparently detail how SA Water proposes to deliver water and wastewater services to its customers in 2024-28.

In the interests of customer affordability, there have been adjustments made to the revenue sought for the delivery of services in the RD24 period. This comprises a reduction in the level of contribution sought by the State Government (as owner) and a formal request to SA Water to manage the operating revenue it is seeking for the RD24 period. The latter comprises reductions in the operating expenditure that SA Water is seeking in RD24 for some of its operating security investments, expenditure on metropolitan service contracts and recovery of electricity expenditure. Collectively this represents around a $35 million reduction per annum.

1.1 Key drivers

SA Water's strategy and vision to deliver trusted water services for a sustainable and healthy South Australia have framed this submission.

As such, the research and engagement that informed the strategy and vision were the base upon which submission engagement was developed. More targeted customer and key stakeholder engagement in 2021 identified 5 dominant themes that informed the submission's initial development and were iteratively refined through 2022 and 2023. These themes of intergenerational equity, climate change, responding to growth, managing cost escalations, and considering affordability appear often throughout this document.

The RD24 submission has also been informed by feedback from ESCOSA and the outcomes of the previous determination and its review. In addition, it is informed by RD24-specific guidance papers released by ESCOSA:

- SA Water Regulatory Determination 2024, Final Framework and Approach, September 2021
- Guidance Paper 1 – Regulatory Business Plan, December 2021
- Guidance Paper 2 – Engaging with Stakeholders to Develop the Regulatory Business Plan, April 2022
- Guidance Paper 3 – Assessing the Regulatory Business Plan, July 2022. [1]

[1] ESCOSA (2021) 'SA Water Regulatory Determination 2024: Guidance Paper 1: The Regulatory Business Plan', ESCOSA, accessed 10 May 2023.

Observations and submissions from key stakeholders, and the experience of SA Water staff have also contributed to this submission.

1.2 What the plan covers

The RD24 submission seeks to logically set out a case for the investments that SA Water proposes to make for its customers in 2024-28. It starts by providing insight into the breadth and scope of the Corporation's regulated operations, together with some of its history and most recent performance. It then details the outcomes of the various research and engagement activities SA Water has undertaken to inform RD24. The experiences of the current regulatory period, external data projections for future demand, customer and key stakeholder insights, and other research proposals that influence the Corporation's position on service standards.

Later chapters examine the governance around the submission, and the processes used to identify initiatives most prudent for ESCOSA to consider as part of the RD24 submission.

The submission then concludes with the revenues SA Water seeks to deliver required outcomes for its customers, how it intends to manage uncertainties where they arise, and what this is projected to mean for customer bills.

These chapters can be read sequentially or as standalone insights into areas of focus in the RD24 submission process. The chapter contents are summarised in Table 1-1 below.

Table 1-1 RBP content summary

Chapter		Content summary
1	Introduction	Basic information about the RBP.
2	About SA Water	Overview of how SA Water is regulated, the operations it manages, its customer base, strategy and strategic framework driving expenditure, and how the organisation considers and manages risk.
3	2020-24 performance	SA Water's performance to date for the current regulatory determination period, RD20.
4	RD24 engagement and research	An overview of customer and community research and engagement that informed the RBP. This includes the information that shaped the approach, the different types of engagement undertaken, what SA Water heard from this engagement, additional customer research informing the plan, and how SA Water's many government regulators informed the plan.
5	RD24 projected demand	Information on what drives demand and its importance to determining revenue requirements.
6	RD24 service standards	A review of current service standards, and proposed service standards for RD24.
7	Integrated planning and decision-making	Information on SA Water's approach to asset management planning, cost estimation and supporting technology planning that has informed RD24. It also covers how investment has been prioritised for RD24 and SA Water's capital delivery planning and governance and assurance supporting delivery.
8	Proposed capital expenditure	SA Water's proposed capital expenditure requirements for RD24.
9	Proposed operating expenditure	SA Water's proposed operating expenditure requirements for RD24.

Chapter		Content summary
10	SA Water's regulated revenue requirement	How SA Water determined the required revenue using the revenue building block model and the total revenue SA Water requires for RD24.
11	Managing uncertainties	How SA Water plans for, and will manage, events out of its control that may impact delivery of the RBP.
12	Prices and bill impact	What this proposal will mean for customer bills and how SA Water will determine prices for excluded services.

Delays arising from the River Murray flood response have affected the preparation and delivery of the RD24 submission. With agreement from ESCOSA, SA Water has delivered its submission in a staged manner, with 2 tranches provided early to the Commission and the public. In May, Chapters 4, 5 and 6 were submitted, with Chapter 3 submitted in June. The balance of the submission, together with the previously published sections has been compiled for final submission to the Commission.

1.3 Terminology and approach

SA Water manages diverse and complicated operations, spanning a range of disciplines and expertise. In developing this submission, efforts have been made to use plain English and with limited use of acronyms and discipline-specific terms.

Nonetheless, there are some terms and concepts used throughout this document that are set out in Table 1-2, in the interests of readability.

Table 1-2 Terminology in this report

Term	Definitions and related terms
Bulk water	Bulk water is the total water extracted from a resource before it is treated and supplied to customers.
ESCOSA	Used interchangeably with the Commission to mean the Essential Services Commission of South Australia, the economic regulator established under the *Essential Services Commission Act 2002*.
Major framework partner	A supplier selected to provide design and construction services to support SA Water's capital delivery requirements for complex multi-disciplinary programs and projects.
Minor framework partner	A supplier selected to provide design and/or construction services to support SA Water's capital delivery requirements for asset renewal programs.
Delivery partner	A supplier contracted by SA Water to deliver capital works or services in the capital program.
Regulatory determination	The regulatory determination is the decision document released by ESCOSA that sets the maximum revenues SA Water can earn from its customers over the 4-year period to which it relates, and the service standards SA Water must deliver for its customers. Regulatory determination and determination may be used interchangeably to mean the same document.
RD16	The regulatory determination for the period from 1 July 2016 to 30 June 2020.

Term	Definitions and related terms
RD20	The regulatory determination for the period from 1 July 2020 to 30 June 2024. Also referred to as the current regulatory period.
RD24	The regulatory determination for the period from 1 July 2024 to 30 June 2028. The forward regulatory period has the same meaning as RD24.
Regulatory business plan	Regulatory business plan, RBP, the plan and the submission all have the same meaning when referring to this document.
SA Water	Used interchangeably with the Corporation, the organisation, and the business to mean the South Australian Water Corporation.
Service standards	The set of 22 minimum performance measures with associated targets as set by ESCOSA to apply for the regulatory period. The service standards set for the 2020-24 regulatory period are outlined in Water Industry Guideline No 1 – Compliance Systems and Reporting – Major Retailers (escosa.sa.gov.au).

All expenditure and revenue dollars quoted in this report are in real 2022-23 dollars unless otherwise stated.

Where further detail is required to explain a position, it is supported by a footnote reference or appendix.

1.4 What comes next

Following consultation on the RBP, ESCOSA will prepare and release a draft determination.

This document will detail ESCOSA's initial evaluation of what SA Water is proposing for RD24 having regard to public submissions received and its own assessments.

As part of this, the Commission will present a draft position on how much revenue it believes SA Water will require to deliver services at the lowest sustainable long-term cost to customers.

At that stage, ESCOSA will provide an opportunity for public comment on its draft determination. SA Water will provide a response to the determination. This will be made publicly available on the ESCOSA website, along with the final determination, scheduled for release in May 2024.[2]

On receipt of the final determination, SA Water will, together with the state government, set prices for delivering its regulated water and wastewater services based on the final approved revenue, to apply from 1 July 2024.

[2] Essential Services Commission (n.d.) SA Water regulatory determination 2024, ESCOSA, accessed 30 June 2023.

2 About SA Water

SA Water is South Australia's leading provider of water and wastewater services for more than 1.7 million people. It is responsible for delivering a reliable supply of safe, clean water and dependable wastewater services to its customers. SA Water ensures continuity of service by making smart asset decisions now and for the long-term, responding to changing operational environments and achieving operational efficiencies to keep costs down.

2.1 SA Water's governance and economic regulation framework

SA Water is a public corporation established under the *South Australian Water Corporation Act 1994* that is wholly owned by the Government of South Australia. As a public corporation, SA Water is required to operate commercially, unless directed otherwise.

The statutory framework which established SA Water through this Act, defines the Corporation's purpose and functions. Consistent with its function pre-corporatisation, SA Water continues to provide water and wastewater services to its customers.

The economic regulation framework that applies to SA Water is enabled through the *Water Industry Act 2012* (WI Act), *Essential Services Commission Act 2002* (ESC Act) and the *Public Corporations Act 1993* as detailed in Table 2-1. Under this framework, SA Water has been licensed as a major water retailer under the WI Act since 2013 where it has been subject to economic regulation through ESCOSA).

The regulatory framework also enables and makes enforceable SA Water's operations, operational standards, and sets compliance requirements. The key elements of this statutory framework that established SA Water and relate to economic regulation are shown in Table 2-1. Other major legislative requirements with which SA Water must comply are summarised in Section 2.2.

ESCOSA's economic regulation role, including its ability to make revenue determinations for water and wastewater revenue that SA Water can recoup from customers, is enabled by the WI Act. The Commission's objectives and approach to regulation are set out in the ESC Act.[3]

As a major water retailer, SA Water is required to prepare a regulatory business plan (RBP) for ESCOSA, detailing the required expenditure to deliver its regulated services, the sale and supply of drinking water and wastewater services, for the forward regulatory period. Since 2016-17 this has been once every 4 years. This document, referred to in the document interchangeably as the RBP, the plan or the submission, has been prepared to meet this requirement for the 2024-28 regulatory determination (RD24).

TheRD20 process elicited considerable feedback from within SA Water, and, more importantly, from customers, key stakeholders, and the Commission. Feedback provided through the RD20 final determination, and other feedback from ESCOSA Commissioners and Officers, has been reflected through this document and the process that SA Water has adopted in developing it. Moreover, SA Water appreciates the ongoing feedback from its customers and peak bodies who sought deeper, more meaningful involvement in RD24 when compared to RD20. These are reflected in the step change in consultation and engagement efforts as part of developing RD24, and in the depth of presentation.

More formally, ESCOSA released several RD24 guidance papers to inform RD24 development and SA Water has considered these when preparing the RBP.[4]

[3] Consistent with section 6 of the ESC Act, ESCOSA's primary objective is to protect the long-term interests of South Australian consumers with respect to the price, quality and reliability of essential services.
[4] Essential Services Commission of South Australia (ESCOSA) (2022) [SA Water Regulatory Determination 2024 Guidance Papers](), ESCOSA, accessed 5 April 2023.

Table 2-1 Key elements of the economic regulatory framework related to RD24

Legislation	Function	Sections	Key instruments
South Australian Water Corporation Act 1994	**Establishment**	Establishment of SA Water (section 5) Functions and powers of SA Water (section 7 and 8) Establishment of the SA Water Board (section 12)	
Water Industry Act 2012	**Licence to operate, pricing regulation**	Requirement for licence (section 18) Licence conditions (section 25) Enable determination and pricing order (section 35)	Water retail licence[5] Pricing order[6]
Public Corporations Act 1993	**Role and direction**	Charter (section 12) Ministerial directions (section 6)	SA Water Charter[7] Ministerial direction (p. 3,378)[8]
Essentials Services Commission Act 2002	**Determine expenditure, revenue, pricing (excluded services), standards and reporting**	Determination (section 25)	SA Water regulatory determination[9] Water retail code[10] Service Standards[11] Monitoring and reporting[12]

Of note, the high-level expectations identified in ESCOSA guidance papers that were a key consideration for making expenditure decisions included in the RBP were that:

- the proposed expenditure relates to either delivery of core services to the required standards, or to improvement, growth, renewal, or enhancement of core services
- expenditure needs to be prudent and efficient, where:
  - prudent expenditure has a clear justification for the activity. In addition to being required to deliver a core service, considerations of prudent expenditure include:
    - a legislative or regulatory obligation that SA Water must comply with
    - an expectation that the activity will deliver benefits to customers that outweigh the cost
    - a clear expectation from customers that an outcome should be achieved, and that they are willing to pay for that outcome

[5] ESCOSA (2017) '*Water Industry Retail Licence - SA Water'*, ESCOSA, accessed 4 April 2023.
[6] Department of Treasury and Finance (n.d.) Economic Regulation - Pricing Orders, Department of Treasury and Finance South Australia website, accessed 9 May 2023.
[7] SA Water (2021) *SA Water - Our Charter*, SA Water website, accessed 9 May 2023.
[8] The South Australian Government Gazette (2020) '*The South Australian Government Gazette'*, Government of South Australia, South Australia.
[9] ESCOSA (n.d.) *Retail Pricing*, ESCOSA website, accessed 9 May 2023.
[10] ESCOSA (n.d.) *Retail code - Major Retailers*, ESCOSA website, accessed 9 May 2023.
[11] ESCOSA (n.d.) *Service Standards*, ESCOSA website, accessed 9 May 2023.
[12] ESCOSA (2022) '*Water Industry Guideline No 1 - Compliance Systems and Reporting - Major Retailers'*, ESCOSA, accessed 24 April 2023.

  - efficient expenditure represents the lowest sustainable or long-term cost for the outcome.
- the need for investment decision for the current period to relate to longer-term plans and strategies.[13]

When developing the RBP, SA Water has also considered relevant codes, standards and reporting requirements already set by ESCOSA, including:

- the Water Retail Code – Major Retailers, dated 1 July 2020 applying to RD20
- service standards for the RD20 period
- ESCOSA requirements for compliance systems and processes
- ESCOSA's guideline on water regulatory information requirements for major retailers.14

Any proposed amendments to codes, standards, and reporting requirements have been reviewed and provided in commentary in the RBP, for example amendments to the service standards against which the Corporation must comply.

The information provided in the RBP has been prepared to inform ESCOSA's determination of SA Water's maximum revenue allowance for its regulated water and wastewater retail services for RD24. How SA Water determines the proposed water and wastewater revenue required to deliver the plan RD24 are discussed in Chapter 10. Further information on how SA Water and the government set prices, proposed price changes and how this might affect customer bills is included in Sections 12.1 and 12.2.

The determination will also set service standards that SA Water is required to meet during the regulatory period. To inform this process, SA Water has included information on how it has performed against the current standards for RD20 in Section 3.2. In addition, Chapter 6 provides a summary of SA Water's review of the current standards and some proposed changes for RD24.

Excluded services, which are services provided on the request of a customer or group of customers where they are the direct beneficiary, such as connection services and trade waste, are subject to lighter regulation by ESCOSA. Excluded services are regulated by ESCOSA through pricing principles (based on National Water Initiative and ESCOSA-developed pricing principles).[15] In accordance with those principles, these services are required to be recovered from the beneficiary (refer to Section 12.3 for further information on the regulation of excluded services).

Under section 6 of the *Public Corporations Act 1993*, the Minister responsible for SA Water can direct the Corporation to undertake certain activities. Similarly, section 35 of the WI Act enables the Treasurer to make a pricing order, which:

- sets out any policies or other matters that the Commission must have regard to when making a determination
- specifies various parameters, principles or factors that the Commission must adopt or apply in making a determination
- relates to any other matter that the Treasurer considers to be appropriate in the circumstances.

It has been the convention through successive regulatory periods for the Treasurer to issue a pricing order that requires ESCOSA to deem initiatives and associated expenses subject to a section 6 direction as recoverable from regulated revenue. For example, the section 6 direction gazetted on 11 June 2020 prior to ESCOSA releasing its final 2020 determination

[13] ESCOSA (2021) '*SAWRD24 - Guidance Paper 1 - The Regulatory Business Plan'*, ESCOSA, accessed 3 April 2023.
[14] ESCOSA (2020) '*Water Retail Code - Major Retailers',* ESCOSA, accessed 25 April 2023; ESCOSA (n.d.) Schedule 1: Service Standards, ESCOSA, accessed 24 April 2023; ESCOSA (2022),'*Water Industry Guideline No 1 - Compliance Systems and Reporting - Major Retailers'*, ESCOSA, accessed 24 April 2023; ESCOSA (2020) 'Guideline – Water Regulatory Information Requirements – Major Retailers', ESCOSA, accessed 24 April 2023.
[15] ESCOSA (2020) '*SA Water's water and sewerage retail services: 1 July 2020 - 30 June 2024 Price Determination'*, ESCOSA, accessed 24 April 2023.

required ESCOSA to incorporate the cost of moving areas of Tea Tree Gully onto the SA Water wastewater system into the revenue cap. [16]

At the time of writing, SA Water has not received any additional section 6 directions that may impact RD24 revenue requirements. However, it has been advised that it will receive directions under the *Public Corporations Act 1993* for the delivery of services to Tea Tree Gully customers and for northern metropolitan growth, as detailed in Chapter 8.

2.2 Other legislative obligations

SA Water must satisfy multiple legislative requirements when designing and implementing its projects and programs. Some of the legislative requirements that may drive expenditure during regulatory periods include the following in Table 2-2 (this is not an exhaustive list).

Where expenditure for regulated services relates to a statutory obligation, the expenditure has been incorporated into SA Water's proposed expenditure. When complying with regulatory obligations, the focus has been on meeting these requirements at minimal cost to customers.

Table 2-2 Legislative obligations

Legislation – subordinate legislation	Examples of application to SA Water
Financial	
Public Finance and Audit Act 1987 Relevant Treasurer's Instructions[17]	Procurement process requirements.
Environmental	
Environment Protection Act 1993 – includes environment improvement plan obligations	Licencing, such as for wastewater disposal, and environment improvement plans. Demonstration of general environmental duty.
Landscapes South Australia Act 2019 (replaced *Natural Resources Management Act 2004*)	Various licences and approvals, such as those related to water allocations and surface water and groundwater extraction.
Native Vegetation Act 1991	Requirements can include: • native vegetation assessments • Native Vegetation Council approval for clearance • offsetting native vegetation clearance through provision of equivalent quality area(s) of vegetated land with ongoing management costs and/or payment into a fund.
Environment Protection and Biodiversity Conservation Act 1999 (Cth)	Costs for assessments, the requirement to meet approval conditions, which may include environmental offsets, sometimes in addition to native vegetation offsets.
Native title	
Native Title Act 1993 (Cth) *Native Title (South Australia) Act 1994*	Assessment of whether native title exists or has been extinguished. If native title exists, additional requirements can include notification requirements, negotiations in the form of indigenous land use agreements, or compensation.

[16] The South Australian Government Gazette (2020) '*The South Australian Government Gazette'*, Government of South Australia, South Australia.
[17] Department of Treasury and Finance (n.d.) *Treasurer's Instructions*, Department of Treasury and Finance South Australia website, accessed 9 May 2023.

Heritage	
Aboriginal Heritage Act 1988	Site clearances and management measures to avoid SA Water damaging, disturbing or interfering with Aboriginal sites or objects.
Heritage Places Act 1993	Protection of state heritages places and state heritage areas.
Critical infrastructure	
Security of Critical Infrastructure Act 2018 (Cth)	New obligations have recently been introduced to this Act which relate to risk management of critical water infrastructure. These are a new consideration in the RBP for RD24.
Health	
South Australian Public Health Act 2011 *South Australian Public Health (Wastewater) Regulations 2013*	Approvals required from the Department for Health and Wellbeing for the supply and use of recycled water. Risk management plans drive requirements for each wastewater/recycled water management system's operation and maintenance, including treatment specifications, and operational and verification monitoring, and reporting in line with the Australian Guidelines for Water Recycling.
Safe Drinking Water Act 2011 Australian Drinking Water Guidelines	Registration as a drinking water provider. Risk management plans drive requirements for each drinking water source's treatment requirements, such as treatment approach, monitoring and testing of water supplies to meet water quality standards.
Development	
Planning, Development and Infrastructure Act 2016	New developments may need to meet assessment requirements for development assessments such as for Crown developments or impact assessed developments.
Diversity, Health and Safety	
Work Health and Safety Act 2012	Includes investment to ensure SA Water is meeting its work health and safety obligations, including providing a safe workplace, and informing staff of their obligations under the legislation.

2.3 Water and wastewater operations

SA Water is licensed as a water retailer to supply clean and safe water to, and to remove and treat wastewater from, homes and businesses. To do this, SA Water operates and maintains more than $14 billion of water and wastewater assets across South Australia.

The types of regulated and unregulated assets (shown in Figure 2-1) include:

- over 27,000 kilometres of water mains
- more than 9,000 kilometres of wastewater mains
- over 400 kilometres of recycled water mains
- around 1,000 facilities to extract, treat, store and supply water
- a further 800 facilities to remove and process wastewater.

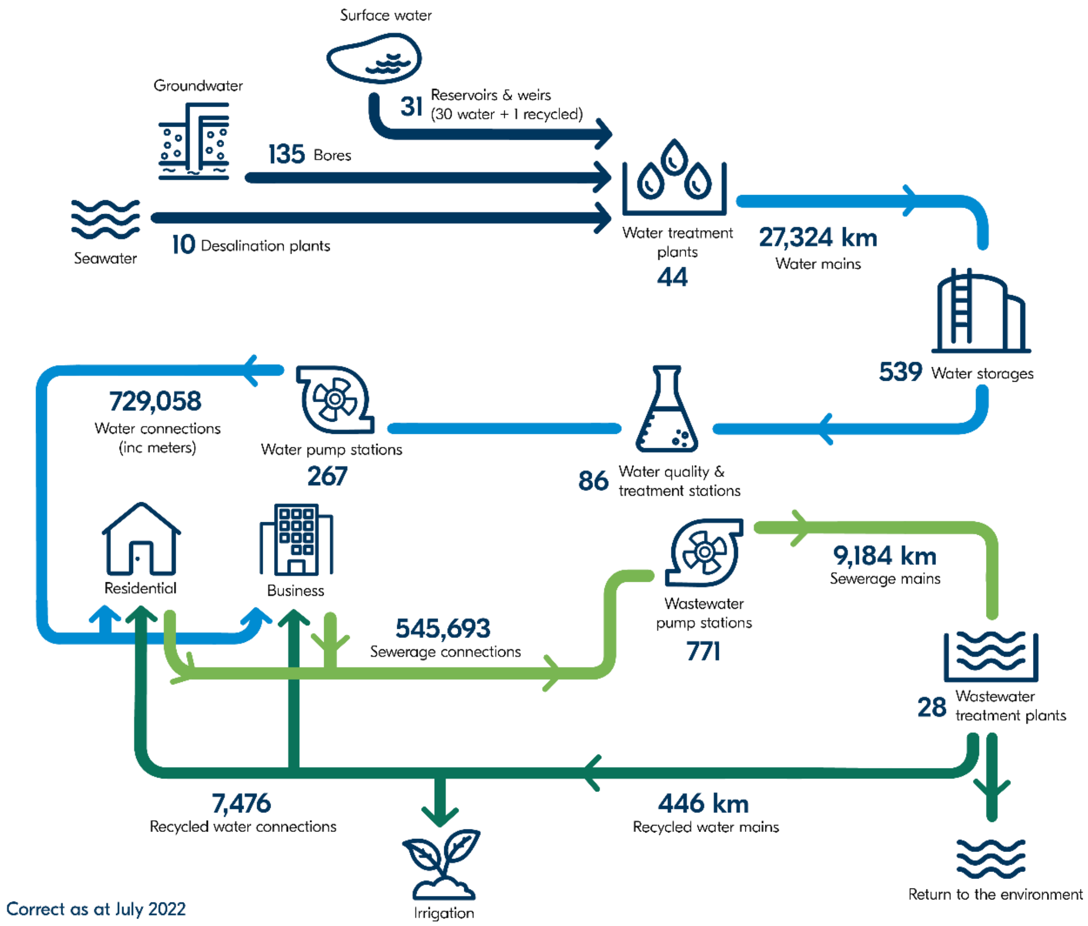


Figure 2-1 Overview of SA Water network and assets (regulated and unregulated)

Constant investment is required to create, sustain, and renew assets to keep up with the demand for water and wastewater services, to meet legal and regulatory responsibilities and keep the network of assets functional.

The following sections provide more detail on SA Water's water and wastewater operations, including the types of assets and operations that support delivery of water and wastewater services. This contextual information is provided to help people understand some of SA Water's investment decisions. Of note is the required ongoing maintenance and management of historic infrastructure with which SA Water delivers water and wastewater services, particularly as the average age of this infrastructure increases. Timing of replacement is an ongoing consideration when making investment decisions.

2.3.1 Drinking water supply

2.3.1.1 Water sources

SA Water uses a mix of water sources to supply drinking water to customers. Each source and its management is summarised in the following sections.

2.3.1.1.1 Reservoirs

SA Water owns or manages reservoirs across the state (Figure 2-2). These are the state's primary water storages and act as catchments for collection and storage prior to treatment before they supply safe drinking water to homes and businesses across South Australia. At full capacity these reservoirs can hold almost 200,000 megalitres of water – just under a year's supply for metropolitan Adelaide.

Figure 2-2 Location of reservoirs owned or managed by SA Water

Reservoirs were constructed as early as 1860 to supply the city of Adelaide, with South Australia's oldest operational reservoirs in Hope Valley (1872), Beetaloo (1890), Happy Valley (1897), Barossa (1902), Bundaleer (1903) and Mount Bold (1938).

Ten reservoir reserves (Barossa, Bundaleer, Happy Valley, Hope Valley, Little Para, Mount Bold, Myponga, South Para, Tod River, and Warren) are open for community access. Each reserve offers a range of activities, such as walking, cycling, kayaking, fishing, and volunteering activities. Permitted activities vary across reserves, due to local risk analyses that inform the water quality management requirements at each site and ensure the water supplies remain safe for human consumption.

2.3.1.1.2 River Murray

The River Murray is an important contributor to state water security, with the amount of water drawn from the river varying during the year and from year to year. As shown by Figure 2-3, at times, more than half of the state's drinking water requirements can be sourced from the River Murray. Water access entitlements are issued in accordance with the relevant Water Allocation Plan. The entitlements represent a share of the resource.

An annual assessment by the Department for Environment and Water will determine the size of the resource that can be allocated for use. SA Water minimises how much it pumps from the River Murray by estimating customer demand and availability of any local water resources. In the case of metropolitan Adelaide, the amount of natural inflow into the reservoirs in the Mount Lofty Ranges will be supplemented with River Murray water when required.

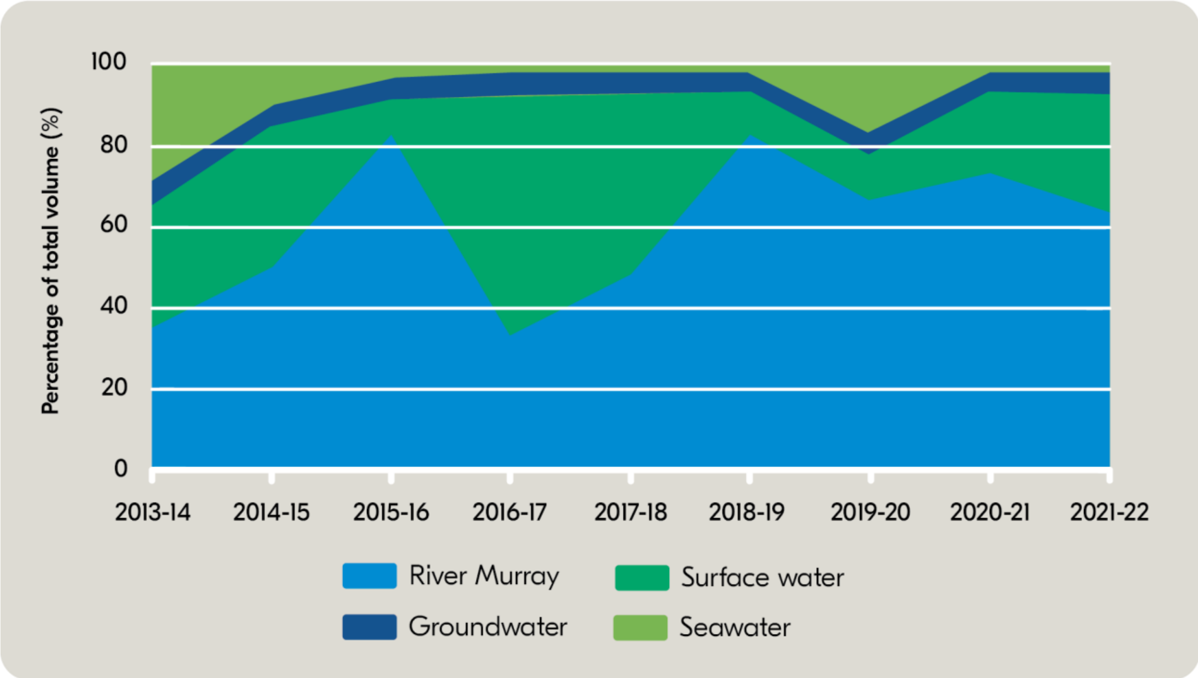


Figure 2-3 Percentage of total volume of water supplied from relevant sources 2013-22

Major pipelines – such as Morgan to Whyalla and Tailem Bend to Keith – supply water from the River Murray to various regional communities. The river also supplements metropolitan Adelaide's reservoirs via 2 major pipelines, the Murray Bridge to Onkaparinga pipeline and the Mannum to Adelaide pipeline.

South Australia defers receiving part of the state's annual water entitlement in Murray–Darling Basin Authority controlled River Murray storages, including Dartmouth Dam in Victoria, and Hume Dam, Menindee Lake (at times) and Lake Victoria in New South Wales as a drought management measure for critical human water needs. Water deferred for critical human water needs guarantees a minimum volume for the metropolitan Adelaide and country River Murray licences. The River Murray flooding through late 2022 and early 2023 required South Australia's deferred water entitlements to be released from storage to provide space for inflows into those storages. As such, the priority for SA Water will be to rebuild these entitlements as soon as can be practically achieved.

2.3.1.1.3 Groundwater

More than half of the state's drinking water supply systems (by number) draw water from groundwater aquifers (a body of rock and/or sediment that holds groundwater) as their primary source, with groundwater contributing about 5 per cent to the total state water supply as shown by Figure 2-4. Most aquifers are located in the South East, Eyre Peninsula and northern region of South Australia.

Groundwater is extracted using bores drilled into target aquifers, with groundwater levels monitored by monitoring bores. Both types of bores require periodic maintenance.

Some ground water sources are highly saline, subject to microbial contamination, or contain other contaminants that make the extracted water unsuitable for human consumption without treatment. Some of these sources of water are treated or desalinated to make the water safe to drink, but several sources are untreated and remain unpotable.

These non-drinking supply systems and the customers served by them have often been adopted into SA Water's network for historic reasons. For example, several systems were transferred to SA Water from the now defunct Australian National Railways Commission. While these sources are non-drinking sources (and the customers are advised accordingly that it is not for drinking and so used for purposes like flushing toilets and watering gardens), they are considered drinking water supplies by SA Water within its regulatory framework.

Sustainability of supply over the long-term is an ongoing consideration when managing groundwater sources. This involves monitoring extraction to ensure localised drawdown is within regulated limits. Extraction from prescribed groundwater resources is managed through water licences issued under the *Landscape South Australia Act 2019* by the Department for Environment and Water.

2.3.1.1.4 Seawater

Desalinated seawater presents a further source of drinking water for SA Water customers. In most instances where SA Water uses sources requiring desalination it is as a secondary source of supply, such as during drought conditions.[18] However, it is being used more widely where alternatives are unviable due to growth, climate change and deterioration of existing water sources.

2.3.1.2 Water treatment

SA Water operates and maintains 44 water treatment plants across the state. These plants are responsible for filtering and treating source water to meet health and aesthetic standards.

Treatment approaches vary between plants depending on requirements to treat the water to drinking standard. Depending on the plant and water quality requirements, treatment may involve a combination of approaches, including:

- chemicals, such as chlorine, chloramine, fluoride
- membrane filtration – providing a physical barrier to pathogens
- iron removal – often from groundwater
- magnetic ion exchange – to remove dissolved organic carbon, while using less chlorine
- ultraviolet light – to destroy bacteria, viruses, and protozoa.

In addition, SA Water currently operates several reverse osmosis desalination plants, with more under construction. Those at Lonsdale in Adelaide and Penneshaw on Kangaroo Island treat seawater. A new desalination plant is currently being built near the existing plant at Penneshaw to increase water supply to support population growth and climate resilience on Kangaroo Island. Planning for a recently announced third desalination plant at Billy Lights

[18] In 2019-20, SA Water was provided a grant by the Australian Government to run the Adelaide Desalination Plant at a higher capacity, enabling River Murray allocations to be diverted to high need irrigators. Forty extra gigalitres of water was produced by the Adelaide Desalination Plant under this agreement as part of the Water for Fodder program.

Point on the Eyre Peninsula will ensure a sustainable water supply is provided to Port Lincoln and surrounds.

Other desalination plants treat groundwater to drinking water standard in regional communities in South Australia, including at Hawker and Leigh Creek in the Flinders Ranges. Expenditure for some of these operations is not regulated by ESCOSA as these are funded through Community Service Obligation (CSO) payments from the Government of South Australia, so these are not considered in this submission.

2.3.1.3 Transport and delivery

SA Water uses a variety of transport and delivery approaches to transport water within the water supply systems that services customers across metropolitan and regional communities within South Australia (Figure 2-4).

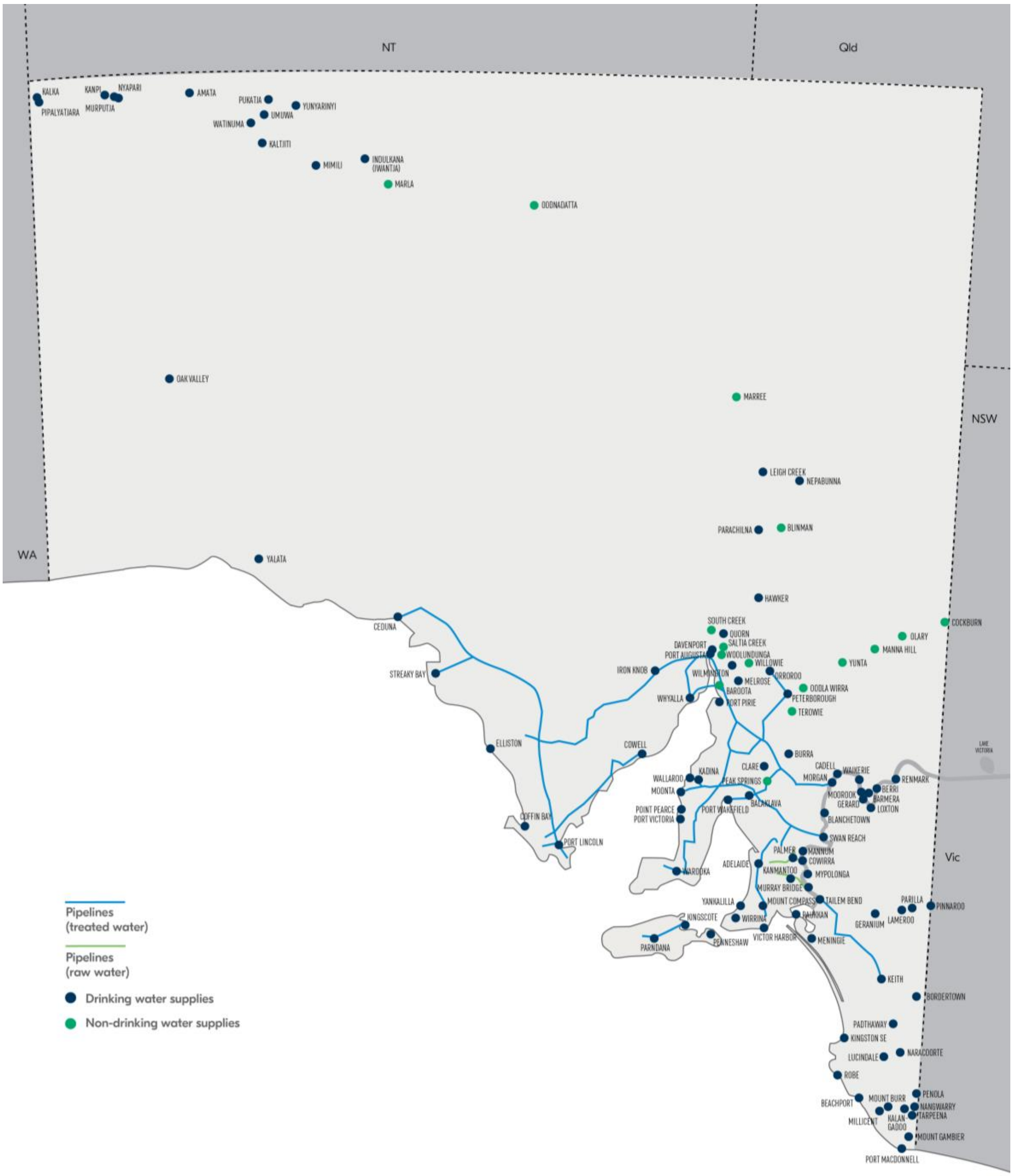


Figure 2-4 SA Water supply areas

2.3.1.3.1 Major pipelines and trunk mains

These pipelines transport bulk water from water sources, before it is treated and enters the reticulation network as detailed below in Section 2.3.1.3.5. Of the major pipelines, the Morgan to Whyalla pipeline was commissioned in 1944, followed by the Mannum to Adelaide pipeline in 1956. Pipes range in size from 375 mm to 2100 mm in diameter and can be made of materials including steel, cast iron, asbestos cement, high-density polyethylene (HDPE), polyvinyl chloride (PVC), ductile iron concrete lined, or glass reinforced plastic (GRP).

2.3.1.3.2 Storages tanks

Storage tanks are used to provide a reliable and efficient means of storing and transferring water within the water network system to maintain a reliable water supply to acceptable water quality levels. They can also serve a continuity function by enabling continuous water supply during upstream service interruptions. There are 557 water storage tanks, ranging up to 56 megalitres in capacity, being operated and maintained across the state. Of these, 474 tanks are used for drinking water storage and the remaining 83 tanks are used to store raw untreated water.

2.3.1.3.3 Pump stations

Pump stations move water within the pipeline network where gravity alone cannot be used. Of the 258 active water pump stations, 39 are connected to major pipelines and 219 operate in the water distribution network. The largest pump stations are used to transfer raw water from the River Murray and treated water from the Adelaide Desalination Plant.

2.3.1.3.4 Isolation valves

These types of valves are installed on water mains and major pipelines and enable operators to isolate sections of the network during operational and maintenance activities. Isolation valves can reduce the areas affected by a water outage or enable water supplies to be rerouted to maintain continuity of service during a failure.

2.3.1.3.5 Reticulation network

The reticulation network comprises pipes and fittings that deliver water to customer connections. Most of the water reticulation network was constructed between the 1950s and 1970s using asbestos cement. Prior to this, much of the network was constructed out of cast iron. In recent decades, other pipes such as ductile iron concrete lined pipes and PVC pipes have been used.

2.3.1.3.6 Customer meters

Meters are devices installed on the end of water connections to measure the volume of water supplied to customers, and to collect data for billing and planning purposes. Water meters almost always define the end of SA Water's assets (the point of sale), with customers connecting their private pipes downstream of the meters. SA Water has more than 730,000 meters in its current fleet with an average age of 12.4 years.

2.3.1.4 Water quality monitoring

SA Water manages drinking water quality from catchment to tap, working cooperatively with SA Health to ensure the continued protection of public health and the supply of high quality, safe drinking water for customers across the state.

Water is tested for health and aesthetic compliance and to optimise water quality. Samples are collected by trained field workers to ensure results have a high degree of integrity. Laboratory analyses are performed by the Australian Water Quality Centre in accordance with ISO 9001:2015 Quality Management Systems and the requirements of the National Association of Testing Authorities.

In 2021-22, more than 45,000 samples were collected from drinking water supplies and analysed, with 100 per cent compliance with the *Safe Drinking Water Act 2011*.

2.3.1.5 Water security

To ensure security of supply, SA Water undertakes water security planning to analyse water availability across all water sources (supply) and project future water demand requirements (demand) on an ongoing basis, regularly updating these plans and projections.

It can be seen from Figure 2-3 that the percentage mix from water sources varies over time. Managing this variability requires planning and analysis to forecast volumes available from primary sources (including surface water catchments and the River Murray in metropolitan Adelaide, or desalination and groundwater sources in some regional areas) and what will need to be sourced from secondary sources (such as desalination in metropolitan Adelaide or tankered water in regional areas).

SA Water also considers historic trends of residential and non-residential use when it projects demand and the potential influence of:

- climate, including the latest climate change data (rainfall, temperature, and evaporation)
- population projections
- state gross domestic product.

The process SA Water uses to project demand is discussed in Chapter 5.

In the longer-term, other sustainable water sources need to be identified to respond to growing water demand as existing water resources are projected to decline.

2.3.1.6 Managing climate-related risk

SA Water's services (from both a supply and demand perspective) are highly dependent on the climate. As a result, the potential impacts and management of climate-related risks and the broader considerations of impacts from climate change over the longer-term are key aspects in both planning and decision-making.

The Millennium Drought from 2001 to 2009 provided evidence of what to expect from extreme weather events associated with climate change. This extended period of drought highlighted the limitations of SA Water's reliance on climate-dependent water resources under extreme drought conditions. During the Millennium Drought, reservoir volumes were dependent on supplementation to maintain supply, and the River Murray experienced the lowest inflows in recorded history, significantly reducing the water allocations able to be drawn. Customers supplied with water sourced from the River Murray and Myponga Reservoir were placed on Level 3 water restrictions by January 2007.[19]

This extended drought event led to the construction of the Adelaide Desalination Plant as a security of supply measure, providing a sustainable, climate-independent water source. As shown in Figure 2-3, desalinated water is used to supplement water supply when volumes available from the River Murray are low. In the short-term it is anticipated that the supply provided by the Adelaide Desalination Plant will need to increase above baseload (5.3 GL per year) approximately once every 4 years. This will increase to above baseload 4 out of every 5 years by 2032, based on medium population growth and high climate change outcomes. To inform immediate and longer-term strategy, planning and decision-making, and to build resilience to climate change, SA Water routinely monitors climate-related data, research and policy changes that may inform or influence what the Corporation does.

SA Water also needs to consider the changing regulatory environment at State and Federal Government levels. There is a growing impetus within both levels of government to issue advisories, regulations and reporting requirements for organisations focused on understanding, managing and reporting on emerging climate change risks. Some examples relevant to the water and wastewater industry relate to critical infrastructure risks[20], development of standardised climate-related financial disclosure[21] and new licencing requirements[22]. While not exhaustive, this indicates a changing regulatory environment which will build on, and may result in new, climate change risk evaluations, treatments, and reporting requirements for SA Water.

[19] Department for Environment and Water (n.d.), *Millennium Drought*, Department for Environment and Water South Australia, accessed 9 May 2023.
[20] Department of Home Affairs (n.d.) 'Risk Assessment Advisory for Critical Infrastructure Water and Sewerage Sector', Department of Home Affairs, accessed 22 May 2023.
[21] The Treasury (n.d.) Climate-related financial disclosure consultation paper, December 2022, The Treasury, accessed 22 May 2023.
[22] Environment Protection Authority, South Australia is requiring consideration of climate change within Environment Improvement Programs (EIPs) as part of wastewater treatment licence conditions.

SA Water has already taken steps to include climate change risk assessments as part of its organisational process. The risk of negative impacts from climate change, extreme weather, greenhouse gas emissions, and water security are identified, captured, and managed as Level 1 strategic risks for SA Water – the highest rated risks for the Corporation.

More granular climate-related risks are identified and controlled as Level 2 corporate risks. Risks at this level relate to SA Water's:

- preparedness for impacts of climate change
- knowledge gaps in keeping up-to-date with climate models
- ability to maintain reliable water sources in regional and metropolitan areas
- business activities impacting the environment through greenhouse gas emissions.

Refer to Section 2.6 for further information on how SA Water defines levels of risk under its risk management framework.

Chapter 11 provides more detailed information on how SA Water manages climate related uncertainty. Section 11.1 provides further information on the potential impact of extreme events linked to climate risks which are expected in the future, and discusses how SA Water is planning for and managing the impacts of such events on both water and wastewater operations.

2.3.2 Wastewater

2.3.2.1 Wastewater network

South Australia's wastewater network is a system of pipework and pumping stations, designed to move wastewater from its source to a point of treatment.

2.3.2.1.1 Wastewater pumping mains (or rising mains)

Wastewater pumping mains, also known as rising mains, transport wastewater from pump stations to gravity systems, to another pump station or to wastewater treatment plants. SA Water has approximately 600 km of wastewater pumping mains, the vast majority (more than 90 per cent) of which are buried and are between 100 mm and 900 mm in diameter. SA Water's wastewater pumping mains are commonly constructed from plastic or ferrous materials, although some older pipes were constructed from asbestos cement. Approximately 32 per cent of wastewater pumping mains have reached, or are close to reaching, the end of their expected service life and require rehabilitation in coming years.

2.3.2.1.2 Gravity mains

Those gravity mains with a nominal diameter of 450 mm or above are categorised as trunk mains, while mains with a diameter less than 450 mm are categorised as reticulation mains. SA Water has 328 km of gravity trunk wastewater mains which generally have higher flows compared to the 8,249 km of gravity reticulation mains in its wastewater network. Wastewater network reticulation mains comprise several material types, with ceramic (vitreous clay) being the predominant material type, followed by PVC and cementitious materials.

2.3.2.1.3 Pumping stations

Pumping stations are used to transport wastewater within the sewerage network where gravity alone cannot be used. Approximately 640 pumping systems operate on the network**.** Design service life can range from 40 to 80 years depending on factors such as material type, operating regime and surrounding soil condition.

2.3.2.1.4 Fan stations

These extract poor quality, corrosive air from the wastewater trunk mains to maintain a dry environment, prevent corrosion and manage odour emissions. SA Water has 16 fan stations in wastewater trunk mains, mainly located in the northern metropolitan Adelaide area.

SA Water manages the wastewater network to achieve the longest life from its assets, with some infrastructure from the first deep drainage network constructed by 1881 still in operation. Mains constructed between 1878 and 1900 in other Adelaide suburbs such as Croydon and Goodwood are also still in use.

2.3.2.2 Wastewater treatment

SA Water operates and maintains 3 major metropolitan wastewater treatment plant sites at:

- Glenelg (opened 1938, duplicated 1956)
- Bolivar (opened 1966, had several capacity upgrades, now again nearing capacity)
- Christies Beach (opened 1970, upgraded 1981 and 2013).

A smaller treatment plant at Aldinga treats the wastewater produced in Aldinga and surrounds. SA Water also operates and maintains 20 regional wastewater treatment plant sites.

Figure 2-5 provides an example of how wastewater treatment occurs from the plant at Bolivar.

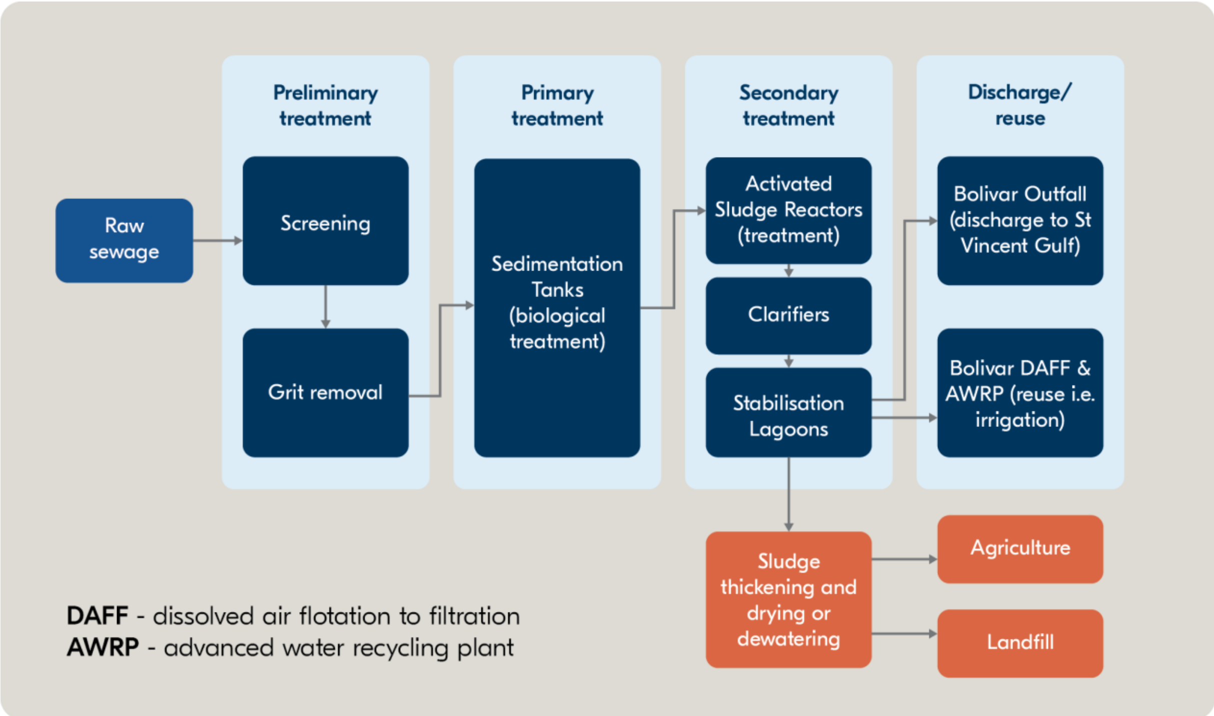


Figure 2-5 Example treatment process overview from Bolivar wastewater treatment plant

To process raw sewage for reuse or disposal at Bolivar, treatment involves initial screening to remove non-biodegradable flushed items which are disposed of to landfill. Following this, sewage goes through primary and secondary treatment. This produces treated effluent and sludge. The treated effluent is either discharged to the environment, or, where available, piped for reuse. Sludge is thickened, dried or dewatered and either disposed of to landfill or reused for agricultural purposes.

Actual treatment processes and infrastructure will vary at individual sites, for reasons such as age, location, or regulatory approval requirements for the site, but the stages followed are consistent at all plants.

Recycled water treatment processes (to further treat wastewater for reuse) also operate at 20 of SA Water's wastewater treatment plants.

2.3.2.3 Recycled water

In 2021-22 SA Water was the largest recycler of wastewater in Australia (by percentage of water recycled), with approximately 30 per cent of wastewater recycled and sold for reuse each year (equating to around 35,000 megalitres in 2021-22).[23]

Recycled water is used to irrigate parklands and community grounds, by the horticulture industry, and by customers who have dual reticulation available in their homes. SA Water has more than 400 km of recycled water mains, and over 7,000 recycled water connections.

The sale and supply of recycled water is subject to price setting principles set by ESCOSA.[24]

2.3.2.4 Biogas and biosolids

The bacteria used in some treatment processes creates gases, such as methane, that are collectively called biogas. Upgrades to pump stations in metropolitan Adelaide and regional South Australia are reducing atmospheric methane emissions with the capture and use of biogas for energy production. This use of biogas equates to about half the energy needs for all 3 wastewater treatment plants in metropolitan Adelaide.

Organic materials from the wastewater process, known as biosolids, are collected and treated. Since the 1960s they have been used as a fertiliser by South Australian primary producers to improve their soils and crops, when managed in accordance with Environment Protection Authority requirements.[25] In 2021-22, the volume of biosolids collected from SA Water facilities reached 89,000 tonnes.[26]

2.4 SA Water's customers

SA Water serves more than 1.7 million South Australians, from the inner city to regional and remote communities. Understanding their needs and priorities is integral to the successful delivery of reliable and fit-for-purpose products and services.

While the primary relationship with customers is through property-based billing, SA Water defines its customers more broadly by recognising the varying interactions that South Australians have with water and wastewater services. SA Water's ongoing customer research and engagement covers the full range of customer types, measuring satisfaction with services along with perceptions of the organisation, to gain a deeper understanding of customer needs and expectations of their water utility.

[23] The Bureau of Meteorology (BOM)(2023) '*National Performance Report 2021-22 Urban water utilities'*, BOM, Australian Government, accessed 9 May 2023.
[24] ESCOSA (2020) '*SA Water Regulatory Determination, Final Determination : Statement of Reasons'*, ESCOSA, accessed 4 April 2023.
[25] Environment Protection Authority of South Australia (2020) 'Guidelines for the safe handling and reuse of biosolids in South Australia', EPA, accessed 20 April 2023.
[26] SA Water (2022) 2021-22 South Australian Water Corporation Annual Report, SA Water website, accessed 5 June 2023.

2.4.1 Defining customers

SA Water defines its customers using one or more of the following groups shown in Figure 2-6:

- Property owners – this includes both business and residential property owners. These customers receive a quarterly bill from SA Water through its property-based billing system.
- Bill payers – this group pays for water and wastewater services and includes renters, who do not receive a bill directly from SA Water.
- Consumers – this is anyone who consumes SA Water's products and services. This includes visitors to South Australia, and those without a connection to the network at home but using products and services elsewhere (for example at work).
- Community – this recognises that SA Water impacts and interacts with the broader community even when people are not consuming its services. This includes those visiting a reservoir reserve, taking part in an education program, or those impacted by traffic delays while network repairs are performed.

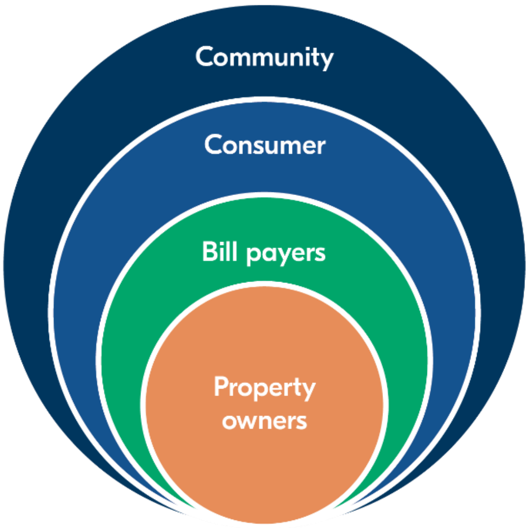


Figure 2-6 SA Water's customers

SA Water's billing and customer relationship management systems capture customer data based on accounts and bill payment activities. As of March 2023:

- There were more than 895,000 SA Water accounts. These are predominantly property-based and reflect connection points to the water and wastewater networks.
- There were over 900,000 SA Water direct bill payers. These are the people whose properties are connected to the SA Water network and who pay bills for those properties. There can be more than one bill payer per account.
- More than 1.7 million South Australians were consuming SA Water services or were impacted by its activities, whether connected directly to the network or not.

2.4.2 Geographic distribution

SA Water serves customers across South Australia, with 78 per cent of the population living in the Greater Adelaide region (Figure 2-7).

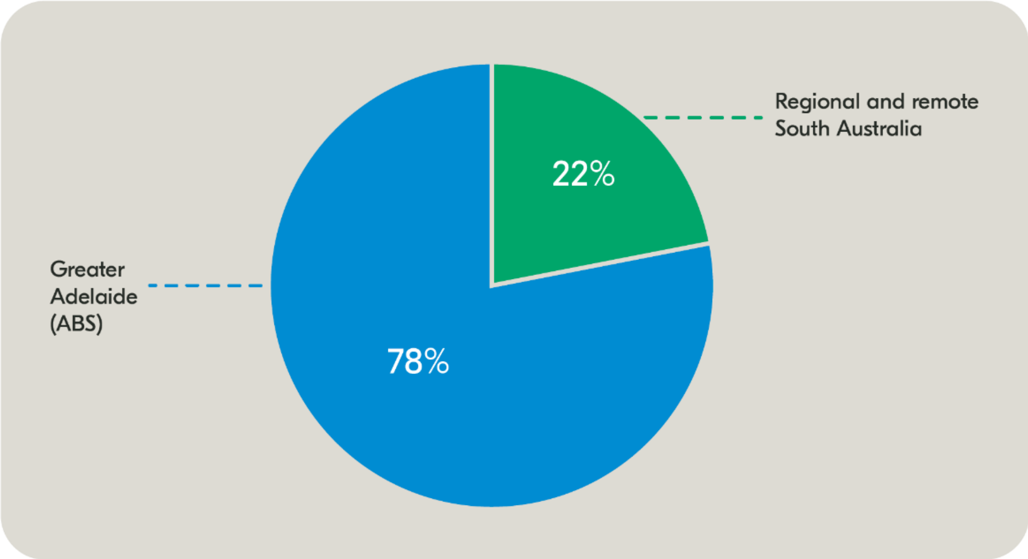


Figure 2-7 South Australian population by location (ABS census data, 2021)

The Greater Adelaide region is defined by the planning region shown in Figure 2-8.

Figure 2-8 Greater Adelaide planning region

2.4.3 Residential and business customers

SA Water has a mix of residential and business bill paying customers as shown by Figure 2-9. Seventy-eight per cent of SA Water accounts are residential, while 17 per cent are held by businesses or other organisations. A small proportion of accounts (5 per cent) include both residential and business customers.

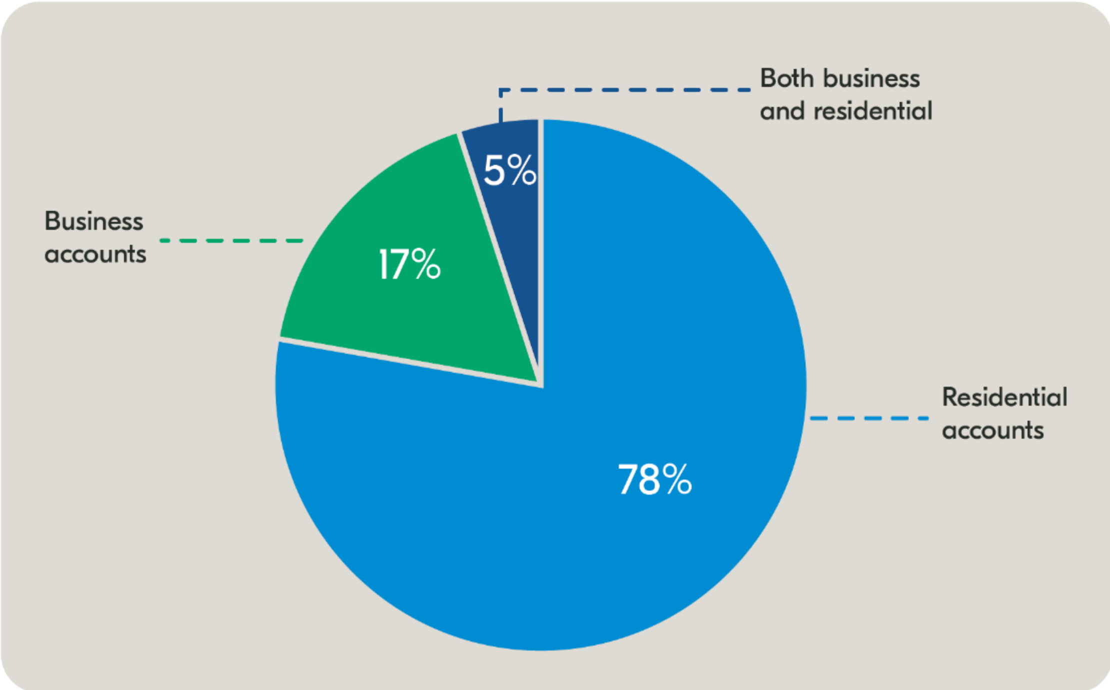


Figure 2-9 Customers by type (SA Water accounts, 2023)

The following are the residential/business customer numbers as of March 2023:

- Residential customers - more than 860,000 residential properties are connected to SA Water's water and/or wastewater networks.
- Business customers - about 76,000 businesses are connected to SA Water services. With major operators, through to medium and small enterprises, and microbusinesses run from home, business customer needs vary from high use, water critical operations to low use and less water critical businesses.

2.4.4 Equitable and accessible services

SA Water aims to provide services that are equitable and accessible to all customers. Customers are provided online and self-service options and an Adelaide-based Customer Care Centre for those who are able and prefer to use these customer service channels.

SA Water recognises that there are barriers faced by some customers due, for example, to disability, language, or literacy. As these customers may not be able to use mainstream customer service channels, SA Water has a program specifically focused on understanding and supporting customers with access and interaction barriers, known as 'Wider World'.

This program is working to support customers through initiatives such as translation services, accessible communications, an accessibility audit of SA Water's digital platforms to identify improvements, and trials of alternative styles of water meters.

In addition, SA Water's Customer Assist Program supports residential customers experiencing short- or long-term financial hardship. As of 31 December 2022, more than 850 customers were participating in this program.

2.5 Strategic framework

This framework sets out how SA Water's organisational vision and strategy link and translate to day-to-day actions through establishing clear goals, objectives, and priorities to support planning. Implementing this framework is done to:

- ensure strategy drives decision-making
- balance short- and long-term investment decisions informing and driving operational activities and budgets
- ensure decisions address key risks and align with the Corporation's risk appetite
- meet legal and regulatory requirements.

The elements of the framework and how they drive consistency and outcomes expected by customers, stakeholders and owner is discussed in the following sections.

2.5.1 SA Water's strategy

The peak driver of strategic direction and decision making within SA Water is the Corporation's strategy, *Our Strategy 2020-25* (as summarised by Figure 2-10).[27] It defines SA Water's vision and identifies its 5 strategic areas of focus, and how the organisation sees its evolution up to 2050 and beyond. Everything SA Water does, including this submission, is driven from SA Water's organisational strategy.

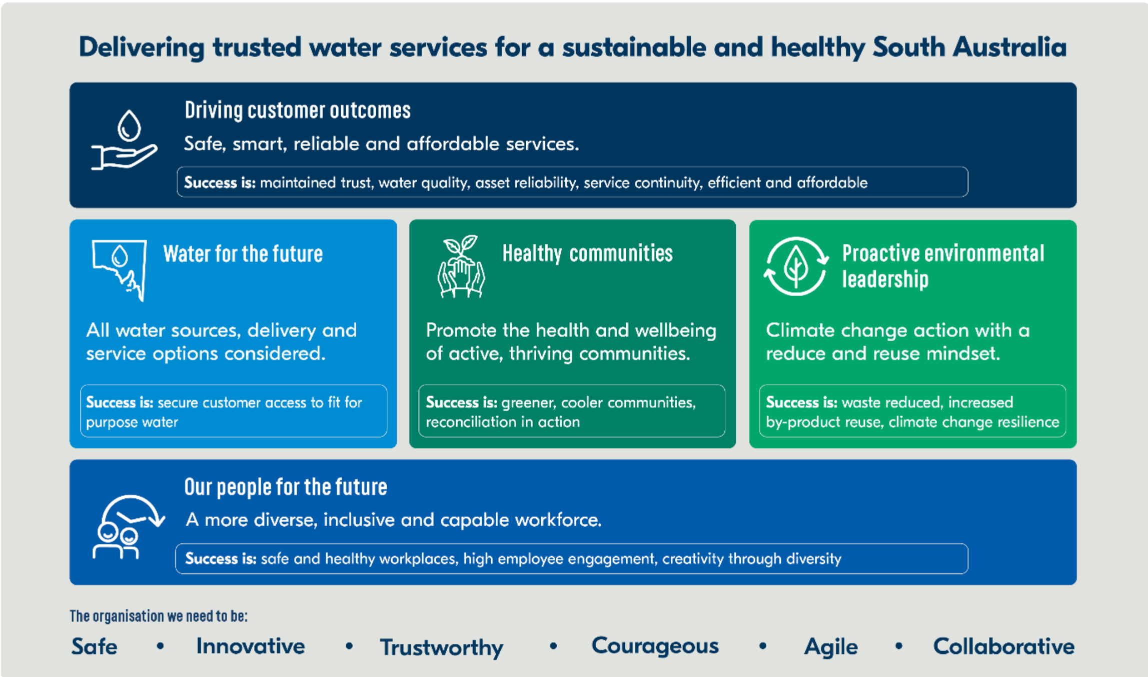


Figure 2-10 SA Water 2020-24 strategy on a page

This strategy is informed and influenced by customer and stakeholder insights, the Government of South Australia, employees, identified risks, and SA Water's regulatory responsibilities. Further information on how customers and stakeholders informed the strategy is included in Appendix 2.1.

[27] SA Water (n.d.) '*Our Strategy 2020-25*', SA Water website, accessed 3 April 2023.

Applying the strategy enables SA Water to prioritise work to support achievement of its goals and supports consistent decision-making, driving the Corporation towards its vision and to operate in the best interests of customers, stakeholders, and its owner.

2.5.1.1 Objectives 2025, 2035, 2050+

As shown in Figure 2-11, the corporate strategy establishes SA Water's focus for the next 5 years while also taking a long-term view to 2050. This drives long-term thinking throughout the organisation in all areas of strategy, planning and decision-making, and sets the expectation of taking a long-term view, knowing decisions have considered long-term needs and impacts.

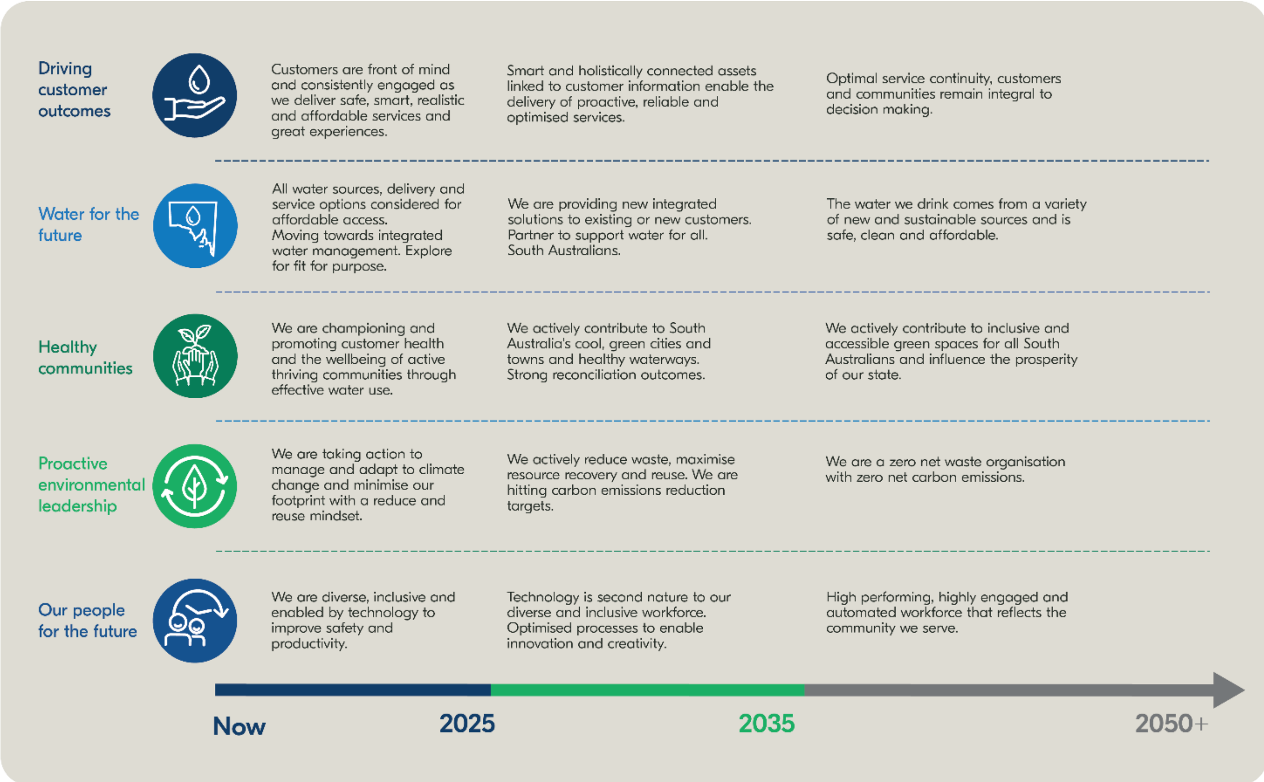


Figure 2-11 SA Water's longer-term objectives for strategic areas of focus

By developing the strategic outcomes with a long-term view, SA Water has aimed to ensure:

- decisions are made with intergenerational equity and fairness for future customers in mind
- the strategic foundation is sustainable with the decisions made now being sustainable into the future.

While development of the RD24 submission aligns with the objectives of this strategy, it should be noted that delivery of some strategy elements will involve unregulated activities. Any initiatives that sit outside the regulatory framework have been excluded from the RBP.

2.5.1.2 Currency of the strategy

SA Water's *Our Strategy 2020-25* focuses planning on the current regulatory period while also taking a longer-term view to 2050, with goals and objectives established for both the current and future strategic horizons. This ensures the planning horizon and focus is appropriate for the forward regulatory period and longer-term planning.

Furthermore, the Corporation found that the topics of interest and what mattered to customers remained consistent from insights captured to inform the strategy and those expressed during RD24 engagement activities (discussed later in Chapter 4). As a result, SA Water is confident the RBP is based on consistent and relevant strategic drivers.

2.5.2 Strategic planning framework

The Corporation uses a strategic framework to implement the strategy. It is designed to operationalise the strategy through an integrated planning approach in a way that considers corporate strategies through to project and program delivery.

This is done by ensuring all levels of planning, decision-making, and budget processes are driven by consistent corporate objectives and goals.

Figure 2-12 shows the structural representation of the strategic framework which facilitates alignment between strategy and delivery at any given time. It shows the relationship of the SA Water strategy through corporate strategies to the levels of business planning and aligned team planning to support implementation.

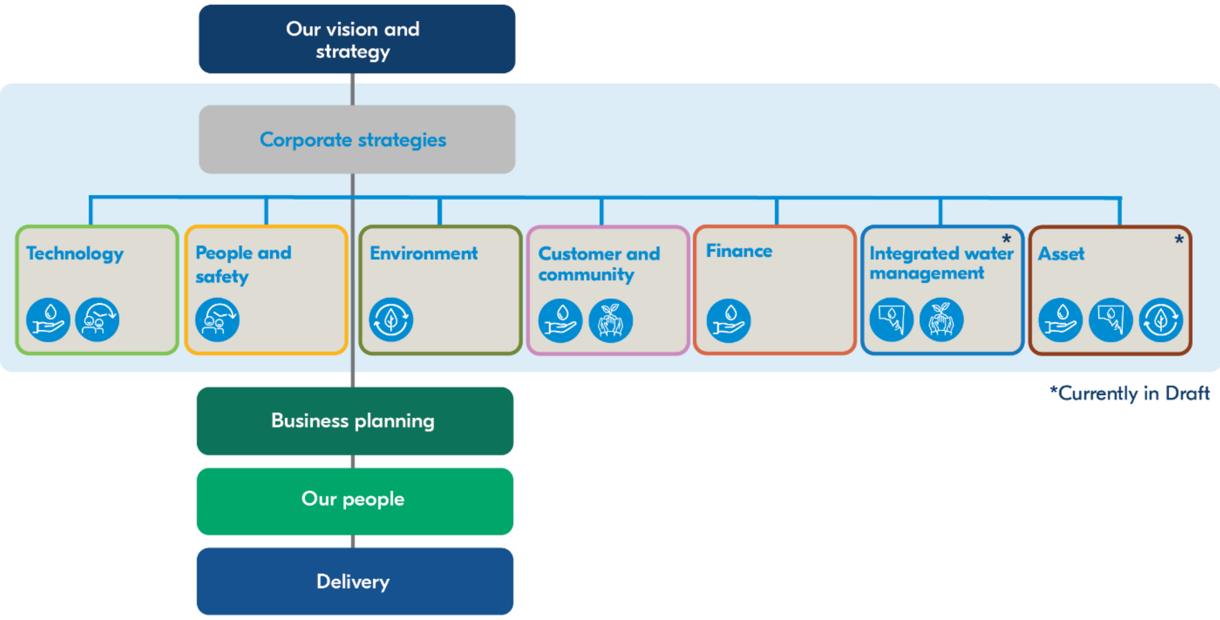


Figure 2-12 Strategic planning framework

Strategy and planning in SA Water is informed by numerous inputs. Key inputs include risk (discussed in Section 2.6), performance requirements (refer Chapter 6 Service standards), customer and stakeholders (discussed in Chapter 4 Customer and stakeholder engagement) and external insights, such as industry trends, population and development growth, community perceptions, global events, extreme weather events, supply chain and technology trends discussed throughout the submission.

The strategies and plans that ensure SA Water is delivering its strategy are detailed in the following sections.

2.5.2.1 Corporate Strategies

SA Water has corporate strategies that define strategic objectives, goals and actions to deliver on SA Water's strategy and longer-term strategic horizon. Their areas of focus include environment, finance, technology, people and safety, customer and community, asset management and integrated water management.

The corporate strategies are interdependent and aligned to the strategic areas of focus of the strategy. Each of the corporate strategies are supported by actions, each of which have accountable parties with strategy-related objectives and goals. These corporate strategies are underpinned and implemented through the various plans discussed next.

2.5.2.2 Long-term investment plans

As SA Water operates and maintains assets which can be in operation for multiple decades, the organisation maintains plans to determine when new or renewed infrastructure and technology is required.

The approach to long-term planning for future infrastructure and technology investment involves:

- developing a detailed picture of the condition, performance, and investment profile of SA Water's assets
- understanding and monitoring general trends in project cost drivers to build a picture of longer-term indicative costing and asset replacement and upgrade cycles
- continuously updating and refining prioritisation of works, with management decisions driven or informed by risk, long-term cost to customers, relevant corporate strategies, and goals.

Further information on how infrastructure and technology planning currently implement this approach is provided in Chapter 7.

As part of ESCOSA reporting requirements discussed in Section 3.4, the Corporation also publishes a 30-year asset plan so customers and stakeholders can understand SA Water's projected asset investments for water and wastewater services.

2.5.2.3 Regulatory business plans

Regulatory business plans outline how SA Water has determined the revenue required to operate and invest to deliver the services customers value and expect. They detail proposed expenditure for a 4-year period. Proposed expenditure in these plans is driven by long-term investment planning and ongoing operational requirements, with final investment decisions influenced by key inputs, such as customer views, external insights, performance requirements and maintaining acceptable levels of risk.

These plans are a point-in-time assessment. As such, some of the actual investments actioned during the period may vary from that proposed. The current regulatory period, RD20, is a good example of how delivery during a period can vary for reasons such as the COVID-19 pandemic, which changed the overall operating environment. Refer to Chapter 3 for more information on the challenges experienced in RD20, how this has influenced delivery, and reprioritisation during the regulatory period.

2.5.2.4 Delivery and project plans

These plans operationalise the regulatory business plan. SA Water uses various delivery plans whether developing a program of works or planning for a specific project. These include capital delivery plans used for new water and wastewater asset planning and scheduling discussed in Section 7.8 and for technology planning and scheduling (Section 7.6). Project plans are developed for implementation of projects such as new infrastructure, and program plans drive on-going activities, such as operations and maintenance activities. These plans ensure that new projects, and operations and maintenance of infrastructure and technology, are appropriately sequenced and efficiently delivered, with a focus on meeting time, cost, and quality standards.

2.5.2.5 People plans

Group and team plans are an integral part of operationalising the strategic planning framework. All are aligned with relevant strategic goals, objectives and designate actions and accountabilities through annual operational business plans at a group and team level. Actual alignment depends on the role of the groups and teams. Periodic reporting tracks delivery and drives accountability at the team and group level.

Individual development plans connect an individual's role requirements to team plans through documenting and driving implementation of targeted goals and actions at a specific accountability level. Periodic reviews track performance against those goals and actions, informing reporting and performance assessments.

2.6 Risk management framework

Risk is a key consideration in planning and decision-making in SA Water. Risk identification and management is particularly critical for an essential service provider such as SA Water operating in an environment where there can be varying degrees of uncertainty with the information that informs decisions.

The Corporation views risk management as essential for the delivery of safe, efficient, and high-quality services. Its use is integrated throughout the organisation from SA Water's strategy right through planning to project and program implementation (Figure 2-11).

SA Water's Risk Management Framework, which is aligned with ISO 31000:2018 Risk Management Guidelines, outlines the principles of risk management and the methodology which drives SA Water's risk management approach. It provides the governance, systems and tools that:

- provides an approach that is structured and consistent
- creates and protects value
- manages risk and opportunity
- enables the achievement of objectives
- enables the improvement of performance
- is underpinned by a commitment to building a risk management culture that balances risks and opportunities in all decision-making.

During the development of the RD24 submission the Corporation's risk framework was updated. Many of the initiatives were developed and risk assessed against the previous risk framework. While the risk and consequence descriptions were updated for the current risk framework, the new and old risk frameworks produce similar risk outcomes. Accordingly, it has been considered appropriate to translate risks developed using the previous framework into the updated framework and this is the methodology used for this submission.

2.6.1 Risk management process

The risk management process shown in Figure 2-13 is an integral part of risk decision-making at SA Water and is integrated into structure and processes. The general process is the same for any application, detailed further below.

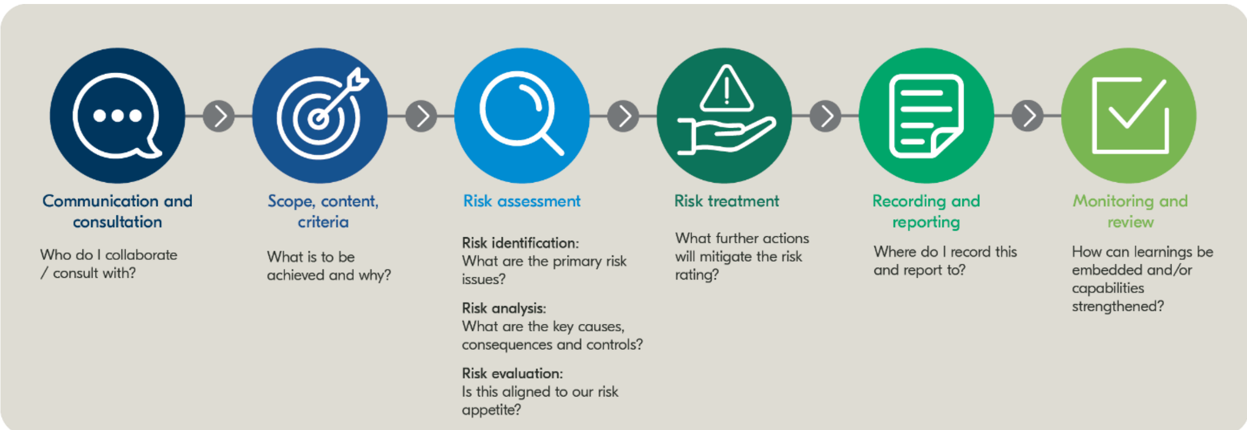


Figure 2-13 Risk management process

2.6.1.1 Informing and framing the risk management process

Communication and consultation involve identifying the key relationships to inform the process. These might be internal to SA Water, key stakeholders (discussed in Chapter 4) and community members. These groups are engaged for expertise, knowledge and perceptions that could contribute to understanding the risk context. Building these relationships can also help SA Water to manage expectations and perceptions, and ensure that their needs are considered.

The scope, context and criteria step establishes the reason and boundaries for the risk assessment. The organisational levels of risk, provided below, help inform this. This is also an information gathering step, that includes identifying any information gaps.

SA Water defines its levels of risk as:

- Level 1 strategic risks – the uncertainties and untapped opportunities embedded in the strategic intent. These risks are usually influenced by external factors and if they occur are likely to force a change in the strategic direction of the organisation.
- Level 2 corporate risks - the uncertainties and untapped opportunities that are operational and affect the whole organisation. These risks are influenced by external and internal factors and if they occur would impact the ability to achieve the SA Water strategy.
- Level 3 operational risks – the prospect of loss resulting from inadequate or failed procedures, systems, policies, or from accidental or deliberate employee action.
- Level 4 functional risks – localised hazards or functional specific risks captured by subject matter experts, site and/or field employees.
- Level 5 project risks – either drive a change in business plans or arise in the execution of business plans and project initiatives.

2.6.1.2 Risk assessment

The risk assessment process to determine the likelihood and consequence of an event involves:

- identification, where the risks are identified and described in terms of cause and contributing factors, and resultant consequences
- risk analysis by building a body of knowledge to understand the causes and consequences of the event and any controls already in place
- Risk evaluation, where a risk rating for likelihood of occurrence and consequence of an event occurs is assigned, noting any controls already in place. This information is used to assign an inherent risk rating before controls are applied, and a residual risk rating with controls applied.

2.6.1.3 Risk treatment

A decision is then made to accept or treat the risk. In treating a risk, a treatment plan is developed. Which may involve one or a number of approaches such as:

- elimination – cease an activity, remove an asset or remove the source of a risk to remove the risk
- mitigation – implement new controls to reduce or remove the risk
- sharing – involves transferring the risk, such as to a third-party contractor or through insurance

- acceptance – when the risk rating might be within the risk appetite, no treatments exist, or the cost of treatment outweighs the risk. For example, extreme events with the consequences managed through contingency plans only.

Some of the considerations of whether to proceed with a treatment, and how to implement a risk treatment include:

- alignment with SA Water's risk appetite
- stakeholder expectations
- legal and statutory obligation drivers
- cost versus benefit gained
- whether it will reduce the risk to a tolerable level in an effective and timely manner.

2.6.1.4 Recording and reporting

Risk recording is undertaken in the approved risk management system to enable an accessible record of data from risk processes to be captured and drawn on as needed.

Reporting provides relevant stakeholders in the organisation with a shared understanding of risk and opportunity management activities, and provides for oversight and escalation of risk mitigation and decision-making, where required. Reporting informs strategy and planning discussion at board, corporate and planning levels (as defined in Figure 2-11):

- where relevant to the objectives identified in the SA Water strategy
- to understand the broad risk exposure profile at each level of the strategic planning framework
- to identifying risks that require increased attention and action
- to provide information to make risk-informed decisions
- to assist informed collaboration with stakeholders
- to monitor progress and effectiveness of risk treatment plans
- improve risk management awareness and culture.

2.6.1.5 Monitoring and review

Risk monitoring and review are ongoing activities in SA Water. This is done at a strategic and corporate planning level to ensure:

- the organisation has an accurate picture of the risk it is carrying
- that risks are managed consistent with the organisation's defined risk appetite
- decisions are informed by the best available evidence.

At a project and operational level, this process enables monitoring the effectiveness of controls and shifts in the risk profiles that may include new risks, increases in documented risk ratings for identified events, and higher risk of adverse events as assets age.

As such, the monitoring and review frequency can vary depending on the risk rating and/or the potential consequence/s. This ensures checking or surveillance of the effectiveness and efficiency of the risk management processes implemented.

2.6.2 Risk appetite

SA Water risk appetite statements have been developed to inform decision-making about an acceptable level of risk to carry or to address. These detail the overall risk appetite against SA

Water's strategic areas of focus to enable a uniform approach across the business. For example, the organisation might have a low-risk appetite for service delivery decisions that impact vulnerable customers, or a high-risk appetite for achieving operational efficiencies without compromising water quality or asset reliability.

Risk appetite statements drive a more uniform approach and guide:

- how best to allocate resources
- when to be active, reactive and proactive
- when to manage associated risks.

These statements have been developed at a point-in-time and are able to be updated over time to reflect changing strategic objectives, and internal and external factors.

2.6.3 Application of risk to the RBP

As highlighted previously, risk is a key driver of decision-making in SA Water. As such, risk-based decision-making is embedded in the development of this plan. Section 3.3.1 discusses how risk informed reprioritisation within the regulatory period.

While it may not always be explicit, the risks associated with expenditure proposals considered for inclusion in this submission have been assessed. In addition, the final decisions on the broader program of works, detailed in Chapters 8 and 9, have had regard to risk. This is touched on in the discussion on the prioritisation process in Section 7.7.

3 2020-24 performance

SA Water is continuously reviewing and monitoring performance of the current regulatory business plan to ensure that the Corporation is delivering on its commitments to customers.

This section provides a point-in-time analysis of SA Water's performance during the 2020-24 regulatory period, including information on the challenges SA Water has faced, their impact on capital and operating expenditure to the start of 2023 and, where relevant, the implications for RD24.

3.1 Challenges

The 2020 regulatory submission was finalised in the fourth quarter of 2019, and ESCOSA's draft determination was released on 4 March 2020, a few days after the first recorded COVID-19 death in this country. While more about the impacts of COVID-19 were known at the time of the release of the final determination by ESCOSA on 11 June 2020, the extent of the social and economic repercussions of the pandemic domestically and globally were still unclear.

While ESCOSA noted the uncertainty around the impacts of COVID-19 on SA Water's expenditure as part of RD20, there was no evidence found for making COVID-19 related adjustments at the time. [28] ESCOSA advised SA Water to use the cost pass-through mechanism to offset material changes to revenue requirements in the next period, where deemed appropriate.

While the direct impacts from COVID-19 during the current regulatory period have been significant, it has been the many accompanying microeconomic and macroeconomic developments that have affected business activities to a greater extent at SA Water. The Corporation has not elected at this stage to seek a pass-through from the regulator for the extraordinary costs incurred due to the price impact this would have on customers. Instead, these costs have been absorbed in the short-term by finding additional efficiencies, operating deferrals or through reduced dividend. However, SA Water has determined that it is unable to carry the ongoing impacts that emerged during the COVID-19 pandemic into future regulatory periods in the same way.

The impacts of COVID-19 have been subsequently compounded by the Ukraine conflict, which has disrupted global energy and commodity markets and major freight activities.[29] In Australia, these impacts have been further aggravated by national climate events including floods on the east coast, west coast, north-west coast, and River Murray. These have created their own disruptions to domestic supply chains through rail outages, re-routed road transport, reductions in supply of some materials, and poorer quality source water adding cost and complexity to SA Water's operations.

The main collective impacts on SA Water's operations from these events have included:

- operational challenges associated with travel due to lockdowns or natural disasters, and restrictions on movement through, or densities at, work sites
- unplanned consumable costs or cost escalations
- labour cost increases and a constrained labour market
- energy costs, including volumetric and fixed supply charges for electricity
- supply chain issues such as materials, chemicals and equipment availability, and associated transport cost increases.

Many projects and programs in SA Water have been impacted. The most affected have been those that required materials and equipment to be manufactured and delivered from overseas, or where the domestic market capacity and capability has been unavailable or

[28] ESCOSA (2020)'*SA Water Regulatory Determination 2020 – Statement of reasons', ESCOSA, accessed 2 March 2023.*

[29] International Energy Agency (n.d.) *Russia's war on Ukraine*, IEA website, accessed 19 March 2023; United Nations Conference on Trade and Development (2022) *War in Ukraine raises global shipping costs, stifles trade*, UNCTAD website, accessed 19 March 2023.

diminished. While some of the impacts are expected to be temporary in nature, others will remain and are expected to require ongoing investment.

The following sections provide more detail of the challenges experienced to date, how SA Water has been managing them, and their impact on RD24.

3.1.1 COVID-19

As SA Water was deemed an essential service provider by SA Health, the Corporation adopted a stringent COVID-19 management plan, which included making COVID-19 vaccinations a requirement for site entry and associated hygiene protocols.

SA Water's COVID-19 management approach focused on ensuring the safety of teams on-site and continuity of customer services. Criteria and collective risks assessments were used to determine key risks and effective approaches for managing the risks to staff and operations. These approaches included determining which works and site operations should be ceased based on operational risk and safety considerations.

Government imposed COVID-19 restrictions, together with SA Water's risk-based management approach affected operations and project delivery by restricting movement (both intra and interstate), constraining interactions and imposing isolation requirements, and in doing so this affected RD20 delivery. The key impacts and costs to RD20 are discussed following.

3.1.1.1 Impact on operations

All SA Water operations across the state were impacted in some way by COVID-19 management arrangements. However, the COVID-19 management arrangements and resulting cost impacts to the business varied across sites and operations.

For example, at SA Water's head office, the customer service desk which offers face-to-face customer support was temporarily closed to minimise COVID-19 risks to staff. To support an expected increase in inquiries moving to phone and online, staff were reallocated to the general call centre from other areas of the organisation to ensure service standards were met. Movements between workspaces were restricted and some critical delivery functions were isolated from general SA Water staff and contractors.

Critical SA Water sites (such as treatment plants) were required to operate under very stringent site safety policies. These policies sought to protect workers from infection, ensure operational continuity of critical services, and recognise the practical inability for these site-based workers to work remotely. For example, where multiple staff at a metropolitan water treatment plant contracted COVID-19 at the same time, it would create extreme risks to service continuity due to the small number of staff with expertise to operate plant and equipment. To reduce the risk of multiple staff contracting COVID-19 from external parties, access to these sites was either prohibited or restricted. Appropriate protocols and separation of operational staff during shifts and at shift changeovers were also implemented.

Activities and projects that were stopped or delayed were primarily those that could be stopped without impacting the short-term operation of SA Water infrastructure or customer service levels. These activities and projects included:

- non-essential construction activities, such as general site visits/audits, non-critical deliveries
- construction works that were not on a critical path schedule or that could be delayed without resulting in adverse consequences such as operational impacts to business or creating unsafe areas for workers or the public.

Such activities and projects were put on hold until the COVID-19 risk to business continuity reduced.

With these measures in place, following the re-opening of South Australian borders, SA Water's operations experienced disruption and additional pressure from increases in the amount of personal (sick and carer's) leave taken across the business. Personal leave peaked in July 2022 at 1,526 days (Figure 3-1) which is 2.5 times the pre-COVID-19 rate in July 2019, when it was 614 days.

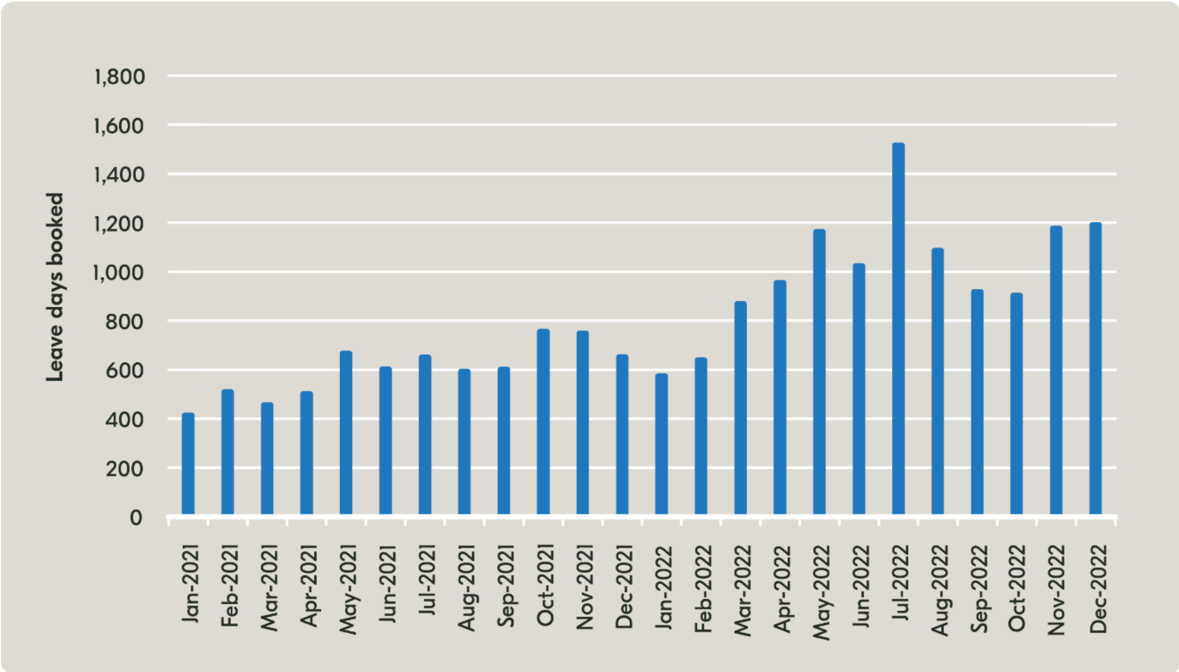


Figure 3-1 Personal leave taken by month from January 2021 to December 2022

Impacts were particularly felt by operational and field-based teams as these areas had to engage additional contract labour or use overtime arrangements (at a higher hourly rate of pay) due to limited resources and skills available elsewhere at SA Water.

Close contact self-isolation requirements were also enforced to a very high level, with a low risk tolerance approach adopted. This led to many operational staff being required to self-isolate on one or multiple occasions during this period. The associated operational pressures were managed through reprioritisation of work within existing resources, such as by deferring lower priority activity, or where necessary, through additional overtime.

Across the capital delivery program, personal leave caused delays on key deliverables and approvals, particularly during the first half of 2022. In the field, there were instances where contractor crew members or entire crews were demobilised and works delayed for a period due to COVID-19 positive cases, isolation rules and close contact rules.

Examples of operations delayed or stopped in accordance with COVID-19 management requirements or due to COVID-19 infection included:

- The Murray Bridge Brinkley pipeline construction project lost time during pipelaying due to crew and truck operator sickness.
- Bolivar Wastewater Treatment Plant (WWTP) Sludge Lagoon works were delayed when workers were infected, and close contacts had to isolate.
- The Bolivar WWTP Digester Pipework crew was stood down for one week due to illness.
- One contractor lost work time of up to 3 weeks on wastewater main rehabilitation at various sites.

COVID-19 impacts contributed to a large underspend of capital expenditure in 2020-21 and 2021-22 and resultant rephasing of works. Other challenges discussed in the following sections have also affected the RD20 plan delivery. Project reprioritisation and moving activities into RD24, to enable delivery of the RD20 plan within approved revenue caps, is discussed in sections 3.3.1 and 3.3.2.

3.1.1.2 Direct costs

As an essential service provider required to maintain operations throughout the pandemic, it was necessary for SA Water to implement a range of proactive measures to minimise COVID-19 risk to staff and operations. These measures included providing:

- additional computer hardware, such as monitors, laptops and docking stations, and additional staff in Technology to increase cyber security measures and to enable staff to work from home
- personal protective equipment (including masks and sanitiser) for staff, contractors, and site visitors. All sites were supplied with disposable masks and disposable surface wipes, and sanitiser was provided at each desk and made available in meeting rooms and other highly used areas
- additional cleaning at all sites, particularly in highly used areas, to support COVID-19 risk management measures
- rapid antigen tests to enable people to undertake tests before visiting critical facilities (most metropolitan and regional facilities), when moving between sites, and to meet strict staff close contact testing requirements where the were implemented
- additional contract labour to provide extra security at some operational sites, with a focus on controlling access to reduce the risk of COVID-19 transmission to staff. This security role included collecting contact information and recent travel history, checking vaccination status, and checking for risk of close contacts.

All COVID-19 costs incurred presented unplanned operating expenditure for RD20. Expenditure decisions were driven by the outcomes of risk assessments, with expenditure only incurred where identified as necessary for managing COVID-19 related risks to the business. As an essential service, maintaining continuity of water and wastewater supplies and services to customers was a nonnegotiable requirement.

As a result of these activities, SA Water incurred $5.5 million of additional unplanned expenditure from March 2020 to end June 2022 in direct response to COVID-19. These costs partly contribute to the overspend in operating expenditure as detailed further in Section 3.3.3. There were other indirect costs partially attributable to the impact of COVID-19. Those are discussed in the following sections.

SA Water has now moved to a living with COVID-19 approach with a risk-based focus, leading to reduced hygiene supplies and cleaning requirements. Restrictions remain only at critical sites. These additional costs of approximately $90,000 per month have been incorporated into existing budgets and include masks, rapid antigen tests and additional cleaning regimes for critical locations, including one cleaner to continue frequent cleaning in high traffic areas.

3.1.2 Labour challenges

SA Water is an organisation that is highly dependent on a diversity of skilled and specialist staff, including trades, engineering, technology, project management, procurement, and legal. During RD20, in addition to increased personal leave from COVID-19 discussed previously, SA Water was impacted by labour market shortages, a highly competitive market for skills, and lower international migration reducing some employee pools. This affected SA Water's ability to retain staff and fill positions due to increased labour market competition, which in turn contributed to either higher costs or to significant delays in delivering key programs of work. Some of the more marked impacts are discussed in the following sections.

3.1.2.1 Competitive job market

During the current period, competition in the job market has been particularly challenging for filling in-demand roles such as engineers, IT specialists, cyber security specialists, asset planners and estimators. While a public corporation, SA Water is competing to fill some of its vacant positions against a much higher private sector wage band.

Industry sectors which SA Water competes against for labour have seen significant movement in wages (Figure 3-2). Remuneration levels and rates of increase are trending above those agreed through SA Water's enterprise bargaining agreement in 2021, which were aligned to the RD20 revenue cap but applied prior to the significant job market increases observed recently.[30] The enterprise agreement wage increases of 1.5 per cent in 2022 and one per cent in 2023 are below market rate increases, affecting SA Water's ability to compete in a highly competitive job market during the regulatory period. For example, a specialist employee relations position has remained unfilled after more than 12 months as suitable applicants were seeking salaries more than $20,000 above the maximum salary range that SA Water could offer for the role. In addition, a dam engineer position has been vacant for 12 months and a maintenance supervisor position for 6 months. In such cases, it may be necessary to use temporary (more expensive) contractors to maintain continuity of service for customers and to avoid disruption to required capital projects.

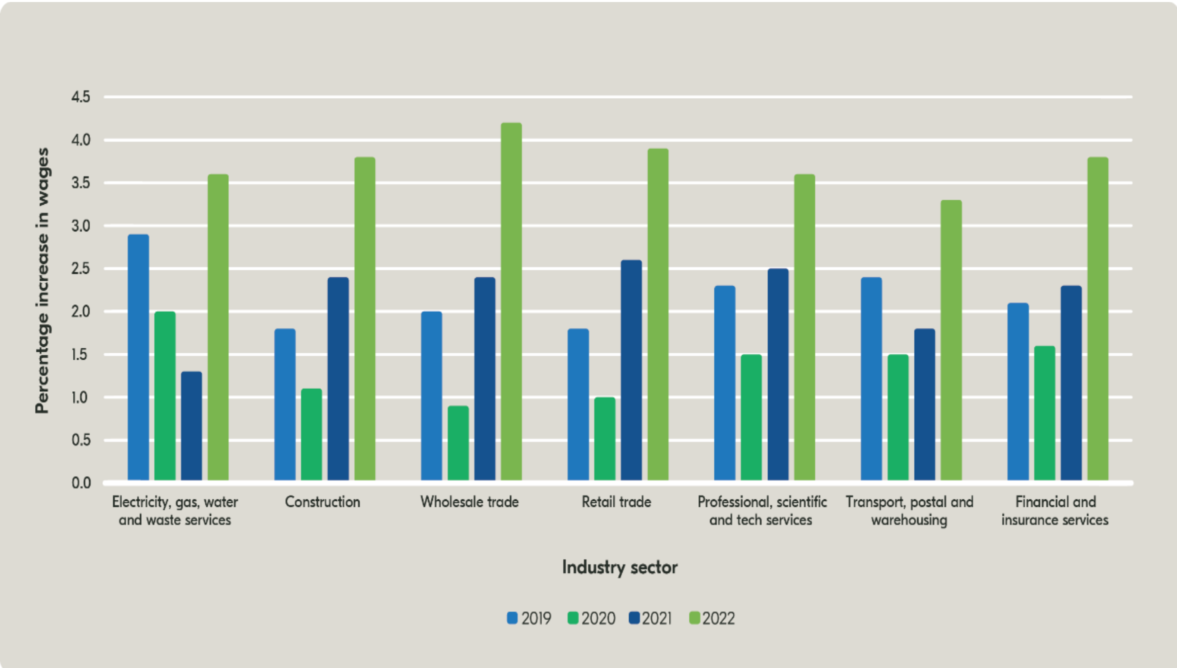


Figure 3-2 Annual wage price index change for related industry sectors 2019-22[31]

SA Water has also experienced higher vacancy rates through parts of RD20. SA Water voluntary staff turnover increased from 8.2 per cent in January 2021 to 16.7 per cent in November 2022, peaking at around 17.5 per cent, with SA Water having to fill 299 positions during the period (Figure 3-3).

The highest turnover in position type was seen in field technicians, customer care centre roles, and some trades, specifically electricians, with 15 trades people and 19 field technicians lost in the 12 months to March 2023. SA Water has relied on more costly contractors where it must

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[30] SA Water (2022) '*SA Water Enterprise Agreement 2021-2024' SA Water Corporation Enterprise Agreement 2021-2024, Attorney- General's Department South Australia, accessed 06 March 2023.*

[31] Australian Bureau of Statistics (December 2022) 'Table 9b. Ordinary hourly rates of pay excluding bonuses: sectors by industry, original (quarterly index numbers) [data set], *Wage Price Index, Australia*, accessed 3 March 2023.

backfill positions while continuing to compete in a tight employment market, with strong wage competition.

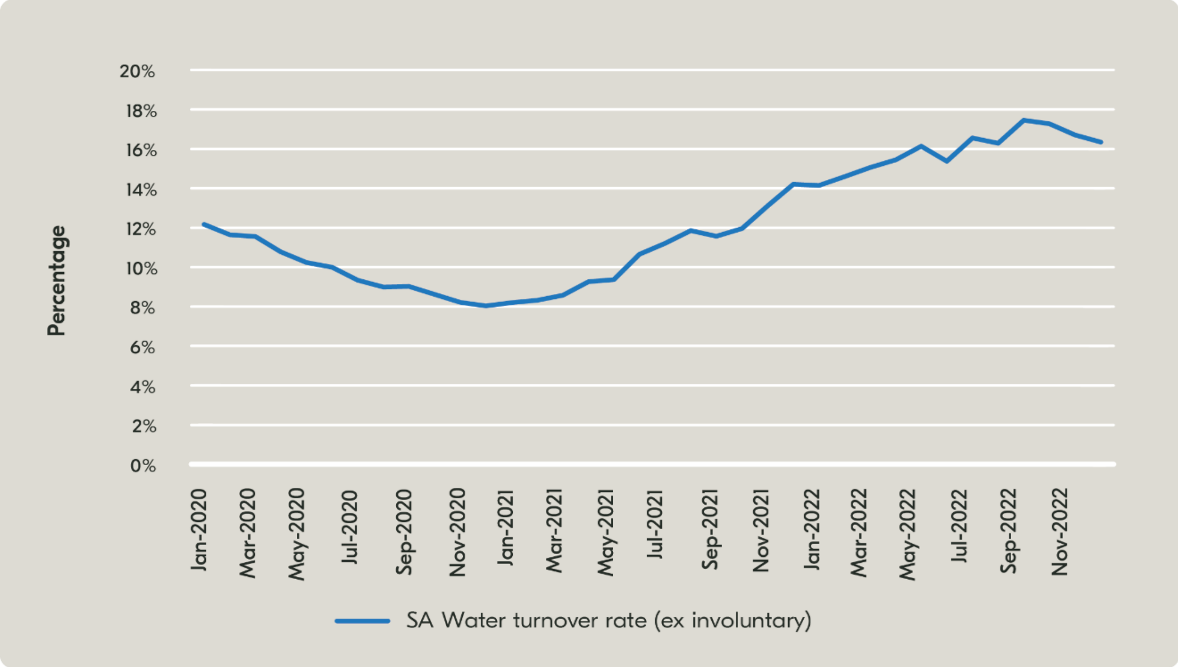

Figure 3-3 SA Water voluntary staff turnover rate 2020-22

3.1.2.2 Contractor procurement

The scarcity of contractor resources available in the market and increased demand drove an increase in contractor rates and in the time taken to engage suitable resources. SA Water normally achieves best value for money using established procurement panels for contract resources, which set payment rates in advance. However, during periods of high contractor demand the fixed pricing for contract resources made engaging through the procurement panels more difficult. This was partly due to the rates set by SA Water to engage contractors being below current asking rates. This undermined the ability of contract resource suppliers to find suitable staff for SA Water resulting in panel members either offering relatively inexperienced staff, or no staff.

For example, to access information technology (IT) contractors, SA Water had to reschedule projects and redefine agreements with suppliers to use a blend of experienced and graduate developers. Where suitable resources could not be identified, secondary approaches to market resulted in much longer engagement times. The Corporation experienced average engagement times of 2-3 months for IT professionals (compared with 2-3 weeks when they could be identified through the resource panel).

For contractor resources engaged outside of panels, significant price increases were experienced. For example, rates quoted for specialist technology developers increased by approximately 35 per cent.

This has all contributed to delayed project delivery and consequently increased project overhead costs as projects waited for work to be completed, which increased overall costs.

3.1.3 Cost escalation and supply availability

Costs have increased above projections for many goods and materials during the period. Price rises, supply shortages and long lead times for acquisitions have impacted delivery of RD20.

Several of these costs are managed through operational adjustments and approaches delivered through the Operations Control Centre (OCC).

The OCC operates 24 hours a day to manage security of supply for customers while balancing operational efficiency of major systems and their cost.

These include managing:

- metropolitan and regional water and wastewater systems
- major pipelines and bulk water transfer systems
- reservoirs and treatment plants
- electricity market monitoring, minimising (and maximising) power usage during high and low energy spot prices.

While some of the innovative operations of the OCC help to minimise and mitigate cost risks, cost increases have still occurred. Some of the most significant cost increases are discussed later.

3.1.3.1 Chemicals

Chemicals are a vital input for water and wastewater treatment, with their use driven by factors including water quality, statutory health requirements and regulatory standards. SA Water manages its chemical procurement using several contracting arrangements that are periodically reviewed to ensure the Corporation pays competitive and market-driven rates. Forecasting chemical costs requires analysis for each type of chemical, as each has its own supply profile, pricing review frequency, and cost variables.

During the RD20 period, chemical prices have increased due to material shortages, supply chain interruptions, and increased production and transport costs. Furthermore, poorer raw water quality has increased the volume of chemicals required to meet drinking water standards. Together the cost and volume increases have seen increases in the required expenditure on chemicals. As shown by Figure 3-4, price increases for many of the major chemicals used by SA Water in water and wastewater treatment processes significantly exceeded the level of the consumer price index (CPI).

Alum (aluminium sulphate) and caustic (sodium hydroxide) are highly used chemicals and so contribute the most to chemical expenditure. These prices increased by 19 per cent and 44 per cent respectively over the 18-month period from July 2021 to January 2023 (Figure 3-4). These price increases contributed to additional actual operating expenditure incurred in RD20 (compared to forecast) further detailed in Section 3.3.3. SA Water forecasts chemical costs to remain at these elevated levels for RD24 (Section 8.2.2.5).

Chemicals are also required to be delivered from interstate and overseas suppliers and are therefore heavily impacted by freight costs which increased substantially during RD20 (Section 3.1.3.4).

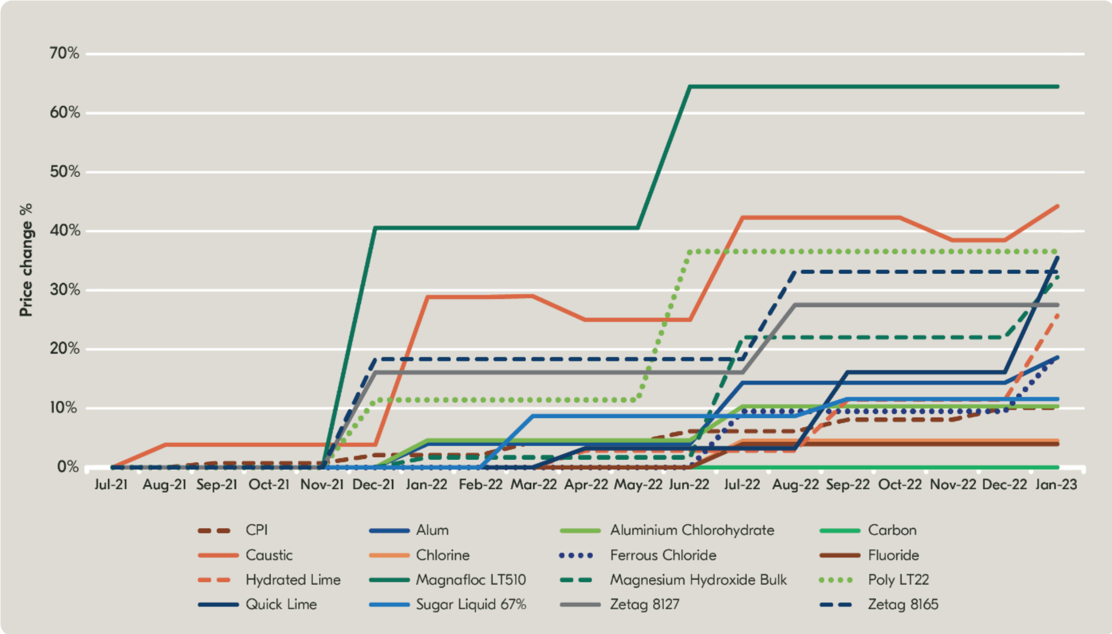

Figure 3-4 Major chemical price changes since July 2021

The current period challenges have highlighted the risks inherent with having limited supply chain options for water and wastewater treatment. For example, there is one local manufacturer for alum and one onshore manufacturer of chlorine gas. SA Water and its major contract partners have been proactive in looking for alternatives to diversify the chemical portfolio, for example, by using alternative chemicals and other technologies. By doing this, SA Water aims to better mitigate the supply chain risk associated with critical chemicals and harvest savings where market conditions allow, noting that this is not always possible.

An example of SA Water investigating alternatives is a trial of the use of ACH (aluminium chloralhydrate, an alternative coagulant to alum) at water treatment plants across metropolitan and regional areas where this is operationally viable. The project started prior to the current period challenges, and was showing signs of providing a viable, cheaper alternative to alum. However, since starting this project ACH prices have escalated to a level that negates the cost benefit.

While SA Water continues to look for innovative ways to enhance risk mitigation and cost management, during the current regulatory period there are limitations to its control over chemical use and the market cost. Factors like unseasonal weather patterns and poor raw water quality from events such as the 2022-23 flooding in the Murray-Darling Basin have driven significant additional chemical use requirements which cannot be mitigated. As shown by Figure 3-5, SA Water has observed declining levels of water quality (as measured by increasing dissolved organic carbon levels) over successive years at its Renmark sample station, which is thought to be a function of climate change. For the 2022-23 year, the impacts of poor-quality raw water on chemical dosing requirements are forecast to be more than $7 million consistent with experience year to date (based on January 2023 forecasts). SA Water will continue to work with chemical suppliers and its metropolitan contract partners to identify efficiencies in the absence of other options.

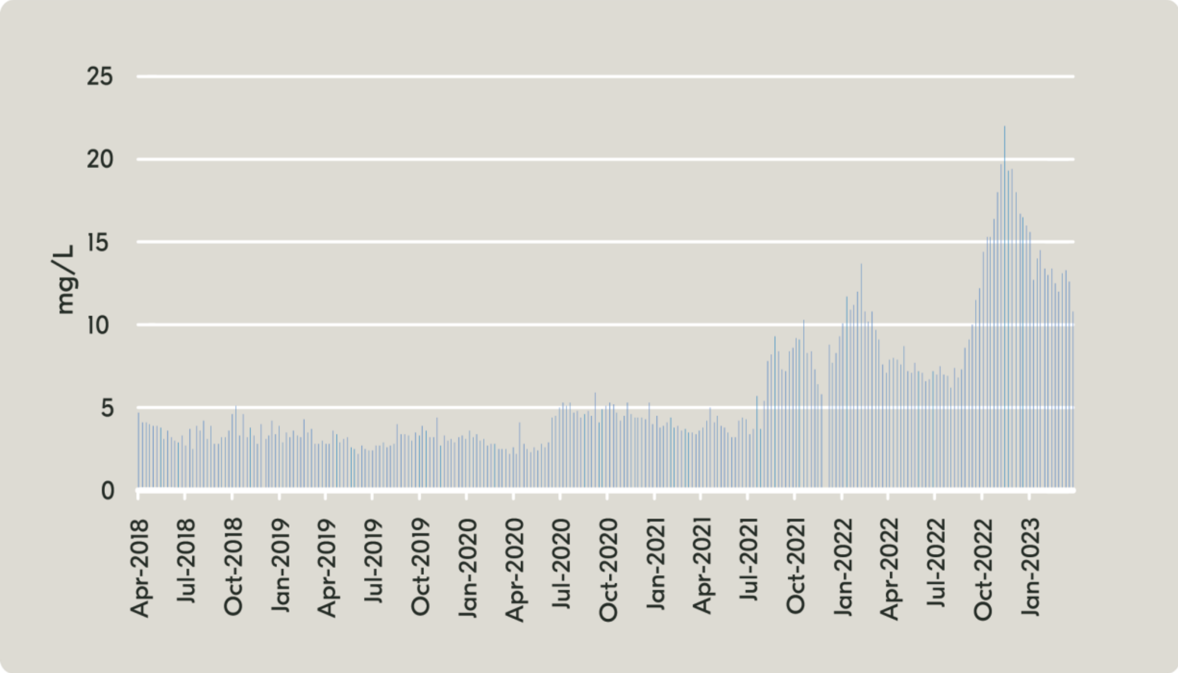

Figure 3-5 Dissolved organic carbon levels in the past 5 years – Renmark sample station

3.1.3.2 Electricity

SA Water is one of the largest users of electricity in South Australia. Electricity is required at every step of the water production, treatment, and reticulation process, including pumping raw water out of the River Murray and along major trunklines to SA Water's reservoirs for later treatment. In the wastewater network, electricity powers pumping stations which push wastewater through the reticulation network to treatment plants for treatment and reuse.

As electricity consumption makes up a significant portion of operating expenditure, SA Water takes significant and innovative steps to manage its electricity portfolio, through procurement, prudent operation and generation of electricity.

SA Water is a market customer on the National Electricity Market, enabling the purchase of electricity at wholesale spot prices, which has delivered significant value. This is achieved by directly managing the commodity risk and making use of extensive operational capabilities and flexibility (for example the timing of major pumping) to deliver considerable electricity-related bill savings for customers. In other words, SA Water will progress its most energy intensive activities where electricity spot prices are lowest, while stopping whatever activities it can when spot prices are highest.

Operating in the wholesale market has enabled SA Water to buy electricity at below peak wholesale price and achieve strong commercial consumption index (CCI) results (Figure 3-6). The CCI measures to what degree SA Water pays the average market pool price for electricity in each period. Where CCI is less than one, SA Water has achieved lower than average market pool prices. This is reflected in Figure 3-6 by the ratio of the SA Water wholesale price (orange line) to the SA pool price (blue bar).

In 2021-22 SA Water had a particularly high-performing year, achieving a CCI of 0.7 for the full year and electricity prices around $40 a megawatt hour (MWh) lower than the market. This is evidence of SA Water's strong energy management practices and their efficacy. This has delivered tangible price benefits in lowering the cost of SA Water's retail services.

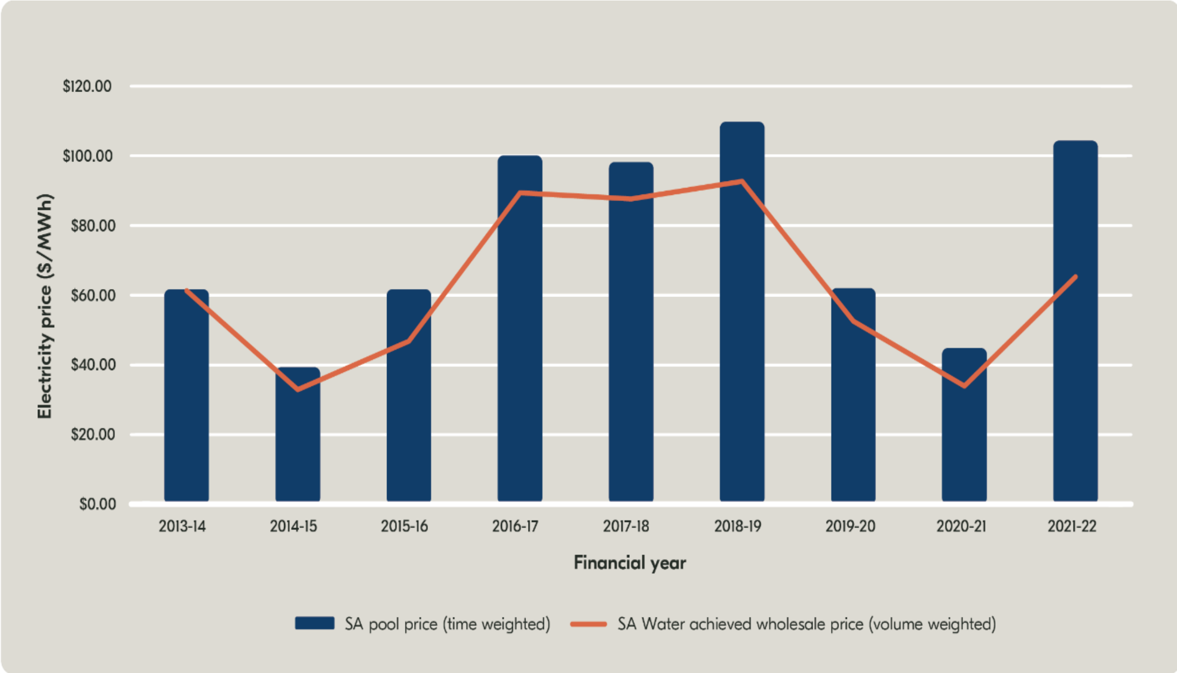

Figure 3-6 Historic electricity prices (South Australian pool price and SA Water's achieved wholesale price)

In addition, optimised operation of major pipelines (which represent up to 60 per cent of annual energy consumption) has been able to deliver volumetric electricity costs more than 20 per cent lower than the average paid on the wholesale electricity market through optimised timing of electricity consumption. SA Water has energy management practices in place to ensure high energy use activity is aligned with the times when energy prices are lower and limits energy consumption when energy prices are high.

Though energy management practices continue to deliver real and significant energy expenditure savings for SA Water over the RD20 period, this has not been able to fully offset

the impact of changes in the electricity market driven by increases in:

- market (pool) prices – which increased by 93 per cent in 2021-22 (Figure 3-6)
- regulatory fixed network charges - which increased significantly from RD16 levels, growing by 25 per cent in 2019-20 year (Figure 3-7)
- renewable energy target costs to comply with Australia's renewable energy target legislation[32].

These external factors are in addition to any increases in customer demand (which increases electricity usage and contributes to greater electricity costs).

[32] *Renewable Energy (Electricity) Act 2000* (Cth), https://www.legislation.gov.au/Details/C2022C00252.

Figure 3-7 Historic and forecast electricity fixed charges

Table 3-1 shows the difference between the allowed electricity expenditure in RD20 compared to the actual costs incurred.

In both 2020-21 and 2021-22 the required electricity volumes (MWh) have exceeded those set by ESCOSA in the last regulatory determination by 26 and 13 per cent respectively. While higher electricity volumes in 2020-21 were largely offset by lower prices (measured in dollars per MWh), in 2021-22 the increase in price resulted in a large variance between the volumetric charge allowance and actual expenditure.

These step-changes have created significant challenges for SA Water in managing electricity expenditure. These have led to higher than forecast costs in RD20 (Sections 3.3 and 8.2). This higher than previously forecast expenditure is projected to continue.

Wholesale electricity pool prices measured by dollars per MWh are also projected to remain high (above $100/MWh) through the first 3 years of the next regulatory period, reducing in 2027-28 to below $100/MWh. More detail on SA Water's projected energy costs for RD24 are provided in Chapter 9.

Table 3-1 RD20 electricity allowance and actual operating expenditure (nominal)

Nominal $	2020-21			2021-22		
	RD20 allowance	Actuals	Variance	RD20 allowance	Actuals	Variance
Volumetric $m	24.5	19.3	-5.2	21.0	34.6	13.6
Network $m	25.8	26.7	0.9	25.8	26.9	1.1
Renewables $m	8.7	5.3	-3.4	7.8	8.6	0.8
Volume MWh	358,079	450,524	92,445	358,080	404,844	46,764
Price $/MWh	74.15	33.91	-40.24	62.93	65.28	2.35

3.1.3.3 Materials and equipment costs

As with chemicals and electricity, the costs for materials and equipment have also escalated above forecasts during RD20. While planning for RD20, SA Water based its forecasts on pricing analysis that assumed steady inflation and was supported by information from suppliers. The extraordinary conditions in 2020-22 have resulted in significant cost increases for materials and equipment.

Multiple factors have contributed to price escalations above forecast, including labour cost increases, production interruptions, increased demand, increased material costs (such as from high-cost iron ore that is used to produce other materials and equipment), and freight costs.

As a result, suppliers have passed on cost increases more frequently to offset increases in their input costs. For one supplier, the rise in iron ore prices resulted in increased costs of between 8 and 15 per cent. Then, due to a continuous rise in the cost of PVC resin, in November 2021 the same supplier advised they would be passing on increases of 12 per cent for materials using this product. This was on top of significant increases in the previous year. With the largest water pipe network in Australia, and one of the largest sewerage networks, the impacts of these pipe cost escalations are considerable, materially affecting what can be delivered.

The degree to which price increases have affected SA Water during the period is dependent on the materials and equipment consumed during the period, which varies depending on the work required and projects implemented. Furthermore, line items can change from year to year due to changes in technical requirements and due to upgrades in technology, which can sometimes enable replacement of one part for another. As such, unlike with chemicals, it is difficult to extrapolate trends for items procured.

To establish forward cost estimates, SA Water determined estimates at the equipment type level. During the height of the price escalations, SA Water experienced the following increases from 2021 to 2022: pipes – 23 per cent, valves – 10 per cent, meters – 6 per cent, chlorinator spares – 9 per cent.

Some examples of how the material and equipment cost escalations have impacted current SA Water projects and operations budgets include:

- For stage 2 of one pipeline project, an increase for PVC pipeline costs approximated to a 20 per cent increase in material cost compared to Stage 1 in a 12-month period.
- Wastewater main relining materials' price increase added an average 21 per cent in material costs for a package of works.
- Regional plants experienced significant escalation increases on several commodities such as fuel, steel and pipe materials as well as subcontractor labour costs.
- One site experienced electrical, freight, stainless steel and subcontractor cost increases on various work packages of approximately $500,000.

These escalations have contributed to fewer capital projects being delivered within the regulatory period to ensure SA Water operates within its approved revenue cap, with substantial work being deferred to future regulatory periods. Deferrals and their impacts are further detailed in Section 3.3.

Cost escalations are expected to continue for the rest of the current period, with average escalation for the 2020-24 period forecast to be 7.9 per cent a year. [33] Price levels are then forecast to be sustained in the next period with increases returning to around the average CPI.

[33] SA Water (2022) Predicted Cost Escalation for the period 2022 – 2028 [unpublished independent opinion], SA Water, South Australia.

3.1.3.4 Supply availability and delivery times

SA Water has experienced significant delays in freight and has been impacted by shortages of materials and equipment sourced both overseas and locally, driven by a combination of the impacts of COVID-19 on producers and suppliers, geopolitical events and natural disasters.

Cost increases were partly driven by global competition for available resources, including both raw materials and parts required for producing goods. International and national shipping and freight costs increased substantially, in part driven by increased fuel costs. As an indication of freight cost escalations being passed on, global freight index prices were $1,812 at the start of RD20 and peaked at $11,109 in September 2021, which is more than 6 times its initial value at the beginning of RD20 (Figure 3-8).

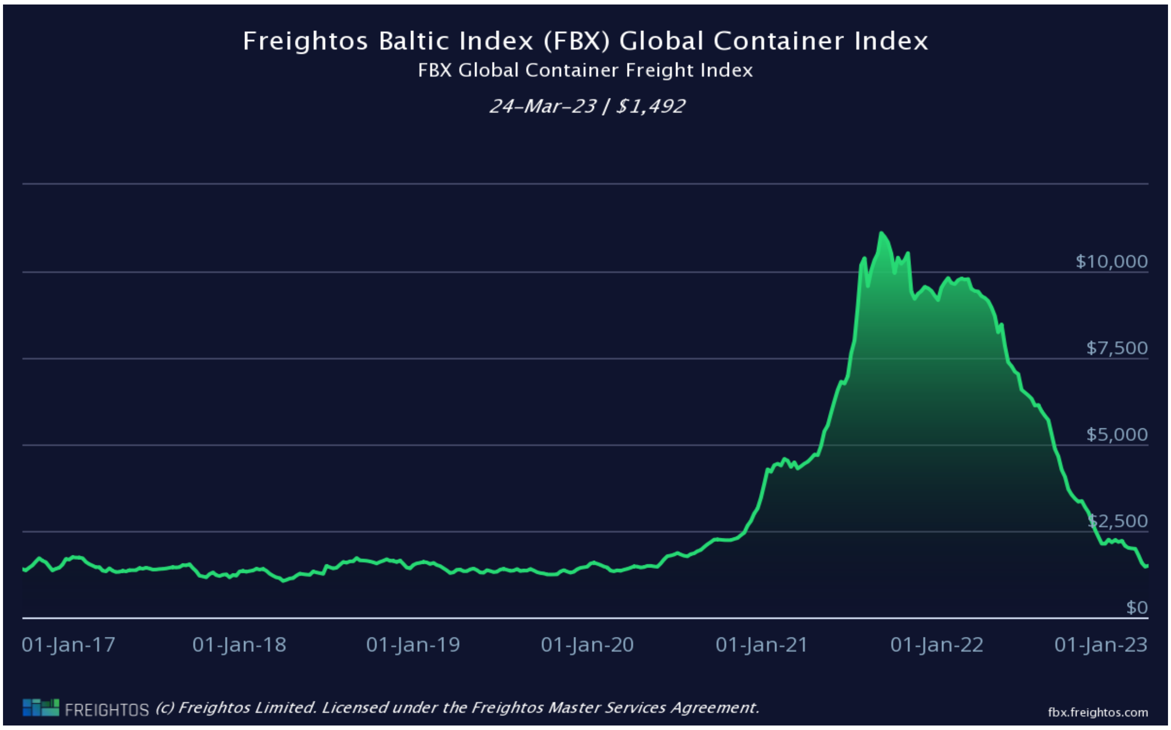

Figure 3-8 Global freight prices, Jan 2017- Jan 2023[34]

Suppliers have been passing on their cost increases to raw material price, labour and shipping. The scarcity of goods at times has also required SA Water to procure more expensive and/or less desirable goods due to preferred goods being unavailable when needed, including in the provision of electrical hardware and componentry.

Supply shortages have resulted in extended procurement and longer delivery lead times across supply chains, compounding cost escalations and causing delays across many projects and operations.

Consequently, there has been a lag, in some cases a significant one, as production catches up with demand. For example, in the case of fleet vehicle purchases, a vehicle that was initially scheduled for delivery at the end of 2023 has now been delayed to February 2025. Suppliers were also not guaranteeing delivery times for heavy fleet purchases as the lead times for loaders increased from 6 months in 2020 to 12 months in 2022, with the lead times for tippers increasing from 8 months in 2020 to 16 months in 2022.

In the technology area, a lack of hardware availability and long delivery times have extended delivery schedules. For example, network communications equipment that has previously been available from stock in Australia within 2-3 weeks has been taking over

[34] Freightos (2023) *Freightos Baltic Index (FBX): Global Container Freight Index*, Freightos Data, accessed 24 March 2023.

6 months to be delivered. Similar delays have been experienced with network sensing instruments and modem deliveries.

Supply chain management is a standard operation at SA Water. SA Water continues to monitor for market changes and identify mitigations to manage the impacts of these supply chain issues for the rest of RD20. For instance, to mitigate the risks from supply shortages or long lead times for materials, the Corporation has increased storage capacity, identified alternative suppliers, and ordered earlier. All options are considered with a focus on supply optimisation and security to ensure service continuity.

All these factors have contributed to the higher cost of delivering programs of work in RD20 and the deferral of capital projects to future regulatory periods (further detailed in Section 3.3).

3.1.3.5 Rest of the period

SA Water continues to monitor risks impacting RD20 delivery, and updates plans as required. This includes monitoring material and equipment costs to minimise the impact of these challenges and provide continuity of service.

SA Water has sought an independent opinion on cost escalations to inform investment decisions in the forward regulatory period (Section 9.3.2.6). This report modelled escalation in terms of:

- an escalation cycle – similar to a change curve, it has a trigger, accelerated growth, peaks, deceleration and recovery
- baseline escalation in Australia – assuming a 3 per cent increase per annum over a 10-year period, which has been used as the baseline for predicting future escalations cycles
- predictable commodities – labour, cement/concrete and imported disposal fill materials that vary little from the baseline.

The Corporation is receiving quarterly updates on changes in the commodity prices to inform the remaining RD20 and future period planning.

3.1.4 Growth challenges

SA Water's activities support South Australian economic growth, including through new development. The Corporation seeks to proactively prepare for growth by working with state and local governments and property developers to both understand projected development and to ensure a shared understanding of SA Water's planning, operational requirements, and constraints to manage this growth. This is an ongoing role for the Corporation.

Growth in customer demand occurs through residential and business developments or through establishment of major industry, which often requires a step-change in water demand. Demand for water and wastewater services is generally expected to grow in line with population growth. In line with this, SA Water plans for growth based on population projections for its regulatory submission, unless it has firm commitments for proposed developments to proceed.

SA Water plans, prioritises, and budgets to deliver growth-related infrastructure to support development over a long-time horizon often through multiple 4-year regulatory periods. This considers planning for gradual network growth and for critical investment thresholds in significant wastewater and water infrastructure, such as for wastewater plant capacity upgrades or to deliver increases in water supply.

Over multiple recent regulatory periods, SA Water has observed gradual growth over time predominantly through urban infill or piecemeal density increases, where the capacity in water and wastewater networks is gradually consumed as demand increases. To continue to provide levels of service expected by existing customers, and accommodate new customers in the network, periodic upgrades to pipe networks, treatment plants or other infrastructure have progressed when required.

Challenges arise for SA Water when actual growth does not align geographically with what was planned and advised by developers and other stakeholders, or where the rate of growth exceeds projections. Demand in unexpected geographic areas or at rates greater than planned may mean that investment in key infrastructure needs to occur sooner or at a larger scale than was originally expected.

To address these risks when planning for future growth, SA Water:

- dedicates time and effort to consulting with developers on the impact of their business cases in the absence of any commitment that a commercial project or residential development will proceed
- assesses and, where required, plans for system augmentation or installation of infrastructure to ensure sufficient capacity of the system, aiming to have infrastructure in place to support growth when needed
- undertakes dynamic planning, adjusting plans over time to respond to changes in network conditions, customer requirements and standards over time. Consideration is also given to delivery rate and/or changing the solution to reflect network conditions and technology as they change.

While SA Water plans for growth, external factors during a regulatory period can affect those plans. For example, shifts in consumer behaviours, significant policy changes or microeconomic and macroeconomic factors can impact SA Water's growth planning. Observations of these developments in the RD20 period are covered in the following sections.

3.1.4.1 RD20 Planned and actual growth

3.1.4.1.1 Planned

For RD20, SA Water planned for forecast levels of customer connection growth across its networks as shown in Table 3-2. This was modelled on average growth. The Corporation determined and submitted its revenue requirements in line with these expectations. At the time of submission there were no tangible commitments for advancing major proposed developments.

Table 3-2 2020-24 customer growth[35]

	2020-21	2021-22	2022-23	2023-24
Water customers				
RD20 forecast	801,599	809,245	816,967	824,763
Actual	802,580	797,743		
Actual normalised*	802,580	809,421		
Variance, normalised actual vs forecast	981 (0.12%)	176 (0.02%)		
Wastewater customers				
RD20 forecast	627,693	633,809	639,985	646,222
Actual	628,101	629,566		
Actual normalised (indicative)*	628,101	634,251		
Variance, normalised vs forecast	408 (0.06%)	442 (0.07%)		

*Actuals adjusted for the impact of the amalgamation of independent living units into retirement village accounts that occurred in 2021-22, detailed in Section 3.1.4.1.2.

[35] The number of residential and non-residential customer billed accounts.

3.1.4.1.2 Actual

In the current regulatory period to date, while customer growth from infill has occurred, there have been variances resulting in significant challenges for SA Water. The following sections discuss the impacts of these variances against forecast for the period and, where relevant, how this might impact the forward regulatory period.

Retirement village customer accounts

There was a decrease from forecast water customer growth in 2021-22, as shown in Table 3-2, because SA Water changed its billing approach for retirement village customer accounts. An amalgamation of those retirement village accounts previously billed as individual properties within a village complex reduced the total number of customer accounts in SA Water's customer billing system by approximately 12,000 accounts, resulting in a lower than forecast number of accounts.

This change was made in response to a recommendation from a parliamentary joint committee on the valuation policies and charges on retirement villages to create consistency in the valuation and charging methods applied to retirement villages across the state. To implement the change, SA Water used the newly created assessment records including whole property valuation determined by the Office of the Valuer-General in the SA Integrated Land Information System for each retirement village, creating a consolidated account for each village.

Adjusting for this billing anomaly, customer growth would have been in line with forecast.

Tea Tree Gully wastewater transfer

In July 2022, SA Water took over services for wastewater customers in Tea Tree Gully that were previously serviced under a community wastewater management scheme owned by the City of Tea Tree Gully. This followed a state government direction pursuant to the *Public Corporations Act 1993* to begin charging these customers under SA Water's price structure and, over time, connect them to SA Water's wastewater network. This resulted in a large increase of around 4,700 wastewater accounts in the first quarter of 2022-23 and may result in the number of actual wastewater accounts exceeding the RD20 forecast for 2022-23 and 2023-24.

Extraordinary growth pressure in RD24

There has been a significant step-change in greenfield developments in previously undeveloped areas during the period, driven by the Australian Government's HomeBuilder economic stimulus package to incentivise construction of new housing.

This, together with the COVID-19 conditions and record low interest rates, has led to above-trend building approvals in the early part of RD20. SA Water observed several developers fast-tracking developments across South Australia where these were not projected to progress in developing the RD20 submission. This was reflected in an increase in dwelling approvals as shown by Figure 3-9 and a corresponding increase in connection applications to SA Water shown in Figure 3-10.

While building approvals and connection applications may align, SA Water may not see the same trends in account growth at the same time. Differences can occur where system augmentation may be required to connect an area to the network (lagged impact), or because of the impact of rating on abuttal (no incremental impact to account numbers). [36]

[36] Rating on abuttal refers to the instance where a property is not connected, but abuts SA Water infrastructure, and therefore is able to connect to SA Water services. Rating on abuttal incurs an availability charge, compliant with Regulation 38 of the *Water Industry Regulations 2012*.

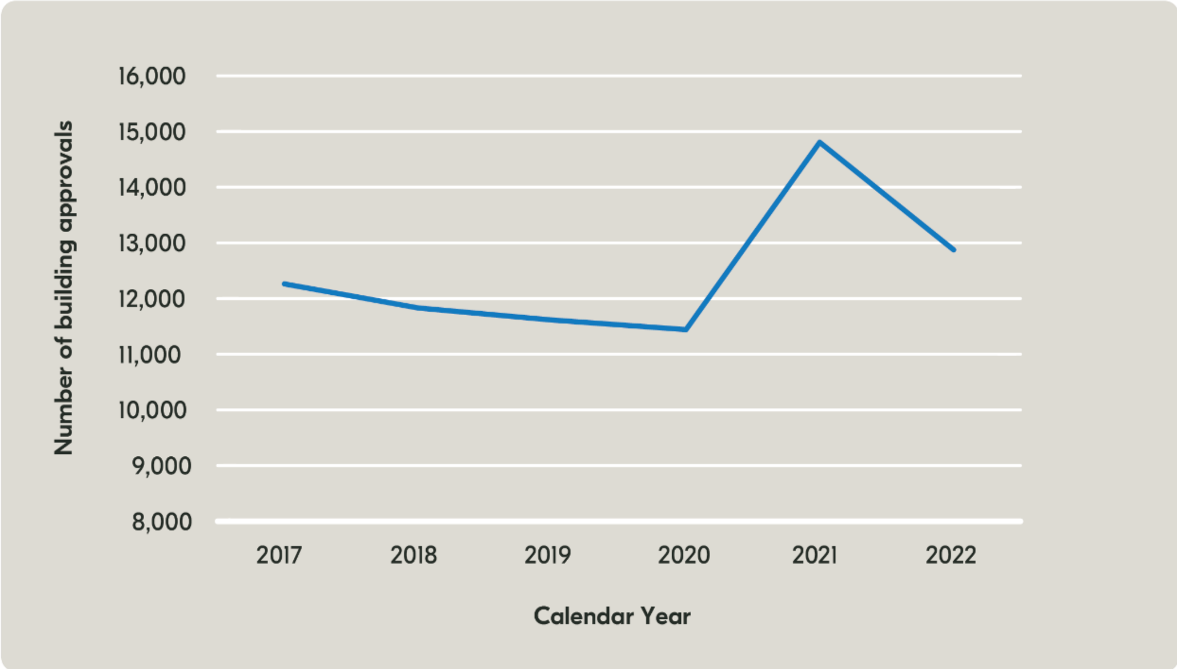

Figure 3-9 Building approvals since 2017[37]

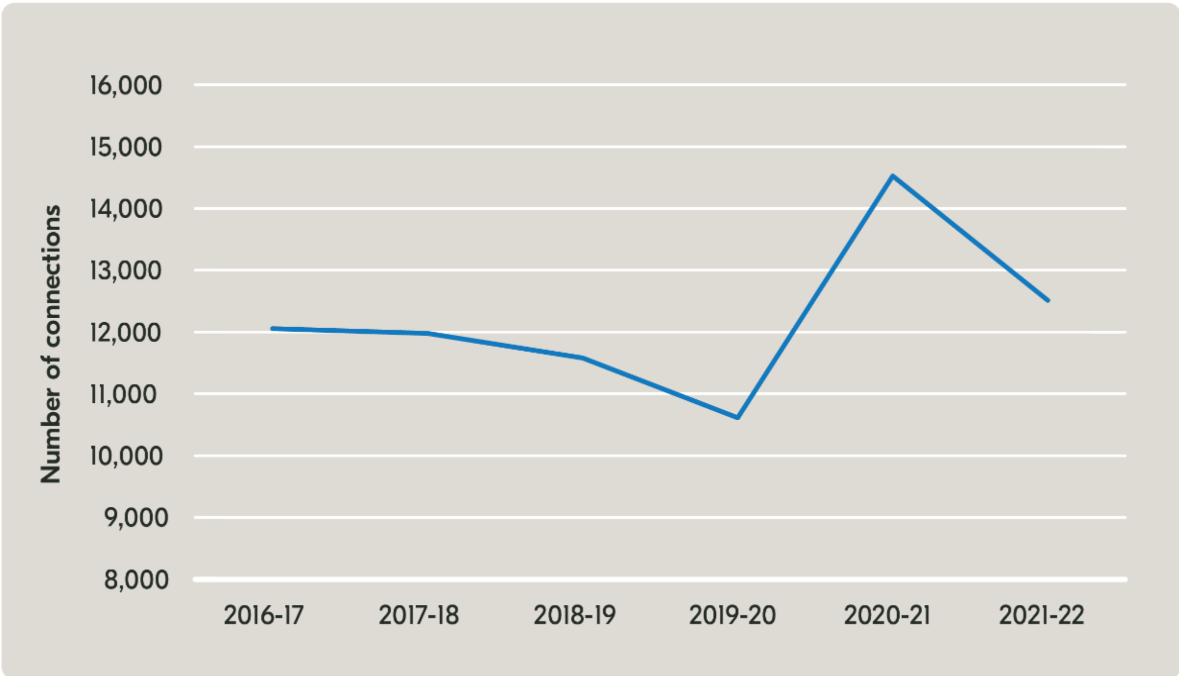

Figure 3-10 Number of connection applications received since 2016-17

This accelerated growth, including concentrated growth at several previously undeveloped sites in Adelaide's metropolitan north, is creating significant challenges for the Corporation, such as headworks investment in system augmentation to enable their supply.

For example, in one instance a developer advised in mid-2020 that no development was planned in the RD20 period at a northern suburbs greenfield site. Subsequently this developer has established many new allotments, which were not planned to be serviced in the RD20 period through network extensions or new treatment plant works.

[37] Period is 12 months to December of year shown.

Since 2018-19, meter installations in the northern metropolitan areas have increased above expectations when compared to pre-COVID-19 conditions (Table 3-3).

Table 3-3 Metropolitan north meter installations 2018-19 to 2021-22

Year	New meters installed in metropolitan north	Meter installation annual increase
2018-19	1,297	-
2019-20	1,419	9%
2020-21	1,880	32%
2021-22	2,129	13%

Accelerated growth in both the water and wastewater network in this area means systems will be at capacity sooner than originally projected. This has triggered the need to bring forward investment in infrastructure that would, under normal circumstances, have been expected to be delivered over several regulatory periods – whether this is supported by the Corporation, the developer, or some other source.

For example, the metropolitan north catchment area now has limited available capacity within the water and wastewater network. Significant upgrades will be required to trunk mains, treatment plants and the distribution network to connect additional customers.

This increase in connections in greenfield areas will require the Corporation to consider the appropriate mix of supporting infrastructure to connect previously un-serviced areas and bring forward augmentation of systems to increase capacity.

3.1.4.2 Consequences for the rest of RD20

As a result of the extraordinary growth, investment equivalent to multiple regulatory periods' worth of infrastructure is required in some areas to meet the capacity requirements. There is also an increasing risk that service levels will be compromised for existing and new customers on some systems as they reach capacity, until necessary system augmentation is completed.

The significant challenges that extraordinary growth has created for SA Water in the current regulatory period have been further complicated by the other cost escalation and supply challenges discussed previously. All of this has contributed to the nature of the growth projects required to be included in the RD24 capital expenditure plan, detailed in chapter 8.

3.1.5 2022–23 River Murray flood

The 2022–23 River Murray flood event, caused by cumulative flooding events upstream in the Darling, Lachlan, Murrumbidgee, and River Murray catchments, resulted in the highest flows into South Australia since 1956 and challenged the resilience of SA Water's assets, people and systems.

An adjusted peak flow of approximately 190 GL per day reached the South Australian border on 23 December 2022. As shown by Table 3-4, peak flows have not been this high since 1956. While the peak flow across the South Australian border was less than 1931 flows (210 GL/day), changes in the river's bathymetric profile meant that 2022-23 water levels surpassed 1931 water levels in many locations.

Table 3-4 Highest peak flows recorded for past River Murray Floods

Year	Peak flow
1931	210 GL/day
1956	341 GL/day
1974	182 GL/day
1975	162 GL/day
1993	112 GL/day
2011	94 GL/day
2016	95 GL/day
2022	190 GL/day

3.1.5.1 Flood response, customer impacts and recovery

To prepare for a predicted increase in extreme natural events associated with climate change, such as bushfires and floods, SA Water undertakes resilience planning for climate related risks that might affect its operations. This planning was put into practice to prepare for the floods as detailed below.

In the lead-up to the floods, employees were reassigned to focus on planning and preparing for the flood. Planning and implementation focused on three principal objectives:

1. Keeping employees, customers, and communities safe from harm.
2. Protecting water and wastewater assets to prevent or reduce damage.
3. Maintaining the highest levels of service to the largest number of customers for as long as possible.

Even though early external agency forecasts significantly underestimated eventual flows, SA Water assumed a higher flow rate for planning purposes, consistent with good practice in emergency management. Dynamic mapping capabilities were used to project from the assumed flow rate to expected flood levels. This enabled assessment of critical water and wastewater assets and systems against these flood levels, and the development of action plans for assets that were at risk of being impacted.

In addition to many smaller protective actions, major initiatives included:

- a preparatory maintenance program and intensified monitoring program for the major pipeline offtakes that service Adelaide and regional South Australia
- relocation of inlet screen controls and sealing of the low-lift pump controls for the Mannum–Adelaide pipeline
- protection of key pump stations in the Mannum wastewater network
- raising and armouring the lagoon banks of the Mannum Wastewater Treatment Plant, and relocation of the chlorination plant
- construction of a temporary levee around the raw water pump station at Cowirra and a bypass pumping arrangement. Figures 3-11, 3-12 and 3-13 show the pump station site before and after levee build and under flood
- protection of the power supply to the Mobilong switch room and pump station, and installation of bypass pumping arrangements to ensure service continuity
- anchoring and protection of the Murray Bridge treated wastewater pipeline.

SA Water also developed a detailed safety approach; a detailed media, communications, and stakeholder engagement strategy; and a financial management framework.

Figure 3-11 Cowirra pump station before levee installation

The floods brought significant water quality challenges with high levels of organic matter entering the river from banks and flood plains affecting water quality and reducing dissolved oxygen levels thereby increasing the risk of blackwater events.[38] Monitoring and careful management of water treatment processes and reservoir storages ensured that drinking water quality stayed within compliance targets based on Australian Drinking Water Quality Guidelines.

Figure 3-12 Cowirra pump station with temporary levee (preflood)

[38] Blackwater occurs when floods wash organic matter such as leaves and grass from riverbanks and floodplains into waterways. This raises carbon levels and depletes dissolved oxygen, contributing to mass fish and crustacean deaths. The breakdown of organic materials gives the water a dark colour and unpleasant odour and taste, creating significant challenges during water treatment.

Figure 3-13 Cowirra pump station during flood inundation of adjacent farmland

SA Water needed to disconnect 130 customers in low-lying areas of Mannum and Murray Bridge from the wastewater network for some weeks from December 2022 through to February 2023 to prevent inundation of the networks.

SA Water supported these actions with intensive outreach to customers in the flood zone, including:

- doorknocking affected customers throughout the incident
- transparent information sharing on the street, in community meetings, through the media, on the SA Water website and via social media channels
- service gestures and financial relief for affected customers
- alternative hygiene amenities such as showers and porta-loos provided to customers in Mannum
- providing Quench Benches - portable trailers fitted with troughs, taps and bubblers that connect to the mains water supply, to provide extra access to drinking water at emergency relief centres
- staffing an on-call roster throughout Christmas and New Year to ensure responsive customer support.

As the floods receded, the recovery phase ensured reinstatement of services as soon as possible. Long-term planning will incorporate lessons from this event to enhance the future resilience of infrastructure.

3.1.5.2 Financial impacts, program, and capital delivery implications

Due to the significance of the flood event and the short timeframes available for action, SA Water needed to divert project management and capital delivery resources from scheduled capital projects to flood response and recovery.

The emergency response led to delays in preparing this regulatory submission due to key personnel being diverted to work on the flood event leading to a 3-month delay in the RD24 submission. These principally related to the availability of frontline and management staff to develop, refine, and optimise proposed RD24 initiatives, which were recognised by the Commission in granting an extension to the due date for SA Water's final RD24 submission.

SA Water tracked costs associated with the 2022-23 floods. As of 31 March 2023, SA Water had spent $19.3 million on flood response activities, including additional chemical usage ($5.67 million), the redeployment of teams from normal operating activities ($4.17 million) and external contract spend ($7.02 million) associated with protecting critical assets. These have contributed to the higher forecast operating expenditure in 2022-23 as detailed in Section 3.3.

This may result in some deferral of capital projects into RD24, which will place additional pressures on the proposed capital budget for the next period. In addition, the floods may also have affected the longevity of in-river assets such as major pipeline offtakes and raw water pump stations, inundated assets such as wastewater networks and treatment plants, and water treatment plant components such as granulated activated carbon filters. These effects will be monitored and may be considered in future regulatory periods.

3.2 Service standards performance

SA Water is accountable for performance against 22 service standards in the sale and supply of retail services to its customers. [39] Service standards relate to the Corporation's customer service, connections, responsiveness, and restoration performance (for a full list of service standards see Appendix 6.1). They are an important consideration for service delivery in the current period and when planning for future regulatory periods.

The service standards reported against in the current period were largely a continuation of service standards from RD16 with the addition of new standards relating to customer service and low priority responsiveness. Performance against the 22 service standards in RD20 to date has been strong, despite the impacts of the COVID-19 pandemic, operations contract transition, and the River Murray flooding event. This section provides an overview of SA Water's performance to date, and how monitoring service performance has driven innovation and improvement.

3.2.1 2020-21 performance

In the first year of the regulatory period, SA Water met 20 of the 22 service standards which was noteworthy given the significant external challenges during this period. These challenges included COVID-19 restrictions that affected inter- and intrastate movement, and the number of staff who could work in close proximity with each other (for example density restrictions that affected the number of staff per square metre). The year also saw the lead up to transitioning all metropolitan field services delivered under a contract with Allwater to new contract arrangements with Lendlease (now Service Stream) which affected staff availability.

Even taking these challenges into consideration, performance exceeded targets for all customer service and connection related service standards as shown in Table 3-5 below.

There were 2 standards where the performance target was not achieved in the period:

- Service standard 13 - the percentage of low priority water network events responded to within target timeframes was not achieved for the metropolitan area for 2020-21. SA Water met the target timeframe 79 per cent of the time compared to the expected performance of 83 per cent. The main contributing factor to this outcome was that SA Water was not able to mobilise the required resources to undertake the work at the time it was required. This was in part due to staff turnover towards the transition of the metropolitan operational contract. While SA Water did not achieve the target for the first quarter of 2021-22, following the transition to the new contract arrangements the target has been achieved.
- Service standard 21 - the percentage of sewer overflow clean-up events resolved within target timeframes for the metropolitan area was slightly below target. SA Water met the standard 96 per cent of the time compared to the target of 98 per cent. Not achieving the target was largely a result of delays to clean-ups requested by the customer or to manage health and safety concerns for staff and contractors. There

[39] ESCOSA (2020) '*Water Retail Code - Major Retailers'*, ESCOSA, accessed 08 December 2022.

were at least 40 events directly attributable to delays of these types, without which the target would have been achieved.

3.2.2 2021-22 performance

During the second year of the regulatory period SA Water again met 20 of the 22 service standards, and as with 2020-21 this was noteworthy given the challenges for the period. The first half of the 2021-22 year saw South Australia subject to continuing COVID-19 restrictions, with viral infections and quarantine provisions affecting staff availability in the second half. Performance for the year also showed the impact of the transition of the metropolitan field services contract. Performance against the 2 service standards not achieved was within one per cent of the target.

- Service standard 21 - the percentage of sewer overflow clean-up events resolved within the target timeframes for the metropolitan area showed improvement on the 2020-21 performance, with 97 per cent of events meeting the target timeframe compared to the target of 98 per cent. SA Water assessed the target would have been exceeded if not for delays due to customer requests or safety reasons.
- Service standard 22 - in variance to the previous year, SA Water did not achieve its service standard target for the percentage of sewer overflow clean-up events resolved within the target timeframes in regional areas. There were 132 sewer overflow clean-up events in regional areas during this period, with only 2 responses to those events not achieving the target timeframe due to difficult site access and equipment availability following a high rainfall event.

3.2.3 2022-23 performance

SA Water was on track to meet 21 of the 22 service standards mid-way through the third year of the regulatory period. Operations were substantially impacted by the flooding emergency affecting the River Murray and surrounds during late 2022 and early 2023. This state emergency event saw a large portion of staff involved in the emergency management. Pleasingly, while operations were seriously impacted, performance remained high.

The only target not met for the year to date was sewer overflow clean-up in the metropolitan area. The instances this target was not met were considered beyond SA Water's control. These include where customers requested the clean-up to be completed when it suited them and later than the target time, where accessing the site was unsafe, or where the clean-up was in an inaccessible location.

Table 3-5 RD20 service standards outcomes

Service standard		Performance			
		Target	Results		
			2020-21	2021-22	2022-23*
Customer service					
1. Customer satisfaction	Customers who are satisfied with recent service experience	>93%	95%	95%	95%
2. Telephone responsiveness	Fault telephone calls answered within target timeframe	>85%	86%	87%	87%
3. First contact resolution	Account enquiry telephone calls resolved at first point of contact	>85%	98%	98%	99%
4. Complaint responsiveness	Customer and community complaints responded to within target timeframe	>95%	98%	98%	97%
5. Complaint escalation	Customer and community complaints escalated to the ombudsman	<15%	7%	6%	6%

Connections					
6. Connection application responsiveness	Network connection applications processed within target timeframe	>95%	97%	97%	97%
7. Water network connection timeliness	Water network connections constructed within target timeframes	>95%	97%	97%	96%
8. Sewer network connection timeliness	Sewer network connections constructed within target timeframes	>94%	99%	98%	97%
Response (attendance)					
9. Water quality responsiveness – metropolitan Adelaide	Water quality service requests responded to within target timeframes	>97%	99%	98%	100%
10. Water quality responsiveness – regional areas	Water quality service requests responded to within target timeframes	>99%	100%	100%	100%
11. Water event responsiveness – high priority – metropolitan Adelaide	High priority water network events attended within target timeframes	>99%	99%	99%	100%
12. Water event responsiveness – high priority – regional areas	High priority water network events attended within target timeframes	>99%	99%	99%	100%
13. Water event responsiveness – low priority – metropolitan Adelaide	Low priority water network events responded to within target timeframes	>83%	79%	85%	98%
14. Water event responsiveness – low priority – regional areas	Low priority water network events responded to within target timeframes	>97%	99%	99%	99%
15. Sewer event responsiveness – metropolitan Adelaide	Sewer events attended by field crews in target timeframes	>99%	99%	99%	100%
16. Sewer event responsiveness – regional areas	Sewer events attended by field crews in target timeframes	>99%	100%	100%	99%
Restoration					
17. Water service restoration timeliness – metropolitan Adelaide	Unplanned water service interruptions resolved within target timeframes	>98%	98%	99%	100%
18. Water service restoration timeliness – regional areas	Unplanned water service interruptions resolved within target timeframes	>98%	99%	98%	99%
19. Sewerage service restoration timeliness – metropolitan Adelaide	Unplanned sewerage service events resolved within target timeframes	>95%	95%	96%	99%
20. Sewerage service restoration timeliness – regional areas	Unplanned sewerage service events resolved within target timeframes	>99%	100%	99%	100%
21. Sewer overflow clean-up timeliness – metropolitan Adelaide	Sewer overflow clean-ups resolved in target timeframes	>98%	96%	97%	95%
22. Sewer overflow clean-up timeliness – regional areas	Sewer overflow clean-ups resolved in target timeframes	>99%	99%	98%	99%

*As of December 2022

3.2.4 Service standards driving innovation and continuous improvement

Service standards are an important consideration for service delivery within the current period and when planning for future regulatory periods. They can indicate and drive innovation and improvement, for instance by uncovering or highlighting changes that will provide better outcomes for customers, improve customer satisfaction, and offer operational efficiencies for SA Water.

The following provides some examples of improvements made, influenced by maintaining and improving service standards, under the relevant service standard category.

Customer service

SA Water has focused on providing customers with better and quicker access to information. Several back-end technology enhancements have been made to achieve this.

Improvements to the navigation of SA Water's existing customer relationship management (CRM) system are enabling customer care agents to provide information more quickly to a customer when handling an enquiry.

Another innovation to aid quicker responses to customer enquiries is the implementation of a new, user-friendly knowledge base system. An improved search engine contains knowledge base content so staff can not only support customers quickly, but also ensure more consistent information is provided.

These initiatives result from SA Water's drive to achieve the customer service standards and provide better customer outcomes more efficiently.

Connections

SA Water is striving to enhance the information available to customers throughout the connection process. To achieve this, an online connections channel is under development on the SA Water website.

Enhancements will include:

- a connections map to enable customers to self-serve information about their connection points, providing them with up-to-date information prior to making an application. This is expected to create efficiencies through higher quality submissions
- application progress tracking for customers through a real-time summary of the customer's case status at a high level, accompanied by relevant support information to provide context about the actions being taken at each stage of the process.

Customer experience and enhanced network connection responsiveness are key service outcomes expected to be improved.

Response/restoration

Metropolitan workforce efficiencies have been implemented in wastewater operations, changing the way the labour force is dispatched. These changes have improved the effectiveness of a preventive maintenance program by ensuring efficiencies in the use of skills and resources. This initiative is expected to result in a reduction in the number of sewer events, which would contribute to meeting, and possibly improving, service standard results.

In the water network, SA Water is monitoring pressure sensors to prevent main breaks and leaks and minimise unplanned interruptions. SA Water uses advanced data science techniques, including machine learning and artificial intelligence, to review the pressure data of the Adelaide central business district water network. This enables proactive monitoring and maintenance of the network through better detection of thousands of pressure changes in the network.

3.3 Financial performance

ESCOSA's final determination for RD20 that set the 4-year revenue cap for operating and capital expenditure from 2020-21 to 2023-24 was informed by SA Water's point-in-time assessment of the Corporation's capital and operating requirements. The plan for RD20 was prepared when SA Water was still delivering its plan for RD16. As a result, changes to priorities and external factors in the operating environment, detailed refinement of projects, and variability of program requirements are expected to influence what is delivered during the period.

As expected, what has been implemented in RD20 to date has varied from what was planned. However, the degree to which it has varied has been significant, in part because of the challenges discussed in Section 3.1.

This section explains how SA Water has worked during the period to operate within its approved revenue cap, including what has been delivered and reasons for annual variances to actual expenditure. This is important to understand how RD20 is influencing decisions for RD24.

3.3.1 Reprioritisation and process improvement during the regulatory period

SA Water has constantly monitored its RD20 plan for changes that might need to be made during the regulatory period to meet customer expectations and operate within the approved revenue cap.

In doing this, SA Water had regard to the drivers of changes to its plan, which include:

- changes to statutory requirements or standards
- government directions pursuant to the *Public Corporations Act 1993*
- changing demand on water or wastewater systems from developments progressing outside of projected rates or in unexpected locations
- unexpected events, such as extreme weather conditions, natural disasters, or pandemics
- an unforeseeable decline in the performance of assets which requires intervention
- new innovations that enable improvements in efficiency or performance, presenting better value outcomes
- changes in costs of required inputs including labour and materials that are outside of SA Water's control.

In response, SA Water reprioritised expenditure within the regulatory period to manage risk, cost, and customer outcomes to effectively deliver its regulated activities within the revenue cap.

While change to the regulatory plan during delivery is normal, the significant local and global challenges during RD20 have had an unprecedented effect on plan delivery. As a result, the process of monitoring and reprioritisation to ensure delivery within the revenue cap during RD20 became increasingly important when compared to previous regulatory periods.

SA Water has managed its expenditure during RD20 in line with ESCOSA's expectations as set out in Guidance Paper 3, where it is stated "It is to be expected that SA Water's actual expenditure within a regulatory period will differ from the forecasts used to determine the maximum revenue caps. This may be due to unforeseen external factors, management action to improve the business or changes that result from obtaining more information about assets and projects."[40]

In achieving this flexibility expected by ESCOSA, SA Water has had to be continuously adaptable and flexible during the dynamic environment experienced in RD20, changing priorities, reviewing and re-sequencing activities, and changing procurement strategies to maintain core business activities.

The first 2 years of the RD20 period, 2020-21 to 2021-22, were affected by the significant challenges discussed in Section 3.1. Some of these effects remain, impacting the rest of the regulatory period, resulting in deliverables from RD20 being deferred to future regulatory periods.

In response to these challenges, SA Water initiated an asset creation improvement program to identify and initiate improvements and create efficiencies in the way the Corporation plans and delivers capital projects and programs. Through repackaging works to reduce delivery costs, identifying areas of technical innovation and productivity savings, the process was able to achieve the $80 million efficiency savings target set at the beginning of the program.

In respect of the balance of the period, years 2022-23 and 2023-24, the Corporation has been acting to respond to the effects of challenges that have created significant budget pressures across the overall program. A key response has been activity to refine the capital program to deliver within total approved expenditure.

A process was initiated that identified projects that would be prioritised for delivery within the current period, and those which could be deferred. The process involved assessing the cost and ability to deliver each project and the risks to service continuity, customer levels of service, future operational cost, and asset life of not delivering a project.

Project risks were also assessed and updated for the most current customer, financial, compliance, water security, environmental, climate, people, safety, wellbeing, and reputational risks using the corporate risk framework that is detailed further in Chapter 2.

This analysis informed the risk of inclusion or deferral within the total program of works in achieving SA Water's defined levels of service and service standards.

The priority of each project was considered within the total program of works to manage a reasonable level of risk while delivering consistent standards for customers. While there is a trade-off between current risk, customer outcomes and long-term sustainability, the outcome of this reprioritisation was an amended program of works within the capital available for the rest of the period.

Reprioritisation in RD20 has resulted in a significant portion of projects being deferred for consideration and assessment through the RD24 development process, together with other initiatives already expected to be considered in this period. After year 2 of the current regulatory period, around $330 million of deferrals had been processed because of market-driven cost pressures, changing business priorities and out of cycle growth. Further reprioritisation during year 3 is projected to deliver around $110 million in additional deferrals.

SA Water will continue to actively monitor delivery of all programs and reprioritise as necessary to ensure the Corporation delivers the best possible value for customers for the remainder of this regulatory period. These considerations will have a view to finding the balance between the need to invest sufficiently to maintain services and security currently, while managing the level of corporate risk appropriately, and seeking to avoid medium term cost increases arising from deferring capital investments.

The following sections provide information on SA Water's actual expenditure performance during RD20, key investments made to date, what is scheduled for the rest of the period, and SA Water's expected revenue position at the end of RD20.

[40] ESCOSA (2022) '*Guidance Paper 3- Assessing The Regulatory Business Plan'*, ESCOSA, accessed 2 March 2023.

3.3.2 Capital expenditure

SA Water's ability to deliver its planned capital program within the approved capital expenditure has been significantly impacted by the external factors experienced during the first two years of the current regulatory period. Table 3-6 shows SA Water's forecast and actual capital expenditure for the current regulatory period (including both infrastructure and technology capital expenditure).

Table 3-6 RD20 forecast and actual capital expenditure (nominal)

Water capital expenditure - nominal	2020-21	2021-22	2022-23*	2023-24*	Total net capital expenditure*
Net allowance[41] (millions)	$344.9	$253.5	$291.2	$298.5	$1,188.1
Actual/forecast (millions)	$165.6	$242.0	$328.2	$465.4	$1,201.2
Variance (millions)	-$179.3	-$11.5	$37.0	$166.9	$13.1
Wastewater capital expenditure - nominal	**2020-21**	**2021-22**	**2022-23***	**2023-24***	**Total net capital expenditure***
Net allowance (millions)	$80.1	$148.5	$194.9	$161.5	$585.0
Actual/forecast (millions)	$102.1	$127.2	$145.3	$261.2	$635.8
Variance (millions)	$22.0	-$21.3	-$49.6	$99.7	$50.8

* Estimates as of January 2023.

While the Corporation has reprioritised works to keep capital expenditure within approved revenue, SA Water is expecting actual capital expenditure to be above forecast at the end of the period based on current projections, representing a variance of less than 4 per cent.

The overall increase in water and wastewater related capital expenditure is due to a combination of the following:

- RD16 capital carry over into RD20 of $27.0 million
- additional net capital expenditure of $23.0 million required for work in Riverlea, Roseworthy and Virginia Main Street
- lower capital contributions relating to the Northern Adelaide Irrigation Scheme of $22.9 million
- other timing and minor adjustments of $11.5 million.

These have been partially offset by an increase in general capital contributions of $20.5 million.

The following sections provide further detail on performance and projects completed in the first half of the period and forecast performance and capital deliverables scheduled for the rest of the period.

[41]Net capital expenditure equates to gross capital expenditure less any capital contributions.

3.3.2.1 2020-21 to 2021-22

During the first 2 years of the regulatory period, the Corporation experienced escalating costs, including materials, however actual expenditure was below forecast.

The annual variances, shown in Table 3-6, occurred due to re-phasing of capital projects, with several large projects rescheduled to commence construction in the second half of the regulatory period, substantially due to the impacts of COVID-19.

Variance in water capital expenditure in 2020-21 was also driven by timing changes from the following 2 projects being moved into the second half of the regulatory period:

- construction of the desalination plant at Kangaroo Island was paused for 3 months to accommodate additional design activity in response to community concerns
- the renewal of the Morgan to Whyalla Pipeline will partially impact habitat of a threatened ecological community listed in December 2022 under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. As a result, works have been further delayed while a referral decision is obtained.

Major capital investments contributing to expenditure in the first 2 years of the regulatory period included:

- Water network renewals - through the water mains management program, approximately 140 kilometres of new water reticulation mains were installed with 50 kilometres laid in metropolitan Adelaide and 90 kilometres in regional areas of the state. In addition, across the metropolitan network, 358 valves were installed, which is forecast to prevent temporary supply interruptions to 1,353 properties over the next year.

The $24 million South Road trunk main relocation project was completed in 2021-22, the first 2 stages of Beetaloo trunk main, costing $10.1 million and the North Terrace trunk main, costing $6.2 million, were delivered.

- Wastewater network renewals - the wastewater main management program renewed approximately 19.4 kilometres of wastewater reticulation mains and 5.6 kilometres of wastewater trunk mains in 2020-21 and 2021-22.
- Kangaroo Island Desalination Plant - installation of about 50 kilometres of large underground pipeline began on Kangaroo Island, to be followed by construction of a new desalination plant. This project will ultimately improve drinking water security and support the Island's tourism and agriculture industries.
- Ultraviolet (UV) disinfection at Happy Valley Water Treatment Plant - this project was to ensure public health and maintain compliance with the *Safe Drinking Water Act 2011* and Australian Drinking Water Guidelines (ADWG) guidelines following the decision to provide recreational access to Happy Valley Reservoir.

  In 2020-21 SA Water incurred $11.5 million to carry out detailed design and commence construction to install UV disinfection at the Happy Valley Water Treatment Plant. In 2021-22 a further $7.2 million was incurred to bring the project to completion and commence delivering on the project outcomes. In 2022-23, a further $2.2 million has been incurred to continue to optimise the new infrastructure and UV disinfection plant.

- Tea Tree Gully wastewater project - the transition of approximately 4,700 properties from the City of Tea Tree Gully's community wastewater management system to SA Water's modern sewer system.

3.3.2.2 2022-23 to 2023-24

Capital expenditure for the last 2 years of the period is projected to be above forecast predominantly due to rephasing of expenditure, with capital cost escalations offset by deferral of other initiatives.

For 2022-23 and 2023-24, SA Water's key capital investments will include:

- Kangaroo Island Desalination Plant – the 2 megalitre a day desalination plant at Penneshaw will supplement the smaller, existing facility at Penneshaw and the Middle River Reservoir. Through a series of pipes, it will also provide capacity to service 4 Island communities and other properties along the pipeline route that are not currently connected to SA Water's network. The plant will deliver an additional climate-independent supply of drinking water and provide benefits to residents, boosting economic activity and increasing the Island's bushfire resilience.
- Eyre Peninsula Desalination Plant – to ensure long-term water security for the Eyre Peninsula, a desalination plant at Billy Lights Point has been assessed and determined to be the preferred water security solution for the region. This additional water source will supplement the current primary 5 gigalitre (GL) per annum extraction from the Uley South bore field and ensure the bore field's long-term sustainability. Works to the end of the period will involve ongoing marine monitoring and environmental assessments that will support preparation of approval documents, concept and detailed design, and long lead time procurement.
- Water network main relays, country and metropolitan - this program continues to make capital infrastructure investment into approximately 190 kilometres of water reticulation mains (over the 4-year period) across South Australia. This investment maintains the water mains failure rate, which in turn enables SA Water to meet customer service expectations regarding frequency of unplanned interruptions, interruption duration and water leakage loss, and service standards.
- Morgan to Whyalla pipeline – The Morgan to Whyalla pipeline provides around 27 GL of water a year from the River Murray to customers in the Upper Spencer Gulf, Eyre Peninsula, and far west coast. SA Water will be replacing between 16 kilometres and 19 kilometres of pipeline that has reached the end of its asset life and poses a risk to SA Water meeting required levels of service around interruption frequency, interruption duration and leakage.
- Tea Tree Gully wastewater project – the rest of the period will see the continuation of Stage 1 of this initiative with additional properties connected following commissioning of 2 new wastewater pump stations. Survey and design work is completed for the first areas of Stage 2 which are scheduled to be delivered in the remainder of RD20.
- Bolivar Wastewater Treatment Plant capacity upgrade - a new inlet structure will be installed to cater for increased flows projected to enter the plant and to improve the screening efficiency of the plant.
- Regional water quality improvement – works to upgrade six regional supplies from non-potable to potable supply, through a Section 6 direction pursuant to the *Public Corporations Act 1993* issued by the then Minister for Environment and Water in 2020.

Works include desalination plants in Oodnadatta, Marla and Maree, and new storage and disinfection systems at Terowie, Yunta and Mannahill that are scheduled to be completed by June 2024.

SA Water will continue to monitor capital plan deliverables and cost fluctuations with a focus on managing initiative delivery within the current regulatory period. With more than $400 million of works currently projected to be deferred to future regulatory periods, a focus will be on prioritising expenditure to deliver the best possible value for customers for the remainder of RD20.

3.3.3 Operating expenditure

Like capital expenditure, the challenges experienced within the current regulatory period have also driven marked increases in operating costs. Table 3-7 shows SA Water's allowance and actual operating and forecast expenditure across the current period.

Annual variances to operating expenditure are expected to occur in any regulatory period for reasons including fluctuations in the volume of water provided, electricity prices and variations in maintenance requirements throughout the period. However, the significant, unplanned increases in actual operating costs during the period including for electricity, chemicals, and labour costs, means expenditure has been above forecast, and substantially greater than previously observed. Because of this, SA Water is forecasting its actual operating expenditure for the period to exceed the allowance set for RD20.

Table 3-7 RD20 Forecast and actual operating expenditure (nominal)

Water operating expenditure - nominal	2020-21	2021-22	2022-23*	2023-24*	Total operating expenditure*
Allowance (millions)	$365.2	$368.8	$388.1	$395.1	$1,517.2
Actual/forecast (millions)	$379.5	$402.3	$438.8	$430.2	$1,650.8
Variance (millions)	$14.3	$33.5	$50.7	$35.1	$133.6
Wastewater operating expenditure - nominal	**2020-21**	**2021-22**	**2022-23***	**2023-24***	**Total operating expenditure***
Allowance (millions)	$140.3	$140.6	$149.9	$154.2	$585.0
Actual/forecast (millions)	$155.2	$158.6	$168.3	$167.5	$649.6
Variance (millions)	$14.9	$18.0	$18.4	$13.3	$64.6

* Estimates as of January 2023

The following explains the main variances in each year of the period to date and expectations for the rest of the period.

3.3.3.1 2020-21

As shown in Table 3-7, in 2020-21 SA Water's actual regulated operating expenditure for both water and wastewater combined was $29.2 million (5.8 per cent) above allowance. The main factors that contributed to actuals being higher than allowance included:

- Leases - the transition to Accounting Standard AASB 16 was taking place at the same time as the final determination was being set and, as such, certain lease arrangements were not considered as an expense at the time. This resulted in lease payments not being considered in the allowance. The total variance from this change was $14.3 million.
- Allwater Metropolitan Alliance contract wrap-up costs - totalling $10.0 million relating to redundancies, vehicle lease termination, office demobilisation and various other costs as part of the Alliance contract wrap-up.
- Site restoration charges - expenditure of $5.7 million was incurred due to the need to carry out site restoration works. This included decommissioning of various water and wastewater assets, for example the old Whyalla accommodation building and Bolivar Wastewater Treatment Plant pump station.
- Fire preparedness - SA Water adapted its approach to bushfire management in response to the serious national bushfire events during the 2019-20 fire season, noted by the independent state inquiry to be the "worst conditions on record".[42] Expenditure of $4.5 million was incurred to prepare a detailed audit of SA Water assets for future

[42] Government of South Australia (2020) Independent Review into South Australia's 2019-20 Bushfire Season, Government of South Australia, accessed 21 March 2023.

bushfires consistent with obligations pursuant to the *Fire and Emergency Services Act 2005*, and Australian Standard AS3959: Construction of buildings in bushfire-prone areas. As part of these works, SA Water developed a bushfire technical standard for existing and new assets TS-0601and completed capital upgrades and vegetation management to improve their bushfire resilience.

- COVID-19 costs - $2.5 million of additional cleaning, equipment, and personal protective equipment further to costs incurred in 2019-20.
- Savings on electricity costs - the above increases in unplanned operating expenditure were partially offset by a short-term reduction in volumetric and renewable charges in 2020-21 (as shown in Figure 3.6, 2020-21 was the lowest electricity price in 5 years). This was offset by increases to network charges, which together provided a $7.7 million adjustment to electricity costs in 2020-21.

While SA Water's actual 2020-21 operating expenditure exceeded the allowance, the Corporation's performance was analysed by KPMG as part of an operating expenditure benchmarking study (included in Appendix 3.2 and discussed further in Section 3.5) commissioned to understand SA Water's operating efficiency relative to other equivalent utilities. This study determined that on a normalised basis SA Water's operating expenditure was more efficient that the average major water utility in Australia, performing substantially better than most of its peers. On this basis, notwithstanding the escalated expenditure in 2020-21, SA Water's operating expenditure outcome is considered efficient.

3.3.3.2 2021-22

In 2021-22 SA Water's actual regulated operating expenditure was $51.5 million (10.1 per cent) higher than the regulatory allowance set at the time of the determination. The key factors that contributed to the 2021-22 actuals being higher than the allowance include:

- Metropolitan contract costs - in 2021 SA Water moved to a 2-contract model for production and treatment operations and field operations in the metropolitan Adelaide area. Since the commencement of the new field operations contract, the volume of jobs has increased beyond the estimates in the original agreement. This increase to job volumes in 2021-22 directly correlates to an increase in costs incurred by SA Water for the financial year. The budget for the new contract was set on 2018-19 work volumes, which was considered a typical year at the time. However, as assets continue to age, on average the required field-work volumes exceed the work volumes set in original budgets. Section 8.2.2.2 provides more information on this impact.
- Electricity prices and network charges – electricity is a critical component of SA Water's operating expenditure as it is required in every step of the production, treatment, and reticulation process. Unavoidable increases in electricity costs were driven by external factors which led to increased market prices and increased network charges (Section 3.1.3.2). Combined with increased energy demand in this period, electricity expenditure for SA Water was substantially higher than the 2021-22 allowance across volumetric, network and renewables charges in contrast to 2020-21.
- Maintenance costs - these have increased primarily due to two reasons. A high-voltage switchboard investigation was progressed following several arc flash incidents that prompted investigation on work health and safety grounds. The detailed investigation and assessment of 146 high-voltage switchboards resulted in unplanned operating uplift of $1.1 million. Additionally, there was an increase of approximately $900,000 in maintenance costs due to the increased failure rate of high-voltage motors in major water pumping systems. This maintenance was necessary because of the combined impact of ageing motors and the increased rate of motors being turned on and off as part of electricity management practices implemented after the RD20 submission to manage escalating electricity costs.

- Chemical and material costs - the COVID-19 pandemic resulted in supply chain interruptions which increased the cost of essential chemicals and materials required in the treatment process. This is discussed in more detail in Section 3.1.3.1.

Additionally, unseasonal weather events resulted in poor raw water quality, increasing the volume of chemicals required to adhere to statutory health standards for water quality. Consequently, increased prices and volumes contributed to the increased operating expenditure reported in 2021-22.

As 2021-22 is the base year for RD24, these factors for increasing costs are further detailed in Section 8.2.

While these cost increases were unavoidable, SA Water took active steps to mitigate the cost pressures during the period through effective procurement processes and management of energy usage, including through the Operational Control Centre, that is further detailed in Section 3.1.3. Through this, SA Water has aimed to minimise the impact to customers whilst maintaining a high levels of service.

3.3.3.3 2022-23

The forecast regulatory operating expenditure for 2022-23 is $69.1 million (12.8 per cent) higher than the original regulatory allowance. This is partly because of the ongoing nature of cost increases experienced in 2021-22 (discussed above) that are expected to continue into the second half of the current regulatory period.

Most of the incremental variance in operating expenditure compared to 2021-22 is due to the financial impacts of the River Murray flood and emergency response. The costs incurred are attributable to 3 key drivers:

1. protecting staff, customers, and communities from harm
2. protecting or reducing damage to water and wastewater assets
3. maintaining the highest level of services to the largest number of customers for as long as possible.

This has resulted in additional operating expenditure incurred to date, as detailed above in section 3.1.5.2.

3.3.3.4 2023-24

For 2023-24, the forecast regulatory operating expenditure is $48.4 million (8.8 per cent) higher than the original regulatory allowance. The variance is mainly associated with cost increases observed in sections 3.3.3.1 (2020-21), 3.3.3.2 (2021-22) and 3.3.3.3 (2022-23) that are projected to continue. No additional costs are forecast for the River Murray flood response in 2023-24.

Historically, SA Water has been able to mostly operate within the regulatory operating allowances, as shown in Figure 3.14 below, with other operating costs tracking in line with projections. The Corporation has previously only sought to adjust for years of higher or lower water demand, such as in 2018-19 when water demand was 208 GL compared to the forecast of 193 GL due to weather impacting demand and reflected in higher operating costs.

However, RD20 has seen unprecedented and unforeseeable impacts in the operating environment leading to extreme shifts in operating costs. In these situations, meeting the operating allowance has not been possible due to external factors (like the COVID-19 pandemic, Ukraine conflict, post pandemic construction boom, supply chain disruptions and cost escalations) as discussed in Section 3.1 above. This has required a re-basing of operating expenditure, which is further detailed in Section 8.2.

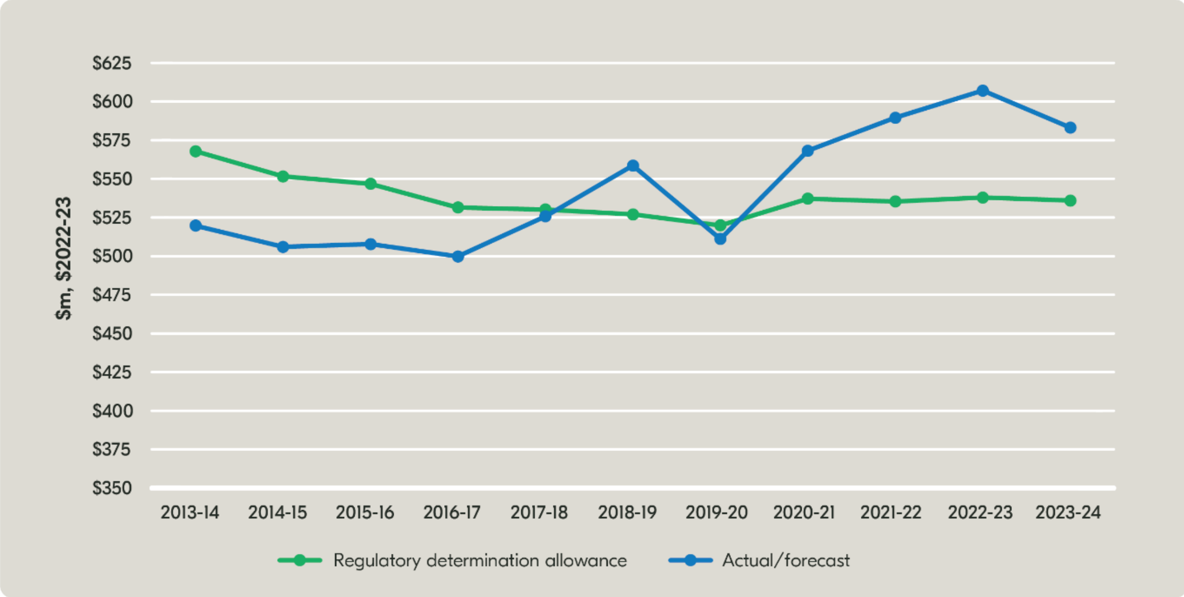

Figure 3-14 Historic and current period operating expenditure

3.3.4 Revenue

During the regulatory period, SA Water set prices to achieve the revenue requirement in the approved 4-year revenue cap set through ESCOSA's 2020-24 final determination. However, annual actual revenue during the regulatory period can vary from forecast. Drivers of deviation from forecast can include variability in weather conditions driving changes in water consumption behaviour, change in the number of customers compared to forecast, and economic conditions. In such cases, ESCOSA calculates revenue adjustments at the end of each 4-year regulatory period to carry forward any significant differences in actual revenue earned (over or under). The mechanism used is discussed further in Section 11.2.

The revenue that SA Water has collected in the first 2 years of RD20 and is projected to collect for the rest of the period for water and wastewater is discussed in the following sections.

3.3.4.1 Water revenue

SA Water's water revenue is composed of fixed revenue (from fixed charges) and variable revenue (from volumetric charges). Water revenue can therefore fluctuate from forecast depending on how much water is collectively used by customers due to changes in average volumes consumed, changes in customer numbers, or both.

SA Water determined the water demand projections for RD20, shown as projected volume in Table 3-8, using a demand model. This was used to forecast revenue for the 2020-24 regulatory period (Table 3.9).

Table 3-8 RD20 water demand – projections and actual

Gigalitres	2020-21	2021-22	2022-23	2023-24
Projected volume	194.0	194.5	195.0	195.5
Actual/ forecast volume	204.5	202.6	194.8*	195.5*

* forecast as of March 2023

Table 3-9 Current period revenue – water (nominal)

Water revenue (nominal, $millions)	2020-21	2021-22	2022-23*	2023-24#
Allowed revenue	$694.4	$705.3	$744.8	$767.0
Actual/ forecast revenue	$732.2	$735.0	$734.5*	
Variance	$37.8	$29.7	-$10.3*	

* forecast as of March 2023
# to be determined mid-2023 and included as part of the final submission

Table 3-8 shows that in both 2020-21 and 2021-22 SA Water has recorded higher-than-forecast water use due to dry summer weather conditions. This resulted in the higher than forecast water revenue in 2020-21 and 2021-22 shown in Table 3-9. This may result in an adjustment at the end of the regulatory period by ESCOSA using a demand adjustment mechanism (as detailed in Section 11.2).

During 2022-23 SA Water did not pass on the full consumer price index (CPI) increase to its customers as proposed at the time of the initial June 2020 regulatory determination. The March 2021 to March 2022 CPI was 5.1 per cent, however, retail customer prices were increased by 3.2 per cent. This is the main contributor to forecast revenues for 2022-23 being projected to be lower than the allowed revenue (Table 3-9).

3.3.4.2 Wastewater revenue

Wastewater revenue is derived from fixed charges based on the number of customers and therefore has less variability compared to water revenue. Wastewater revenue has been closely aligned with forecast for the first 2 years of the regulatory period (as shown in

Table 3-10). It was slightly below forecast in 2022-23 due to the lower than CPI price increases passed on to customers in that year (where a 3.2 per cent price increase applied compared to 5.1 per cent CPI). As with water revenue, this variance may result in an adjustment at the end of the regulatory period.

Table 3-10 Current period revenue – wastewater (nominal)

Wastewater (nominal, $millions)	2020-21	2021-22	2022-23*	2023-24#
Allowed revenue	$329.5	$336.4	$357.0	$369.5
Actual/ forecast revenue	$329.0	$337.4	$351.0	
Variance	-$0.6	$0.9	-$6.0	

* forecast as of March 2023
# to be determined mid-2023 and included as part of final submission

3.4 Reporting on performance

The 2020 Final Determination: Statement of Reasons identified the importance of a robust reporting framework to drive accountability in the performance of regulated activity. [43]

The suite of expanded public reporting is detailed in ESCOSA's approach to monitoring and evaluating the performance of SA Water during RD20.[44]

SA Water welcomes this reporting, recognising that transparent public reporting enables customers and key stakeholders to understand how the Corporation is delivering on its commitments, planning for future regulatory periods, and efficiently managing its services. SA Water has embraced the broadened suite of public reporting which includes:

- Annual and quarterly performance statements - detailing SA Water's performance against 22 service standards. These service standards relate to SA Water's customer service, connections, responsiveness, and restoration performance.
- Annual financial performance report - published following the end of each financial year. This report includes information on performance against key financial metrics, actual operating and capital expenditure, and reasons for any material variations from the operating and capital expenditure forecasts used to set the revenue caps.
- Key investment areas report - detailing SA Water's progress against proposed investment expenditure in the regulatory period. It provides a snapshot of period to date expenditure by program area and major projects, including updates on key investment priorities, such as maintaining the reliability of services, and improvements to water quality.
- 30-year asset management plan - focuses on the longer-term investment horizon. It provides a point-in-time snapshot of the expected future capital expenditure required by the Corporation within a 30-year window based on current intelligence and asset condition assessments.

The latest reports are published on the SA Water website at https://www.sawater.com.au/about-us/our-publications/our-reports/our-performance-scorecard.

These reports accompany key financial reporting, shared publicly through annual reporting processes to Parliament and the Commission, which is complemented by other accountabilities that SA Water has to Parliament, the state government and various inquiry agencies.

These reports have also been useful in engaging with customers and key stakeholders. Notably, elements of the 30-year asset management plan, including projected risk ratings and asset renewal costs, provided contextual information for informed discussions with customers and key stakeholder groups on their expectations about intergenerational equity considerations.

3.5 Benchmarking - other water utilities

National benchmarking of water utilities in Australia occurs annually through the Bureau of Meteorology's National Performance Report (NPR).[45] Figure 3-15 illustrates the water utilities participating in the reporting and shows SA Water's location and operational footprint in comparison to the others. As part of this report, SA Water is benchmarked against equivalent water utilities, which are those in the major utility category that serve a customer base of more than 100,000 properties.

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[43] ESCOSA (2020) '*SA Water Regulatory Determination 2020 – Statement of reasons', ESCOSA, accessed 2 March 2023.*

[44] ESCOSA (2021) '*SAWRD20-24-Monitoring Evaluation Framework', ESCOSA, accessed 8 March 2023.*

[45] The Bureau of Meteorology (BOM) (2022) *National Performance Report 2020-21 Urban water utilities*, BOM, Australian Government, accessed 1 March 2023.

Map of Australian water service providers (2020-21)

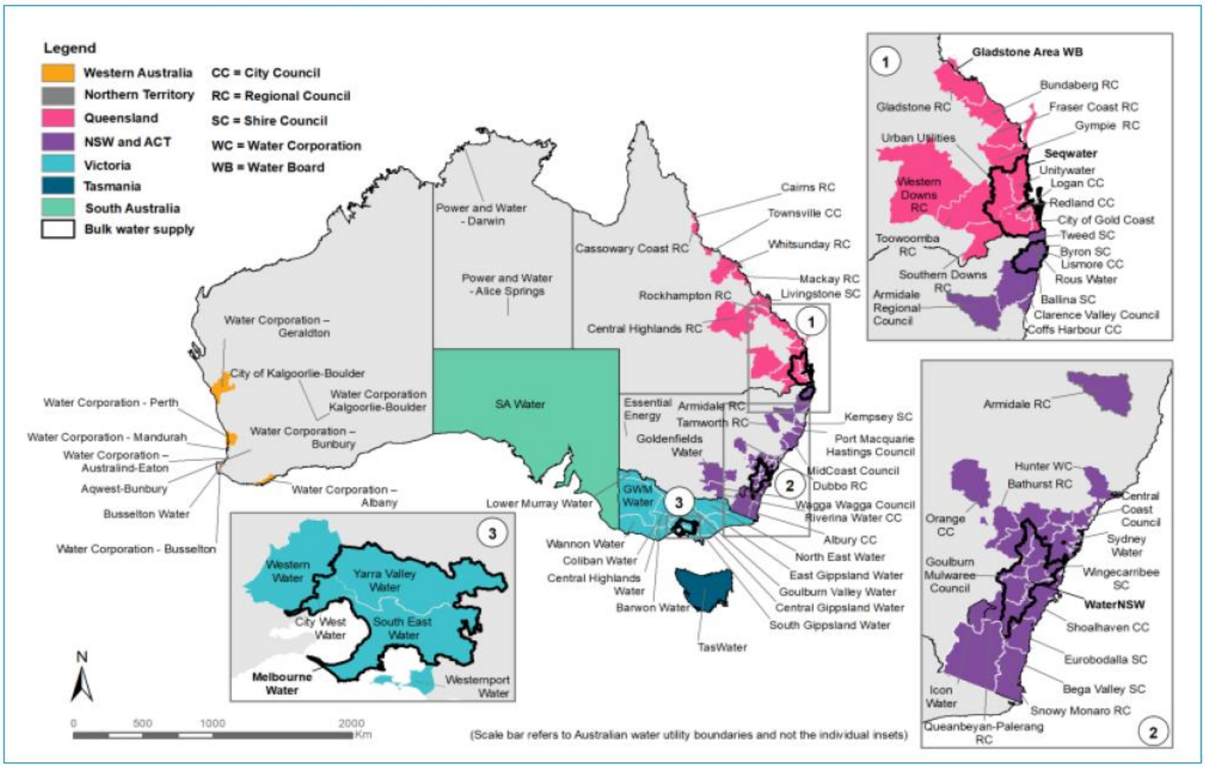

Figure 3-15 Australian utilities that submitted data for the 2021-22 National Performance Report[46]

The report highlights the similarities and differences between the utilities and can be used to gain an understanding of comparative performance. It provides a valuable independent perspective of SA Water's performance. The 2020-21 NPR data was used in all analyses in this section.

3.5.1 Customer bills and affordability

In 2020-21(the latest NPR report available at the time of writing), SA Water had the sixth lowest typical residential bill of the 15 major urban utilities.[47] Where consumption is standardised, the 2020-21 NPR shows that at 200 kilolitres, SA Water improved to third lowest annual residential bill in 2020-21.[48] This highlights that the average customer bill for SA Water in 2020-21 is lower (more affordable) than average, when compared to interstate peers.

SA Water engaged Stantec (previously Cardno) to undertake an analysis of its business in comparison to other water utilities to benchmark performance over time (full report available in Appendix 3.1).

The movement in the total water and wastewater typical bill for the major urban water utilities between 2010-11 and 2020-21 is shown in Figure 3-16. SA Water is shown as a light green line in this analysis and the median as a grey line.

[46] The Bureau of Meteorology (BOM)(2023) *National Performance Report 2021-22 Urban water utilities*, BOM, Australian Government, accessed 1 March 2023.
[47] The total typical residential bill is indicator P8 in the NPR. Major utilities are those defined by the Bureau of Meteorology as having more than 100,000 connected properties.
[48] The total annual residential bill based on 200 kL per annum is indicator P7 in the NPR.

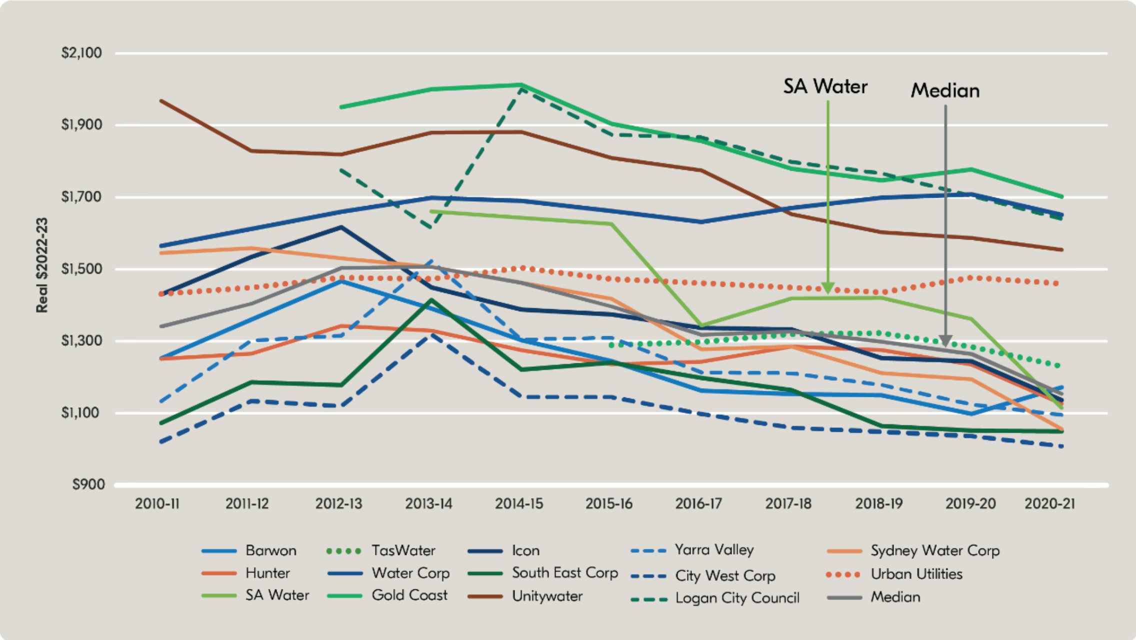

Figure 3-16 Total typical annual water and wastewater bill for major urban utilities 2010-11 to 2020-21 (Real $2022-23)[49]

Stantec noted that "while there is an overall decreasing trend for almost all utilities, SA Water's performance in reducing the total typical bill is notable with bills starting at a level amongst the highest of the peer group to now reducing to a level that is $39 per annum lower than the median and only $5 per annum above the lowest (best performing) quartile."

[49] The Bureau of Meteorology (BOM) (2022) National Performance Report 2020-21 Urban water utilities, BOM, Australian Government, accessed 1 March 2023.

Table 3-11 Change in typical water and wastewater bills for major urban utilities 2013-14 to 2020-21[50]

Change 2013-14 to 2020-21 ($2022-23)	Variance ($)	Variance (%)
South Australian Water Corporation	-$546	-33%
Sydney Water Corporation	-$450	-30%
Yarra Valley Water Corporation	-$428	-28%
South East Water Corporation	-$365	-26%
Unitywater	-$326	-17%
Icon Water	-$313	-22%
City West Water Corporation	-$310	-24%
Median	-$310	-21%
City of Gold Coast	-$298	-15%
Average	-$269	-17%
Barwon Region Water Corporation	-$219	-16%
Hunter Water Corporation	-$203	-15%
Water Corporation – Perth	-$47	-3%
Urban Utilities	-$13	-1%
Logan City Council	$25	2%

"Between 2013-14 and 2020-21, SA Water has shown the greatest reduction (by $546) in its water and wastewater bills per year comparatively, which is one third of the 2013-14 level of bills. This is a substantial reduction which is underscored by the level of SA Water's reduction being $235 better than the median reduction for the major urban utilities" (Appendix 3.1).

Stantec further concluded that "the reductions in bills for customers in South Australia have been achieved despite SA Water facing environmental factors that make it more difficult to deliver efficient services compared with its peers, all else being equal. These factors include:

- Having a relatively large asset base per customer compared with other major utilities. This can be seen in Figure 3-2" (shown here as Figure 3-17) "which shows that SA Water has the largest length of water mains to support per connected property at 33.2 km per 1,000 properties. This is double the median for major utilities at 16.7 km of water mains per 1,000 properties.
- Having a very low density of customers within its operating area, and one of three state-wide service providers in Australia along with Water Corporation (Western Australia) and TasWater (Tasmania). While the customer density over the operating area in Adelaide is reasonably high, SA Water also services a wide regional area with towns spread out over wide distances.
- Having to source a relatively large proportion of bulk water from higher cost sources compared with its peers. For SA Water, a major proportion of water in each year is sourced from the River Murray which is required to be transferred through large pipelines over long distances (Mannum to Adelaide – 87 km and Murray Bridge to Onkaparinga – 50 km). This water is also of relatively low quality and therefore requires greater treatment than for example the surface water sources that supply Melbourne and Sydney."

[50] The Bureau of Meteorology (BOM) (2022) *National Performance Report 2020-21 Urban water utilities*, BOM, Australian Government, accessed 1 March 2023.

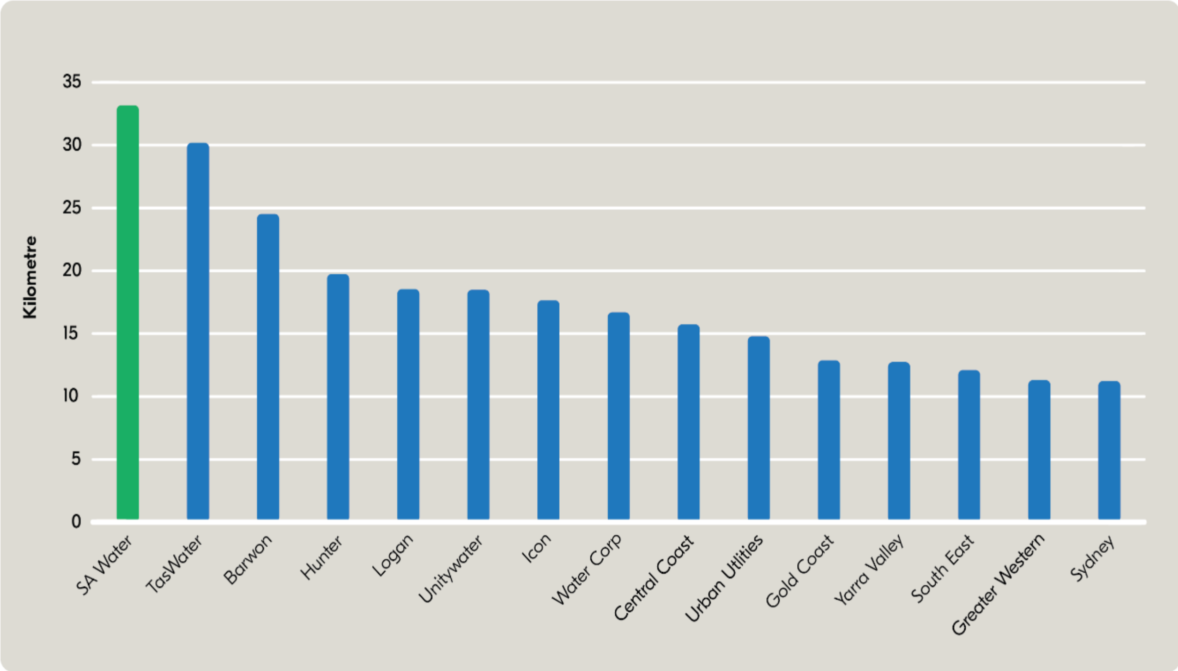

Figure 3-17 Length of water mains per 1,000 connected properties (2020-21)[51]

To demonstrate SA Water's achievements in reducing customer bills since the start of regulation, the movement of the level of customer bills with the movement in cost of other measures of living costs faced by customers was compared.

Figure 3-18 shows the change in water and wastewater bills compared to energy bills[52] for South Australia. Energy prices have increased since 2015-16, initially by 20 per cent which was sustained to 2019-20, then decreasing slightly in 2020-21. While energy prices have increased in real terms over this period, water and wastewater bills have shown consistent and sustained reductions in real terms.

[51] The Bureau of Meteorology (BOM) (2022) *National Performance Report 2020-21 Urban water utilities*, BOM, Australian Government, accessed 1 March 2023.
[52] Measured by the Market Offer for South Australia as published by the Australian Energy Market Commission (AEMC). The data are compiled from the annual residential electricity price trends report published by the Australian Energy Market Commission. The Market Offer is determined by multiplying the consumption of a 'representative' consumer's consumption by the average of the lowest representative offer provided by each market retailer weighted by market share. Note this data is only available from AEMC from 2015 onwards.

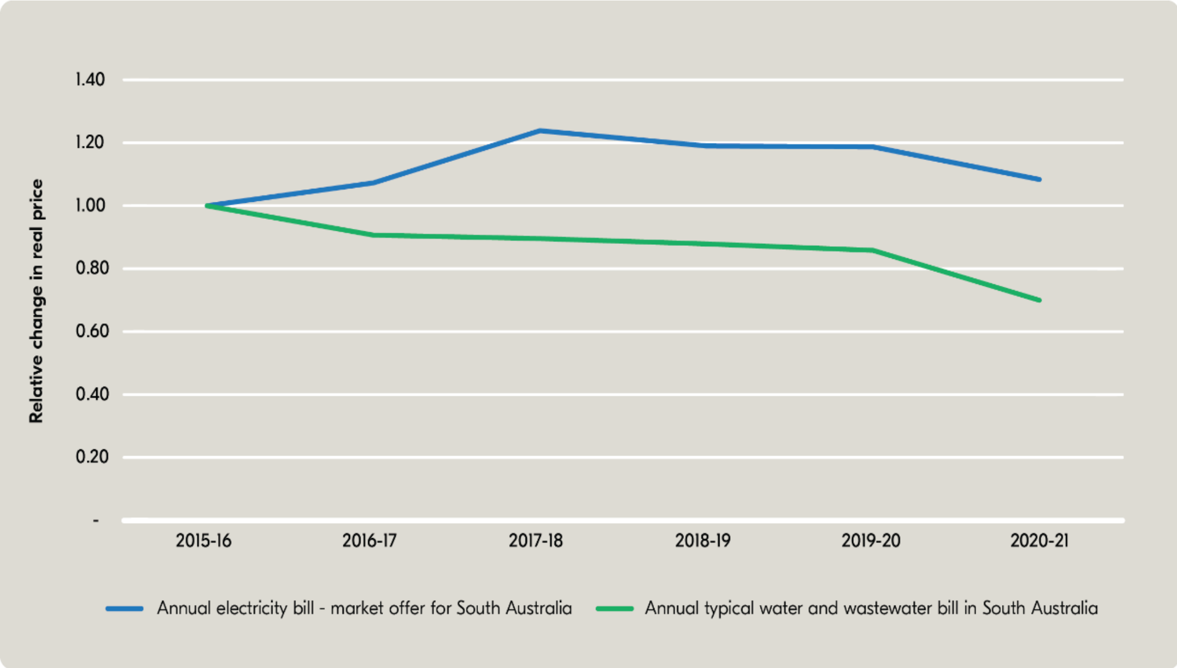

Figure 3-18 Change in price of Market Offer electricity bill in South Australia with water and sewerage bills in South Australia 2015-16 to 2020-21

Stantec also compared the movement in 2 major components of cost of living – food and non-alcoholic beverages, and housing – against the movement in water and wastewater bills. These 2 categories are components of the CPI prepared by the Australian Bureau of Statistics.

Figure 3-19 shows this trend over the period 2013-14 to 2020-21. Stantec concluded that "in this time, the cost of food and housing have increased by around 10 per cent. This is another demonstration of the substantial achievement made by SA Water in reducing water and wastewater bills over this period."

It is therefore evident that SA Water bills are low when compared to interstate peers and have reduced since 2013 when compared to other utilities and in comparison to other household costs including energy, housing and food and non-alcoholic beverages. However, another way to measure affordability of water and wastewater bills is "the proportion of income needed to pay for the bill. The appropriate measure is household incomes, as water and wastewater bills are applied to households" (outlined in Appendix 3.1).

Figure 3-20 shows the level of gross annual household income for the lowest and second quintile in real terms over the period 2013-14 to 2019-20 (solid lines) on the primary y-axis. The proportion of gross annual income that the typical water and wastewater bill for South Australia comprises (for these income quintiles) is also shown on the secondary y-axis (dotted lines) over this time.

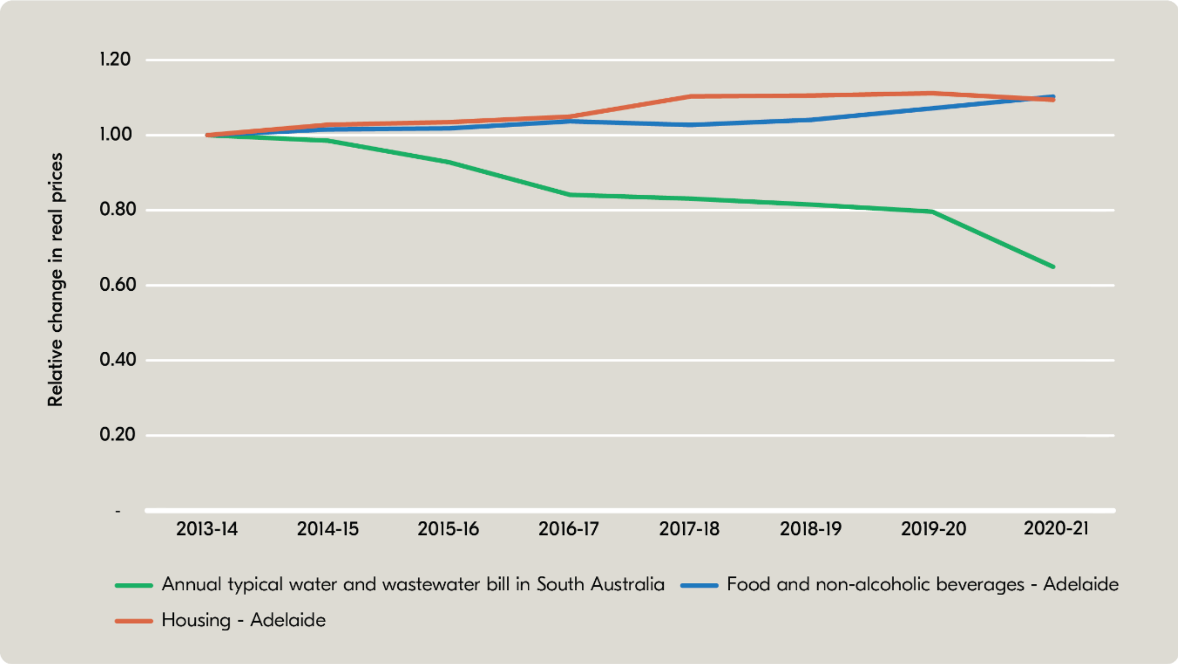

Figure 3-19 Change in price of food and non alcoholic beverages and housing for Adelaide compared with water and sewerage bills in South Australia 2013-14 to 2020-21

This shows that for the second quintile of annual gross household income, the water and wastewater bill represent close to 3 per cent of their annual income, and close to 6 per cent of their annual income for the lowest income quartile.

Stantec did note that "there is a decreasing trend in the proportion of household income needed to pay for water and wastewater bills for the lowest income households over time driven by the decrease in bills" (outlined in Appendix 3.1).

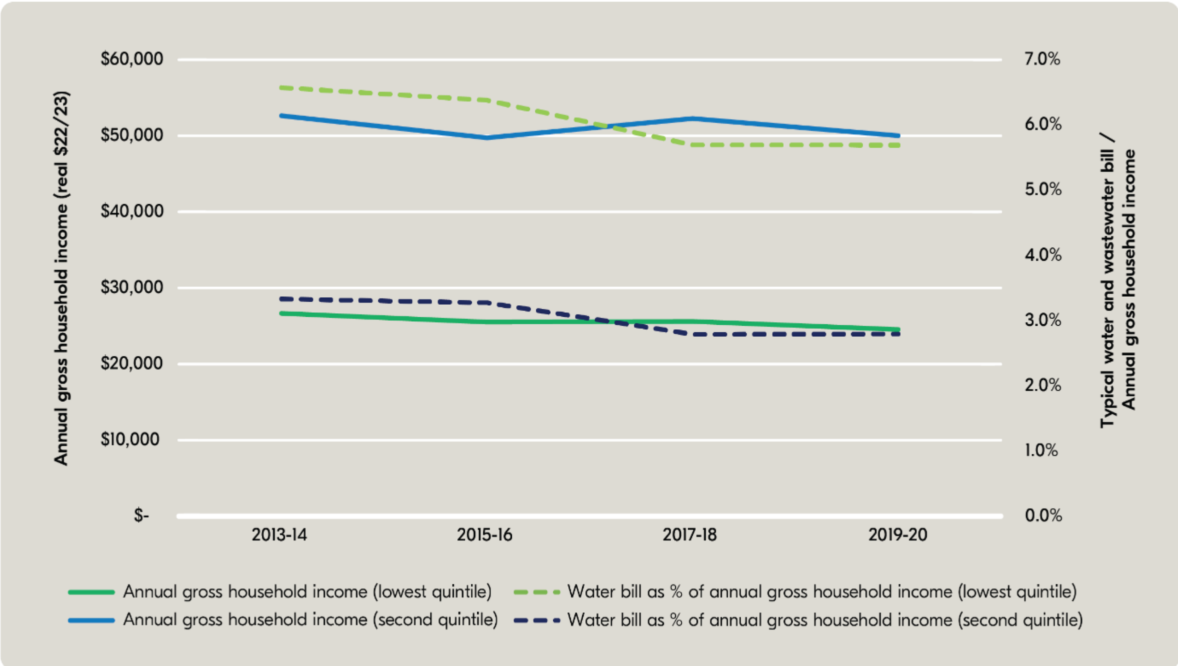

Figure 3-20 Water and wastewater bills as a proportion of annual gross household incomes

Finally, Stantec noted that "while the reduction in bills has been a good outcome for customers in South Australia, there are significant factors that are putting upward pressure on future bills. These include:

- SA Water having implemented significant efficiency opportunities since the beginning of regulation meaning that it is much closer to the efficiency frontier than at the beginning of regulation. Therefore, there is much less scope for catch-up efficiency in future
- an asset base that has aged compared over the period of comparison and therefore has increased need for investment to renew assets and sustain services
- increasing cost of capital" (Appendix 3.1).

These topics are discussed further in Chapter 8, 9 and 10, respectively.

3.5.2 Service and performance

Comparing service and performance measures across utilities/states can be difficult because, as Stantec notes, "measures of the level of service are also measured in different ways to make comparisons between service providers and for an aggregate level of service extremely difficult" but "one measure of service that does have reasonably consistent data set for major utilities is unplanned interruptions" (Appendix 3.1).

Figure 3-21 shows the number of unplanned interruptions per 1,000 customers for major water utilities. Over the period from 2013-14 to 2020-21, the level of unplanned interruptions for SA Water has been around 150 per 1,000 customers per year. Stantec concluded that "this analysis suggests that SA Water has provided a reasonably consistent level of service as measured by this one indicator, while at the same time materially reducing bills" (Appendix 3.1).

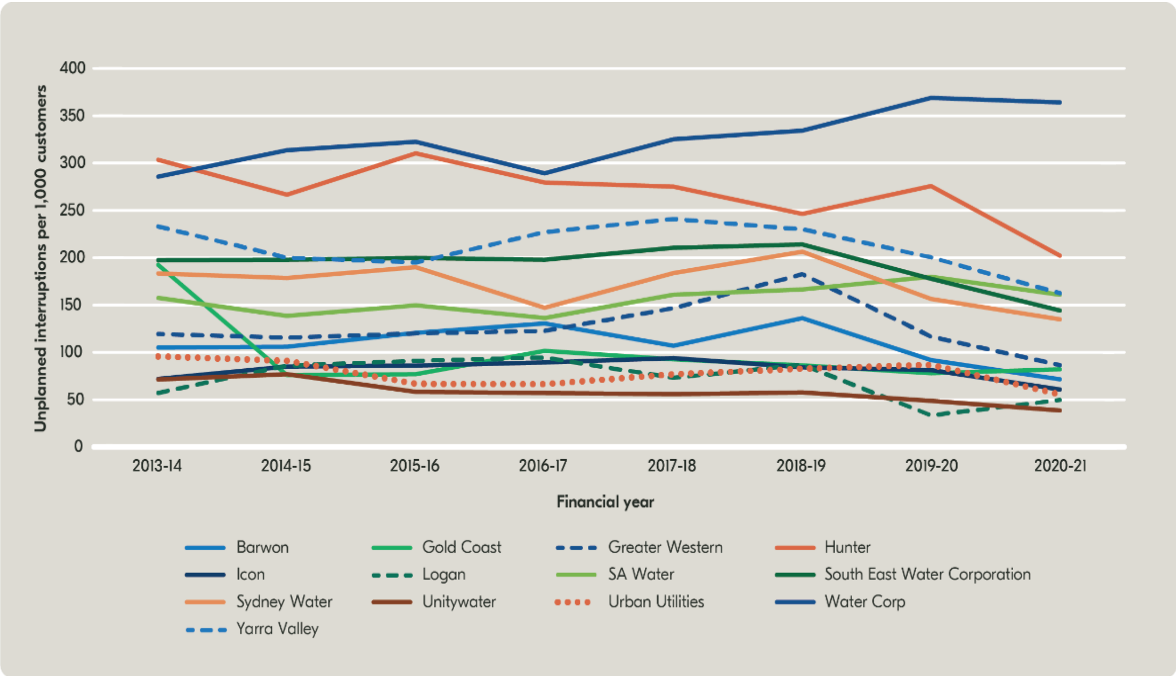

Figure 3-21 Unplanned water service interruptions per 1,000 customers

Stantec also stated that "given the difficulty in making like-for-like comparisons in the level of service provided by water utilities, an alternative approach is to consider customer complaints and customer satisfactions (sic). These measures go past the level of service and will capture how customers feel about the service provided to them."

Figure 3-22 shows the number of customer complaints per 1,000 properties for major urban water utilities for the period 2010-11 to 2020-21. Stantec states, “this shows that the level of customer complaints varies widely between utilities – by a factor of around six between the lowest and highest. One utility has shown an increasing trend over this period but all other utilities, including SA Water have shown flat or small decreases. This provides further evidence that the observed reductions in bills for SA Water’s customers has not been achieved at the expense of a reduction in service.”

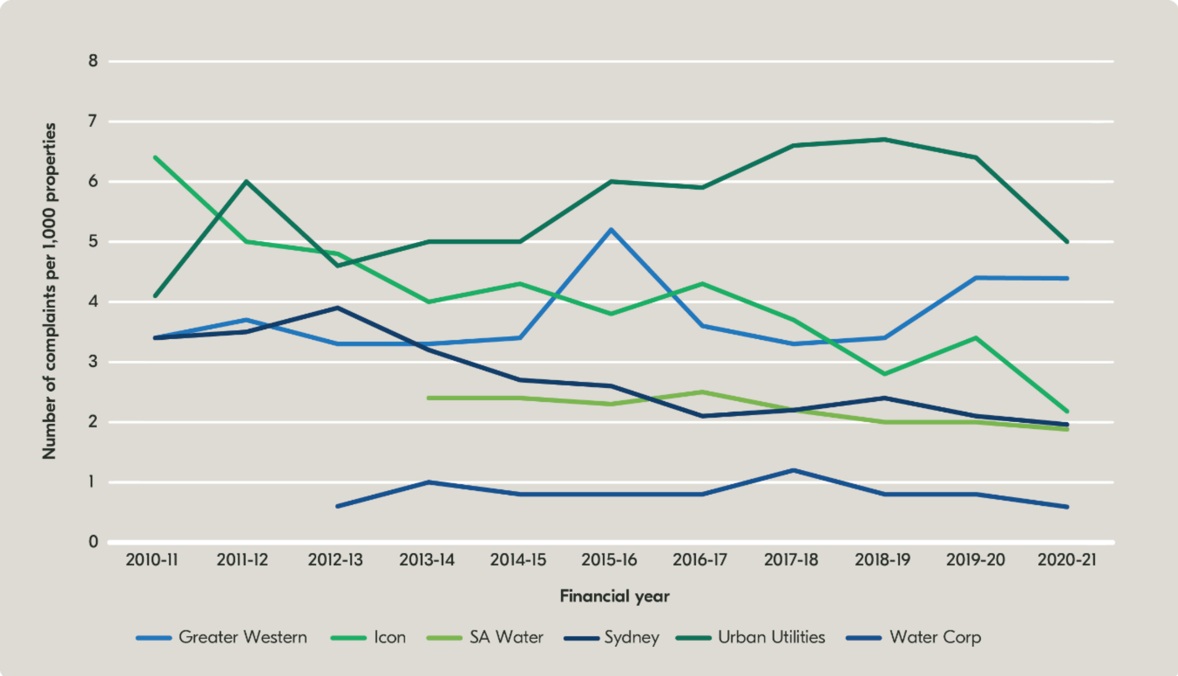

Figure 3-22 Complaints per 1,000 properties for major water utilities 2010-11 to 2020-21

3.5.3 Expenditure

SA Water’s actual expenditure for RD20 is detailed in Section 3.3. To understand how the organisation compares to equivalent utilities in terms of expenditure, SA Water commissioned KMPG to undertake benchmarking of SA Water’s operating expenditure compared to other utilities (see full report in Appendix 3.2).

In framing its analysis, KMPG recognised that “SA Water operates in a unique environment that it can neither control nor improve on when compared to other major water peers… These environmental factors require SA Water to operate in certain ways and generally increase its operating costs” (Appendix 3.2).

The environmental factors affecting SA Water noted by KPMG that are a point of difference to other water utilities include:

- smaller metropolitan water storage compared to other metropolitan cities
- relatively low densities of customers across large areas
- areas of relatively flat geographic landscape that requires extensive pumping to move water rather than gravity-based systems
- costly marine wastewater disposal into gulf environments, requiring higher levels of treatment (Appendix 3.2).

Therefore, to accurately compare operating expenditure across major utilities, a normalisation was undertaken to ensure more effective comparisons could be made.

KPMG normalised operating expenditure based on 3 factors: number of customers, length of infrastructure (such as water mains and sewer mains and channels) and customer demands. To achieve this, KPMG deduced that “there was a reasonable positive correlation between opex (operating expenditure) and the combination of: number of customers (C), length of infrastructure (i.e. water mains and sewer mains and channels) (L) and customer demands (D) (collectively 'CLD')" (Appendix 3.2).

The 3 variables were weighted as shown in the formula:

$$\mathbf{CLD = C^{0.5} \times L^{0.3} \times D^{0.2}}$$

KMPG noted that "these weightings represent the approximate degree to which each variable influences operating costs. E.g. the number of customers has approximately 2.5 x the degree of influence over operating costs than the volume demand does" (Appendix 3.2).

The CLD analysis has been used in the electricity industry, including in ETSA Utilities' 2010-15 regulatory proposal to the Australian Energy Regulator (AER) and in a 2008 report for the AER on proposed operating expenditure in New South Wales and the Australian Capital Territory.[53] The approach was previously used by Ofgem (the Office of Gas and Electricity Markets in Great Britain) where it was used to compare networks of different sizes and densities. As such, there are strong parallels to the water industry where major utilities operate with different sized footprints, geographies and densities. The same method of calculation employed for the AER has been used in KPMG's analysis ensuring a degree of independence.

Figure 3-23 below shows the CLD analysis undertaken for the combination of water and wastewater operations for SA Water compared to its peers for 2020-21. As this analysis has been completed for each regulatory period, SA Water's results for 2013-14 and 2017-18 are also shown for comparison. The solid/dotted lines are the average operating efficiency across all utilities. Where a utility is below this line it would be deemed to be more efficient than the average.

KPMG concluded that "SA Water is well positioned, being one of the frontier organisations" (where a frontier organisation is one of the most efficient out of its peers) as "SA Water continues to remain below the industry average line, indicating better efficiency than its peers over the period" (as outlined in Appendix 3.2).

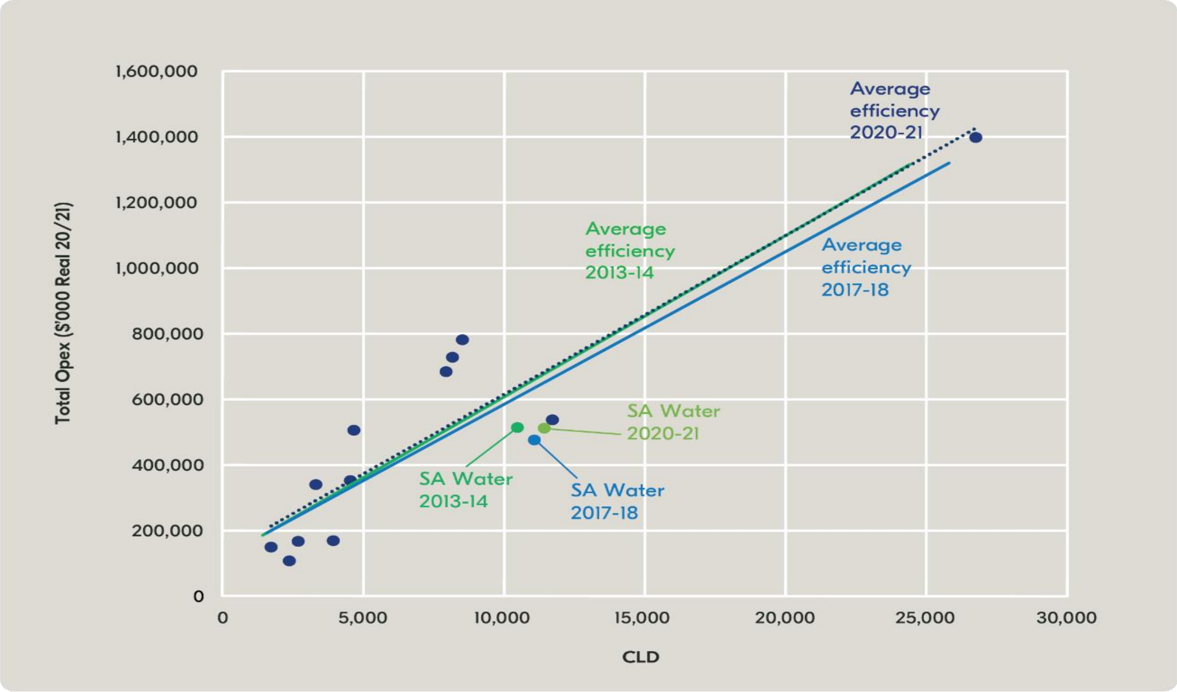

Figure 3-23 Total operating expenditure (Opex) CLD analysis (2020-21)

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53 ETSA Utilities (2009) *ETSA Utilities Regulatory Proposal 2010–2015*, ETSA Utilities, accessed 1 March 2023; Wilson, Cook and Co Limited (2008) *Review of Proposed Expenditure of ACT & NSW Electricity DNSPs Volume 1 – Main Report*, Wilson, Cook and Co, accessed 1 March 2023.

For water operations, KPMG noted that SA Water's average water operating expenditure per customer was below the median despite SA Water having the lowest average customer density compared to its peers (Figure 3-24). In addition, the average operating expenditure per kilometre of water mains was the lowest amongst its peers. This is shown in Figure 3-25.

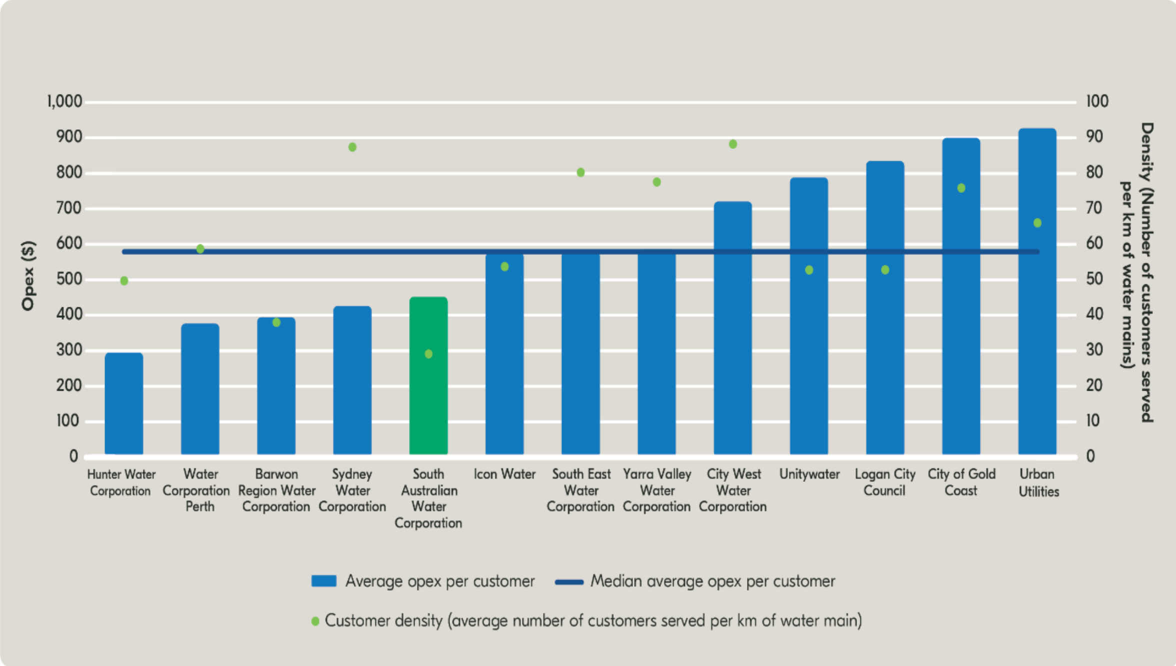

Figure 3-24 Average water operating expenditure (Opex) per customer (2016-17 to 2020-21)

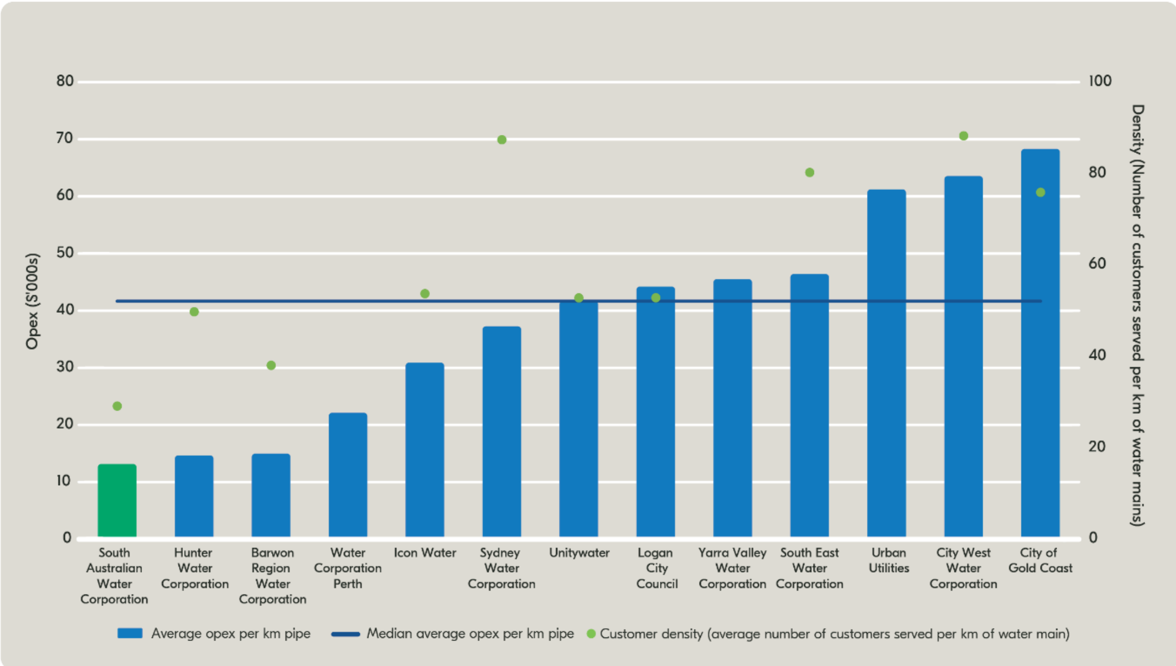

Figure 3-25 Average water operating expenditure per kilometre of water mains (2016-17 to 2020-21)

For wastewater operations, KPMG noted that SA Water had the lowest average sewerage operating expenditure per customer compared to its peers (Figure 3-26) and the lowest average sewerage (wastewater) operating expenditure per kilometre of sewer main and channel in the peers group (Figure 3-27). Refer to Appendix 3.2 for more information.

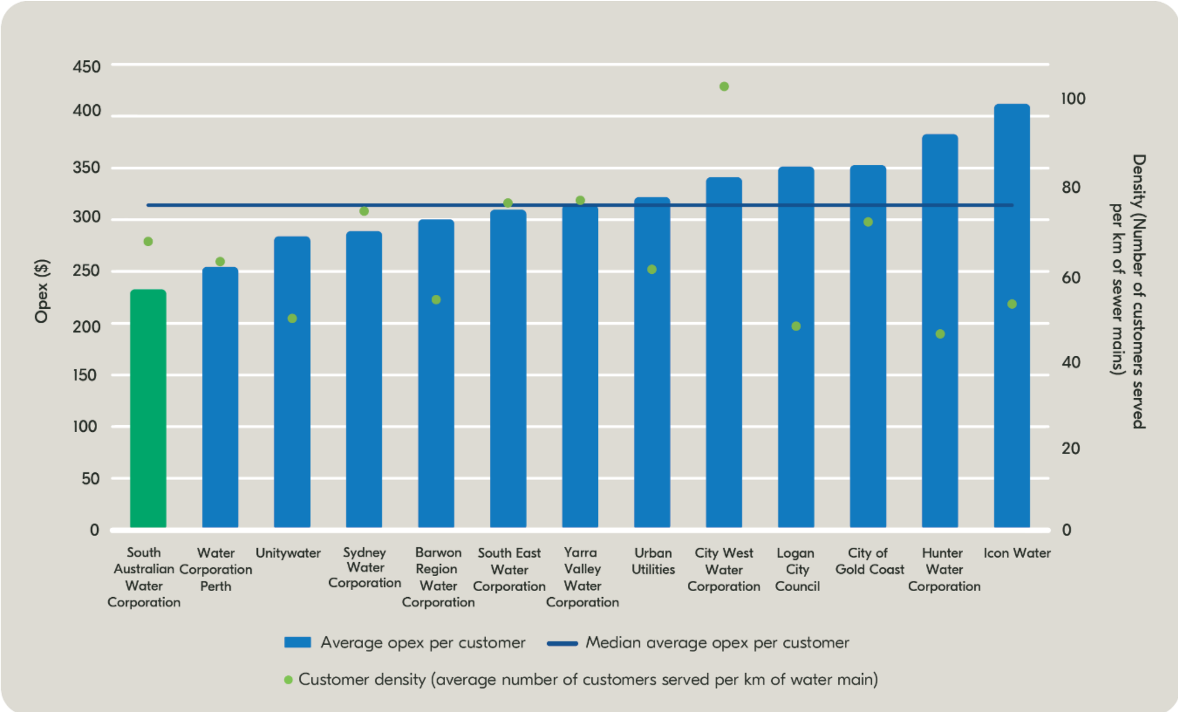

Figure 3-26 Average wastewater operating expenditure (Opex) per customer (2016-17 to 2020-21)

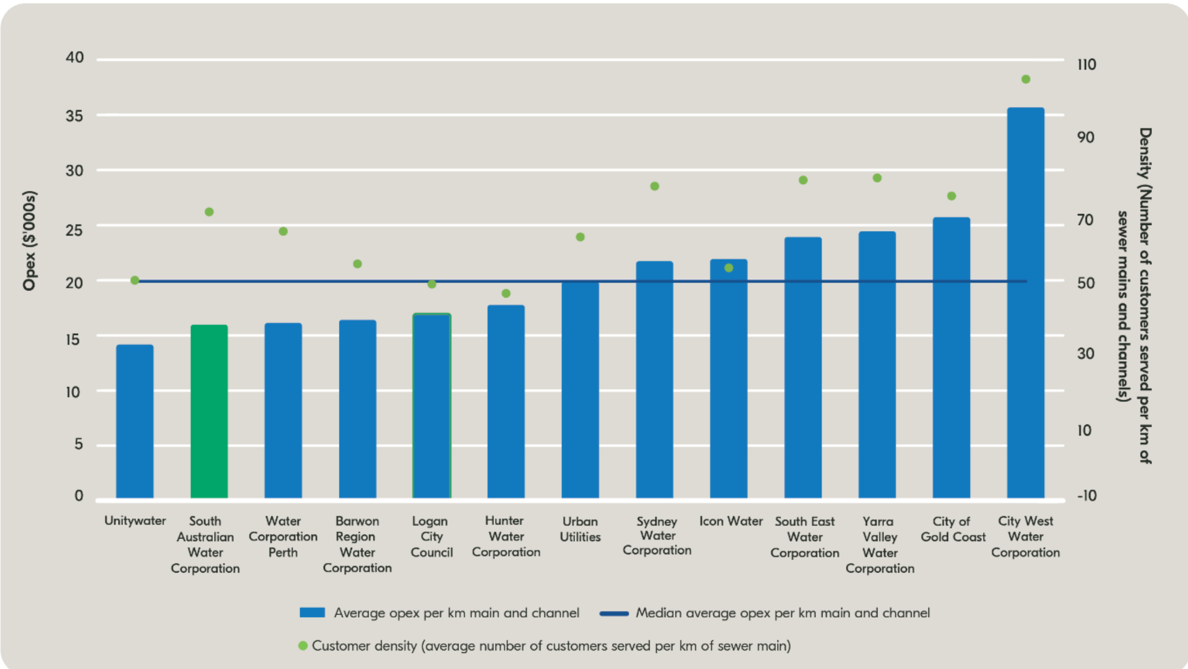

Figure 3-27 Average wastewater operating expenditure (Opex) per kilometre of sewer mains (2016-17 to 2020-21)

This is the fourth CLD analysis undertaken as part of SA Water's regulatory submissions. It continues to show that the Corporation's operating performance and efficiency is consistently favourable to the major utility average and better than most water utilities. This supports the conclusion that SA Water is operating efficiently.

3.5.4 What this means

Benchmarked results provide SA Water with assurance that its actual operating expenditure has been more efficient than the average of its peers to date. Even with the difference in environmental conditions, the Corporation continues to make expenditure decisions that are prudent and efficient, and support customer outcomes.

SA Water will continue to monitor and benchmark its performance to ensure operating expenditure is as efficient as possible. Operating expenditure planned for RD24 is discussed in Chapter 9.

4 Customer and stakeholder engagement

SA Water recognises its relationships with customers and stakeholders are critical to the delivery of services, and it actively seeks to understand their views and preferences to support delivering the services they value and expect.

To achieve this, SA Water works with customers and stakeholders in a variety of ways, from broad interaction through to targeted engagement and research, and integrates these customer and stakeholder insights into its activities.

In developing the Regulatory Business Plan (RBP), SA Water has sought to meet the Essential Services Commission of South Australia's (ESCOSA's) engagement expectation to ensure that "*stakeholders are consistently and appropriately being involved in discussions about investment needs and planning, investment prioritisation and service delivery approaches - in both a long-term sense and in the context of each four-year regulatory determination period*".[54]

SA Water has ensured, as expected from Guidance Paper 2, that the RBP:

- is informed by meaningful engagement with a diverse range of stakeholders
- reflects engagement with stakeholders through a diverse range of channels and methods
- carefully considers and incorporates stakeholder views and feedback into project design and prioritisation[55].

SA Water used a multi-modal approach to understand the values, expectations, perceptions and satisfaction of customers and the broader community through research and engagement for RD24.

Aligned with Guidance Paper 2, the approach to stakeholder engagement for the 2024 Regulatory Determination (RD24) has been an extension of SA Water's business-as-usual research and engagement activities, with additional activities as required by the RD24 Framework and Approach.[56]

Appendix 4.1 provides an overview of the alignment between the requirements for the engagement approach outlined by ESCOSA in its Guidance Papers and how this is reflected in SA Water's submission preparation.

The business-as-usual engagement and research which provided the foundation for RD24 engagement activities included:

- Customer research – quantitative and qualitative research undertaken to ensure key decisions that impact SA Water's customers and community are evidence-based, with fair and equitable representation of the diversity of customers and community in research activities.
- Water Talks[57] – SA Water's online engagement platform which is used to engage with and educate customers and the community on specific projects and initiatives.
- Customer Advisory Group – a consultative body comprising representatives from consumer, industry and community organisations to provide a mechanism for SA Water to better understand the needs of member groups and consumers. This group includes both residential and commercial representatives and is used to engage on topics including service standards, policies, processes and strategies.
- Wider World Advisory Group – a group comprising customers with specific needs, including representation of people living with a diverse range of disabilities, people

[54] ESCOSA (2021) '*SA Water Regulatory Determination 2024 Final Framework and Approach*', ESCOSA, accessed 23 February 2023.
[55] ESCOSA (2022) '*SAWRD24 - Guidance Paper 2 - Stakeholder engagement*', ESCOSA, accessed 23 February 2023.
[56] ESCOSA (2022) '*RD24 - Guidance Paper 2 - Stakeholder engagement*'; ESCOSA (2021) '*SA Water Regulatory Determination 2024 Final Framework and Approach*'.
[57] SA Water (n.d) *Water Talks*, SA Water website, accessed 23 February 2023.

from culturally and linguistically diverse backgrounds, Aboriginal and Torres Strait Islander people and older customers.

- Key stakeholder relations – SA Water meets regularly with individual organisations that are significantly affected by or can significantly influence its strategic goals, plans and operations. This includes community representative groups, federal and state government agencies, and industry bodies.

The information gained from these activities provided a foundation for, and informed, RD24 stakeholder engagement planning.

In addition to these ongoing engagement activities, SA Water also established additional engagement activities specific to RD24 which are detailed in Section 4.1 and 4.2.

Note that the ways in which this engagement has influenced specific investment decisions is detailed in the capital and operating expenditure sections of the RBP.

SA Water commenced engagement across three phases as summarised by Figure 4-1 below, following ESCOSA's release of the SA Water Regulatory Determination 2024 Framework and Approach in September 2021.

Phase 1 included a review of information from previous research, establishing the engagement plan and approach, and setting up advisory bodies in accordance with ESCOSA's Framework and Approach. The key additional requirement from ESCOSA's RD24 Framework and Approach was the establishment of a Customer Challenge Group. This is detailed further in Section 4.1.3.1.

Phase 2 involved delivery of the research and engagement program specific to RD24 – this is further detailed in Section 0and 4.2.

Phase 3 was the validation phase to ensure that final investment decisions considered stakeholder expectations.

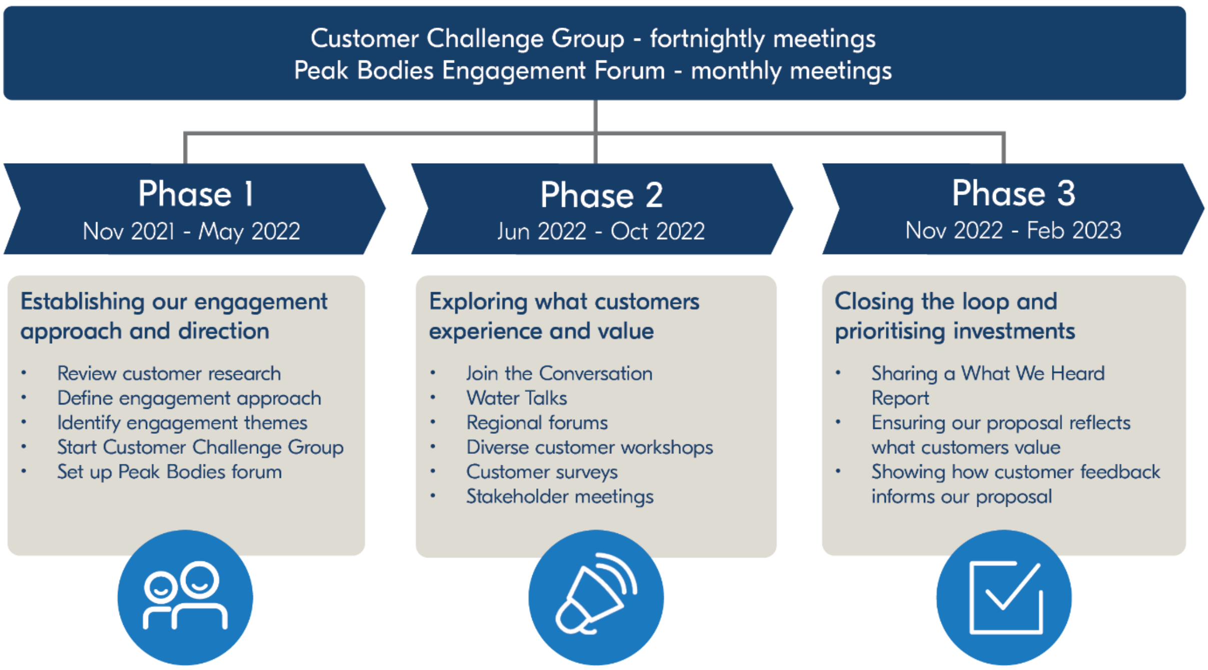

Figure 4-1 RD24 engagement phases

To facilitate meaningful customer, community, and stakeholder contributions for RD24, SA Water focused on 5 key foundational themes around which engagement activities were developed:

1. Delivering reliable water and wastewater services to you
2. Improving your customer experience with us.
3. Providing equitable and affordable services.
4. Ensuring water security into the future.
5. Being a leader in environmental and sustainable practices.

These themes reflected customer priorities identified in previous customer research. A detailed summary of the customer research that informed the submission can be found in the RD24 Engagement Phase 1 Report in Appendix 4.2.

Using themes enabled SA Water to frame discussions and gain useful insights about its critical challenges, including infrastructure renewal, projected growth of the customer base, exhaustion of low-cost water sources, changes to baseline operations due to climate change, and the increased cost of doing business.

The objectives of the RD24 engagement program were to:

1. Ensure customers, community and stakeholders were fully informed about the regulatory determination process and how they could be involved.
2. Engage in a meaningful way with an appropriately diverse range of customer and community stakeholders to feed their interests into project design and prioritisation processes.
3. Ensure customer, community and stakeholder expectations, values and priorities were appropriately and robustly reflected in the proposal to ESCOSA.

To achieve these objectives, a 3-pronged approach to engagement was applied – broad, targeted and deliberative. The engagement approach was framed to align with and address the expectations set out ESCOSA's Guidance Paper 2 and informed by the International Association for Public Participation Australasia's (IAP2) Public Participation Spectrum.

4.1.1 Broad engagement

This approach focused on reaching broad and diverse audiences. Table 4-1 shows the types of activities SA Water used to engage with customers, the broader community, and key stakeholders. These activities were used to raise awareness about the RD24 process, how to get involved, and to encourage feedback from a wide audience. They reached thousands of customers.

Social media advertising and marketing was used to encourage people to engage in the below processes, with a combined reach of more than 1.4 million people (Facebook reach of more than 620,000, online advertising reach of around 600,000, and more than 180,000 letterbox drops).

Table 4-1 Types of broad engagement activities

Activity	Participation
RD24 information and engagement via Water Talks website	2,836 visits to RD24 on the Water Talks website
Online survey on engagement themes	116 responses to the online survey
Regional and metropolitan workshops	6 regional face-to-face workshops across South Australia (in Mount Gambier, Ceduna, Kadina, Berri, Victor Harbor, Whyalla) and 2 metropolitan Adelaide workshops
Community pop-up sessions across metropolitan Adelaide to speak face-to-face	34 conversations at community pop-ups across the metropolitan area to supplement the feedback received through workshops
'Would you invest in this?' survey	1,919 responses to a 'Would you invest in this?' survey. Based on the SA Water customer base, this response rate is considered high, providing a two per cent margin of error at a 95 per cent confidence level

The Water Talks engagement website provided a platform to engage and seek meaningful input from the broader community on the 5 key engagement themes. A dedicated RD24 landing page, 'Planning for 2024-28'[58], provided information about the process, engagement opportunities, fact sheets, how to get involved and the RD24 timeline.

Community pop up sessions were held at libraries and shopping centres across metropolitan Adelaide to enable people to join the conversation face-to-face. This provided an alternative format to the other digitally based activities, thereby enabling richer interactive conversations with customers to supplement the other activities. Community members were asked five questions, each relating to an engagement theme.

A willingness to pay survey called 'Would you invest in this?' was undertaken to test customer support and the level of investment they would be willing to make when paying for new services. This survey method and result is detailed further in Section 4.2.3.

For more information on the broad engagement undertaken, refer to page 7 of the *What we Heard* report in Appendix 4.3.

4.1.2 Targeted engagement

During the targeted engagement, key stakeholders, organisations and community members were engaged directly to ensure diverse perspectives informed the RBP. Discussions were based on interest, impact, location or the RD24 engagement themes. Types of targeted engagement are summarised in Table 4-2.

[58] SA Water (n.d.) Water Talks, SA Water website, accessed 23 February 2023.

Table 4-2 Targeted engagement

Activity	Audience
Regional community conversations (workshops and interviews)	Key stakeholders and community members across the state (including several CEOs and Regional Managers covering populated areas in the South East, Eyre Peninsula, Yorke Peninsula, Riverland, Adelaide Hills and Upper Spencer Gulf).
Key stakeholder conversations (interviews and meetings)	Organisations with a specific interest in water and wastewater services. This included Uniting Communities, Consumers Association of SA, Australian Migrant Resource Centre, Youth Environment Council of SA, and SA Aboriginal Community Controlled Organisation Network.
Community meetings and workshops	Interested community members across urban and regional South Australia, including Adelaide, Ceduna, Kadina, Port Pirie and Adelaide Hills.

Activities included regional conversations through community workshops and interviews with key stakeholders to enable feedback on issues specific to geographic areas. The 5 engagement themes helped to focus these conversations on customer priorities identified in strategic research previously undertaken by SA Water.

Targeted engagement also included customer research undertaken to inform specific RD24 initiatives. This research is discussed in more detail in Section 4.2. Research outcomes were shared internally to inform investment proposal development.

For further information, refer to page 7 of the *What we Heard* report in Appendix 4.3.

4.1.3 Deliberative engagement

Deliberative engagement involved establishing forums for representative groups to discuss and challenge RD24 planning processes and business proposals. This included understanding and discussing specific business proposals. Discussions included proposed investments, prioritisation, and assessment and management of customer-related risks.

The 2 forums for deliberative engagement were the Customer Challenge Group (CCG) and the Peak Bodies Engagement Forum (PBEF), which are detailed further below. A summary of the engagement with each group is provided in Table 4-3.

Table 4-3 Summary of CCG and PBEF engagement for RD24

Customer Challenge Group	Peak Bodies Engagement Forum
26 meetings	12 meetings
40+ hours of deliberation	24+ hours of deliberation
50+ business cases challenged	10+ business cases challenged

4.1.3.1 Customer Challenge Group

The CCG was established in November 2021 to "constructively challenge all aspects of the Regulatory Determination 2024"[59] and comprised 11 people representing a cross-section of SA Water customers. CCG members were selected through an expression of interest process, which considered a cross-section of skills, backgrounds, and demographics.

ESCOSA representatives were invited to, and attended, all CCG sessions in an observational capacity.

As per the requirements in the RD24 Framework and Approach, "the Customer Challenge Group is expected to:

- comprise community members who can engage with SA Water at a strategic, whole of business level, about investment requirements and prioritisation
- discuss, debate and challenge the assumptions underpinning the needs for investments and the options to be considered to deliver the benefits expected to be achieved, and
- help SA Water to design, conduct and review the findings from various forms of customer research, with a particular focus on any research that will be used to inform future investment decisions."[60]

After a comprehensive induction program, the CCG met for 2 hours each fortnight from January 2022 and continued into 2023. At facilitator-led meetings, the CCG was empowered to challenge proposals and provide feedback to ensure decision-making processes were robust and proposals represented what customers valued and expected.

Members elected to focus specifically on new initiatives and approaches aimed at improving services or supporting growth. They also considered investment proposals developed to meet a legal obligation and those related to maintaining current service standards where the potential costs were significant. They also considered customer research that informed and supported specific initiatives. When evaluating business cases, the group challenged rationale, timing, spend and customer impacts.

The process was iterative. Feedback was provided after each session to those at SA Water who developed the draft initiatives for careful consideration and incorporated into a revised initiative design. Feedback from the CCG was also shared with internal RD24 governance committees to inform the prioritisation process.

For further information, refer to page 8 of the *What we Heard* report in Appendix 4.3.

4.1.3.2 Peak Bodies Engagement Forum

The PBEF was established to ensure broad, inclusive and collaborative engagement with key industry and community representative organisations. Membership comprised the existing SA Water Customer Advisory Group and members of ESCOSA's Customer Advisory Committee. Membership was also expanded to ensure an inclusive representation of customers and community.

Engagement with PBEF involved monthly facilitator-led meetings with the 2-hour sessions held from February to December 2022. PBEF members were provided with the meeting topics in advance and were able to opt into meetings most relevant to their membership cohort. Members were highly engaged on the topics that interested them. A small number of members who represent broad interests attended most meetings, while most members attended only the topics of relevance to them.

[59] SA Water (2022) *Customer Challenge Group Terms of Reference* [unpublished terms of reference], SA Water, Adelaide.
[60] ESCOSA (2021) '*SA Water Regulatory Determination 2024 Final Framework and Approach*', ESCOSA, accessed 23 February 2023.

In addition, meetings between SA Water and individual member organisations were also held as needed to explore specific areas of interest.

The forum comprised representatives from:

- Business SA
- Australian Industry Group (AIG)
- Urban Development Institute of Australia (UDIA)
- Property Council of Australia, SA
- Local Government Association (LGA)
- South Australian Council of Social Services (SACOSS)
- Council on the Ageing SA (COTA)
- Multicultural Communities Council of SA (MCCSA)
- Consumers Association of South Australia
- JFA Purple Orange (Julia Farr Association)
- SA Federation of Residents and Ratepayers Association
- South Australian Aboriginal Community Controlled Organisation Network
- Youth Affairs Council of South Australia (YACSA)
- Uniting Communities
- Conservation Council SA.

Members were informed and consulted on RD24 plans, investment proposals and key challenges. They provided insights and advice on specific areas of concern and interest to the sectors and communities they represent. They also played a key role in bringing a diversity of voices to the RD24 process by promoting engagement opportunities to their members. ESCOSA representatives were invited to, and attended, most PBEF sessions in an observational capacity.

PBEF members brought a wealth of collective knowledge, experience and historical context to discussions to inform and shape the direction of proposals. To facilitate the incorporation of this information into RD24 planning and investment proposals, feedback was provided after each meeting to those at SA Water who developed draft initiatives.

For further information, refer to page 9 of the *What we Heard* report in Appendix 4.3.

4.2 Customer research

As with engagement, the customer research that informed RD24 was an extension of business-as-usual activities for SA Water. Customer research helps SA Water and its partners understand and connect with customers, so the business, through its strategy, plans, projects and services, is customer-driven. It ensures SA Water understands and measures what customers think about its services and how these could be improved to meet changing customer expectations over time.

SA Water uses both qualitative and quantitative approaches to understand the expectations, perceptions and satisfaction of customers and the broader community. The customer research that informed SA Water's current strategy and longer-term planning is an important input to this submission and has been a consideration for making investment decisions for RD24. SA Water's approach and the outcomes from this customer research is described below.

4.2.1 Customer expectations on future actions

Customer and stakeholder research was a key input to SA Water's current strategy - *Our Strategy 2020-25*. This research identified what customers and stakeholders expected from a water utility of the future. Further information on the strategy research is provided in Appendix 2.1.

Subsequent prioritisation research validated that customer expectations still aligned with those that informed SA Water's current strategy and identified the actions that customers wanted SA Water to take. For instance, this research showed that customers still expected investment in the water and wastewater networks, and proactive environmental leadership to ensure that environmental outcomes are considered in all parts of SA Water's operations. Customers also continue to recognise the need to be innovative to meet expectations and address challenges. Further detail on this research is provided in the Customer Research Summary in Appendix 4.2.

All new investment proposals for RD24 needed to demonstrate alignment with SA Water's strategy to ensure investment is aligned with customer expectations, both now and into the future. The prioritisation research outcomes reinforced that *Our Strategy 2020-25* aligned with customer expectations. They also guided the start of the regulatory planning process to ensure that SA Water's proposals for RD24 will meet customer needs.

4.2.2 Research informing RD24 investments

Customer research that informed the RBP is summarised in Figure 4-2, Table 4-4 and Table 4-5. Insights and feedback collected through ongoing tracking research (brand health, customer satisfaction, trust index and complaints data) have been important information sources for RBP development. For example, SA Water used this research to help assess whether the current service standards met customer expectations going into the forward regulatory period.

Figure 4-2 RD24 customer research pathway

Ongoing research (Table 4-4) measures and tracks both perception-based and service-based elements of SA Water as an organisation and its delivery of core services. It enables SA Water to gain ongoing insight into customers' needs and to better understand how initiatives can meet their expectations. This can help SA Water identify any areas of improvement, both generally and for the forward regulatory period.

Table 4-4 Ongoing tracking research

Research program	Purpose	Data collection frequency	Sample size
Brand health and trust index research	Measurement of community perceptions regarding SA Water	Quarterly	1,600 responses annually
Customer satisfaction (CX) tracker	Measurement of customer satisfaction following a service experience with SA Water	Weekly	20,000 responses annually
Complaint resolution satisfaction	Measurement of satisfaction with how an escalated complaint (not resolved at first point of contact) was handled	Weekly	Varies, depending on number of complaints resolved

Research was also carried out to inform specific investments within the RBP, as outlined in Table 4-5. This research was undertaken where there was:

- a gap in knowledge about customer preferences
- a desire to explore potential future investments
- to validate what was heard previously from customers through strategic and ongoing research.

This research was used to inform planning for RD24 and future period activity. It reflects the outcomes of what customers told SA Water, including feedback on initiatives and programs that may not neatly align with the ESCOSA's regulatory remit.

Table 4-5 Customer research to inform specific projects

Initiative	Research objective	Sample size	Key findings
Purified recycled water (PRW) for drinking	Understand the current perceptions, support for, and potential uptake of PRW among the South Australian population.	1,133 survey responses (2021) 1,200 survey responses (2022)	Most residents (76 per cent) were aware of PRW, and two-thirds would be willing to consume it. There is evidence that support for PRW increases when additional information is provided, and two-thirds would support a demonstration plant to build knowledge and understanding. The environmental benefits of PRW were viewed by customers as the key benefit of this technology. Those who were concerned about PRW mentioned the concept of 'wastewater' and the 'thought of it', and the potential safety/risks of the purification process.
Wastewater network – odours and overflows	Understand customers' thoughts about the wastewater network, from the perspective of both those who have and have not experienced issues. Understand whether customers value investment in solutions to achieve	576 survey responses	Of those who had experienced wastewater odour in the past, 52 per cent had reported it to SA Water. Two-thirds were satisfied with the experience and 61 per cent were satisfied with being kept informed. However, the more times a customer contacted SA Water, the lower their satisfaction. Of those who made contact once or twice, 84 per cent were satisfied, compared with 54 per cent who were satisfied after making contact 3 or more times. Keeping customers informed and longer-term fixes were key improvements

Initiative	Research objective	Sample size	Key findings
	an improved level of service.		mentioned, and respondents supported investment in monitoring equipment to reduce the likelihood of sewer network odours in the first place. Customers told SA Water that continuous service is the key element of reliable sewerage services, and they prioritised sewer pipe cleaning to reduce the likelihood of internal and external overflows. Nine out of 10 said it was important that SA Water invest in solutions to reduce the likelihood of customers being impacted by overflows.
Billing modernisation	Understand customer expectations of offerings and services relating to billing and billing options, including billing formats, payment methods/frequency, security, smart data and future expectations.	18 in-depth customer interviews 420 survey responses	Demand for eBilling increased and there was a higher preference for BPAY and online payments rather than direct debit. A quarter of customers would also like to receive or pay their bills more regularly, with about 7 out of 10 customers willing to read their own meters. Customers tended to prefer digital self-service options but expected SA Water to be there for more complex issues or enquiries.
Optimised Customer Relationship Management notifications	Understand what types of communication residential and business customers expect, including billing preferences, bill stress, account set-up, and notifications.	20 residential interviews 5 business customer interviews	There was a lot of variability in the types, frequency and delivery methods of notifications that people expected. Providing people with the flexibility to choose how they received different notifications and which ones they received would give customers better control over their interactions with SA Water. An option for people to opt in or out of notifications would enable better control over what they received.
Customer contact preferences	Understand the communication preferences of SA Water customers.	1,002 survey responses	Customers were interested in setting bill reminders and being able to control their contact preferences. Customers wanted to be contacted by text message for most outbound communications. There was a strong demand from younger customers for more technology-based contact channels.
Tenants as customers	Explore the tenant relationship with utilities (including billing preferences, expectations from service providers, use and behaviour, support services and financial hardship), to inform service propositions to meet tenants needs.	25 in-depth interviews 17 participants in 2 regional focus groups 400 survey responses	Tenants felt they had a lack of visibility of water use, which was an issue when bills were high. This limited their ability to monitor and control consumption, and they felt they had no control over the water use information they received. Three-quarters of tenants surveyed wanted the option to request extra time to pay their bill, 71 per cent wanted a payment plan option to spread the costs of high bills, and 68 per cent wanted to speak directly to SA Water for bill support. Tenants felt that poorly maintained properties impacted their water bills, with unintended leaks leaving tenants out of pocket.

Initiative	Research objective	Sample size	Key findings
			The majority of tenants (83 per cent) wanted to receive notifications for water supply interruptions, and 77 per cent said they would want alerts for progress on repairing faults.
Wider World accessible services	Research with a diverse range of customers to understand their very specific needs, to inform new and improved products and services.	108 participants – interviews/focus groups 555 survey responses	Two thirds of customers with a disability could only manage for a short time without water. Of those, 20 per cent were critical water users with high care needs and couldn't get by for more than a couple of hours without water. 43 per cent had moderately critical water needs, requiring water as part of a daily routine for wellbeing and to help them function. Overall, a quarter of customers said they had high water use relating to their disability. More than a third of customers who spoke a language other than English would like more time or help when communicating with SA Water.
Carbon offsets	Estimate customers' willingness to pay for carbon abatement and co-benefits arising from carbon offset projects.	300 survey responses	The planting of new native forests and the ability of these forests to support significant biodiversity was valued the most highly out of all options presented, with South Australians willing to pay to support this initiative. Two-thirds of respondents felt climate change was occurring mostly due to human activity, and almost half felt that SA Water should aim to achieve net zero greenhouse gas emissions before 2050.
Service standards	Understand the current perceptions of service standards.	7 focus group participants 1,153 survey responses (929 residents, 224 businesses)	There was a perception that SA Water performed well across all standards for customer satisfaction. Modelling showed satisfaction was more complex than meeting the standard, with ease of communication an important driver. Desire for improvement was lower for customers who had a service experience with SA Water, and willingness to pay was low across the board. As such, SA Water considered that there was little appetite from customers in the survey cohort to amend the service standards performance at this time.

4.2.3 Willingness to pay study

To further inform and prioritise new initiatives, during August and September 2022, SA Water tested how customers valued proposed new initiatives through a willingness to pay (WTP) study. A WTP study is a tool to better understand a customers' preferences when prioritising investments.

The study:

- provides a measure of the average maximum bill increase that customers would be willing to pay to support a service improvement
- measures a customer's willingness to accept trade-offs between different outcomes and levels of service.

By providing an economic measure of benefits, SA Water can put a dollar value on proposed changes in services. It can then confirm with residential and business customers whether they accept the initiatives they said were previously wanted, at the expenditure needed to achieve them, and with the associated bill impact. This ultimately gives an understanding of their capacity and willingness to pay for the services identified.

Willingness to pay is only one information source within a suite of engagement inputs informing investment prioritisation. The investment proposals tested were also assessed against other engagement outcomes, where relevant, and other prioritisation measures were applied to all investment proposals.

The study followed the approach shown in Figure 4-3. It was determined that the willingness to pay study would focus on proposed investments which met the following criteria:

- The proposed investments and service levels were clearly defined, included 3-5 distinct variations in levels of service (including current service level), and provided an outcome from the investment that customers would value.
- The associated bill impact corresponding to the investment and the different levels of service could be costed.
- The investment was discretionary and not something SA Water must do to meet an external responsibility, a guaranteed service level, or a regulated requirement.

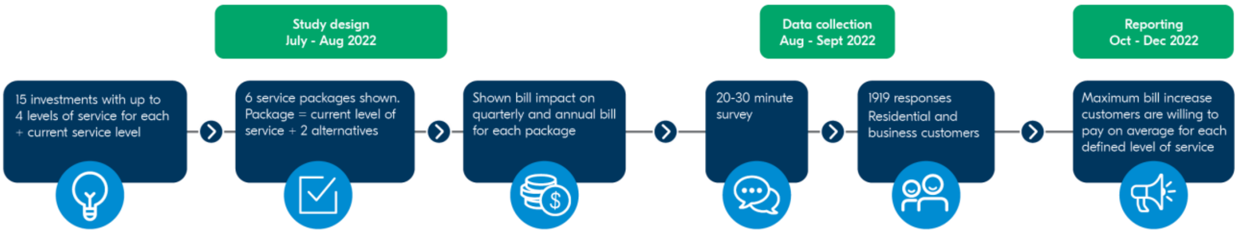

Figure 4-3 Willingness to pay study approach

Feedback from ESCOSA and key stakeholders as part of the last regulatory submission showed there was a perception that SA Water selectively chose initiatives to include in the WTP study. In preparing the RD24 submission, SA Water sought to include all discretionary initiatives that advanced through early stages of prioritisation, as well as several required investments with discretionary components (for example, water network management). Through this process, 15 costed discretionary investments (Table 4-6) were included, with up to 4 levels of service for each investment, plus the current service level.

Table 4-6 Service levels tested in the WTP study for delivery by 2028

Service level outcome	Service	Service currently provided	Possible future service levels
Delivering reliable water services	Water network management	1,750 customers experience 3 or more unplanned water supply interruptions each year averaging 3 hours 20 minutes	1,700 customers experience three or more unplanned water supply interruptions each year averaging: • 3 hours 20 minutes, or • 3 hours 10 minutes.
	Wastewater odours	16 odour hot spots and 550 odour complaints each year	• 20 odour hot spots and 625 odour complaints, or • 14 odour hot spots and 500 odour complaints each year.
	Upgrading water quality in metropolitan Adelaide	Water quality improves for 0 customers	Water quality improves for: • 600,000 customers • 755,000 customers • 835,000 customers or

Service level outcome	Service	Service currently provided	Possible future service levels
			• 1,250,000 customers.
	Upgrading regional non-drinking water supply	No upgrades	Provide drinking water in regional South Australia for: • 50 customer (3 communities) • 100 customers (6 communities) or • 150 customers (9 communities).
	Improving regional South Australian water quality	No upgrades	Water quality improves for: • 1,200 customers • 7,200 customers or • 7,600 customers.
	Water leakage management	About 9,000 Olympic-size swimming pools worth of water lost each year (9% of annual supply)	The amount of water lost each year, measured in Olympic-size swimming pools, is about: • 10,200 (10%) or • 8,400 (8%).
	Wastewater overflows management	About 300 overflows on customers' properties and 170 overflows into the environment each year	About 280 overflows on customers' properties and 135 overflows into the environment each year. Or About 260 overflows on customers' properties and 120 overflows into the environment each year.
Improving customer experience	Smart meters	2,000 customers with smart meters	Increase the number of customers with smart meters to: • 13,000 or • 200,000.
	Keeping customers informed	• 40% of customers contactable digitally • 75% satisfaction with digital services • 60% ease of interaction	• 40-60% of customers contactable digitally • 75-85% satisfied with digital services • 90% ease of interaction
Providing equitable and affordable services	Billing information for renters	Billing information not sent to renters	Number of renters having access to online billing and water information will be: • 17,000 • 85,000 or • 225,000.
	Accessible customer services	Free interpreter and relay telephone services available, as well as a front counter service in SA Water House, Adelaide	Current level of service + Service options and communications tools to better match the language and physical, cognitive, intellectual, and sensory abilities to support 50,000 or 75,000 customers per year.

Service level outcome	Service	Service currently provided	Possible future service levels
	Supporting customers with high water use for medical needs	Bill support for 30 customers per year	Bill support for 1,500 or 3,000 customers per year.
Environmental and sustainable leadership	Carbon capture	No new additional native forest plantings	400-800 hectares of new native forest plantings with the opportunity to implement conservation and recovery programs.
	Circular economy	No spoil recycled and reused	55,000 or 110,000 tonnes of spoil recycled and reused.
	Environmental flows	Compliance with licence conditions in Mount Lofty Ranges	Current level of service + Environmental and cultural benefits at one or 2 reservoir sites in the Flinders Ranges.

Outcomes of study

The WTP study results, summarised in Table 4-7 below, indicated customer support for one or more options in 11 out of 15 proposed services that SA Water could provide. Out of all proposals considered, these are the future investments valued by customers, that customers said they were willing to pay for through their SA Water bills. Further information on the WTP survey analysis and results is provided in Appendix 4.4.

Table 4-7 Outcomes of the WTP study

Service level outcome	Service	Outcome
Delivering reliable water services	Water network management	Not supported with customer WTP
	Wastewater odours	Not supported with customer WTP
	Upgrading water quality in metropolitan Adelaide	Supported with customer WTP
	Upgrading regional non-drinking water supply	Supported with customer WTP
	Improving regional South Australian water quality	Supported with customer WTP
	Water leakage management	Supported with customer WTP
	Wastewater overflows management	Supported with customer WTP (Note: WTP is less than the cost to deliver the investment)
Improving customer experience	Smart meters	Supported with customer WTP
	Keeping customers informed	Not supported with customer WTP
Providing equitable and affordable services	Billing information for renters	Not supported with customer WTP
	Accessible customer services	Supported with customer WTP

	Supporting customers with high water use for medical needs	Supported with customer WTP
Environmental and sustainable leadership	Carbon capture	Supported with customer WTP
	Circular economy	Supported with customer WTP
	Environmental flows	Supported with customer WTP

4.3 What SA Water heard

The engagement set out in the previous sections built on SA Water's business-as-usual and earlier research and engagement. From the engagement undertaken in 2022, which was specifically focused on informing RD24, SA Water prepared a report detailing what it had heard from this comprehensive engagement program. Some of these insights reflect on programs and initiatives that do not form part of SA Water's regulated business activity, or programs and initiatives that ESCOSA has told SA Water would not be considered in the RD24 period (such as investment in renewable energy generation and storage). Nonetheless, all feedback that was received is provided.

This section summarises key insights from the stakeholder engagement.

Safe, clean drinking water

Providing safe, clean drinking water for all SA Water customers is still a first order priority. There was concern expressed that while all customers pay the same for services, not everyone enjoys the same access and water quality, with some areas experiencing issues including hardness and poor taste. Others report prohibitively costly access to mains connections, impacting business, development and quality of life.

Equitable services for regional areas

Equitable access to safe, clean drinking water and improvements to water quality for those in regional areas is a priority. While there was strong support for investment to expand services in regional areas outside of major townships, investment should be cost-balanced and prioritised according to demand and likelihood of future growth. In addition, there are a range of views about who should pay for this investment – the beneficiary, the retailer or government.

Investment in older infrastructure

Respondents supported investing now to replace and maintain infrastructure to reduce costs to customers in the future. This included a preference for prioritising infrastructure maintenance activities most likely to reduce service disruptions. There was also support for investing early where future growth is known.

Future water security

Water security was a major concern for respondents across South Australia, with people wanting more collaboration between SA Water, state and local governments, as well as businesses, to improve long-term planning for water security. A need for more awareness raising was identified to educate communities about where their water comes from, noting the current state of supply and key challenges. There was recognition that innovative solutions would be needed to support long-term water security. There was strong support to invest now to secure alternative, long-term water sources across the state, with increased visibility of long-term plans.

All options on the table

Respondents supported considering the use of all potential water sources, including greater use of recycled water for irrigation, toilets and laundries. There was a general openness to purified recycled water for drinking, but more education and awareness of the purification process, water quality testing, and safety was desired to help mitigate public concerns.

Desalination was widely accepted as a solution, although it was noted that many in Adelaide were not aware that the Adelaide Desalination Plant is used.

Growth and development

Respondents told us that access and connection to water was critical to meet the needs of growing populations and industry development. The link between water and the capacity to grow and develop was evident in responses from people in metropolitan as well as regional areas. People indicated a desire for more information about capacity and supply options. People also questioned who should pay for the required infrastructure.

Affordability

While many respondents reported that water bills were not their largest bill, the cumulative impact of increasing power bills and the rising cost of living was putting pressure on all customers. Consumer and frontline community organisations expressed concern about the affordability of water services for vulnerable customers. The cost impact of RD24 investments needs to be carefully considered.

Support for vulnerable customers

There was widespread appreciation for the support provided by SA Water to customers experiencing financial hardship. In addition, there was a call for more information about available assistance for migrants, young people, tenants, older people, and people living in regional areas. There was also interest in information about how to be more water efficient and for more detailed billing information to help vulnerable customers manage costs.

Renewable energy and sustainability

There was widespread respondent support for more investment and innovation in renewable energy to power SA Water infrastructure and offset the rising costs of electricity. Support was particularly indicated where investment could also help reduce costs for customers. People saw value in SA Water promoting its sustainability initiatives to raise community awareness. More education to support household water conservation and water efficiency was also suggested.

The *What we Heard* report, providing all key insights under each RD24 engagement theme and a summary of the WTP study is included in Appendix 4.4.

4.4 Engagement with other regulators

In addition to ESCOSA, SA Water actively maintains working relationships with its other regulators: Department for Environment and Water, Office of the Technical Regulator, SA Health, and Environment Protection Authority. Engagement is focused on ensuring SA Water understands and operates within regulator policy and regulatory requirements, and remains aware of, and contributes to, policy changes that may have an impact on SA Water.

4.4.1 Department for Environment and Water (DEW)

DEW regulates access to natural water sources, protects water catchments, native vegetation, national parks and reserves, and heritage, and is the state body responsible for the River Murray as part of arrangements for managing the Murray-Darling Basin. Together, DEW and SA Water are South Australia's primary water management agencies, responsible for the regulation, planning, management, treatment, supply, and distribution of water. Both agencies have a shared interest in a range of matters relating to water security and protection of critical human water needs, including prudent planning to protect the long-term water security of South Australian communities, industries, and the environment upon which people's health and the economy depend.

DEW is responsible for implementing elements of the *Water Industry Act 2012*, oversees the creation of water allocation plans that determine the rules for the take and use of prescribed water resources (both surface and groundwater), and is responsible for water licensing and maintenance of the Water Register in accordance with the *Landscape South Australia Act 2019*.

This cooperative relationship with DEW is managed through multiple touchpoints within SA Water. SA Water and DEW engage regularly on water policy-related matters through established governance arrangements including the State Water Forum which advises the Minister and Cabinet on strategic water issues, and other water security, storage, science, and planning groups.[61] A Memorandum of Administrative Arrangement between the organisations facilitates strong collaboration on water security.

Key investment areas discussed with DEW included:

- options for future water sources
- security of existing sources
- data and modelling to inform water security planning.

Integrated urban water management is an area of increased focus between SA Water and DEW with policy and plan development expected during 2023-24 that will influence future decisions for investment in water, wastewater, stormwater and recycled water networks in metropolitan areas.

4.4.2 Office of the Technical Regulator (OTR)

OTR sets standards and requirements for water and sewerage infrastructure, and the operation of that infrastructure, to ensure public safety and reliability of services.[62] Where relevant, meeting these requirements will be considered in project and operations planning and implementation and budgeted for accordingly.

Through regular meetings, SA Water and OTR work to maintain an engaged, collaborative and open relationship. During development of business cases for RD24, OTR was provided with a range of infrastructure business cases for awareness and input.

Key investment areas discussed with OTR included:

- inflow and infiltration management
- approaches to management of different asset types to avoid failures.

4.4.3 SA Health

SA Health sets and monitors standards for drinking water quality and regulates recycled water use in the state. SA Water is legally required to comply with the *Safe Drinking Water Act 2011*, *Safe Drinking Water Regulations 2012*, and *South Australian Public Health (Wastewater) Regulations 2013*.

Through well-established connections at multiple points, SA Water maintains a positive relationship with SA Health. Strategic and technical meetings are held bi-annually. These focus on the management of public health risks associated with regional and metropolitan sewerage and recycled water infrastructure.

Key investment areas discussed with SA Health included:

- options for safe future water sources
- protection of water quality in water supply catchments (including reservoirs)
- water quality in SA Water networks
- aesthetic improvements in regional areas

[61] Department for Environment and Water South Australia (DEW) (n.d.) *Water Security Statement*, DEW website, accessed 24 February 2023; DEW (n.d.) *Urban Water Directions Statement*, DEW website, accessed 24 February 2023; DEW (n.d.) *Government action on climate change*, DEW website, accessed 24 February 2023.
[62] Department of Energy and Mining South Australia (n.d.) *Infrastructure technical regulation*, Department of Energy and Mining South Australia website, accessed 24 February 2023.

- recycled water quality.

SA Water is also engaging with SA Health on areas of future policy change that include changes to regulated and legislated drinking water aesthetic parameters. This may increase the requirements beyond those currently set in the *Safe Drinking Water Act 2011*.

4.4.4 Environment Protection Authority (EPA)

The EPA regulates SA Water under the *Environment Protection Act 1993* (EP Act) in addition to its core role of setting standards and requirements to prevent environmental harm. The EPA's role includes:

- setting environmental standards
- issuing environmental authorisations, including licences for desalination plants and wastewater treatment plants
- overseeing monitoring of SA Water's operations and activities to minimise impact on the environment.

SA Water works proactively to be an environmentally responsible organisation, by maintaining a cooperative relationship with the EPA through multiple touchpoints and being transparent in its planning and operations. This is facilitated through formal governance arrangements including quarterly meetings at the chief executive, senior management and officer levels, and ongoing day-to-day interactions.

SA Water engaged with the EPA throughout RD24 planning by holding workshops, sharing plans as they were under development, and providing regular updates. All key investments proposed at wastewater treatment plants (WWTPs) have been shared with the EPA, including those to meet statutory environment improvement programs (EIPs) which are the key regulatory tools driving SA Water's compliance obligations under the EP Act. SA Water's approach to EIPs is to plan across multiple regulatory periods.

The EIPs currently in focus involve WWTPs at:

- Millicent – potential investment in RD24 to minimise environmental harm caused by the discharge of wastewater through addressing effluent quality and groundwater infiltration, optimising reuse and expanding where feasible.
- Port Augusta East – potential investment in RD24 to minimise environmental harm caused by the discharge of wastewater by addressing effluent quality and developing suitable options for reuse.
- Whyalla – potential investigations during RD24 to plan for future investment that could address wastewater impact on the marine environment, increase recycled water use, minimise odour effects, and address lagoon leakage.
- Glenelg and Bolivar – research and modelling being undertaken by SA Water and other agencies will inform the need for further investment in these metropolitan WWTPs. SA Water and the EPA are also developing a process to offset SA Water's environmental impacts by minimising stormwater impacts. In this case, investment in stormwater pollution reduction or actions such as seagrass restoration activities could be done in lieu of investment at WWTPs.

Other areas not currently subject to an EIP but which SA Water is discussing with EPA include the:

- Naracoorte Wastewater Treatment Plant – focus on plant capacity, lagoon leakage, recycled water opportunities, climate change resilience and biosolids reuse
- Finger Point Wastewater Treatment Plant – focus on plant capacity, effluent quality, outfall replacement, climate change resilience and lagoon leakage.

Further key investment areas with environmental benefits that have been informed through this relationship with the EPA include:

- odour management, focusing on hot spots of repeated complaints
- wastewater network inflow and infiltration management
- wastewater lagoon leakage management
- wastewater overflow abatement.

In preparation for future regulatory periods, SA Water is also in discussion with the EPA about matters including climate change-related vulnerability and changes to the regulation of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS). PFAS are manufactured chemicals which are a known environmental contaminant, the risks of which are being collaboratively managed by Australian governments. The EPA has a focus on regulating the use of PFAS-containing fire-fighting foams, disposal of PFAS-contaminated wastes and site contamination.

4.5 Application to investment decisions

SA Water's research and engagement is just one of the bodies of evidence that SA Water considers when making investment decisions and assessing changes to services provided. Therefore, final decisions on investments may not always align with the outcomes of this work.

How this information, and other insights garnered from the full program of research and engagement, has informed investment decisions is discussed in Chapters 8 and 9 concerning capital and operating expenditure.

5 Demand and customer growth

Water demand and customer growth are key considerations for SA Water when determining revenue requirements for the forward regulatory period. The following sections explain the approaches SA Water uses to inform estimates for water demand and water and wastewater customer growth for 2024-25 to 2027-28.

5.1 Projecting future water demand

SA Water uses an econometric regression model to project future water demand, which is common to many water utilities. This method, shown in Figure 5-1, analyses the historical demand against all the known economic and climate variables that influence demand to determine the relationship that best describes how SA Water customers use water.

Once the 'model' relationship is determined, the per capita projection is multiplied out by the state population projections and climate forecasts (calculated as outlined in sections 5.1.3.1 and 5.1.3.2 respectively) to determine demand projections.

The following sections explain the regression model used to predict demand, as well as the assumptions in its application.

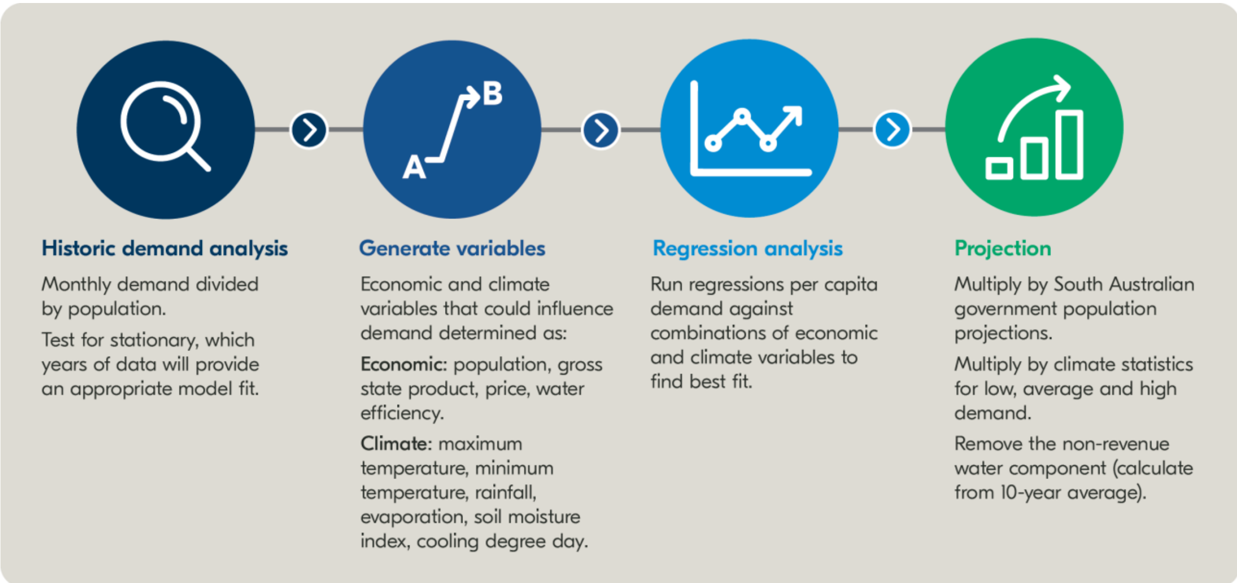

Figure 5-1 Standard regression modelling process for projecting demand

5.1.1 Historic demand analysis

Water demand has an annual variability as evidenced by historic bulk water demand trends shown by Figure 5-2. A major change in historical demand has been the decline in demand during the Millennium Drought, when volumes peaked in 2000-01 and decreased consistently until 2010-11. Demand after 2010-11 has shown more interannual variability between wet and dry years, with water efficiency (the gap between water use in a wet and dry year) becoming larger.

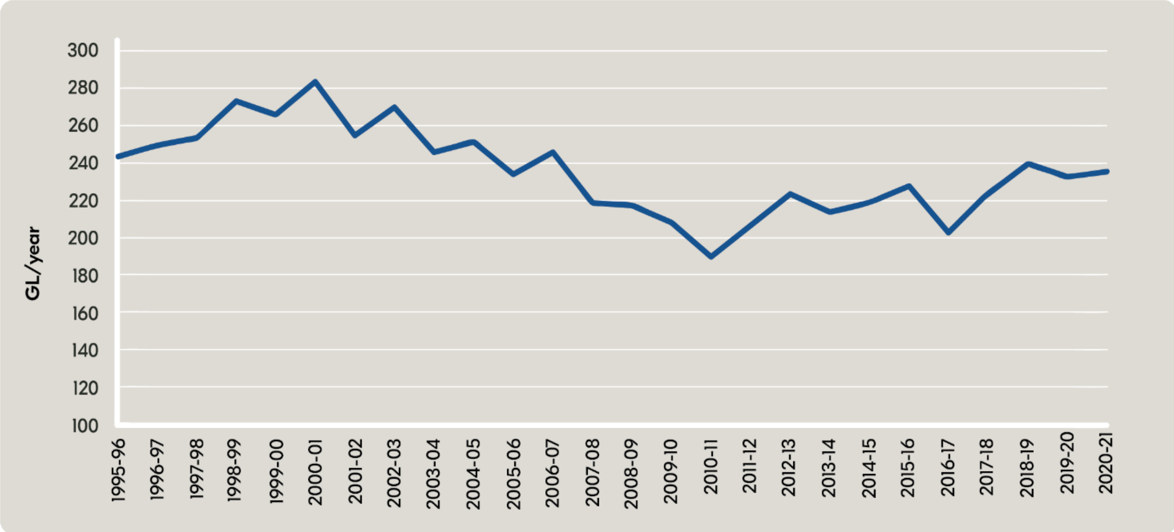

Figure 5-2 SA Water annual bulk water demand

Figure 5-3 shows how the monthly water demand per capita has reduced over time. This is mainly due to the impact of restrictions through the Millennium Drought and the increased water saving practices among consumers (such as using more water efficient garden irrigation or planting more hardy garden varieties).

This change in demand is an important consideration when determining which time period of data to input into the demand forecasting model.

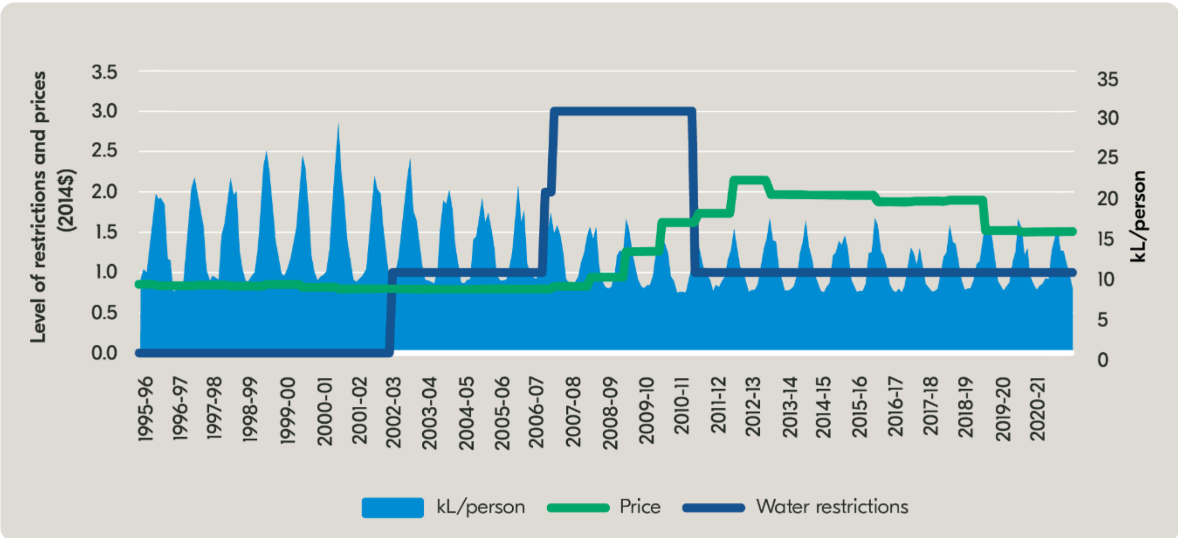

Figure 5-3 Economic variables and monthly per capita demand

Stationary time series data sets are preferred for demand regression models, where the time series has a mean and distribution that are statistically similar through time. This is because the descriptive power of the regression analysis will be greater, improving the accuracy of forecasting. If data from 1995-96 to present was used, a transformation of the raw data would be required to remove the impacts of the earlier year's trend.

SA Water has assessed that using the stationary data only from 2007 produces a better forecasting model. This approach was confirmed by applying a stationarity test to the data range. The full time series was analysed for stationarity using Pettitt's method, developed for hydrological modelling and is used to test for a shift in the central tendency of a time series. This analysis identified that the breakpoint in the data set was 2007-08. Stationary time series data sets are preferred for demand regression models, where the time series has a mean and distribution that are statistically similar through time. This is because the descriptive power of the regression analysis will be greater, improving the accuracy of forecasting.

As a result of the change in water use behaviour, demand modelling for RD24 is based on a time series commencing in 2007-08 and going through to June 2021. The change in time series is demonstrated in Figure 5-4.

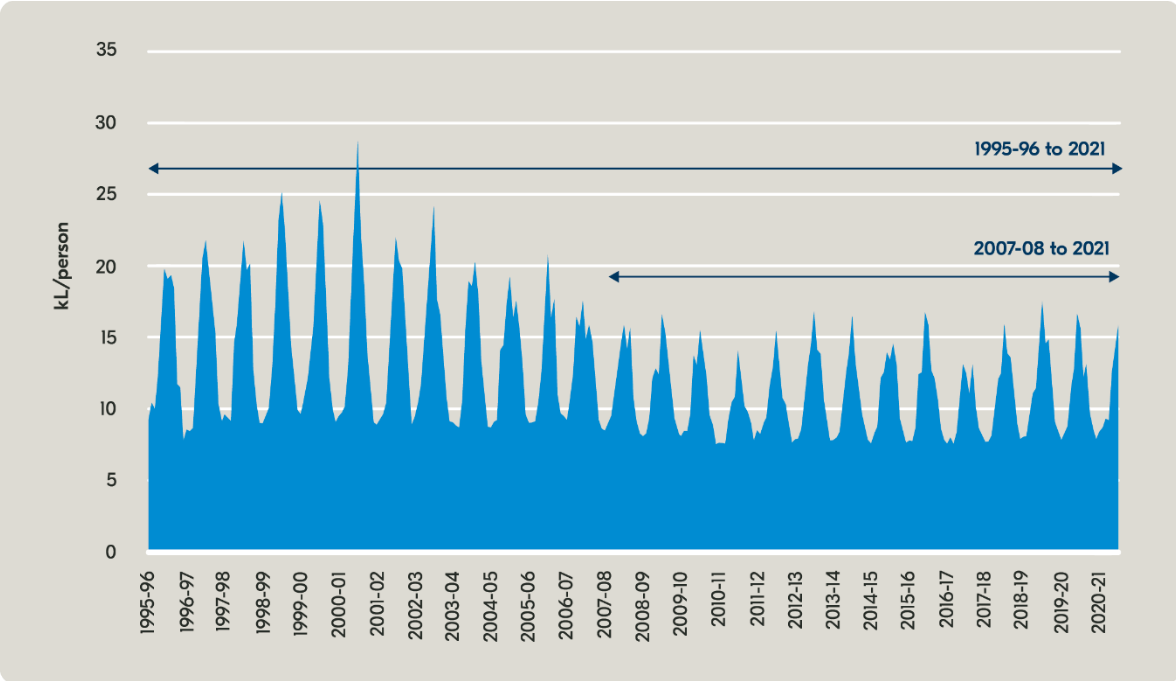

Figure 5-4 Per capita demand showing the breakpoint at 2007-08

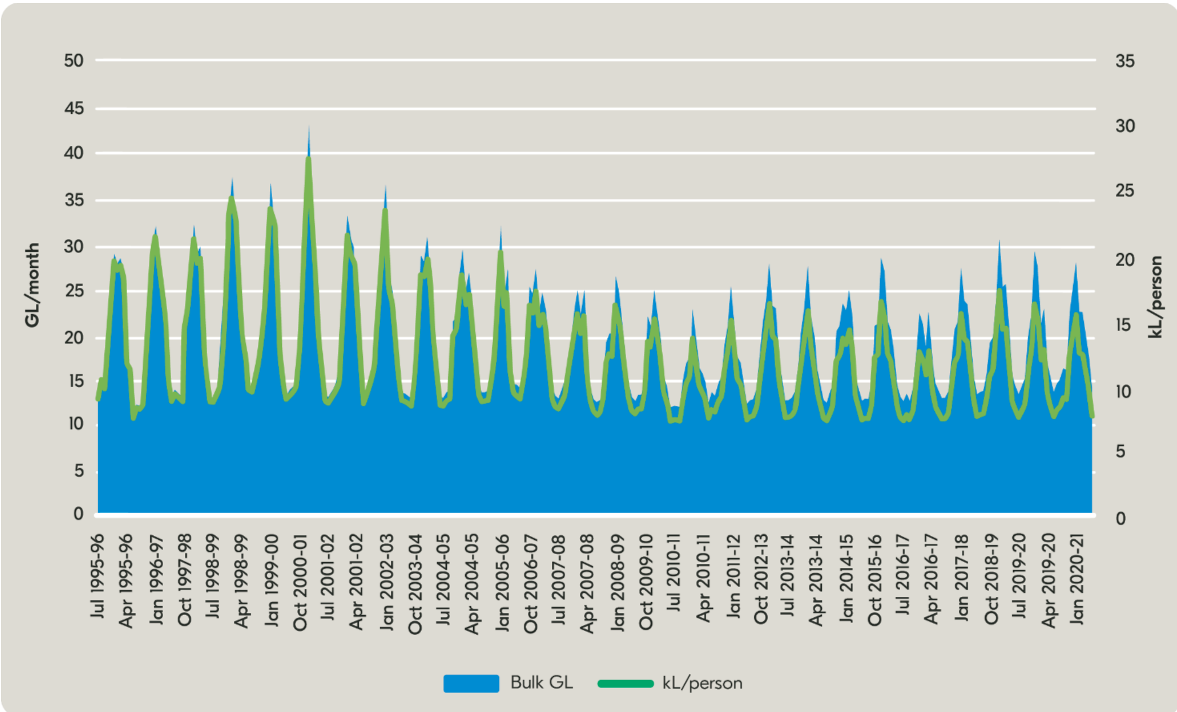

Figure 5-5 Per capita adjusted monthly demand

Figure 5-5 shows the bulk water demand as monthly data, and then divided by population. The per capita demand (green line) shows that winter demands remain relatively steady each year, but that the summer demands are variable because of the weather. The data in green is used in the regression analysis.

5.1.2 Generate variables and regression analysis

There are several drivers of demand variability that are considered when modelling demand, which are both economic and climate related. Variables that are tested in the analysis include:

- economic variables – population, Gross State Product, water price and water efficiency
- climate variables – maximum temperature, minimum temperature, rainfall, evaporation, soil moisture index and cooling degree days.

A multiple linear regression model was used in this instance using a root mean square error plot, where the goodness of fit was assessed using the t-statistic to produce a highly significant p-value. Multiple scenarios were run, which considered the various economic and climate variables. The analysis shows that the 2 variables that have the best mathematical predictive power to SA Water's demand profile are:

- soil moisture index (SMI), which measures the level of soil moisture, and is a function of rainfall and evaporation (so is higher when evaporation is higher than rainfall). It is known from SA Water's data that customer demand does not change when it rains in winter but does decrease if it rains in summer.
- cooling degree days 15 (CDD15), which measures the number of days when the temperature is high, so indicates heat waves. It is calculated by subtracting 15°C from the average of the maximum and minimum temperature.

The model relationship for these variables which had the greatest predictive power was:

$$\text{bulk water usage per capita}_t = (a + \beta_1 \times CDD15_t + \beta_2 \times SMI_t + \varepsilon_t)$$

Where:

- bulk water usage per capita is measured in kilolitres per person
- CDD15 is the cooling degree days metric using 15 °C as the base temperature
- SMI is the soil moisture index calculated from a function of temperature, rainfall and evaporation
- t is the month of the year
- a, β_1, β_2 are the regression coefficients (as shown in Table 5-1).

Table 5-1 Regression coefficients for 2024-28 demand model

a - Intercept	β_1 - CDD15	β_2 - SMI
11.998	0.01379	-0.04045

The intercept reflects the point the model intercepts the y-axis, and the β_1 and β_2 coefficients reflect the relationships that the 2 independent variables (CDD15 and SMI respectively) have on the dependent variable demand. In this instance, there is a small positive relationship between increases in temperature measured by CDD15 and a small negative relationship between the SMI where consumption increases as it gets drier.

5.1.3 Demand variable projections

The regression model (Section 5.1.2) produces a per capita water demand estimate using historic demand together with economic and climate variables. This then needs to be multiplied out by population and climate projections to generate statewide demand projections.

The projection assumptions for these 2 variables are detailed below.

5.1.3.1 Population projections

SA Water uses estimated resident population (ERP) projections provided by the Department for Infrastructure and Transport (Figure 5-6, plotted with historic population growth data from the Australian Bureau of Statistics)[63].

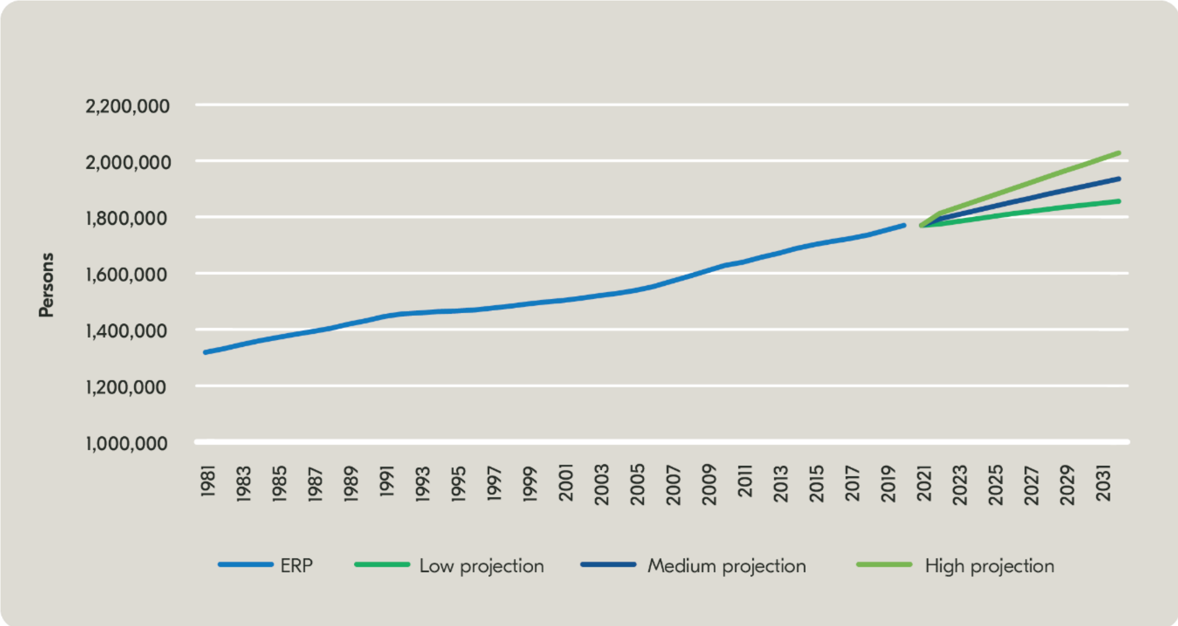

Figure 5-6 South Australian population - historic and projected

Migration has had the strongest influence on actual population change during the current regulatory period, which has been lower than projected due to COVID-19. Figure 5-7 shows that while South Australia experienced a rapid increase in migration in the lead up to RD20 (between 2017 and 2019), this was followed by a rapid reduction in 2020.

Between 2010 and 2020, the annual rate of change in South Australia's population ranged between 0.6 per cent and 1.0 per cent. In 2020-21, this dropped to a record low of 0.07 per cent due to net negative overseas migration and it is yet to recover from these low levels**.** The low population projection (Figure 5-6) was used in the demand model for this reason.

[63] Plan SA (April 2019), 'Population', Plan SA website, accessed 19 August 2021; Australian Bureau of Statistics (2020), 'National, state and territory population', ABS, accessed 30 July 2021.

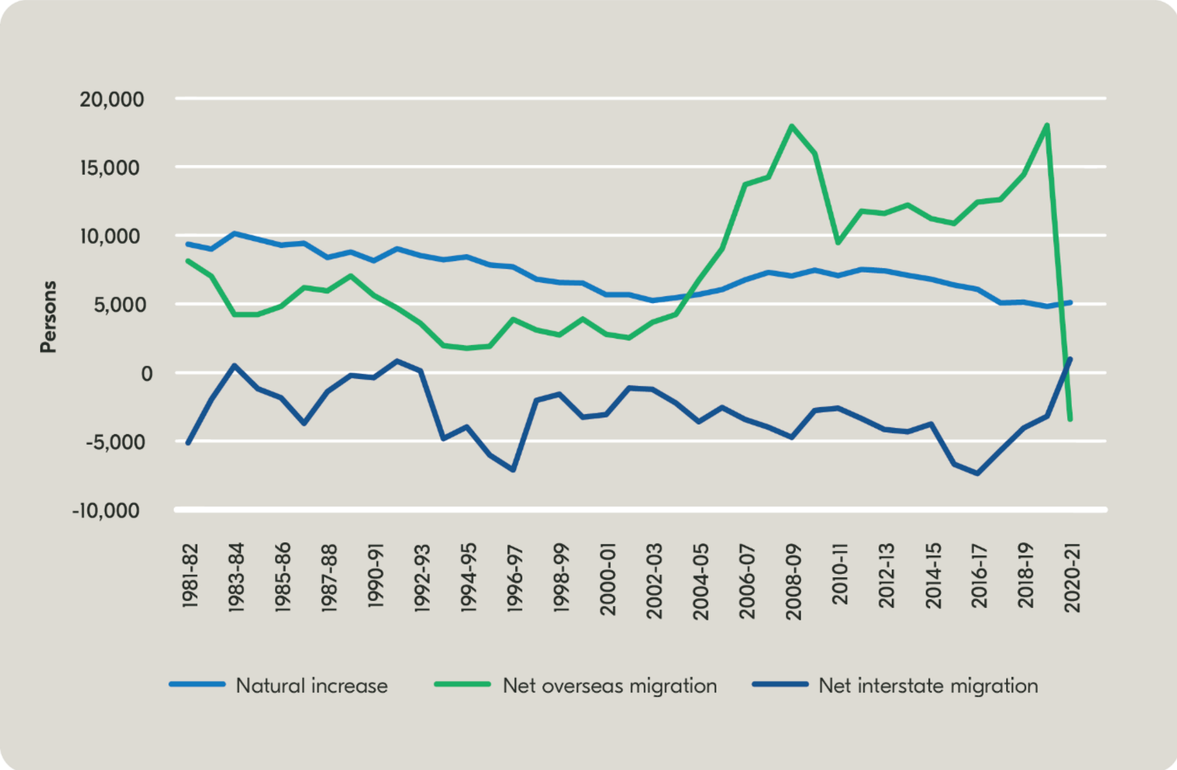

Figure 5-7 South Australian population components of change (data from Australian Bureau of Statistics, 2021[64])

5.1.3.2 Climate projections (soil moisture index and cooling degree day 15)

Using the model relationship in Section 5.1.2, the low, median, and high monthly climate statistics are used for the CDD15 and SMI variables from the 2007 to 2021 climate data series (Figures 5-8 and 5-9). In these figures:

- the low scenario uses the 90th percentile values for SMI and the 10th percentile for CDD15
- median scenario uses the 50th percentile values for SMI and CDD15
- high scenario uses the 10th percentile values for SMI and the 90th percentile for CDD15.

Demand is anticipated to occur somewhere between the low and high range each month. The median climate series are used (for both SMI and CDD15) to provide certainty when setting prices for customers. Climate forecasts 4 years in advance are not available to inform forecasts of the exact demand, so a demand adjustment mechanism set by ESCOSA (as detailed in Chapter 10) exists to enable adjustment for the natural variability in demand.

[64] Australian Bureau of Statistics (2020), National, state and territory population, ABS, accessed 19 August 2021.

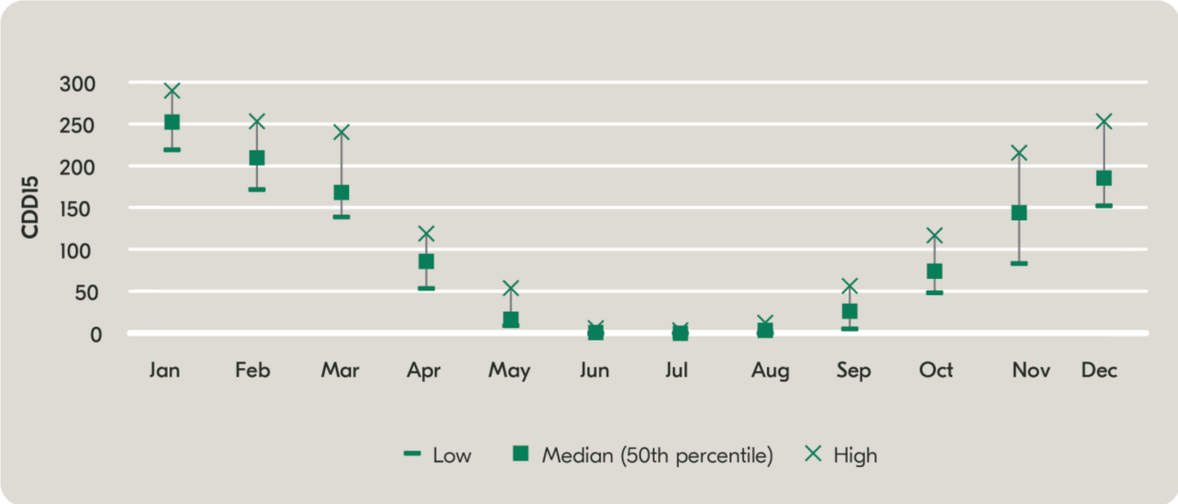

Figure 5-8 Cooling degree day 15 climate statistics by month[65]

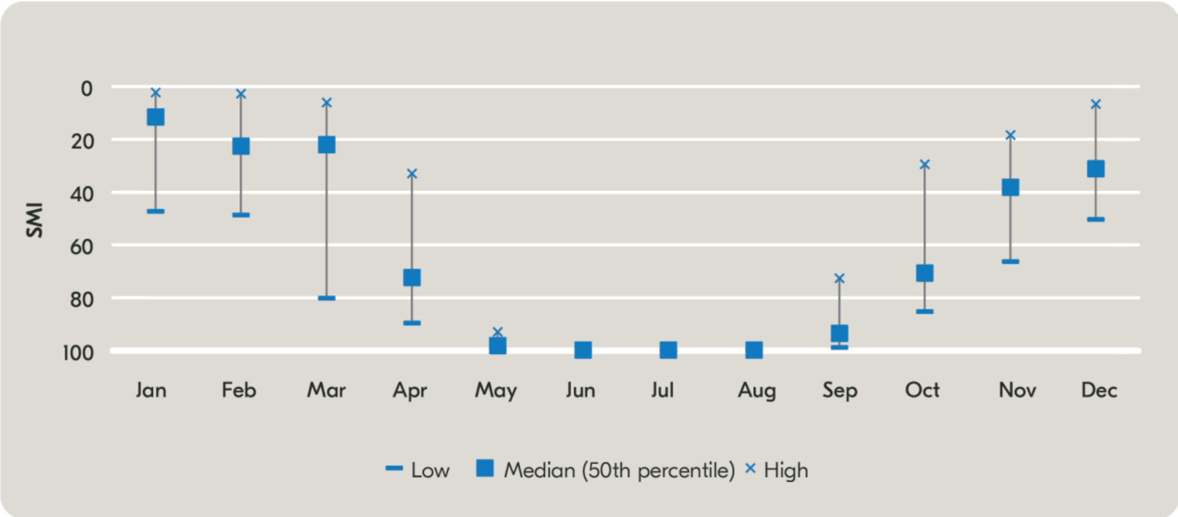

Figure 5-9 Soil moisture index climate statistics by month[66]

5.1.3.3 Adjustment to get from bulk water demand to consumed water demand

Bulk water demand varies from consumed water demand due to loss factors in the network including leakage and water used for firefighting and during maintenance activities (for example flushing of water mains). National performance reporting (NPR) data across all major water utilities indicates that this loss factors (called 'non-revenue water') has ranged between 0.1 per cent and 15.5 per cent over the past 5 years[67]. The 10-year average non-revenue water for SA Water (12.2 per cent) is applied to the bulk water projection to determine the final consumption demand forecast.

Based on observed 2021-22 consumption data the model projected actual bulk water consumption in 2021-22 within 1 per cent.

[65] The low, median and high monthly statistics for these values have been generated using 2007 to 2021 climate data series.

[66] The low, median and high monthly statistics for these values have been generated using 2007 to 2021 climate data series.

[67] Calculated as NPR indicator W10.1 – volume of non-revenue water as a percentage of water supplied (water supplied equivalent to W8.3 volume of water supplied to residential customers + W9.3 volume of water supplied to non-residential customers + W10.1 volume of non-revenue water).

5.1.4 Projected water demand

The projected water demand is calculated for low, median, and high climate scenarios in the forward regulatory period as detailed in Table 5-2.

Table 5-2 Annual sales demand projections in gigalitres (GL)

GL	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Low demand	181.7	182.4	183.4	184.3	185.2	186.0	186.9
Median demand	200.8	201.6	202.7	203.7	204.7	205.6	206.6
High demand	221.5	222.4	223.5	224.7	225.7	226.8	227.8

Plotting actual bulk water used with the linear demand projections as per Figure 5-10 shows that demand can vary by up to 20 GL above or below the median value due to the actual weather experienced when assuming low population projections. The median data is used as the preferred model for revenue forecasts. SA Water is therefore forecasting customers will use 203.7 GL of water in 2024-25, increasing by around 0.5 per cent per annum to 206.6 GL in 2027-28.

SA Water will rely on ESCOSA's demand variation adjustment mechanism (as described in Chapter 10) to rebalance the revenue when actual demand is more than one per cent above or below the median projected. This would be applied in the next regulatory period, in this case, the period 2024-28.

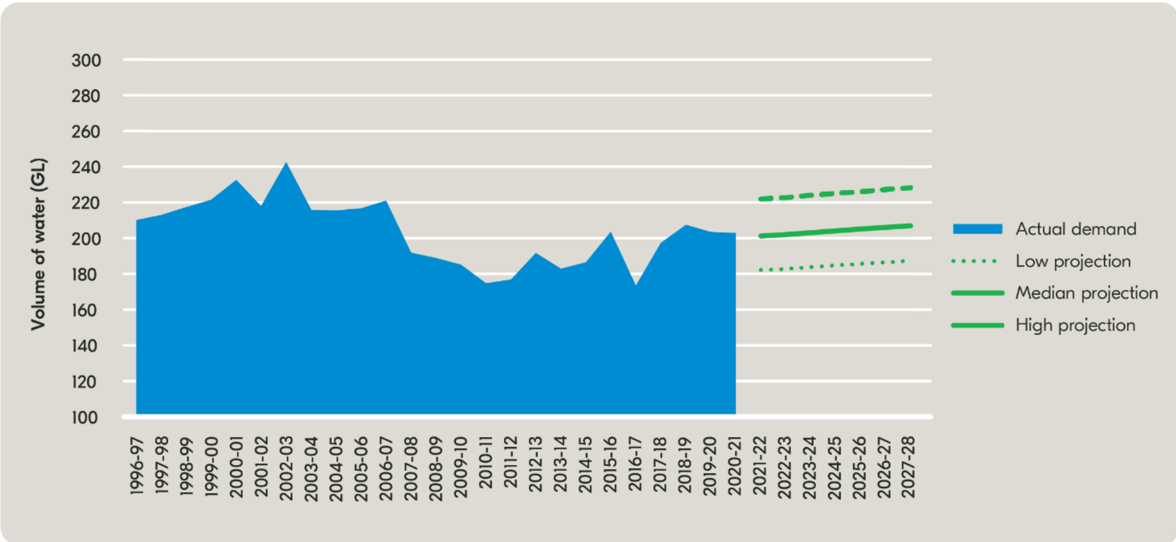

Figure 5-10 Bulk water projections from preferred model

5.2 Customer growth

The number of SA Water customers forecast impacts on the revenue profile and price calculations for both the water and wastewater parts of the business. Around 30 per cent of water revenue is based on fixed charges which are affected by the numbers of water customers. All wastewater revenue is based on fixed charges which are affected by the number of wastewater customers.

Customer growth can occur through residential and business developments or through establishment of major industry which can lead to a step-change increase in demand. At the time of writing, it is anticipated that future defence announcements through the AUKUS (Australia, United Kingdom, and United States) security pact will affect future water demand in various South Australian defence precincts. These impacts and the timelines for implementation are unclear. It is considered unlikely that these defence-led demand changes will affect SA Water in RD24.

While one-off events, such as COVID-19 or government stimulus packages, can temporarily impact customer growth, SA Water expects that long-term customer growth will trend towards historical levels (as detailed in Section 5.2.1).

5.2.1 Historic analysis

5.2.1.1 Residential customers

Around 90 per cent of SA Water's customers are residential. The historic growth in residential customers is shown in Figure 5-11 below.

Residential customer numbers have increased annually by between 0.8 and 1.4 per cent in the past 10 years for water, and between 0.9 and 1.6 per cent annually in the past 10 years for wastewater.[68] Customer numbers are correlated with overall population numbers, but there is not a direct relationship. This is because not all South Australian properties are SA Water customers and because household formation rates are elastic, responding to a range of drivers in addition to total population.

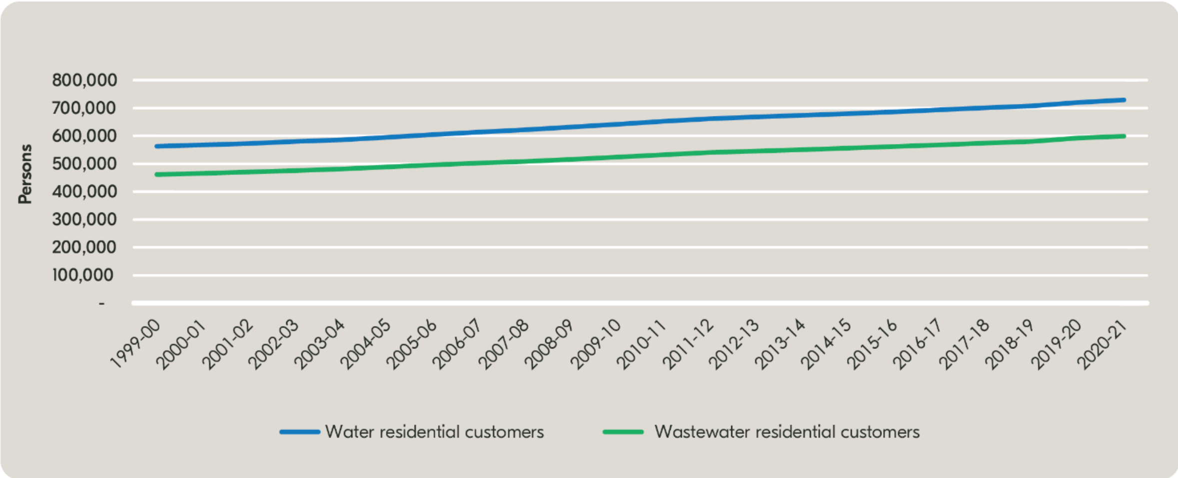

Figure 5-11 Historic number of residential water and wastewater customers

5.2.1.2 Non-residential customers

Around 10 per cent of SA Water's customers are non-residential. The historic growth in non-residential customers is shown in Figure 5-12 below.

Non-residential customer growth is more variable, fluctuating between -1.9 and 1.0 per cent annual growth in the past 10 years for water, and between -4.0 and 1.9 per cent annually in the past 10 years for wastewater.

[68] Excluding 2019-20 data when sub-division account creation from the Valuer General Department moved from annual updates to quarterly updates which caused a one-off data anomaly.

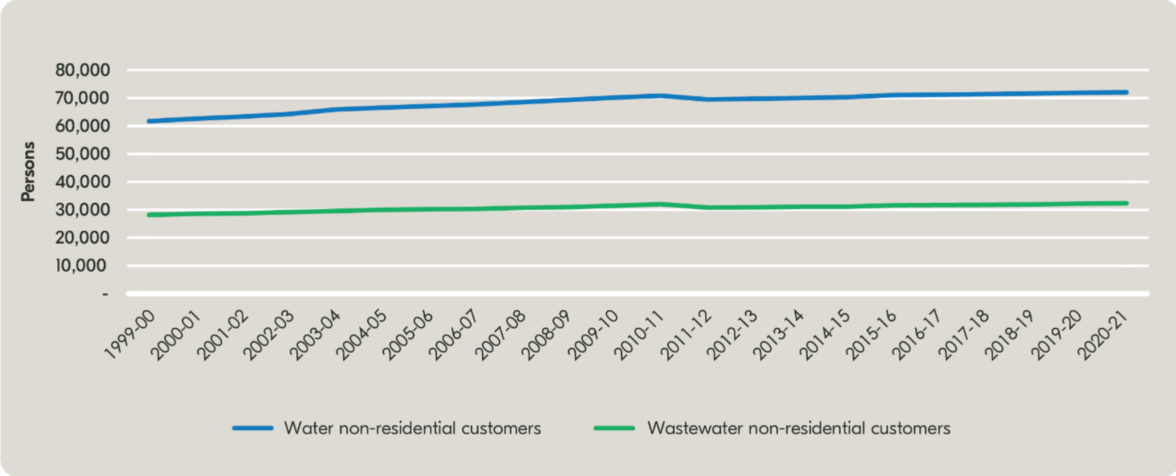

Figure 5-12 Historic number of non-residential water and wastewater customers

5.2.2 Generate variables and regression analysis

5.2.2.1 Residential customers

South Australian population growth was considered when modelling customer growth. The low, medium, and high projections from the Australian Bureau of Statistics were tested in the analysis.[69]

A single linear regression model was used in this instance using a root mean square error plot, where the goodness of fit was assessed using the t-statistic to produce a highly significant p-value. The analysis showed that each population growth projection had a very strong mathematical relationship to SA Water's residential customer growth profile (r-squared values greater than 99.4 per cent).

Historical growth in occupied private dwellings is higher than population growth in South Australia. Growth in dwellings and growth in water and sewerage connections generally move in line, which directly affects revenue from fixed charges. For this reason, the medium population growth forecast was used for both water and wastewater customer growth projections rather than the low population growth assumption used for demand modelling.

It may seem counterintuitive to adopt a higher, medium population growth assumption for customers numbers than for consumption, where low population growth was assumed. However, the rate of household formation in South Australia has outpaced the rate of population growth through successive periods. Or, to put this another way, the growth in the number of residential properties in South Australia has outpaced population growth.[70]

This is reflected in the declining size of the average residential property in South Australia, where household size is, on average, continuing to decrease.[71] Indeed, South Australia has one of the highest rates of one-person dwellings in the country. Out of all major states and territories in the country, South Australia's rate of 28.5 per cent is second behind Tasmania (29.0 per cent) and above the national average (25.6 per cent) in 2020-21.[72]

This model is highly statistically significant with an r-squared value of 0.9962 for water and 0.9954 for wastewater which indicates that 99.62 per cent and 99.54 per cent of the variance in the number of customer accounts respectively is explained by population growth.

[69] Australian Bureau of Statistics (2018) 'Population Projections, Australia 2017 (base) – 2066', *Population Projections, Australia* accessed 15 November 2021.
[70] Australian Bureau of Statistics (2021), Census of Population and Housing, Community Profile for South Australia (Time Series Profile), *South Australia 2021 Census Community Profile*, accessed 20 March 2023.
[71] ID Informed Decisions (2021), 'South Australia Household Size', *South Australia household size*, ID Informed Decisions website, accessed 20 March 2023.
[72] Australian Bureau of Statistics (2021), 'Census 2021, G35 Household composition by number of persons usually resident, Suburbs and Localities (SAL)', *Data Explorer*, accessed 20 March 2023.

The model relationship for these variables is:

The number of residential water customers = $(\alpha + \beta_1 \times P_t)$

The number of residential wastewater customers = $(\alpha + \beta_1 \times P_t)$

Where:

- P is the population of South Australia
- t is the year (in financial years)
- α, β_1 are the regression coefficients (as shown in Table 5-3).

Table 5-3 Regression coefficients for 2024-28 residential customer growth model

	α - Intercept	β_1 - P
Water	-277,026	0.5646
Wastewater	-223,804	0.4605

The intercept reflects the point that the model intercepts the y-axis, and the β_1 coefficient reflects the relationship that the independent variable P has on the dependent variable, customer growth. In this instance, there is a positive relationship between increases in population growth and residential water and wastewater customer growth.

Using forecast population growth, the regression produces a forecast number of water and wastewater customers. The resultant annual growth rate from this forecast is one per cent annual growth for water and wastewater customers.

5.2.2.2 Non-residential customers

The statistical relationship between population growth and non-residential customer accounts is weaker than it is with residential accounts (the r-squared values are 0.862 and 0.841 for water and wastewater respectively). Therefore, due to the fluctuating nature of customer growth, and the small proportion of customers in this category, a 20-year average of year-on-year growth rate was used to forecast non-residential customer accounts for RD24. This equates to 0.5 per cent growth per annum.

5.2.3 Projected customer growth

The projected number of customers forecast using the above model outputs (1.0 per cent annual growth for residential customers and 0.5 per cent annual growth for non-residential customers) is detailed in Table 5-4 below.

Table 5-4 RD24 customer account growth forecast*

Water customer accounts	2024-25	2025-26	2026-27	2027-28
Residential	759,746	767,344	775,017	782,767
Non-residential	60,820	61,124	61,429	61,736
Wastewater customer accounts	**2024-25**	**2025-26**	**2026-27**	**2027-28**
Residential	614,770	620,918	627,127	633,399
Non-residential	32,760	32,924	33,089	33,254

*As of March 2023

6 Service standards proposal

Service standards are set by ESCOSA in consultation with SA Water and key stakeholders and define the minimum levels of service customers should expect to receive for regulated water and wastewater services. For the 2020-24 regulatory period, SA Water is accountable for its performance against 22 service standards (Appendix 6.1) that measure customer service, connection timeliness, response timeliness and restoration timeliness. These levels of service inform operating and capital expenditure requirements in each regulatory period.

This chapter considers SA Water's performance against the current service standards during the 2020-24 regulatory period and proposes service standard amendments to apply for the 2024-28 regulatory period.

6.1 Service standard review and findings

SA Water reviewed and analysed performance against the current service standards to identify possible changes for the next regulatory period. Targeted and general feedback through customer and stakeholder engagement was considered, together with any costs associated with delivering changed levels of service. This work is summarised in the following sections.

6.1.1 Customer satisfaction

SA Water regularly surveys its customers following a service experience related to a service standard. These survey results consistently indicate that those who have had a service experience are highly satisfied with SA Water. This is demonstrated by an overall customer satisfaction score of 95 per cent in 2020-21, 2021-22 and 2022-23 (year-to-date as of December 2022).

SA Water has also undertaken targeted research to understand perceptions of the current service standards among a mix of customers. These included those who had a service experience with SA Water and those who had not had a service experience. This research indicated that customers who have had a service experience are less likely to suggest improvements to service standards. It also indicated that, on average, all customers did not wish to see a reduction in levels of service, nor did they see benefit in increasing service levels at greater cost.

6.1.2 2020-24 service standard performance

In the first 2 years of the 2020-24 regulatory period, SA Water achieved 20 of the 22 service standards. Annual performance against targets for the 2020-24 service standards are presented in Figures 6-1 to 6-4 below, grouped by customer service, connection timeliness, attendance and restorations.

Figure 6-1 shows that all 5 customer service standards were met in each of the first 2 years of the 2020-24 regulatory period.

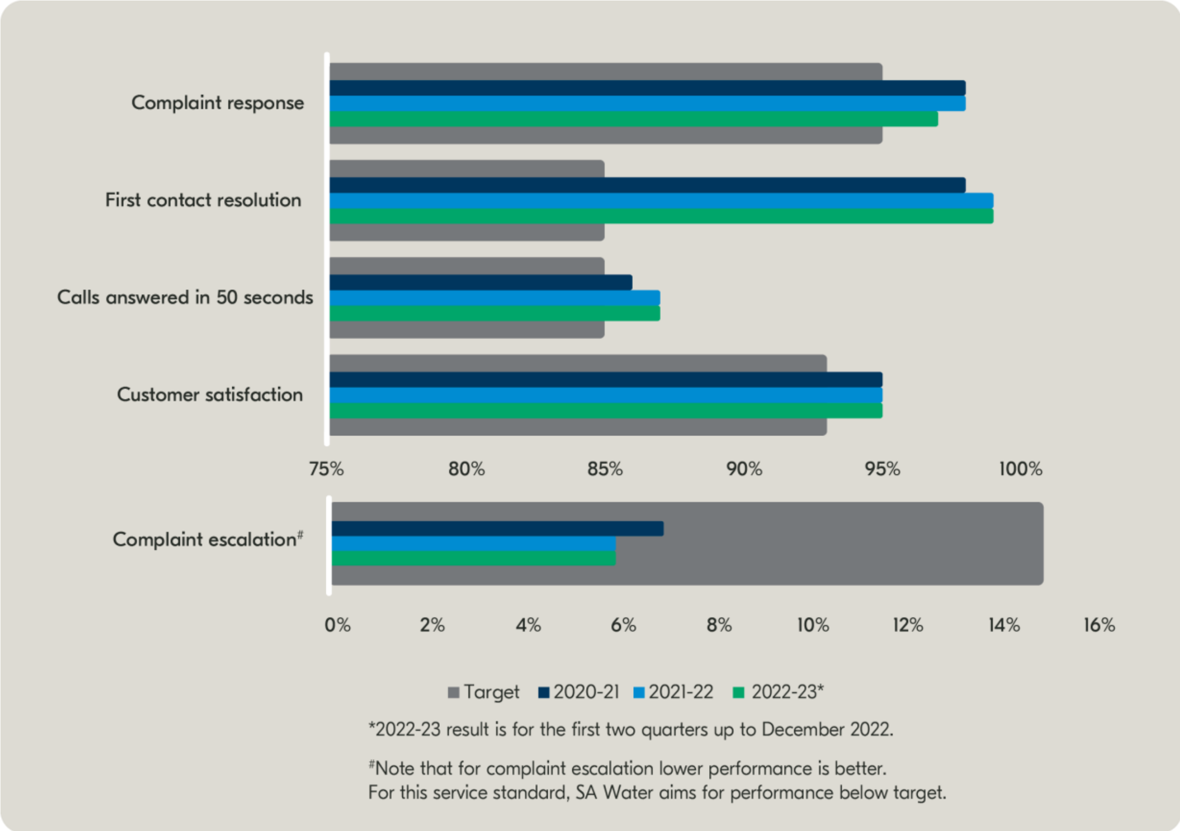

Figure 6-1 Customer service standard performance as of December 2022

SA Water met its service standards for all connection timeliness metrics in the first 2 years of the 2020-24 regulatory period (Figure 6-2).

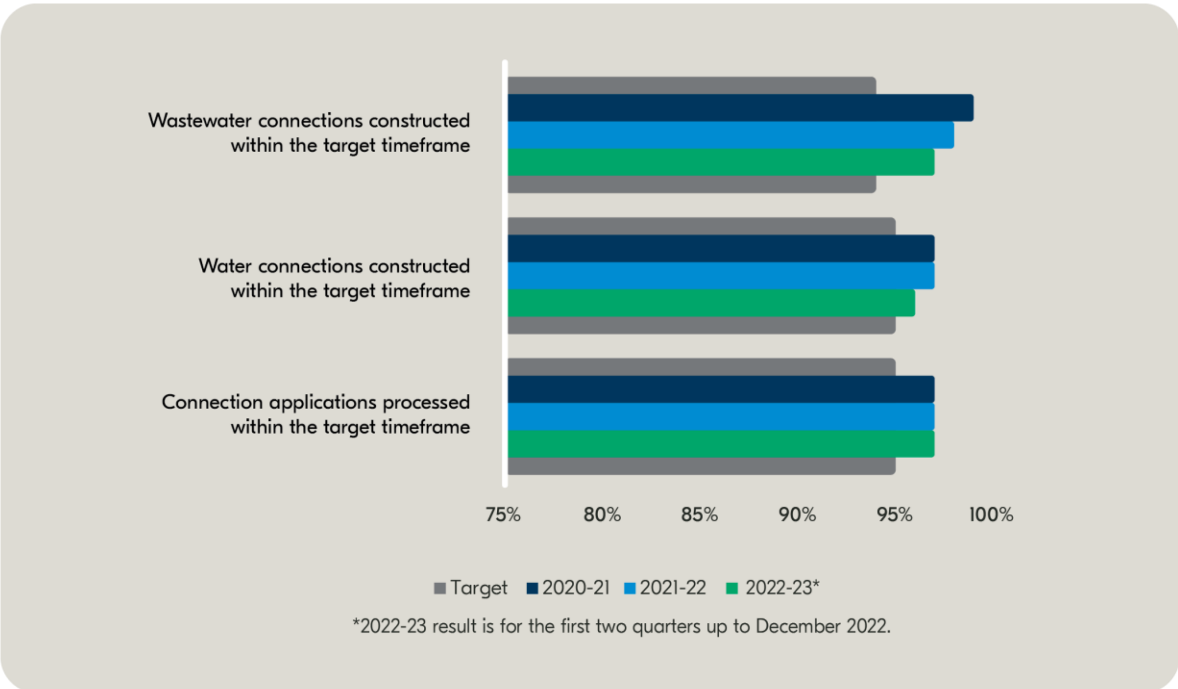

Figure 6-2 Connections service standard performance as of December 2022

For performance against attendance-related service standards, Figure 6-3 shows both metropolitan and regional attendance performance targets were achieved in the first 2 years of the 2020-24 regulatory period, except in one instance. In that case in 2020-21, annual performance was below the standard for metropolitan water event attendance – low priority. The contributing factors occurring in the lead-up to the metropolitan operations contract transition were resolved in the next period. At the time of writing, SA Water is part-way through the third reporting year, 2022-23, with the expectation that attendance targets will be achieved.

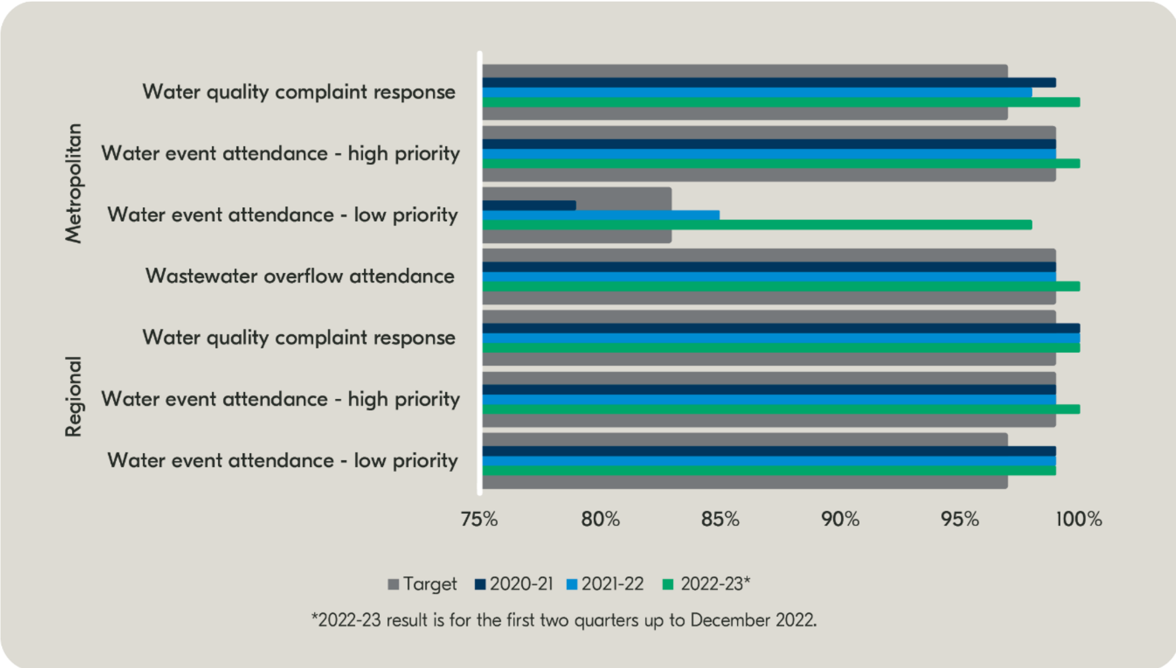

Figure 6-3 Attendance service standard performance as of December 2022

Figure 6-4 shows performance against restoration-related service standards. For the metropolitan restoration performance standards, the restoration target was achieved for water and wastewater events. However, the wastewater clean-up metric was not achieved, as the target was missed on 6 of the 8 interim reporting quarters by up to as much as 4 per cent. As outlined in further detail in Section 6.1.3, this underperformance was driven by customer requests, limited access, or safety considerations that were outside SA Water's control.

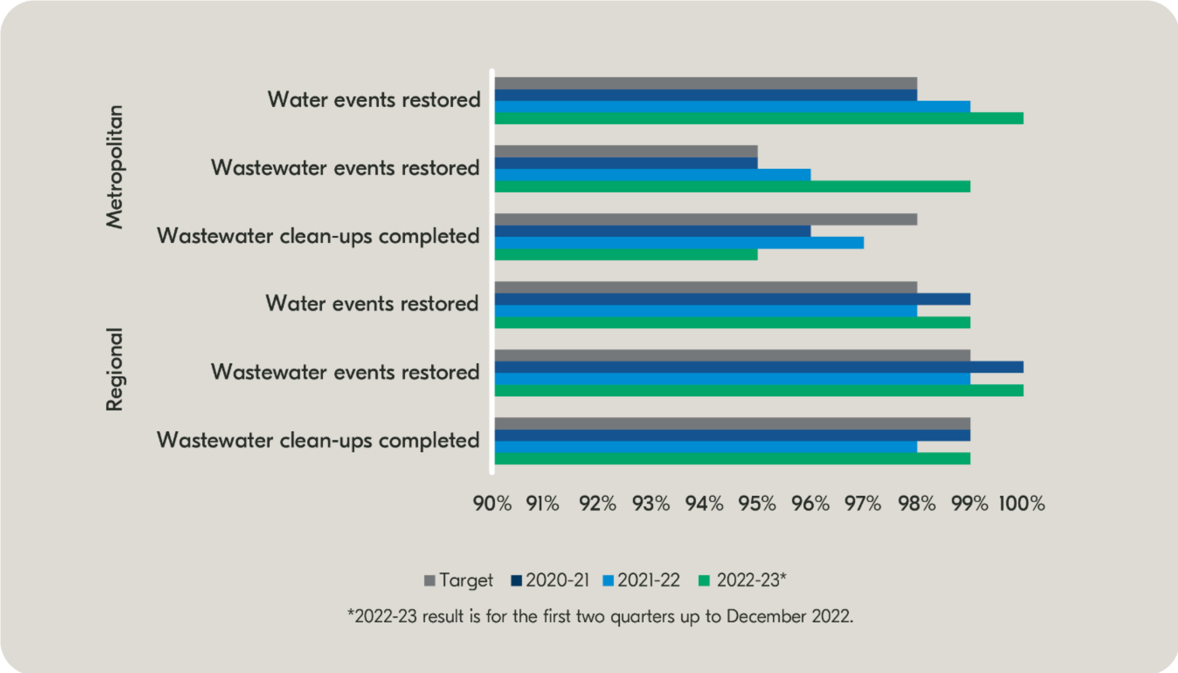

Figure 6-4 Restoration service standard performance as of December 2022

For regional restoration targets, most were achieved in the first 2 years of the 2020-24 regulatory period. However, the regional wastewater clean-up metric was not met in 2021-22 with the target missed by one per cent. Access to property and complexity of the clean-ups were contributing factors to this result.

As detailed in Section 3.2, these performance results were achieved (with exceptions noted above) even with operations affected by matters outside of SA Water's control, such as COVID-19 restrictions.

6.1.3 Self-assessment

ESCOSA's Monitoring and Evaluating Performance Framework, introduced a requirement for self-assessment during the 2020-24 regulatory period.[73] SA Water considered where the service standard performance reporting could provide a greater level of transparency in key areas that are likely to be of interest to stakeholders.

Prior to 2020-24, SA Water reported performance results to ESCOSA, and where a performance target was not achieved, ESCOSA assessed whether, on balance, SA Water did all it reasonably could to achieve the service standard. Where ESCOSA determined that SA Water had demonstrated that it did everything it reasonably could to meet the target, it would deem that it achieved the required performance based on 'best endeavours'. Typically, best endeavours would apply in instances where circumstances beyond SA Water's control substantially contributed to any observed under-performance.

However, under the current reporting framework implemented for the 2020-24 regulatory period, ESCOSA no longer proactively provides assessments of best endeavours. As such, and as demonstrated in the current regulatory period, there have been several instances where performance has not met the service standard targets, but, historically, SA Water believes would have met the best endeavours criteria.

[73] ESCOSA (2021) '*SAWRD20-24-Monitoring Evaluation Framework*', ESCOSA, accessed 20 February 2023.

An analysis of several years of exception reporting has identified regular instances of underperformance against service standard targets where SA Water believes the driver for the underperformance is outside the Corporation's control.

There are 4 distinct classifications of exceptions regularly reported across 2 reporting areas: regional response measures and overflow clean-up.

Regional response measures

- Long travel time - some events occur in remote parts of the state where long travel times are required to attend the site. In these instances it is not possible for SA Water to meet the required attendance timelines. SA Water has concerns that travel time performance measures have the potential to result in unsafe behaviour in instances where actual travel time makes it difficult or impossible to meet this target.

Overflow clean-up

- Customer requested delays - customers often request that SA Water delay an overflow clean-up following resolution of a sewer blockage to a time which better suits them, rather than the target time. While SA Water does not require customers to provide a reason for the request, where a reason is volunteered, these have included the customer leaving the property, avoiding noise disturbance at night-time, and providing customers time to remove personal property before the clean-up.
- Safety risks - SA Water sometimes encounters safety issues where work in the allotted timeframe would be of risk to its workers or the community. Instances of these events include overflow clean-ups which occur in a gully at night.
- Access issues - SA Water sometimes reports that events have occurred in an area to which it is unable to gain access, such as clean-up areas being behind locked gates.

In its review, SA Water has identified that by reframing certain performance measures to accommodate such scenarios, performance can be reported without the requirement for additional exception reporting or compromising employee, contractor or community safety.

Additionally, in the case of customer requested delays, which account for the majority of the exception reporting events, committing to an alternative time which better suits a customer could produce an improved customer outcome.

SA Water understands that 2020-24 service standards have been set very high to reflect historical performance. It is also understood that performance is not set to 100 per cent, even if performance has historically averaged 100 per cent, to make allowance for unexpected occurrences.

Nevertheless, where performance is routinely impacted by events outside SA Water's control or in response to reasonable requests from customers, incorporating the proposed changes to the measures will ensure SA Water achieves performance outcomes without impacting levels of service. It is SA Water's position that these proposed amendments, which are supported by stakeholders, would continue to hold it accountable for a high level of customer service.

6.2 Stakeholder feedback

SA Water consulted the Customer Challenge Group (CCG) and Peak Bodies Engagement Forum, to determine members' views on the current service standards and proposed amendments. Further details on these groups and their functions can be found in Chapter 4.

SA Water's proposal to retain the existing 2020-24 regulatory period service standards, with some minor amendments to performance measures, was presented to members. Specifically, it was proposed to:

- incorporate a travel time allowance for regional response service standards in recognition that it may not be possible for crews to physically attend a site within the required time due to the distance to the job site from the departure location

- vary the measurement of wastewater overflow clean-up times to account for customer requests to delay clean-ups or for instances where, for safety or access reasons, work cannot be completed.

6.2.1 Customer Challenge Group

The CCG was directly engaged on the service standards proposal following. It was provided a presentation summarising SA Water's service standards, performance against those standards, and how standards are developed.

In addition, the CCG was also engaged throughout 2022 on multiple initiatives that had an outcome related to service standards, such as water network investments, mains failures, and options on how levels of capital investment could affect achievement of standards in the 2024-28 regulatory period.

In specific deliberations on the current RD20 service standards, members demonstrated a good understanding of the many factors and trade-offs in setting service standards.

Overall, the CCG was positive about the way in which SA Water is measuring performance. There was no strong impetus to improve service standards, but there was a discussion about SA Water continuing to challenge itself to achieve high levels of performance.

In relation to proposed changes to how performance was measured in achieving the response standards:

- Response times for regional areas were discussed, noting that the timeframe targets are the same for metropolitan areas and regional areas. [74] It was explained to the CCG that given the dispersed nature of operations across the state, at times regional teams need to travel multiple hours to attend an event which may have a one-hour target. The group agreed that maintaining a regional service standard the same as a metropolitan standard in these instances may create an incentive to drive unsafely to attend an event in time to meet the standard. As such, measuring response times to allow for travel time was considered acceptable.
- The CCG determined that it is reasonable for SA Water to preference customer requests in instances where doing so does not impact other customers. As such, there was support for its proposal that performance against the wastewater overflow clean-up service standard be modified to not penalise SA Water where the customer has requested alternative arrangements.

Further clarification from CCG members was sought at its 21 February 2023 session on the measurement of the service standards. At this session CCG members were asked for explicit feedback on 2 proposals:

1. That when measuring attendance service standards in regional areas, the travel time should be deducted from response time.
2. That SA Water be deemed to have achieved the service standard in instances where it is unable to fulfill a sewer clean-up restoration time target due to reasons outside its control such as access issues or customer requests.

The CCG indicated strong support for these adjustments.

6.2.2 Peak Bodies Engagement Forum

Like the CCG, the Peak Bodies Engagement Forum (PBEF) was given an overview of existing service standards performance and areas for potential improvement.

The PBEF expressed support for retaining the current set of service standards with potential tweaks to recording performance. Some members acknowledged there could be more work

[74] ESCOSA (2020) '[Water Retail Code - Major Retailers'](), ESCOSA, accessed 15 February 2023.

done. For instance, it was expressed that the current service standards should be expanded to include environmental or social standards.

This feedback was considered in the context of the current reporting remit from ESCOSA. While the Commission does not consider environmental or social performance in its consideration of service standards, there are several regulated service obligations for SA Water arising through other statutory compliance requirements, such as environmental obligations from the Environment Protection Authority, Landscape Boards, or other regulators.

SA Water has determined not to incorporate standards for areas that ESCOSA does not factor in its assessment of what is prudent and efficient (and therefore for which SA Water is not directly receiving regulated revenue) into its proposed service standards submission for the 2024-28 regulatory period. Rather, SA Water will continue to seek to deliver environmental and social outcomes through its corporate strategies.

6.3 2024-28 proposed service standards

Based on the reviews undertaken, SA Water proposes to maintain all 22 of the 2020-24 regulatory period service standards as outlined in Schedule 1 of the Water Retail Code, with minor amendments to service standards 10, 12, 14, 16, 21 and 22. [75] These proposed amendments involve 2 types of variations to performance measures where the defined unavoidable circumstances regularly result in underperformance which, prior to the current regulatory period, would have been deemed to have been met on best endeavours. Specifically, SA Water is proposing:

1. The measurement of service responsiveness metrics in regional areas be amended to accommodate the travel time required to reach the event.

   The distance to attend events in regional areas can require significant travel time, sometimes exceeding the service responsiveness requirement currently set. There will be circumstances where endeavouring to meet the target could result in unsafe behaviour. SA Water and its employees cannot commit to meet this standard. While SA Water is committed to achieving positive outcomes for its customers, it is also committed to the health and safety of its people and the community. Amending this service standard will enable SA Water to meet the standard without the need for best endeavours to be considered.

   While an alternative to this adjustment could be for SA Water to establish additional workshops to reduce travel times, this is considered an unreasonable additional capital and operating expense for the Corporation's customers.

2. A minor measurement variation to both metropolitan and regional wastewater overflow clean-up restoration metrics to account for unavoidable or agreed delays to the restoration processes.

   This will enable SA Water to meet its target by accounting for unavoidable delays (for example, where access to a property is restricted or circumstances are unsafe) and/or complete activities in a manner endorsed by the customer, even though the target is technically not met. This will enable SA Water to meet the service standard without the need for best endeavours to be considered.

The outcomes of SA Water's evaluation and proposed amendments are summarised in Table 6-1.

Table 6-1 Summary – service standards review outcomes

[75] ESCOSA (2020) '*Water Retail Code - Major Retailers*', ESCOSA, accessed 15 February 2023.

Service standard	Review outcome	SA Water proposal
Customer service		
1. Customer satisfaction	Performance positive, measure establishing, service level customer accepted	No change
2. Telephone responsiveness	Performance positive, measure establishing, service level customer accepted	No change
3. First contact resolution	Performance positive, measure establishing, service level customer accepted	No change
4. Complaint responsiveness	Performance positive, measure establishing, service level customer accepted	No change
5. Complaint escalation	Performance positive, measure establishing, service level customer accepted	No change
Connections		
6. Connection application responsiveness	Performance positive, measure well-established, service level customer accepted	No change
7. Water network connection timeliness	Performance positive, measure well-established, service level customer accepted	No change
8. Sewer network connection timeliness	Performance positive, measure well-established, customer accepted	No change
Response (attendance)		
9. Water quality responsiveness – metropolitan Adelaide	Performance positive, measure well-established, service level customer accepted	No change
10. Water quality responsiveness – regional areas	Performance positive, measure could be improved, service level customer accepted	Minor amendment to remove travel time from response time accounting.
11. Water event responsiveness – high priority – metropolitan Adelaide	Performance positive, measure well-established, service level customer accepted	No change
12. Water event responsiveness – high priority – regional areas	Performance positive, measure could be improved, service level customer accepted	Minor amendment to remove travel time from response time accounting.
13. Water event responsiveness – low priority – metropolitan Adelaide	Performance positive, measure well-established, service level customer accepted	No change
14. Water event responsiveness – low priority – regional areas	Performance positive, measure could be improved, service level customer accepted	Minor amendment to remove travel time from response time accounting.
15. Sewer event responsiveness – metropolitan Adelaide	Performance positive, measure well-established, service level customer accepted	No change
16. Sewer event responsiveness – regional areas	Performance positive, measure could be improved, service level customer accepted	Minor amendment to remove travel time from response time accounting.

Service standard	Review outcome	SA Water proposal
Restoration		
17. Water service restoration timeliness – metropolitan Adelaide	Performance positive, measure well-established, service level customer accepted	No change
18. Water service restoration timeliness – regional areas	Performance positive, measure well-established, service level customer accepted	No change
19. Sewerage service restoration timeliness – metropolitan Adelaide	Performance positive, measure well-established, service level customer accepted	No change
20. Sewerage service restoration timeliness – regional areas	Performance positive, measure well-established, service level customer accepted	No change
21. Sewer overflow clean-up timeliness – metropolitan Adelaide	Performance positive, measure could be improved, service level customer accepted	Amendment to account for: • agreed delays where the customer requests a different response time or • where property access is restricted, or the circumstances are unsafe.
22. Sewer overflow clean-up timeliness – regional areas	Performance positive, measure could be improved, service level customer accepted	Amendment to account for: • agreed delays where the customer requests a different response time or • where property access is restricted, or the circumstances are unsafe.

7 Integrated planning and decision-making

SA Water manages a significant portfolio of assets to deliver trusted water and wastewater services for a sustainable and healthy South Australia. The Corporation's various asset management systems, strategies and principles ensure it deliver value to customers now and over the long-term. SA Water's approach to asset management, which is detailed in this chapter, enables the organisation to identify and respond to the challenges it faces including an ageing asset base, population growth, climate change, increasing understanding of, and changing expectations for, environmental protection, and an economically constrained environment.

SA Water's approach to asset management is aligned with the principles of ISO55001 2014: Asset management – management systems – requirements. The Asset Management System (AMS) provides a framework for SA Water to translate customer, community, stakeholder and owner expectations documented in its 2020-25 strategy, into objectives for asset management. This includes actions for managing assets across their life cycle that balance cost and risk objectives while achieving required performance and driving continual improvement.

Figure 7-1 highlights the key elements of SA Water's AMS and the relationship between these elements, as aligned with the ISO 55001 standard.

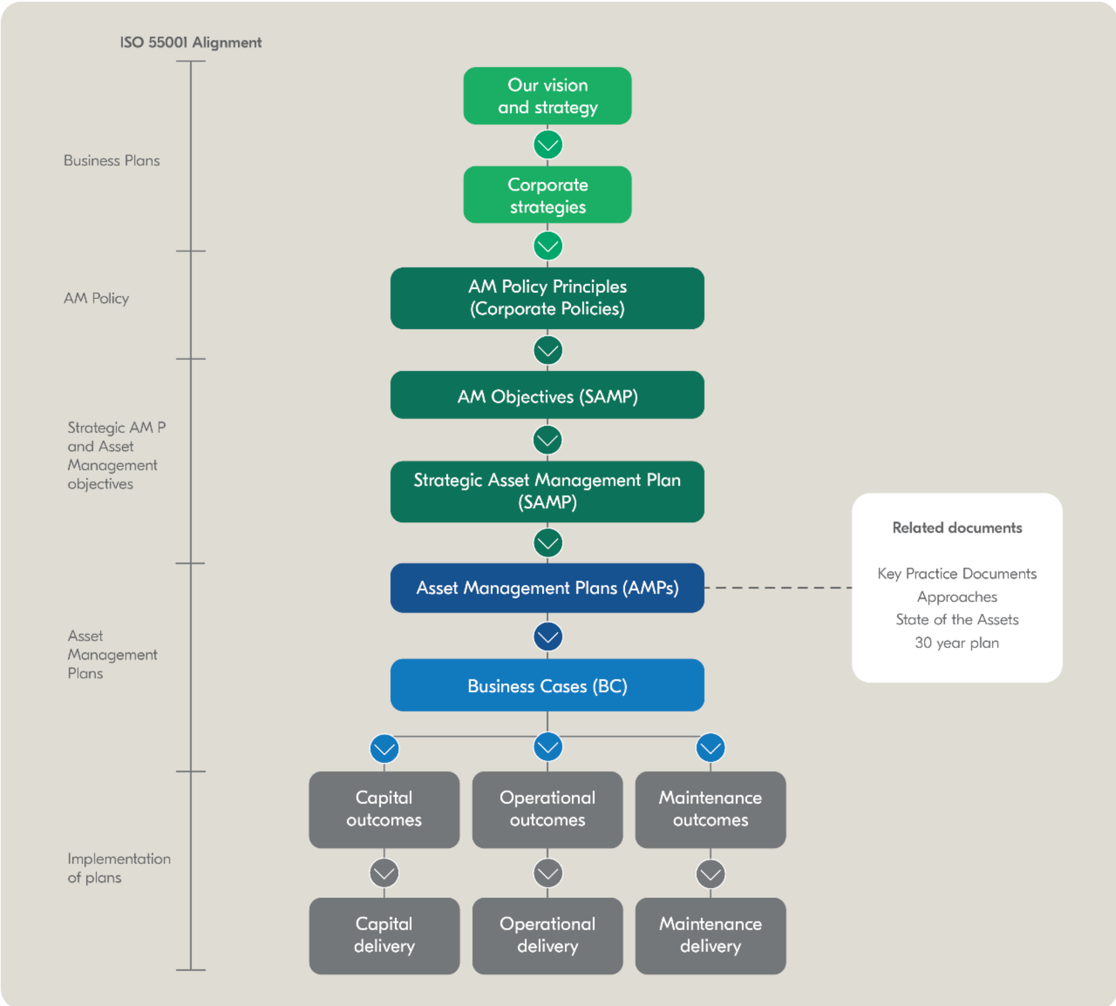

Figure 7-1 Key elements of SA Water's Asset Management System

SA Water's AMS was developed and operates based on the Institute of Asset Management's conceptual model. As shown by Figure 7-2, the AMS consists of asset life cycle activities (life cycle delivery) and the elements necessary to drive, support, implement and provide assurance for the life of an asset, or group of assets.

The model shows the link from the organisational strategic plan to the principles, strategy, objectives, and plans (strategy and planning) within the AMS. Decision-making operationalises the strategy and planning into optimal interventions across the asset life cycle.

Supporting the AMS are the key enablers:

- asset information strategies, standards, information systems and data and management systems (asset information)
- governance structures (organisation and people)
- risk management and assurance, continuous development, and improvement of SA Water's practices (risk and review).

In addition to its operational elements, the framework also incorporates external interrelationships that inform and influence the AMS, including the organisational strategy, customers, legislative requirements, investors, and the commercial environment.

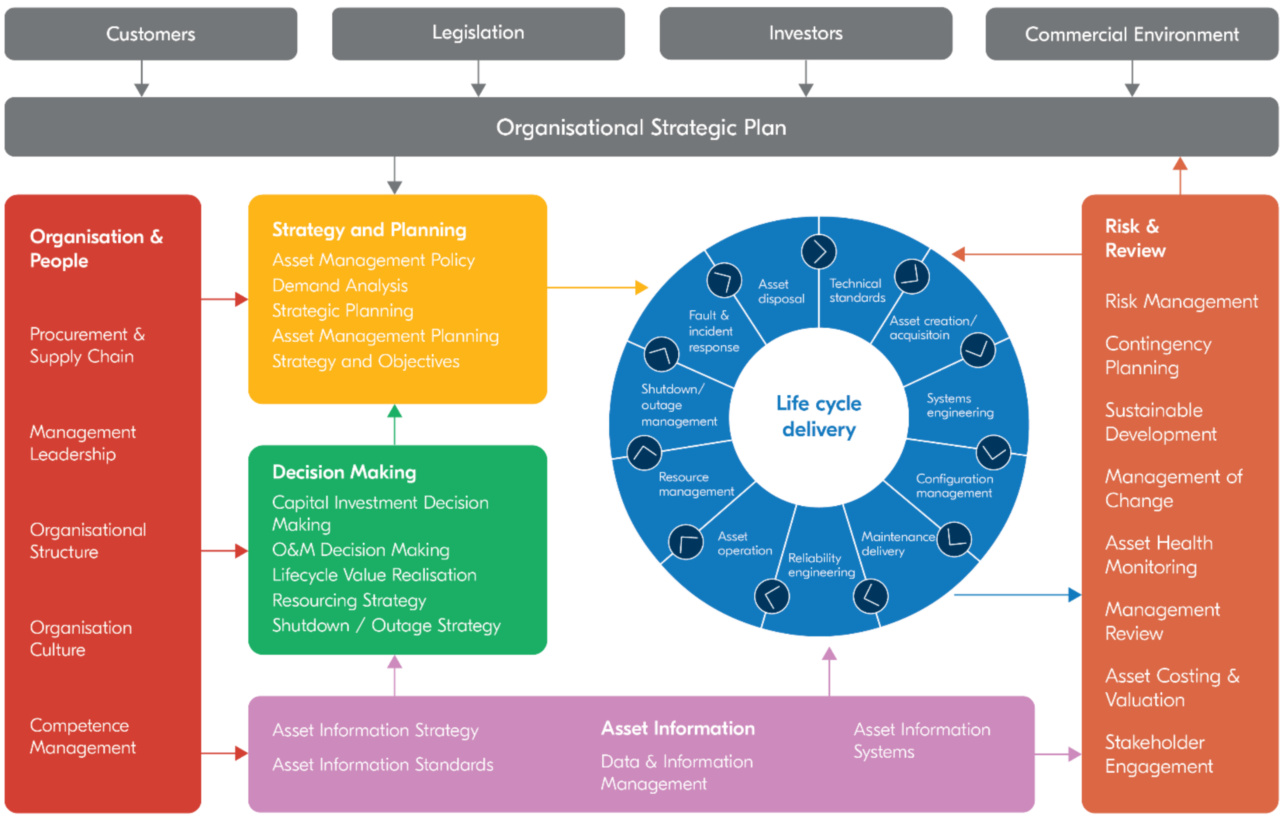

Figure 7-2 SA Water's Asset Management System

The key elements of the AMS that underpin the capital and operating expenditure proposed for RD24, as well as in the long-term, are detailed in the following sections.

7.1 Asset management policy principles

Through its asset management policy, SA Water sets and commits to a vision and framework for asset management. The policy principles in Figure 7-3 guide asset management for SA Water.

- Assets exist to provide our customers with safe, sustainable, and affordable water and wastewater services.
- Across the business, our people have the knowledge, accountability and behaviours to influence levels of service experienced by our customers through smart, innovative asset management and a lowest total cost of ownership approach.
- Our Asset Management System aligns with good asset management practice, and we are committed to continual improvement.
- Asset management objectives are designed to deliver against corporate objectives and performance measures.
- Asset management decisions reflect customer expectations and our legal and regulatory responsibilities.
- Critical assets are managed proactively to minimise their likelihood of failure.
- All relevant legislative requirements are considered, along with the social and economic environment in which we operate.
- Asset management decisions are based on optimising the 3 critical elements of risk, levels of service and whole-of-life costs.
- Information is collected and made readily available to provide the certainty necessary to make good decisions.
- Long-term investment planning is based on prudent and efficient investments in context of medium- and long-term investment plans.
- Customer and community engagement is open to challenge and debate and provides timely and transparent information to customers/stakeholders.

Figure 7-3 Asset management policy principles

Table 7-1 provides examples of where the principles have been applied to formulate the RD24 submission.

Table 7-1 Examples of how asset management principles have shaped the RD24 business plan

Asset management principle	How the principle has influenced RD24 planning
Assets exist to provide our customers with safe, sustainable, and affordable water and wastewater services	• Investment programs were developed to address the water quality risks in networks and treatment plants. In recognition of affordability constraints in RD24 only the highest risks have been prioritised for action. • South Australia is experiencing high rates of out of sequence growth in a small number of areas in northern Adelaide. While SA Water has looked for non-asset solutions first, the growth is impacting water pressure and the ability of the wastewater system to convey flows without overflowing. Therefore, investment in capacity upgrades (system augmentation) has been identified as necessary in the RD24 period.
Asset management decisions reflect customer expectations and SA Water's legal and regulatory responsibilities	• Customer engagement was undertaken to inform RD24 prioritisation. Engagement with the Customer Challenge Group sought to validate preferred levels of service and understand customer priorities for RD24.

7.2 Asset management objectives

The asset management objectives are enduring expectations aligned with SA Water's functions and strategy. They detail what SA Water aims to achieve through coordinated activity under the AMS. All activities driven by the AMS are planned and implemented to achieve the asset management objectives which are mapped to the current SA Water strategy (Appendix 7.1).

Asset management objectives incorporate levels of service, which define SA Water's commitments to its customers in a detailed, measurable way (Figure 7-4). The level of service can be driven by customer expectations and feedback, owner requirements, statutory requirements, standards, and codes of practice. For clarity, these levels of service may differ from, but still be consistent with, the service standards set by ESCOSA covered in Chapters 3 and 6.

Statutory requirements are set through obligations in Acts, regulations or associated licensing conditions. An example of a statutory level of service is one related to an obligation from the Environment Protection Authority pursuant the *Environment Protection Act 1993*.

Other levels of service may be set by SA Water with regard to operational requirements or external drivers. For example, SA Water will set work health and safety targets based on an expected profile to maintain occupationally safe sites.

Customer levels of service are informed by engagement and research activities undertaken from time to time to establish preferred service outcomes and priorities for investment. For instance, some of the willingness to pay survey feedback discussed in Chapter 4 informed levels of service for interruptions.

These levels of service form 2 classifications:

1. Customer levels of service – focus on how customers receive or experience the product or service supplied by SA Water, such as the frequency of an incident occurring, how quickly incidents are attended to, and the quality of the service a customer receives. These can be informed both through statutory obligations, such as meeting the ESCOSA service standards, or through customer engagement outcomes.
2. Technical levels of service – focus on asset-based metrics such as reliability and availability, and how to minimise loss of product or service quality. These are typically set internally but can also be informed by customer engagement.

Delivering on an investment plan to achieve these levels of service ensures alignment to asset management objectives and, in turn, SA Water's strategy.

Levels of service are used to track performance of asset management objectives and to demonstrate contributions to strategic objectives. They are regularly reviewed to ensure they remain relevant.

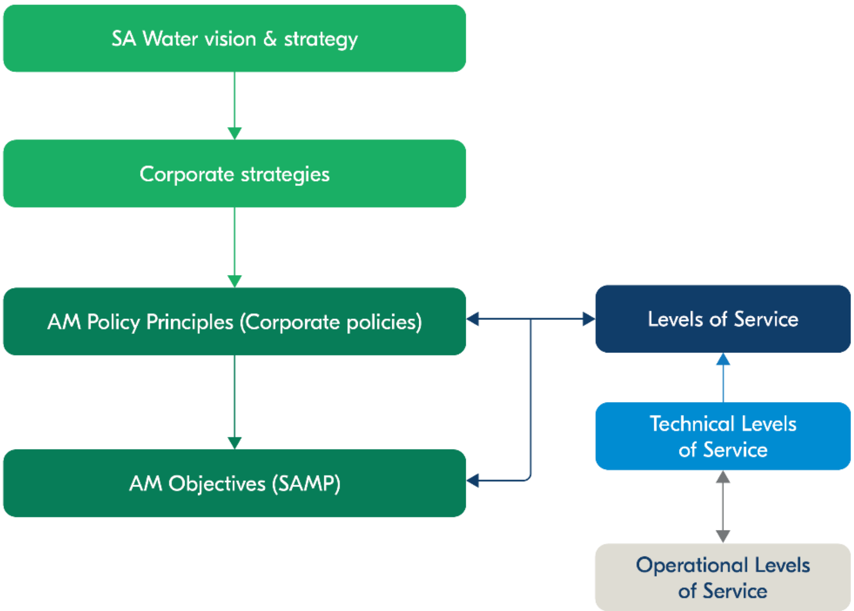

Figure 7-4 Levels of service - line of sight to corporate strategy

Proposed RD24 capital investments have been developed through levels of service and asset management objectives. How initiatives support SA Water's corporate vision and strategy are included in each business case, as detailed in Section 7.7.2. Some examples of how levels of service have specifically shaped business cases are detailed in Table 7-2.

For some business cases, the alignment to the level of service is less direct and, instead, the expenditure supports assets that provide services. For example, supervisory control and data acquisition (SCADA) is vital to service delivery but does not directly contribute to customer-facing levels of service. In these instances, SA Water manages SCADA assets through technical levels of service.

Table 7-2 Examples of how levels of service have been incorporated

Segment	Business case	Asset class	Strategic alignment	Level of service type	Level of service	Target
Wastewater	Wastewater pumping mains renewals	Wastewater pumping mains	Compliance with environmental protection obligations	Technical	Total wastewater overflows to the environment (Type 1 and 2 reportable incidents)	<135 per year
Water and wastewater	Major maintenance	Odour control unit biofilters	Customer satisfaction with service experience	Customer	Customer odour complaints	<550 odour complaints per year
Water	Water quality program	Water reticulation network	Compliance with health obligations	Customer	Systems with unacceptable water quality risks	Zero extreme risks

7.3 Strategic asset management plan

The AMS is operationalised in accordance with the strategic asset management plan (SAMP).

The SAMP:

- formalises and articulates the line of sight from SA Water's strategy through policy principles to asset management objectives, showing their alignment with SA Water's strategic objectives (Figure 7-1)
- defines the role of the AMS in supporting achievement of the asset management objectives
- conveys the current state and target future state of the asset management system and the asset portfolio. The SAMP planning horizon is aligned to SA Water's 30-year asset plan [76]
- sets out the approach for developing asset management plans that aligns with the asset management objectives. This approach informs and guides the development of the system, facility and statewide approaches and plans
- defines monitoring and review requirements. The SAMP will be reviewed every few years. This ensures the SAMP remains up-to-date and that continuous improvement to the SAMP document can occur.

7.3.1 Planning architecture

Asset planning is the process SA Water uses to manage its assets. It is driven from the SAMP ensuring line of sight to SA Water's strategy (Figure 7-5). With a focus on the medium- to longer-term total investment needs for the organisation, asset management plans (AMPs) are developed for individual asset programs and projects, which contain specific analyses and strategies for individual asset classes.

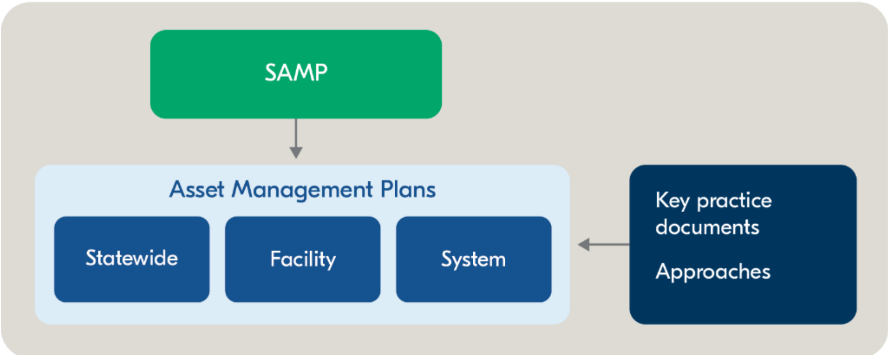

Figure 7-5 Planning architecture

In doing this, the Corporation approaches asset management planning in a consolidated way that recognises that assets form classes with consistent requirements for life cycle management, while also aggregating into networks and systems to deliver services. To reflect this, asset planning is undertaken at different scales depending on the focus, whereby plans are developed:

- statewide, to detail how to maintain, operate and renew statewide assets
- for facility types, to provide an aggregated perspective and approach to planning for specific facility types

[76] SA Water (n.d.) 30 year asset plan, SA Water performance scorecard, SA Water website, accessed 11 July 2023.

- for systems, planning from source to tap water or sink to dispersion.

They document the detailed activities, resources, responsibilities, timescales, and risks for the achievement of the asset management objectives.

SA Water reviews and updates AMPs on a rolling basis with the frequency based on considerations including performance and materiality. To inform the regulatory business plan (RBP), all AMPs received major updates in 2022-23.

AMPs are also subject to continual refinement and evolution to meet business needs. Some plans have been combined in recent years. For example, cathodic protection for water mains now forms part of the water mains asset management plan, while other plans have been retired and others newly created.

Key practice documents (KPDs) and approach documents currently inform the development and implementation of AMPs (Figure 7-5).

Specifically:

- KPDs support standardised development of AMPs, summarising key asset management processes and principles that are applicable to the entire asset portfolio to follow
- approach documents summarise the process for asset management decision-making for specific system strategies or facility type.

Table 7-3 summarises the current type of documents in SA Water's value chain.

Table 7-3 Summary of asset management planning documents

Document type	Examples
Approach documents	Customer meters (water) Digester management (wastewater)
Key practice documents	Asset performance and health monitoring Optimise life cycle decision-making
System AMPs	Northern system plan (water) South-East system plan (wastewater)
Facility AMPs	Storage tanks AMP Wastewater treatment plant AMP
Statewide AMPs	SCADA system management

7.3.2 Planning process

Asset management is a complex process that considers an array of diverse factors, objectives, inputs and outputs, and decision makers. The asset planning process comprises the activities to develop the AMPs that specify the detailed activities, resources, responsibilities, timescales, and risks to achieve the asset management objectives. This drives how SA Water operates and maintains its assets.

The high-level process SA Water uses for developing and updating AMPs to inform investment decision-making is shown in Figure 7-6.

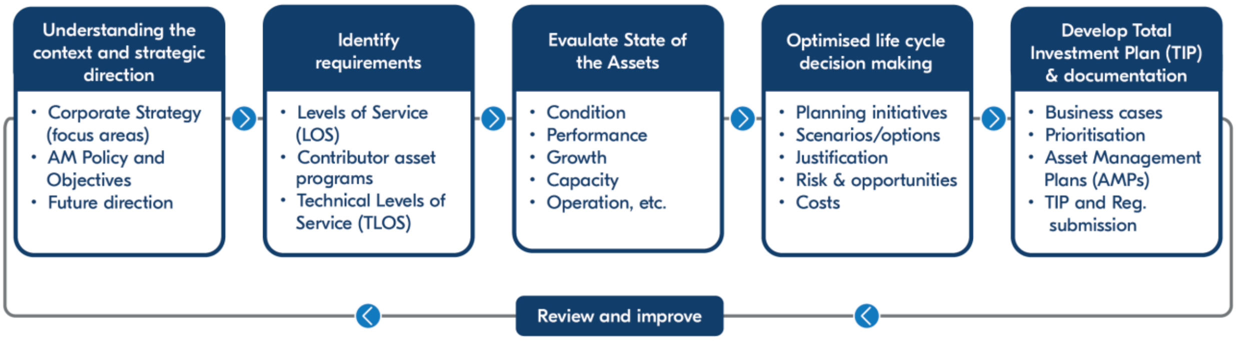

Figure 7-6 AMS asset planning process

AMPs (and approaches to support the process) describe the management of the assets, system, or facility by articulating and making investment decisions through the following process.

7.3.2.1 Understanding context and direction

During planning, SA Water takes strategic and long-term views to investment in its regulated asset base, determining how it currently aligns with strategic objectives and articulating the future needs.

Considering both immediate and long-term investment requirements enables prudent decision-making over time, minimising capital expenditure that may be considered inefficient in hindsight. This approach provides a profile of investment requirements across regulatory periods and provides SA Water with a line of sight for when significant investment will be needed.

AMPs are developed and updated to reflect immediate and longer-term investment requirements. They are prepared for individual asset programs and projects, which contain specific analyses and strategies for individual asset classes. They document the detailed activities, resources, responsibilities, timescales, and risks for the achievement of the asset management objectives though the following stages.

7.3.2.2 Identifying requirements

To determine what is required for the particular asset class or type to inform development of, and updates to, AMPs, these key questions must be answered in this step:

- What are the levels of service and performance required of the assets to meet customer and stakeholder requirements?
- How will these requirements change over time?
- What are the necessary asset management enablers to support effective infrastructure planning and decision-making processes?

Enablers are organisational structures, capabilities, plans, systems, tools, and external resources that support effective asset management delivery. An important enabler is technology which is discussed in Section 7.6.

7.3.2.3 Evaluating the state of the assets

This stage aims to answer questions including:

- What is the current state of the assets? This includes assessing the asset condition and current performance.

- Are the assets capable of meeting demands now and in the future?

This evaluation assesses apparent gaps in the level of service provided against current and future requirements and identifies appropriate interventions to address the gaps.

Interventions are determined based on criteria including economic, financial (least long-term cost), risk and value contribution. The decision criteria used varies depending on the nature of the service and the driver. This is documented within the AMPs and approach documents.

7.3.2.4 Life cycle decision-making (asset strategies)

Asset life cycle decision-making is a complex and dynamic process that considers an array of diverse factors, objectives, inputs, and outputs. To maximise the life of an asset, the key questions that are answered through the planning process are:

- What are the best approaches (strategies) for operating, maintaining, replacing, and improving the assets?
- How much will it cost over the longer-term to provide the service?
- What is the best long-term funding solution?

The AMPs document interventions and the expenditure and risk impact associated with those interventions, which are subject to review and prioritisation within the revenue cap.

Asset management is a dynamic, continuously changing process over time, that uses good asset information and a Plan - Do - Check - Act approach to ensure levels of service, cost and risk are informed, visible and in optimal balance.

7.3.2.5 Develop total investment plan

In addition to informing the RBP, collectively the AMPs are used to inform the immediate and longer-term direction for SA Water's water and wastewater assets, through development of a total investment plan (TIP).

A TIP is developed considering the full suite of AMPs to achieve all known level of service requirements in the long-term, within corporate risk appetites, and for the lowest whole-of-life costs. It defines the Corporation's long-term investment profile, providing a view of the investment and timing for interventions. The 30-year asset plan is a point in time projection of SA Water's long-term investment profile.[77]

Consideration of investment requirements and timing in the context of the long-term profile enables SA Water to analyse and plan for how the decisions made now will affect future customers and influence risk to operations in the longer term.

The process for prioritising and validating these investments determined through the asset management processes for inclusion with the final RD24 expenditure is detailed in Section 7.7. The interventions that are endorsed for delivery are informed, refined, and validated further through SA Water's capital project life cycle process (Section 7.8).

7.3.3 Long-term asset management planning

Most assets managed by SA Water are long lived. For instance, a water main is typically expected to provide service for 80 years or more, and a water storage made of high strength concrete may reliably provide service for hundreds of years, where appropriately maintained. SA Water is currently managing water mains up to 150 years old, with a

[77] SA Water (n.d.) 30 year asset plan, SA Water performance scorecard, SA Water website, accessed 11 July 2023.

concentration in the 40- to 70-year age bracket (Figure 7-7). This ageing asset profile indicates when capital investment may be necessary and the quantum of that investment.

The need for a long-term perspective is imperative to ensure SA Water's customers today make a fair contribution to service delivery, without these costs being disproportionately carried by future customers. To support investment decision-making, SA Water plans for short-, medium-, and long-term investments in its infrastructure assets.

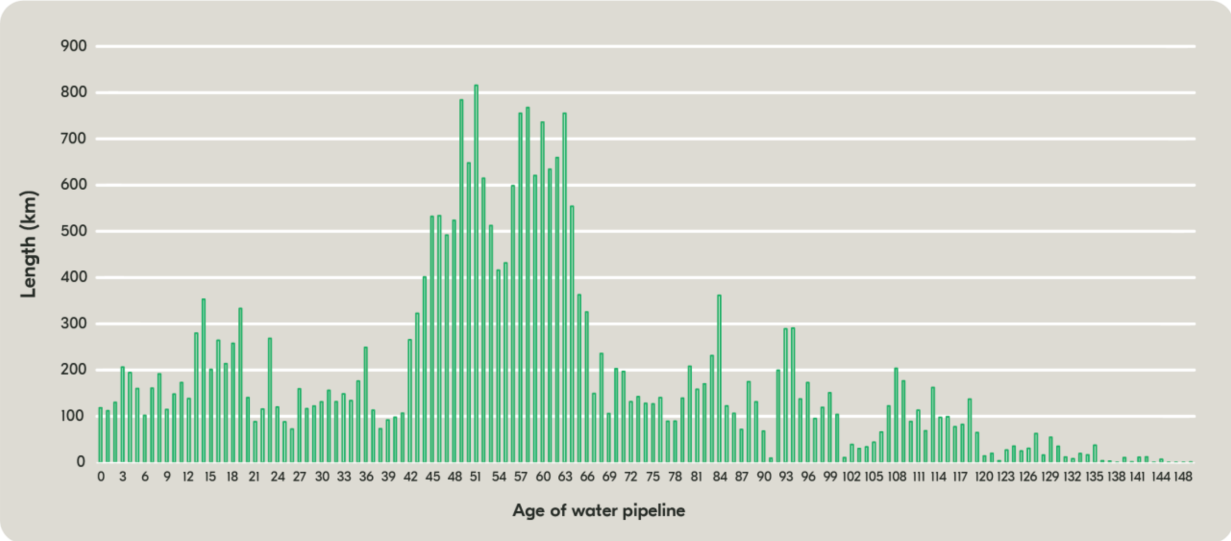

Figure 7-7 Statewide water main age profile

While SA Water could take the approach to only replace or renew assets at the time of failure or at age of replacement, investment peaks can be concentrated (Figure 7-7), which can result in investment spikes leading to bill shocks as have been observed in recent years in Britain, Ireland and Scotland.[78] The concept of intergenerational equity, which SA Water aims to deliver through its long-term planning approach to investment, was strongly supported by the CCG which sought to ensure infrastructure decisions made today are appropriate over the long-term.

At a high-level, long-term expenditure expectations are monitored, reviewed, updated and publicly reported annually as required by ESCOSA in the 30-year asset investment plan.[79] The published 30-year asset investment plan presents a point-in-time assessment of future expenditure needs. The same data, systems and processes used to develop the 30-year plan have also been used to develop the expenditure proposals included in this RBP, albeit in much greater detail.

Through having this long-term approach to asset portfolio planning, SA Water seeks to identify and plan for expected future investment to sustain services in the long-term, identify efficiencies, and smooth investments in capital over time.

Reduced investment in the short-term, will lead to a deficit in required capital investment that will grow over time, leading to higher amounts of required future investment in coming regulatory periods. This must be carefully managed to minimise future bill shocks for customers due to large amounts of capital investment being required at once to avoid substantial service deterioration and asset failure. Additionally, delaying capital investment may result in higher operating expenditure to maintain ageing assets. This approach is discussed further in the next Chapter, where the balance between managing risk and service levels against current and future costs to customers are covered in detail.

[78] Helm, D., (2023) *Who should pay for the sewers?* Oxford University, accessed 26 June 2023; McDermott, R., Solan, B., McCord, S. and Littlewood, K. (2019), Irish Water and Scottish Water: A Comparison. Journal of Water Resource and Protection, 11, 1064-1089.
[79] SA Water (n.d.) Our performance, SA Water, accessed 26 June 2023.

Long-term forecasts have informed the shorter-term expenditure included in this RBP where it has been identified that proactive decisions now will deliver long-term benefit to customers and the community. Examples of this include:

- New investment and operating expenditure to change the water chemistry in the distribution network and thereby prolong the expected life of these assets. This investment is expected to have a return over many decades to come and mitigates the risk of forward expenditure spikes for water main renewal.
- Deferral of major capacity upgrades at the Bolivar Wastewater Treatment Plant is being achieved by diverting flows to better use existing capacity. While this option is operationally more challenging and results in SA Water taking on more risk, this is considered the right decision for customers financially in the current economic climate and to prove this approach as a longer-term solution.
- Actively trialling innovations for structurally relining pipes that provide a lower cost alternative to pipe replacement.
- Maturing innovations in pressure management across the water supply network to provide benefits that extend the useful life of pipes.

SA Water will continue to identify and implement innovative practices and technology that can drive lower life cycle costs for the benefit of customers now and into the future.

7.4 Capital project life cycle

SA Water applies a corporate project management methodology (CPMM) to capital delivery to ensure standardised processes and procedures, standards, accountability, and transparency in decision-making. This is undertaken to support efficient and effective delivery of the capital portfolio.

The CPMM covers a capital project from asset planning through to capital delivery and then handover to operations and maintenance (Figure 7-8). It is aligned to the Australian Institute of Project Management's National Competency Standards for Project Management[80] and supplemented by SA Water processes. This process applies to all capital delivery projects initiated within SA Water.

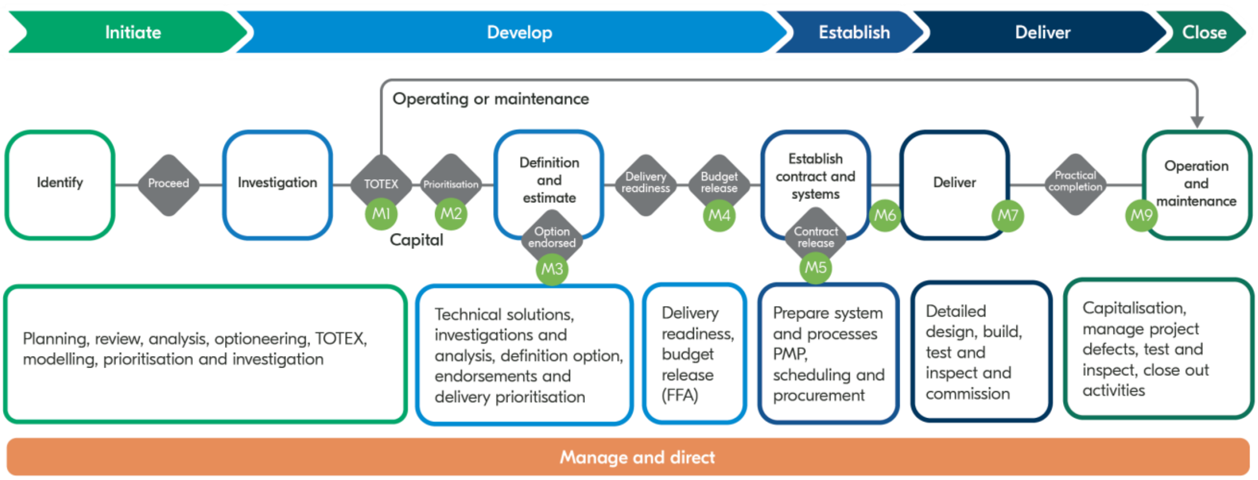

Figure 7-8 CPMM capital project life cycle

[80] Australian Institute of Project Management (2023), AIPM Professional Competency Standards for Project Management – Certified Practising Project Manager (CPPM), AIPM, accessed 4 July 2023.

The project life cycle begins through the asset planning process when a gap or deteriorating trend against a level of service is identified. This need is investigated and, where deemed necessary, appropriate interventions are identified and tested. Interventions include both asset and non-asset solutions. Where an asset solution is applied, the process concludes with the handover of the new or renewed asset to the operations and maintenance teams.

The project life cycle processes are made up of phases which consist of one or more stages that identify core activities, actions, inputs, projects, approvals, and gateways required to transition to the next stage or phase. Each milestone, activity and gateway within every stage is reviewed, endorsed, and approved by an appropriate delegate or governance forum. The assurance framework ensures transparent and accountable decision-making across the whole project life cycle.

There are 6 processes and 8 mandated steps across the asset planning to capital delivery life cycle shown in Figure 7-8.

7.5 Cost estimation

Cost estimating is a vital component of the project life cycle detailed in Section 7.4. During the current regulatory period, SA Water has strengthened its cost estimating function through a comprehensive improvement program.

7.5.1 SA Water's approach to cost estimation

SA Water applies a cost estimation and cost intelligence approach consistent with industry standards and stakeholder expectations. This consistent, documented approach to estimating comprises the estimating strategy, standards, processes, and procedures.

SA Water applies cost estimation in the following way to ensure reliable cost estimates:

- Ensure scope definition is clear and well-defined, as a detailed project scope is essential to reducing the risk of future cost overruns.
- Use cost guidelines and templates, along with agreed definitions, to facilitate consistency in the cost estimation approach.
- Enable effective communication and collaboration between estimators, engineers and project managers to facilitate a clear understanding of project scope, risks, assumptions, and consistency in cost estimation.
- Apply unit base rates that are made available through a unit rates database, particularly for routine projects such as new mains construction or renewals. These are regularly updated with historical actual costs.
- Uses cost estimating software to facilitate efficiency and consistency in the estimating process.
- Ensure indirect costs are documented and based on analysis of historical project costs, to provide a clear understanding of likely and actual indirect costs.
- Apply external validation to external cost estimates, where appropriate, to ensure complex projects are provided with a higher level of cost certainty, and applied rates are consistent with market rates.

SA Water's documented cost estimating procedures act as a guide to outline the indicative level of project development required from engineering, asset management, project management and cost intelligence, to satisfy the requirements of the class of estimate (as outlined in Table 7-4). This shows the requirements for each estimate class based on the stage of project development, with accuracy improving through the phases of estimation.

Unit rate cost models are used for estimating commonly constructed assets (such as water main renewals by pipe diameter). For more bespoke assets classes, sources including unit rates and analysis of recent contracts are used.

Table 7-4 Cost estimation classes

Classification	Class 1	Class 2	Class 3	Class 4
Estimate type	Project identification	Project scoping	Project development	Project delivery
Intended use	Planning / budgeting	Feasibility or options analysis	Project business case / financial approval	Procurement
Target accuracy	-30% to +50%	-20% to +30%	-10% to +15%	-5% to +5%
Definition of scope	Statement of project brief	Options report or documentation	Concept design and documentation	Final documents
Indicative level of design	10%	20%	40%	80-100%
Basis of cost (major items)	Work breakdown structure Historical costs Benchmarked overheads Real SA Water overheads	Work breakdown structure Unit rates Benchmarked overheads Real SA Water overheads	Work/cost breakdown structure First principles Benchmarked overheads Real SA Water overheads	Cost breakdown structure Real overheads Real SA Water overheads

In determining estimates, SA Water employs different estimating strategies depending on the project category: renewals; projects between $1 million and $4 million; and projects >$4 million. Estimates are developed for the detailed design stage and then further refined as the project progresses through the life cycle. Delivery partners involved in delivering major projects (major framework partners) are involved in this process. Major framework partner estimators develop estimates for the target outturn costs, the expected total cost for completion of a project, which make up 70-80 per cent of the capital investment program. In doing this, these estimators use SA Water's estimating templates, guidelines, and other estimating collateral.

SA Water's cost estimating policies and procedures and their application have been refined, building on lessons learnt through the RD20 process. More reliable evidentiary estimates that form the basis of project cost management throughout the project life cycle more strongly inform the infrastructure investment.

7.5.2 Innovation and improvement

To enable innovation and improvement and ensure the processes are the best fit for the business, SA Water has set up a program where lessons learned from scope management and actual project costs are regularly reviewed. Current focus areas to deliver innovation and improvement to support efficient and effective delivery in RD24 include:

- upskilling its cost estimating capability and developing consistent approaches

- the application of historical actual costs to inform assumptions and improve estimating knowledge
- increased monitoring and assurance on actual costs during project delivery against work breakdowns contained in estimates
- increased use of cost estimating software and probabilistic risk practices.

These factors have ensured that SA Water's cost estimates continue to improve over time and are as robust as possible for RD24.

7.6 Supporting technology

Technology supports the provision of water and wastewater services to customers and facilitates many of SA Water's direct customer interactions including billing, communication and fault management. While expenditure for technology is managed consistently within SA Water's overall planning, governance and prioritisation processes, the dynamic environment for technology means that additional processes are employed to get the best result for customers.

7.6.1 Technology strategy

The technology corporate strategy (TCS) articulates SA Water's technology objectives, goals and actions over a 10-year time horizon. It is driven from, and designed to align with, SA Water's strategy (as discussed in Section 2.5). SA Water's TCS places technology as an enabler of service continuity that supports the customer experience, delivers cost efficiencies, and achieves compliance requirements. It has been formulated to meet these aims through objectives as shown in Figure 7-9.

Figure7-9 Technology strategy objectives

The technology strategy drives technology investment choices for SA Water's systems, data and intelligence, infrastructure and smart services that seek to achieve asset security and reliability, service continuity, personalised services, and more efficient systems and processes.

To ensure all technology requirements are identified, technology planning influences and considers other business area strategies and plans, including those used for asset management, finance and planning.

A technology capital plan is developed to drive investment during a regulatory period. The technology capital planning approach enables SA Water to accommodate and make decisions that consider the impacts and consequences of technology to the broader plan and allow for changing technology requirements over time.

In parallel, a continuous planning approach of identifying, defining, reviewing, and updating opportunities for investment takes place, which is informed by stakeholder engagement, dependencies being captured, and identification of foundational gaps and risks.

This agile approach enables changes during a regulatory period to be implemented when required.

7.6.2 Determining technology requirements for RD24 and beyond

Technology investment needs are dynamic and can change for reasons outside SA Water's control. As such, SA Water's technology portfolio requirements for maintaining existing systems and investing in new technologies are reviewed, analysed, and updated on an ongoing basis to ensure the right investment decisions are made at the right time to support business continuity.

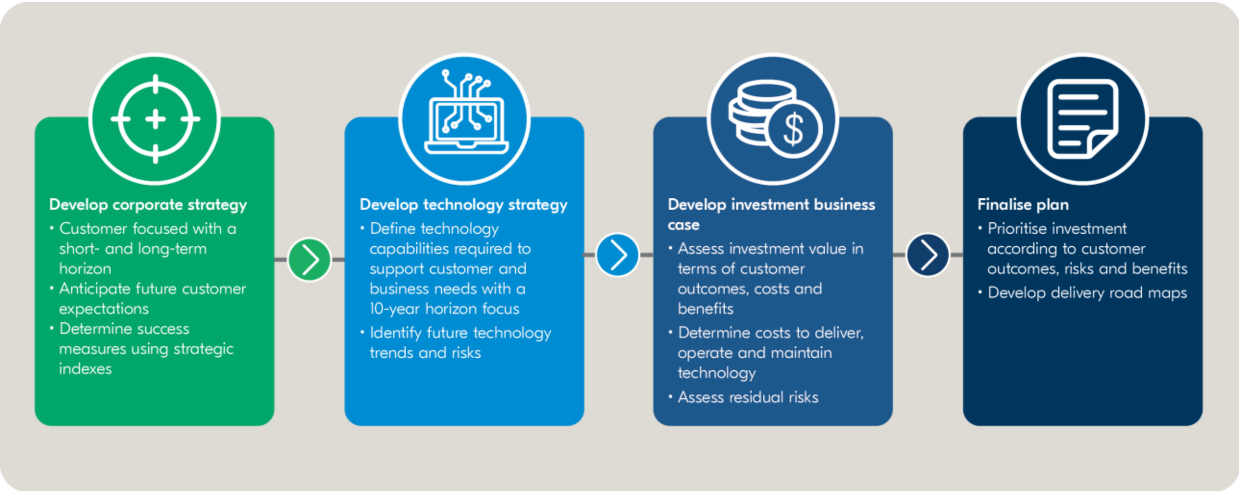

Figure 7-10 Technology planning approach

The RD24 investment plan for technology is a result of this ongoing review and analysis, which occurs within a planning framework represented by Figure 7-10. This occurs under the oversight of a technology governance committee (TGC).

7.6.3 Technology investment prioritisation

Technology investments for the 2024-28 regulatory period were identified using the technology strategy and current capital plan for RD20.

Solution options were developed, and the list of proposals assessed for customer outcomes (see Section 7.6.2), costs, benefits, dependencies, and to identify foundational technology gaps. This activity aims to balance drivers such as affordability with risk and improvement, while ensuring that business needs are met.

Under the oversight of the TGC, the initial list of proposals was refined through multiple rounds of review. Initial prioritisation was achieved by scoring and ranking investments using the corporate risk and opportunity heat map. From the resultant ranking, portfolio options were prepared based on varying levels of investment and presented to the TGC. The TGC selected and refined the portfolio for inclusion in the corporate prioritisation process.

Technology proposals were included in the corporate prioritisation process alongside capital investment and operating expenditure proposals to produce a whole-of-business prioritisation ranking for each proposal. Following this, due to affordability objectives, the TGC undertook a value optimisation activity to assess options to further reduce the investment in technology. To manage cost escalations, a final round of refinement identified proposals to proceed that are mandatory to maintain current levels of technology reliability and security, and to meet external obligations.

7.6.4 Supporting technology governance and assurance

The RD24 technology proposals will be delivered using the existing continuous planning framework and project delivery methodologies governed by the TGC. The TGC's purpose is to ensure SA Water's investment in technology enables the business to deliver on its objectives. It sets priorities, endorses significant changes to agreed plans and budgets, and oversees the realisation of benefits.

While retaining investment decision-making authority, the TGC has delegated management of detailed planning and outcome delivery to technology streams that have responsibility for different areas of technology capability. Each has a stream steering committee (SSC) chaired by a General Manager that has responsibility for delivering committed outcomes with the resources allocated to the stream. SSCs oversee the sponsorship, development and delivery of individual investment programs and projects, and report back to the TGC on stream delivery status and updates to the technology road map. Delivery works involve a mixture of internal and external delivery resources and business subject matter experts.

7.7 Submission development process and governance

The RD24 submission was developed using a structured process and overseen by a multilevel governance structure, under the ultimate authority of the SA Water Board. The following sections explain the process used to review and provide assurance for proposed investments.

7.7.1 Governance

In planning and determining the final investment profile to submit for RD24, governance and assurance were provided through to the Board under the structure shown by Figure 7-11. This provided for informed planning and decision-making and ensured levels of accountability were established through a committee structure reporting into the SA Water Board.

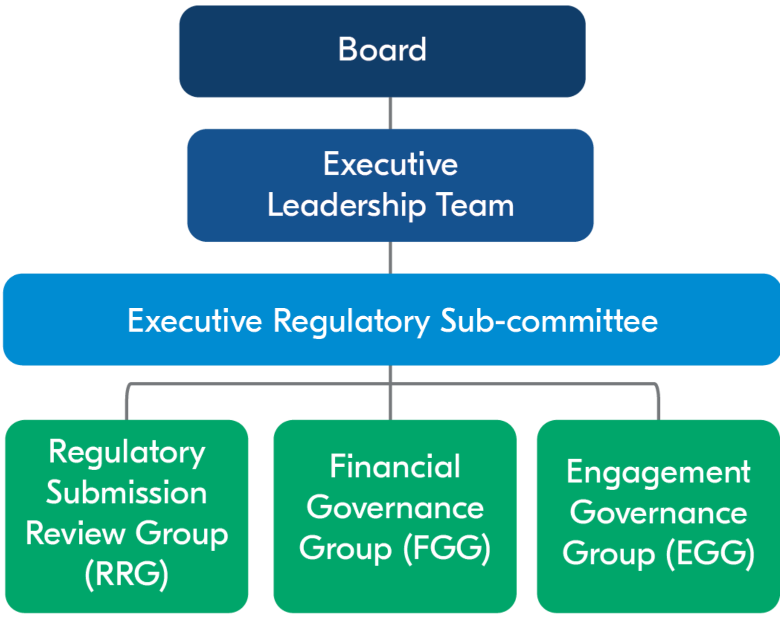

Figure 7-11 RD24 governance structure

Under the umbrella of an Executive Regulatory Sub-committee (ERS), planning, prioritisation, decision-making and assurance occurred through three functional streams:

1. Finance stream through the Finance Governance Group – FGG.

2. Communications and engagement stream through the Engagement Governance Group – EGG.
3. Business case oversight stream through the Regulatory Reference Group – RRG.

Each group had established terms of reference and were chaired by lead Senior Managers, typically meeting fortnightly from late 2021 through to late 2022 when the River Murray flood response took precedence. Regular meetings resumed in late January 2023, albeit at a reduced frequency, aligned with submission development requirements.

Recommendations and decisions from the FGG, EGG and RRG were considered and ratified by the ERS, which is chaired by the General Manager Business Insights and Excellence. It met fortnightly, with membership including the Chief Executive, General Manager Sustainable Infrastructure, General Manager Business Insights and Excellence, General Manager Strategy, Engagement and Innovation, and Senior Manager Economic Regulation and Pricing. The ERS endorsed content and made recommendations for consideration by the SA Water Board.

This governance structure established the approach to prioritising initiatives for inclusion in the RD24 submission as discussed in the following sections.

7.7.2 Initiative prioritisation

In developing a proposed list of initiatives for the RD24 submission, an assessment of all potential expenditure in the 2024-28 period was undertaken, informed by internal planning processes. Initiatives were categorised as to whether their primary driver was to sustain services, meet external obligations, enable growth or for improvement (service enhancement) purposes. This list included initiatives requiring only capital expenditure, only operating expenditure, or both.

7.7.2.1 Informing prioritisation

Proposed initiatives were considered in late 2021 and early 2022 against ESCOSA's Guidance Paper 1[81], with regard to validating the drivers for proposed expenditure against the regulatory framework. This validation process resulted in multiple initiatives not progressing for further development due to issues of timing (the initiative was not required for RD24), the statutory lever (the initiative was proposed to enable compliance with anticipated future statutes), or scope.

Around 250 initiatives deemed to fit within the regulatory framework were further developed as draft business cases under the oversight of the RRG. These business cases were informed by research and general or targeted engagement (as discussed in Chapter 4) under the oversight of the EGG. This included with the Customer Challenge Group (CCG) and Peak Bodies Engagement Forum (PBEF).

Early insights from the CCG and PBEF identified 4 priority themes for RD24:

1. intergenerational equity – prioritising current investments that will reduce the long-term costs to SA Water and its customers, with reference to the long-term planning undertaken
2. managing services in a changing climate – having regard for future water security planning and SA Water's impact on the environment
3. growth – supporting growth of the state to everyone's benefit and where everyone pays their fair share

[81] ESCOSA (2021), *SA Water Regulatory Determination 2024: Guidance Paper 1 the Regulatory Business Plan*, ESCOSA, accessed 14 April 2023.

4. cost escalations – understanding that labour, construction and consumable cost escalations may mean that SA Water needs to apply different approaches in its submission structure and investment prioritisation.

During the second quarter of 2022, a further theme emerged as an additional priority, focused on the affordability of SA Water bills and the impact of this on the size and scope of SA Water's proposed RD24 investment.

These themes were used to help prioritise proposed business cases and, as business cases were progressively prioritised, created platforms for further detailed engagement with the CCG and PBEF.

7.7.2.2 Business cases

7.7.2.2.1 Purpose

Business cases were prepared to provide consistent and transparent information to underpin SA Water's investment prioritisation and decision-making for the forward regulatory period. These documents articulated proposed interventions to address gaps, and the benefits and risks from the proposed capital expenditure for the forward regulatory period. They were also prepared for operating expenditure, detailing new base expenditure and step changes in expenditure.

For capital expenditure, business cases generally covered programs of work or discrete, large investments. Investment programs enable projects which achieve similar outcomes to be grouped together and managed under the same consistent method, using one or a series of interrelated approaches. For example:

- Renewal programs group assets of a similar type, and that deliver a similar outcome, into a common program to improve life cycle delivery efficiencies.
- Strategy programs (such as water quality) group common objectives into a program but could have a range of infrastructure solutions to deliver the outcome.

The business cases prepared for RD24 covered the entirety of the proposed capital and operating expenditure program and were, in turn, informed by AMPs, approach documents and planning documents. In this way, the thread from SA Water's expenditure proposal back through prioritisation, to initial planning decisions, such as determined in AMPs to maintain levels of service requirements or technology planning to support delivery, can be readily traced.

7.7.2.2.2 Approach

Business cases follow a structured template to ensure consistent and transparent information. Each business case documented:

- the problem/opportunity being addressed
- drivers for the initiative
- proposed expenditure
- alignment with corporate strategy, the asset management objectives and customer expectations
- customer engagement outcomes related to the initiative
- option analysis
- assessment of risks and opportunities.

Using this information, business cases summarised the justification for the underlying investment, detailing the key decision criteria and analysis.

Supporting analysis and evidence is referenced, but contained within other internal use documents, such as AMPs or planning reports. For example, the options analysis within business cases is often at an aggregated level for consideration of cost and risk trade-offs. The detailed options analysis providing the evidence for how the Corporation has arrived at preferred interventions are contained in the supporting documents identified.

7.7.2.3 Development of the long list

Prioritisation and refinement of initiatives occurred in July, August, and September 2022, based on final draft business cases submitted in June 2022. The gated prioritisation process, shown by Figure 7-12, saw initiatives assessed against several criteria at each gate. This was done to test investments to determine whether they were priorities for SA Water to invest in on behalf of its customers. It enabled SA Water to rank proposed areas for investment in a priority order.

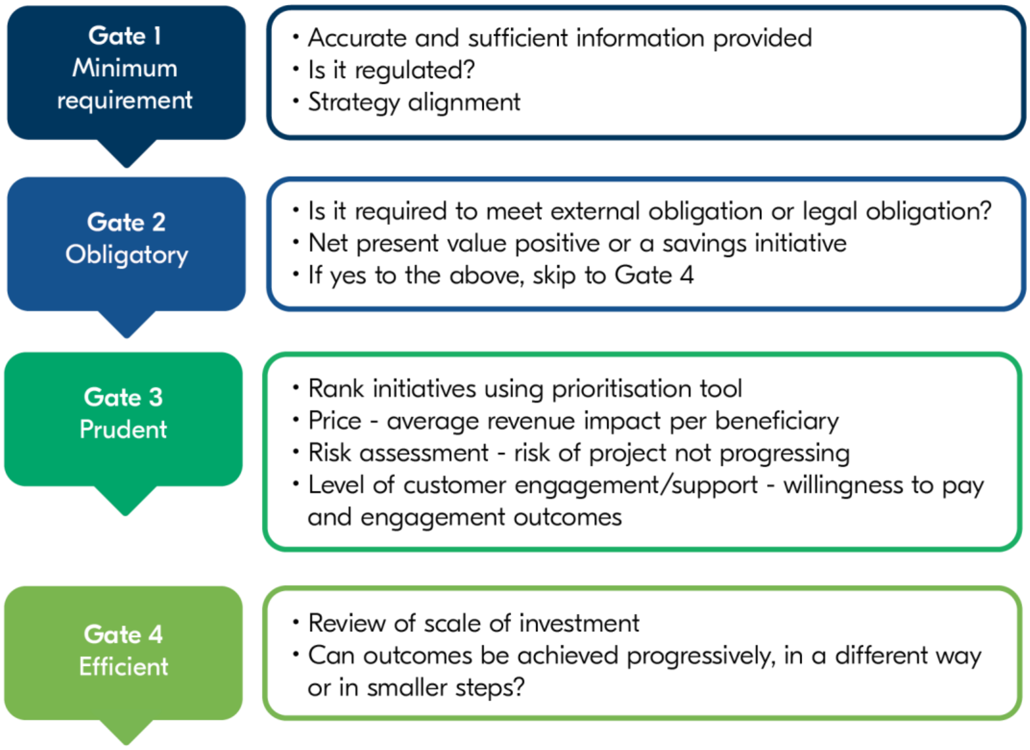

Figure 7-12 Gates for prioritising investment expenditure

The process and considerations at each gate were as follows.

- Gate 1 – involved a qualitative assessment that reviewed the minimum requirements expected of each initiative.

Incomplete, poorly formed, or unjustified initiatives were removed from consideration at this point. Furthermore, to pass this gate each initiative needed to demonstrate alignment to the SA Water corporate strategy and needed to fit within the framework for investment set out in ESCOSA's Guidance Paper 1.[82]

Several initiatives that were aligned to SA Water's corporate strategy but not aligned to the current regulatory model were not progressed through this gate, including several that had a demonstrable environmental benefit.

[82] ESCOSA (2021) SA Water Regulatory Determination 2024: Guidance Paper 1 the Regulatory Business Plan, ESCOSA, accessed 14 April 2023.

- Gate 2 – involved assessment of obligations with which SA Water must comply.

  This gate primarily considered initiatives where the nature and quantum of investment required was certain, rather than instances where compliance was subject to greater ambiguity. Initiatives at Gate 2 identified as obligations bypassed the Gate 3 ranking process.

- Gate 3 – initiatives at this gate were assessed against 3 criteria considering the prudence of the investment:

1. The level of unmitigated risk to SA Water's customers where the initiative did not progress.
2. The revenue requirement per beneficiary from the investment.
3. Feedback through customer research and engagement processes.

This methodology provided all initiatives with a score, which was then subject to peer review and moderation to be passed through the next gate process.

- Gate 4 – re-reviewed all the initiatives to assess what was required to be completed in RD24, and those which could be wholly or partly deferred to future regulatory periods.

Where initiatives were deemed to be able to be partly deferred, they were re-scored against the Gate 3 criteria.

The outcomes of this prioritisation process produced a long list of initiatives that each had an assigned score which was used for initial prioritisation. Scoring, and the order of the long list, was further adjusted as additional engagement and research progressed, particularly with more targeted engagement with the CCG and PBEF (as detailed in Section 4.1.3). Willingness-to-pay (WTP) survey outcomes (discussed in Section 4.2.3) were also incorporated into engagement scoring. ESCOSA provided feedback as part of the RD20 process was that too great an emphasis was placed on WTP outcomes in prioritisation, and that too few initiatives were considered. As such, for RD24 planning, WTP was treated as one information source as part of a suite of engagement inputs informing investments and decision-making, and all initiatives with a discretionary component were tested.

The methodology used to prioritise the long list saw initiatives that have statutory obligations prioritised above others. Furthermore, the methodology also saw priority initiatives required to retain current ESCOSA service standards or levels of service ranked highly. Conversely, initiatives that provided discretionary benefits did not score highly.

Due to the significant number of initiative deferrals arising from COVID-19, global conflict and supply chain disruptions detailed in Chapter 3, the proportion of initiatives required for service standard or level of services reasons was higher than RD20. These priority initiatives supplanted discretionary initiatives in the list.

7.7.2.4 Confirming the initiative list and value optimisation

Through late October and November 2022, the CCG and PBEF were briefed on the outcomes of engagement activities and the long list to ensure alignment between SA Water's assessments and those of the groups. Collective feedback from willingness to pay research and community consultation was also discussed with members.

Members were engaged to establish if there was any obvious misalignment between what was taken from the research and engagement to date, and their own views developed through their participation in the PBEF or CCG engagement process. No misalignment was identified.

Furthermore, the 5 core themes of the RD24 engagement process as detailed in Section 7.7.2 were re-shared with PBEF and CCG members to test continued support for these themes from earlier sessions. There was consensus from both groups that the priority themes of intergenerational equity, managing services in a changing climate, growth, cost escalation and affordability were still relevant.

Finally, testing of general priorities for investment in a constrained environment was examined with members in recognition of the number of initiatives on the long list, and the apparent priority for addressing obligations and maintaining current standards rather than investing in new initiatives. This is because while the breadth of initiatives considered under prioritisation was consistent with what was valued most, it became apparent during 2022 that in an environment of escalating costs and uncertainty about future scenarios, SA Water would need to ensure it could meet its obligations and maintain services with a view to managing bill impacts for customers.

This process asked members to prioritise types of new investments comprising new services, addressing long-term affordability, meeting legal obligations, maintaining current levels of service for existing customers and delivering services to new customers. The CCG members voted through an online voting tool to enable unbiased feedback to be provided. This scored each priority out of 5. On balance, members confirmed priorities as stated in Figure 7-13.

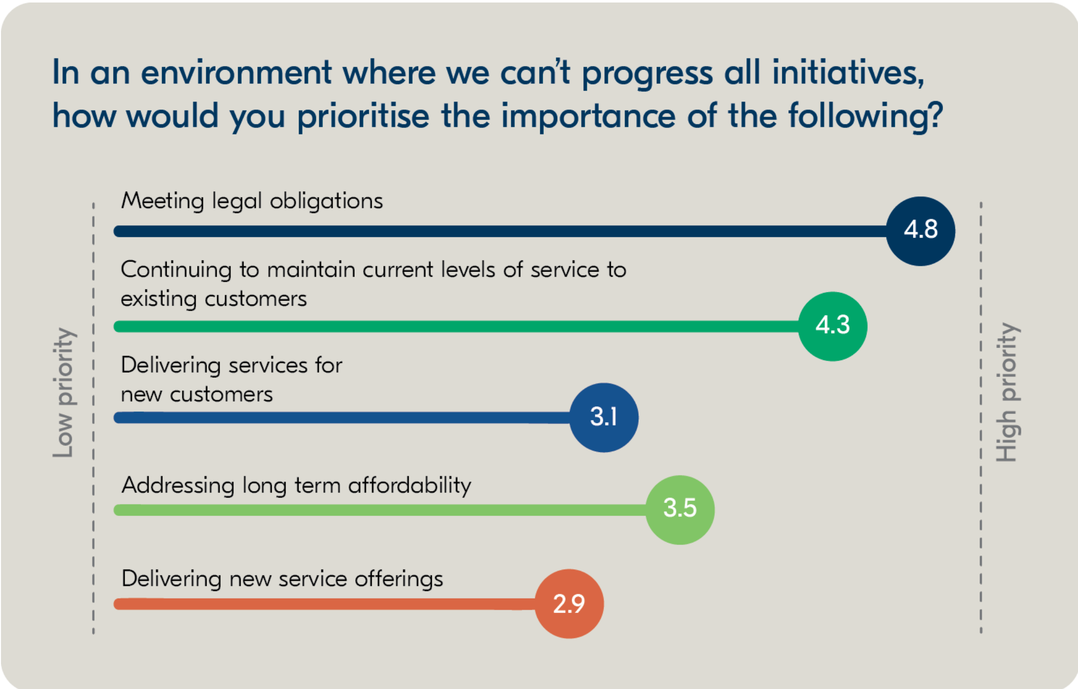

Figure 7-13 CCG feedback on investment priority

In the final meetings of 2022, the groups were asked to review the long list priority order, with regard to the previous session's feedback and prior engagement and research outcomes. Several standalone initiatives were also tested to ascertain whether their relative position on the long list reflected group views. The consensus view was that the long list reflected the PBEF and CCG's preferred areas of focus for investment and the relative importance of investment.

7.7.2.5 Asset class or program level prioritisation

Using this prioritised long list, further work was undertaken in late 2022 and early 2023 to value optimise the expenditure requirements for initiatives.

To prioritise capital programs for consideration at the organisation level, an asset prioritisation tool was used to balance level of service and risk, while minimising whole-of-life cycle costs.

In doing this, the prioritisation tool measured the benefits of risk improvement, direct level of service impacts and constructability of projects over multiple regulatory periods.

$$\frac{\text{(Residual risk value x risk reduction) + level of service impact + constructability}}{\text{Cost x estimate class score}}$$

These different weighting parameters enabled comparison of different programs that have a need based on different drivers.

Key considerations when applying the tool included:

- separate decision-making for water, wastewater, and other expenditure (such as physical security investment)
- optimising the investment portfolio to deliver outputs associated with prioritised projects and programs
- evolving as corporate strategy and objectives change
- guiding decision-making.

While not all factors could be considered using the tool, it provided a consistent approach to value optimisation and enabled evaluation of initiatives and programs by risk. These outputs were reviewed in conjunction with reporting outcomes, asset documentation and other artefacts to inform the overall value optimised list of initiatives at different risk thresholds.

The River Murray flood response, detailed in Chapter 3, delayed some aspects of value optimisation, particularly where it related to operating activities.

Ongoing value optimisation continued to occur through to finalisation of the submission for the purpose of managing the impacts of any required revenue uplift on customer bills.

It was the outcome of this final value optimised prioritisation list informed by current and future risk, together with considerations of current and future period affordability, that informed the list of initiatives.

7.8 Capital delivery

SA Water delivers hundreds of millions of dollars in capital works in each regulatory business period, through the development and delivery of a capital delivery plan. This section details how SA Water plans its capital program and the governance that oversees delivery through the regulatory period.

7.8.1 Planning for the regulatory period

During the regulatory business planning process, capital delivery considerations are incorporated into capital initiative business cases and capital investment prioritisation and decision-making processes. This includes advising on investment strategies to ensure an investment profile over 4 years that optimises efficiency and resourcing and minimises carryover of capital activity into the next regulatory period.

Capital delivery planning and execution is undertaken with a long-term view over multiple regulatory periods. Maximising forward visibility of works, enables prudent planning and prioritising, and can optimise efficiency of costs, time, resources, and procurement.

Developing the capital program for the next regulatory period involves planning, working with stakeholders, design, procurement, construction, and commissioning of planned capital outputs within the regulatory period.

At the time of writing, SA Water has already commenced some planning, design and costing work for the forward period's program in line with appropriate governance, including:

- packaging, sequencing, and network impact analysis activities with key stakeholders to form potential packages of work based on high priority investment and efficient delivery of programs
- ongoing workshops and feedback with internal and external stakeholders and delivery partners (for example major and minor framework partners) to inform planning and development activities, strategies, and durations
- investigations and concept design work on prioritised packages of work for commencing construction in Year 1.

7.8.2 Governance and assurance – capital delivery

SA Water delivers its capital delivery plan through established governance and assurance processes. These are incorporated into all stages and decision points in the capital project delivery cycle shown in Figure 7-8.

7.8.2.1 Governance structure

SA Water has a governance and assurance hierarchy in place to ensure the appropriate level of oversight on decisions and assurance over projects and programs. The level is determined based on project or program dollar amount, complexity, time criticality, political sensitivity, and risk to the business. The structure shown in Figure 7-15 has been designed to provide an optimal level of oversight, governance, and scalability and to empower SA Water's workforce to make decisions and provide endorsements and approvals at the appropriate levels of seniority and accountability.

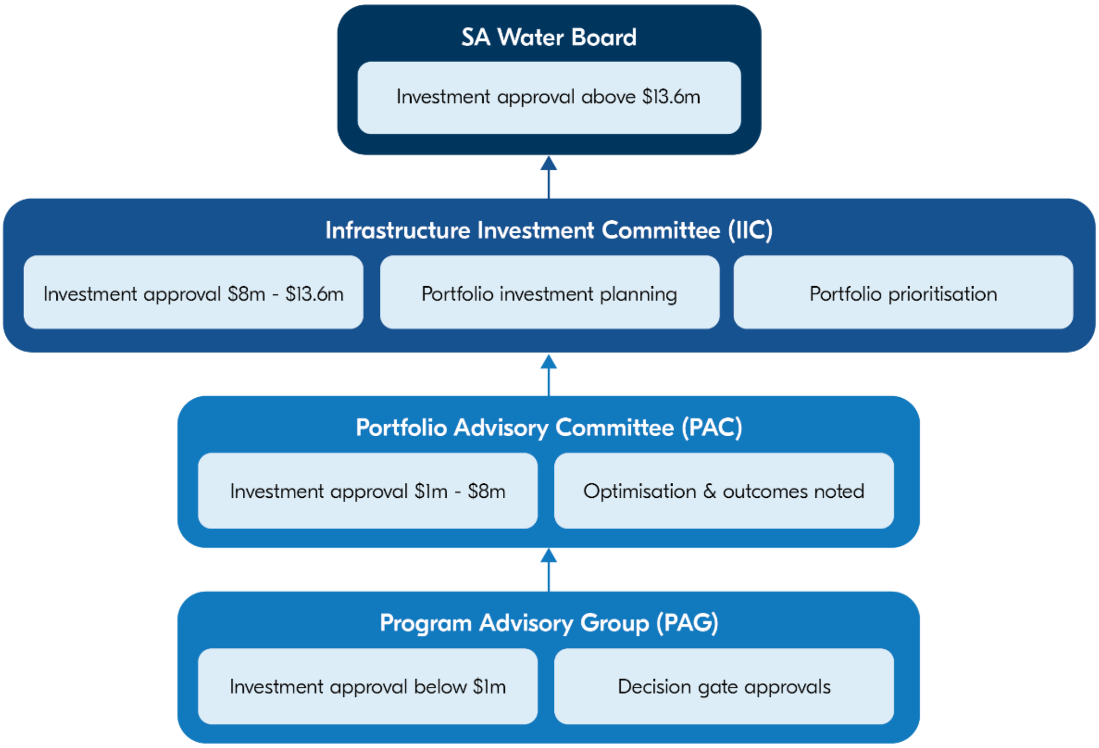

Figure 7-15 Capital delivery governance and assurance heirarchy

This hierarchy also dictates reporting levels and to which level significant risks and impacts to capital delivery are escalated and actioned as detailed in Table 7-5.

Table 7-5 Internal governance and assurance levels and functions

Level	Function
SA Water Board	• Reports to Minister for Climate, Environment and Water. • Approves the strategic direction and values. • Monitors performance and evaluates senior management (including monthly progress reports and tracking of capital expenditure). • Approves projects valued at more than $13.6 million.
Infrastructure Investment Committee	• Provides governance oversight of portfolio investments. • Prioritises and balances portfolio investments. • Monitors, reports on, and optimises portfolio delivery. • Approves projects between $8 million and $13.6 million.
Portfolio Advisory Committee	• Supports consistent and robust governance, assurance, and enablement of the asset planning to capital delivery life cycle for all projects and programs. • Approves projects between $1 million and $8 million.
Program Advisory Group	• Ensures the effective operation of the governance and approval processes of key process hold points. • Approves projects under $1 million.
Steering committees	• Monitor, review, report on and optimise the delivery of major projects and ensure they are aligned with the Corporation's strategy. • Control project scope of major projects. • Approve major project elements such as budget, changes, prioritisation, and risk management strategies. • Review and oversee delivery of major projects.
Infrastructure Management Office	• Oversees key governance functions for each of the phase project life cycle. • Provides assurance, analysis, and reporting support across the asset life cycle.
Executive sponsor	• Responsible for the delivery and success of the project. • Conduit to the executive leadership team on project progress, issues and risks. • Approves project budget, changes, prioritisation, and risk management strategies.
Asset sponsor	• Champions all aspects of decision-making. • Manages the planning for the initiative until a decision is made on total expenditure. • Provides oversight throughout the definition to deliver stages to ensure outcomes are aligned with the project or program intent (Figure 7-8).

To support and monitor the delivery of capital projects at SA Water, there are 2 groups which oversee the capital portfolio (Table 7-6). These groups comprise SA Water executives and representatives from its major framework partners.

Table 7-6 Capital delivery monitoring groups

Level	Function
Executive Steering Committee	• Provides oversight, guidance and accountability for the delivery of the capital investment road map, in terms of dependencies, risk and opportunities, communications and reporting. • Reviews timescales, progress and performance. • Champions the capital investment program internally to key stakeholders. • Reviews program key performance indicators (KPIs) and key result areas (KRAs) to identify risks and opportunities.
Portfolio Leadership Team	• Develops and owns the 4-year strategy and plan for capital delivery. • Ensures there is effective and efficient synergy, collaboration, and integration of all resources (people, processes and systems across SA Water and its business partners). • Reviews program KPIs and KRAs to identify risks and opportunities. • Reviews and endorses the capital delivery performance model.

As a statutory authority, SA Water is subject to the external project and program assurance requirements of Infrastructure South Australia (Infrastructure SA) and review by the Public Works Committee of the South Australian House of Assembly. These reviews are dependent on the amount of capital expenditure.

Infrastructure SA is an independent statutory advisory body, whose role is to ensure better planning and more transparent decision-making for critical public infrastructure projects. It provides assurance through its Infrastructure SA Assurance Framework (ISAAF).[83] SA Water is required to follow Infrastructure SA's assurance process for all capital projects above $50 million total expenditure, reporting on project or program process through predefined gateways. This enables assurance reviews and reporting to the Infrastructure SA Board and Cabinet and advice on improvements to be provided SA Water.

The Public Works Committee is a parliamentary committee of the House of Assembly established pursuant the *Parliament Committees Act 1991* to ensure proposed public works have a sound basis and the proposing agency or authority has incorporated best practice in project management during the concept and design stages. SA Water is required to refer works to the Public Works Committee if they have a total construction cost of more than $4 million, or when requested by the committee.

These review processes provide added assurance for projects, as they provide an independent review and evaluation. This can offer extra validation for, or provide an opportunity to identify improvements to, the processes SA Water has in place.

7.9 Application to RD24

The planning and prioritisation processes described in this chapter have enabled development of an evidence-based expenditure plan for RD24, supported by:

- a line of sight between strategy and investment
- consistent, agile asset management practices that determine current period asset requirements, having regard to medium- and long-term requirements
- processes for evaluating technology requirements to support asset management and operational needs for the organisation

[83] InfrastructureSA (ISA) (n.d.) InfrastructureSA Assurance Framework, ISA, webpage accessed 11 July 2023.

- industry standard, rigorous costing processes
- a structured and evidence-based prioritisation process.

Through this, SA Water has developed an investment plan to deliver sustainable water and wastewater services that meets legal obligations, and balances customer expectations, risk and affordability and intergenerational equity.

The outputs from these processes, the initiatives that these planning and decision-making processes have determined and prioritised to be progressed in RD24, are provided and discussed in the following chapters, with:

- capital initiatives, and the capital and operating expenditure required to deliver them in RD24, discussed in Chapter 8
- operating expenditure only initiatives covered in Chapter 9.

8 Capital expenditure

Capital expenditure comprises routine program expenditure requirements supporting SA Water's day-to-day operations, and initiatives involving new infrastructure. Chapter 7 describes how SA Water makes investment decisions for all its assets, and this chapter provides information on proposed capital expenditure for RD24. This includes information on:

- how SA Water's research and engagement informed the proposed capital expenditure
- proposed capital efficiencies
- SA Water's proposed capital expenditure and associated operating expenditure, listed by driver
- SA Water's risk position from delivering this capital plan.

8.1 Research and engagement informing expenditure

As explained in detail in Chapter 4, SA Water actively engages with its customers and stakeholders. In doing so, the Corporation continually seeks to understand their views and preferences. This ensures customers' views about what services SA Water delivers and how they are delivered inform its operations in the current period and plans for future initiatives.

Feedback has been consistent across its strategy research and prioritisation survey (discussed in Chapter 4) and RD24 engagement activities (as mentioned in Section 2.5.1). From both pieces of research, SA Water knows its customers support investment in the water and wastewater networks which will futureproof supply and reduce the number of leaks and breaks.

This consistency in customer and stakeholder feedback means that aligning RD24 investment decisions with SA Water's strategy ensures the Corporation will deliver what its customers value and expect.

Capital expenditure initiatives assessed for inclusion in RD24 were all required to demonstrate how they were informed by customer and stakeholder research and engagement. This approach ensured customer and stakeholder considerations influenced each proposed investment decision.

In addition to relevant ongoing engagement, initiative-specific research and engagement activities related to capital expenditure were conducted with the Customer Challenge Group (CCG) and Peak Bodies Engagement Forum (PBEF) and included in the willingness-to-pay (WTP) survey. Additional detail on the roles and activities of the CCG and PBEF and on the approach to the willingness to pay survey is included in Chapter 4.

In the early stages of establishing the CCG and PBEF, both groups were consulted on what type of investment initiatives they wished to be consulted on. The groups expressed a general satisfaction with how SA Water delivers its existing capital programs and renewal activities during briefings in 2021. They did, however, indicate a strong interest in reviewing new initiatives that would deliver improvements to customer service and major initiatives that required large investment. Consistent with this feedback, much of the engagement with these groups focused on improvement and growth initiatives, with less focus on initiatives to sustain services and those required by external obligations and responsibilities.

As engagement progressed through 2022, rising interest rates and the lingering impacts of the COVID-19 pandemic, natural disasters and the Ukraine conflict continued to affect household budgets. Both CCG and PBEF began to identify affordability as a key focus. This shift left SA Water needing to determine whether it still had strong support from its customers and stakeholders for initiatives established earlier in the engagement process.

Given the shift in position on affordability, particularly later in 2022 as discussed in Section 7.7.2.4, SA Water asked the CCG what should be prioritised in an environment where SA Water is not able to progress all initiatives. The CCG members voted independently on the

5 priority themes, which provided and scored them from zero to 5, with 5 being the highest achievable score.

Figure 8-1 shows the output of voting, demonstrating how the group scored each priority.

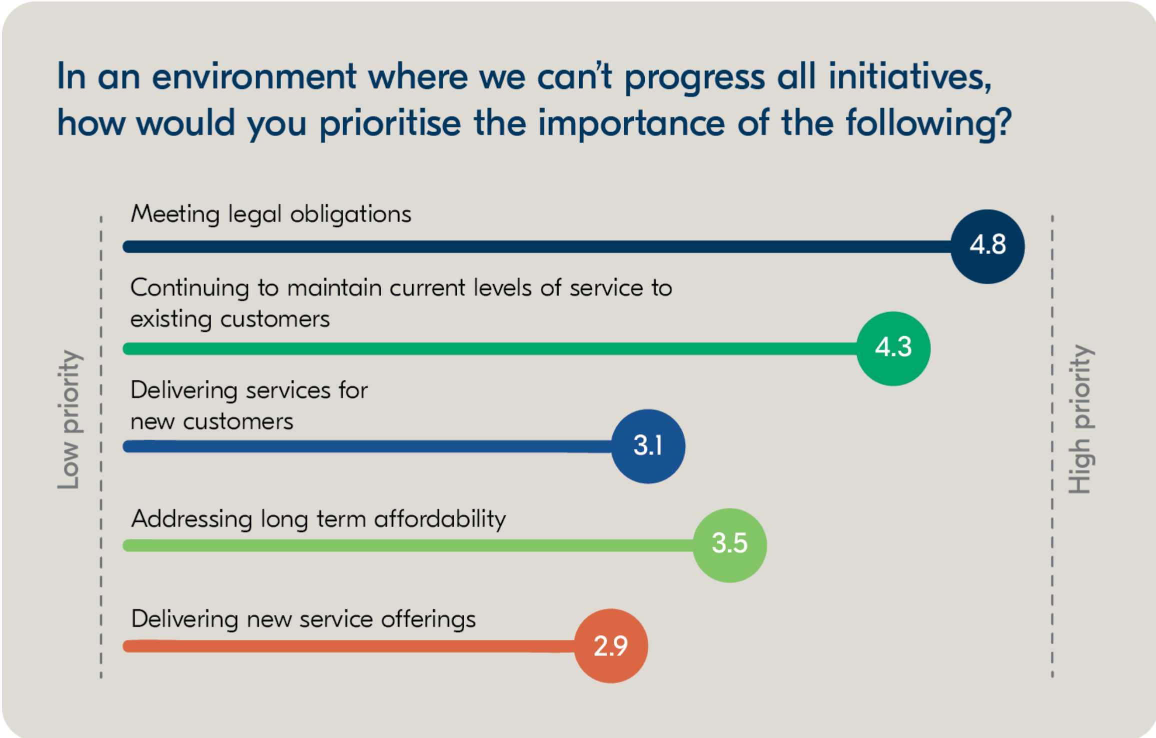

Figure 8-1 CCG feedback of investment priority

From the above output, the CCG determined the following priorities for investment:

1. Priority 1 – meet legal obligations (with the highest score of 4.8 out of 5.0)
2. Priority 2 – continue to maintain current levels of service to existing customers
3. Priority 3 – address long-term affordability
4. Priority 4 – deliver services to new customers
5. Priority 5 – deliver new service offerings (with the lowest score of 2.9 out of 5.0).

This feedback, which was endorsed by the PBEF, was used to further support the prioritisation criteria adopted by SA Water when determining what initiatives to progress. This feedback contradicts some of the willingness to pay survey outcomes (covered in Section 4.2.3).

A summary of what SA Water heard from its stakeholder groups and from the willingness to pay (WTP survey about new capital initiatives that have not been prioritised in the submission is included in Table 8-1. Engagement on initiatives that include operating expenditure only are discussed in Section 9.1.

Table 8-1 Targeted research and engagement outcomes - initiatives not progressed

Initiatives not progressed in RD24	Targeted engagement		Research
	CCG	PBEF	WTP
Improve initiative: non-drinking water system upgrades. Investment in the upgrade of non-drinking water systems to deliver drinking water throughout South Australia in response to strong sentiment from customer research and feedback. These works include delivery of water from reliable sources via pipelines or through carting, new storage and pumping infrastructure, disinfection, pipe upgrades, and customer meter replacements.	Discussion was wide ranging and comprehensive as members weighed up equity for all people to have access to quality water, with the costs of supplying water for the benefit of a small number of customers which would be borne by the wider customer base. Seven of the 9 members were supportive of some level of investment due to the importance of providing equity of water access, while 2 members did not support any investment due to the high costs involved and the viability of the towns.	The approach taken to determine which communities to prioritise was seen as good, but talking to councils or local government members can be seen as biased. There needs to be a better understanding from a diverse group of people in regional and metropolitan areas.	SA Water customers on average were willing to pay $9.67 extra in their bill to upgrade 9 regional non-drinking water systems across South Australia. Customer WTP exceeded the potential bill impact of all proposals tested.
Outcome	SA Water considered the feedback from the CCG, PBEF and willingness to pay survey on this specific initiative, against feedback provided from the Commission in RD20. This is a new improve initiative proposed for RD24 that has a considerable cost impact per beneficiary (around $70,000). Further feedback from the CCG and PBEF in November 2022 indicated that SA Water should prioritise meeting external obligations and delivering existing services where its total investment is constrained. As an Improve initiative, this investment is not proposed for inclusion in RD24, but may be considered at a future time.		
Improve initiative: regional water quality aesthetics. Aesthetic drinking water quality includes various parameters that may impact customers such as the look, taste and smell, as well as the potential for the water to corrode or scale pipework and appliances. Each drinking water system in South Australia has its own unique characteristics and customer impacts. This business case proposed a staged investment to improve the quality and security	Views were evenly split among members. Several members recognised the large cost associated with this initiative per beneficiary, suggesting it was inequitable for the broader customer base to fund this initiative. Other members considered community members should expect a higher quality of water.	PBEF did not review this initiative.	SA Water customers value improving regional South Australian water quality and were willing to pay $11.13 extra in their bill to upgrade the water quality in Quorn, Naracoorte and Melrose, which exceeds the potential bill impact.

Initiatives not progressed in RD24	Targeted engagement		Research
	CCG	PBEF	WTP
of the water supplied to certain regional towns.			
Outcome	SA Water considered the feedback from the CCG and through willingness to pay survey on this specific initiative against feedback provided from the Commission in RD20. This improve initiative was proposed in RD20 with a large impact per beneficiary (around $42,000) and no statutory driver for the investment. It was not supported by the Commission in RD20. Feedback from the CCG and PBEF in November 2022 was that SA Water should prioritise meeting external obligations and delivering existing services where its total proposed investment is constrained. As an improve initiative, this investment is not proposed for inclusion in RD24. SA Water recognises that Quorn remains a priority area for investment where improving aesthetics is considered at a future time.		
Improve initiative: smart meters. The transition to digital metering presents potential customer and business benefits, including better customer service options and water conservation along with operational and capital cost savings. This business case focuses on a statistically relevant digital meter trial to measure benefits and assess the viability of this technology as a smart solution for all South Australians.	All CCG members in attendance identified their in-principle support to trial of smart meters, noting they would deliver a range of benefits to customers as detailed in SA Water's presentation. Members identified that smart meters would provide important information to empower customers to monitor and manage their water use and provide the ability to adjust behaviours and reduce what they spend on water. The role smart meters can play in helping to identify pipe leaks early was also identified as a key benefit. However, there were mixed views about who should pay for the meters (via the regular annual water bill or for the customer who benefits – noting this may create a barrier to the roll out).	PBEF did not review this initiative.	SA Water customers value rolling out smart meters across South Australia to replace manual meter reading and were willing to pay $10.14 in their water bill to provide 200,000 customers with smart meters by 2028, which exceeds the potential bill impact to deliver the investment.
Outcome	SA Water considered that smart meters accrue a tangible benefit to the customer with the meter connection, but less clear benefits in the short term for the broader SA Water customer base. While feedback from the CCG, was favourable, SA Water determined there should be stronger benefits for the wider customer base, an innovation efficiency, or other tangible benefits before deployment. Feedback from the CCG and PBEF in November 2022 was that SA Water should prioritise meeting external obligations and delivering existing services where its total investment is constrained. As an improve initiative, this investment is not proposed for inclusion in RD24. SA Water will continue to deploy smart meter pilots but will not progress this initiative to RD24.		

Initiatives not progressed in RD24	Targeted engagement		Research
	CCG	PBEF	WTP
Improve initiative: tenant services. An adapted billing service model for tenants so they are provided with a copy of their portion of the bill, have access to a bill portal, and have access to a level of payment support.	CCG members could see the need to better service tenants to be fairer, but concern was raised about the cost to be recovered from all customers even though it would only benefit a small group of customers. CCG members noted that providing bill access to tenants will help tenants manage their water use and encourage water conservation, but that maintaining the property owner as responsible for debt was still required. Additionally, some of these issues could be resolved through changes to the *Residential Tenancies Act 1995* to enable provision of bills to tenants.	PBEF members noted that there is a desire to see a nationally consistent approach and legislation for tenants regarding water billing, and there is a need for data to be collected on tenants to understand the issues and develop solutions. The initiative would enable SA Water to gather data on tenants experiencing hardship, which is currently a data gap. PBEF members liked that the proposal would enable better transparency and accountability of billing for landlords and tenants, and that facilitating tenants' access to hardship support is excellent.	Customers on average were not willing to pay extra in their SA Water bill to provide billing information for renters across all service levels tested. Renters, on average, were willing to pay to move to the highest level of service tested which would see 225,000 renters (100 per cent of all renters in South Australia) receiving billing information.
Outcome	SA Water recognises that its customers comprise not only those who own property, but also those who pay bills and consume services. In principle, SA Water supports greater access to bill information where customers are a bill payer. However, due to the age and functionality of SA Water's current billing system, implementation of tenant services would be costly. Feedback from the CCG, PBEF and the willingness to pay survey was mixed. Statutory means exist to require a property owner to share water bills with tenants, and as such, SA Water considers this a viable mechanism to deliver the preferred outcome for customers. As an improve initiative, this investment is not proposed for inclusion in RD24. SA Water will continue to consider reform of the *Residential Tenancies Act 1995* in the context of future regulatory periods but will not progress this initiative to RD24.		
Improve initiative: carbon capture. SA Water to establish 1,685 hectares of environmental carbon plantings on its own land which will sequester 364,948 tonnes of carbon dioxide emissions over the life of the project (25 years). Each year, on average, this would offset 18 per cent of SA	Most members supported investment in carbon emissions reductions but noted the likely costs involved and questioned how this would impact customers. One member noted that through these initiatives, SA Water would be contributing to the government's overall target of net zero emissions and asked if the government should be	Reducing emissions is "great to do and has to be done", but there is a need to consider the cost to the consumer given the current financial environment. Customers on very low incomes may not be able to cover increased costs.	SA Water customers placed significant value on the proposed measures to increase carbon capture on SA Water land. The average customer's WTP of $18.77 is significantly higher than the proposed customer bill increase to support an investment in planting 800 hectares of native forest plantings on SA Water land.

Initiatives not progressed in RD24	Targeted engagement		Research
	CCG	PBEF	WTP
Water's scope 1 emissions.[84]	contributing to this endeavour rather than customers. The importance of investing in carbon emissions reductions was emphasised, even if it is not mandatory, but there is a need to consider overall cost and impacts on customers.		
Outcome	SA Water's internal target is to reach zero net carbon emissions by 2030, and the State Government plans to reach this target by 2050. Nonetheless, this initiative does not align with the permissible investments set out in the Commission's third guidance paper[85] related to permissible investments to address climate change risks. Furthermore, notwithstanding strong feedback for the initiative, it is an improve initiative. Feedback from the CCG and PBEF in November 2022 was that SA Water should prioritise meeting external obligations and delivering existing services where its total investment is constrained. As such, this initiative is not proposed for inclusion as part of RD24.		
Improve initiative: circular economy. Potential to implement new waste strategies to address future disposal liabilities. To enable this, SA Water will explore new circular waste management opportunities. This business case presents a proposal to construct and operate a facility to enable the management and reuse of spoil as a sustainable construction material for water and sewer infrastructure.	All CCG members expressed in-principle support for the construction of an operating facility to enable the reuse of SA Water spoil and commended the proactive environmental leadership. The role waste spoil processing facilities play in reducing waste was identified as a key benefit as "anything you can do to prevent waste is good". Several members indicated concern that the initiative was not sufficiently costed.	PBEF did not review this initiative (PBEF focused on initiatives with a higher bill impact/ greater stakeholder interest).	Customers placed significant value on the proposed measures to reuse spoil generated from the construction and repair of water and sewerage mains. SA Water customers indicated they were willing to pay $10.94 on average to recycle and reuse an additional 100,000 tonnes of spoil, rather than sending it to landfill. Customer WTP exceeds the potential bill impact of all proposals tested.
Outcome	This initiative does not align with the permissible environmental investments set out in the Commission's third guidance paper.[86] Furthermore, notwithstanding strong feedback for the initiative, it is an improve initiative. Feedback from the CCG and PBEF in November 2022 was that SA Water should prioritise meeting external obligations and delivering existing services where its total investment is constrained. As such, this initiative is not proposed for inclusion as part of RD24.		

[84] Clean Energy Rregulator (n.d.) Greenhouse gases and energy, CER, webpage accessed 13 July 2023.
[85] ESCOSA (2022) SA Water Regulatory Determination 2024: Guidance Paper 3 – Assessing the Regulatory Business Plan, ESCOSA, accessed 10 May 2023.
[86] ESCOSA (2022) SA Water Regulatory Determination 2024: Guidance Paper 3 – Assessing the Regulatory Business Plan, ESCOSA, accessed 10 May 2023.

Initiatives not progressed in RD24	Targeted engagement		Research
	CCG	PBEF	WTP
Improve initiative: environmental flows. This business case outlines the existing environmental flows program and proposes investing in additional environmental flow programs for the benefit of the environment and community.	All members supported the concept of proactively investing in environmental flow systems. The following reasons were identified: • It would improve the cultural/spiritual connection to water for First Nations people. • Environmental considerations have "clearly been a strong point for this group". • SA Water should be proactive in this regard. • "Whatever we can do to improve the environment on our watch we should do."	PBEF did not review this initiative (PBEF focused on initiatives with a higher bill impact/ greater stakeholder interest).	SA Water customers indicated they were willing to pay $3.33 on average to deliver environmental and cultural benefits at 2 reservoir sites in the Flinders Ranges. Customer WTP is significantly higher than the bill impact for the proposals tested.
Outcome	Similar initiatives in other catchments are statutory requirements, but as this catchment is not subject to the same requirements this initiative does not align with the permissible investments set out in the Commission's third guidance paper.[87] Furthermore, notwithstanding strong feedback for the initiative, it is an improve initiative. Feedback from the CCG and PBEF in November 2022 was that SA Water should prioritise meeting external obligations and delivering existing services where its total investment is constrained. As such, this initiative is not proposed for inclusion as part of RD24.		

Several of these initiatives, while highly supported by customers, were not clearly aligned with SA Water's regulatory remit as set out by the Commission in Guidance Papers 1 and 3.[88] Even where there was a degree of ambiguity, in an environment where there are constraints on operations for reasons of affordability, SA Water has focused investment primarily on maintaining existing services and meeting its legal obligations consistent with customer and stakeholder feedback. This saw several initiatives not advance on the basis that they were discretionary or new service initiatives that were the lowest priority group as set out in Figure 8-1. This is not to say that the excluded initiatives are not a priority, but rather that in an environment of constrained investment, other initiatives are a greater investment priority.

Although many initiatives tested through the WTP survey were not ultimately included in the submission, those that are progressing in RD24 are summarised in Table 8-2.

[87] ESCOSA (2022) SA Water Regulatory Determination 2024: Guidance Paper 3 – Assessing the Regulatory Business Plan, ESCOSA, accessed 10 May 2023.
[88] ESCOSA (2021) SA Water Regulatory Determination 2024: Guidance Paper 1 – The Regulatory Business Plan, ESCOSA, accessed 10 May 2023.

Table 8-2 Targeted research and engagement outcomes - initiatives being progressed

Initiatives progressed in RD24	Targeted engagement		Research
	CCG	PBEF	WTP
Sustain initiative: water reticulation management. Replacement of water mains (12km/year in metropolitan Adelaide and 35km/year in regional South Australia) to maintain the current level of main breaks and service interruptions. In addition, pressure management and water conditioning changes will be rolled out to extend the life of existing water mains where possible. (Discussed further in Section 8.2.1.1.2)	Members supported SA Water prioritising pressure-related failures over ground movement-related failures due to the greater customer impacts of the former. This initiative was seen as an example of considered investment in the short-term to reduce long-term cost and inconvenience for customers. Comments included that minimising disruption to customers needs to be a priority. In general, the group supported maintaining current service standards for failure rates. The group was broadly supportive of changing water pressure to improve asset life. Comments included that regardless of how this is managed, keeping customers informed about changes is key. In terms of extending asset life through water conditioning, a key concern raised was in relation to impacts on human and environmental health.	Members indicated a preference for improving levels of service and reducing the number of interruptions for customers. Members felt that SA Water should not increase service costs for customers.	Customers on average were not willing to pay more in their SA Water bill to reduce the number of customers experiencing 3 or more unplanned water supply interruptions from 1,750 to 1,700 customers or to reduce the average duration of interruptions from 3 hours and 20 minutes to 3 hours and 10 minutes.
Outcome:	This initiative proposed a range of investment options to reduce long term costs and overall levels of service. WTP survey outcomes did not support improving levels of service, and, as such, enhanced services are not proposed through this initiative. Other aspects of this initiative that related to reducing long-term costs to customers were strongly supported through discussions with the CCG. PBEF feedback that services should improve, but that costs should not, was noted, but not considered achievable in the context of the asset network that SA Water operates. The RD24 initiative seeks to proceed with those aspects of this initiative that address intergenerational equity considerations without changing levels of service. As a sustain initiative this forms part of the priority initiatives that the CCG and PBEF identified as preferred investment types in a financially constrained environment.		
External obligation initiative: wastewater odours.	All members supported the odour management proposal.	PBEF did not consider this initiative (PBEF focused on initiatives	Customers indicated they were not willing to pay more in their SA

Initiatives progressed in RD24	Targeted engagement		Research
	CCG	PBEF	WTP
Address wastewater odour hot spots to address odour complaints from customers. (Discussed further in Table 8-7)	Members commented that the proposal "makes sense" and supported it "because it would be difficult to do any other option". One member supported the proposal but would "like to see the money spent flatten out" the number of odour complaints.	with a higher bill impact/ greater stakeholder interest).	Water bill to reduce the number of odour hotspots each year from 16 to 14. SA Water customers were indifferent about an increase in odour hotspots from 16 to 20.
Outcome	Odour management is a mixture of maintaining regulatory compliance (as overseen by the Environment Protection Authority) and delivering expected customer levels of service. Willingness to pay survey outcomes did not support improvements to levels of service, and, as such, this initiative focused on maintaining current levels of service. As an external obligation initiative this forms part of the priority initiatives that the CCG and PBEF identified as preferred investment types in a financially constrained environment.		
Improve initiative: continuation of metropolitan water quality improvement from RD20. This initiative will deliver water safety and quality improvements for the Adelaide metropolitan region to improve public health and the taste of drinking water. (Discussed further in Table 8-11)	Eight members expressed their support for the upgrade, citing reasons including reduced chemicals and the economic sense of the proposal. One member did not support the upgrade as they believed the money would be better spent to "bring other communities up to the same standard of water quality".	PBEF did not consider this initiative (PBEF focused on initiatives with a higher bill impact/ greater stakeholder interest).	SA Water customers on average supported upgrading water quality in metropolitan Adelaide and were willing to pay $10.42 extra in their bill, compared to the $9.04 cost, to upgrade water quality to reduce the number of customer water quality complaints received each year from 700 to 70.
Outcome	This initiative continues RD20 investment in improving water quality. Engagement on this initiative considered whether it remained a priority for RD24 and assessed whether it should be de-prioritised in the list of RD24 initiatives. The initiatives have been identified as a priority through willingness to pay and through customer engagement, and as such, is proposed for continuation in RD24.		

Proposed investments for these initiatives were assessed against feedback provided through engagement. Different levels of service were explored with customers, stakeholders and through the WTP survey, and those more closely aligned with feedback were progressed.

Research and engagement outcomes were subsequently used to inform the prioritisation process discussed in Section 7.8 to make sure they were considered in and influenced the proposed final capital investment decisions for RD24.

8.2 Proposed capital expenditure

This section details the new capital initiatives SA Water has determined are necessary to progress in RD24 so that the Corporation can deliver its services at the current service standards. These new initiatives and their timing have been determined through measured planning, review, analysis and prioritisation, following the planning and prioritisation processes described in Chapter 7. All decisions have considered the long-term implications for customers, particularly in future regulatory periods.

As discussed in Chapter 4, and in further detail in Sections 7.3 and 7.7, SA Water has received strong support for making investments in RD24 that seek to reduce long-term risks and costs for customers. In developing the proposed capital expenditure list for RD24, SA Water has sought to carefully balance immediate risks to infrastructure and maintaining current service standards with current and future costs to customers. While this trend is most intuitive for physical infrastructure, it is also affecting technology. Indeed, lower allowed investment in the current regulatory period that has been exacerbated by cost escalations has, in SA Water's view, led to a deficit in required capital investment in physical and technology assets. If left unaddressed through unsustainably low levels of investment, this deficit will grow, leading to higher amounts of required investment in future regulatory periods.

Recent observations of British, Irish and Scottish water utilities demonstrate the risks to customers when this occurs, where large capital deficits are currently leading to significant customer bill spikes. [89] SA Water identifies that the level of proposed capital investment in RD24 is insufficient to address this issue, as it was in RD20. With considerable infrastructure constructed in the post-war periods reaching the end of its life in the next few regulatory periods, SA Water projects a need for additional capital investment incremental to that proposed in RD24 in future periods. This renewal of infrastructure and technology assets will be required to maintain services, and while it can be delayed temporarily, cannot be avoided.

It is estimated that SA Water enters the RD24 period with more than $2.5 billion in high and extreme capital investment risks. Based on proposed investments in RD24 it is estimated that SA Water will still carry several hundred million in high risks into the 2028 regulatory period and beyond.

This estimate does not include:

- any further asset deterioration (physical),
- any additional statutory obligations (physical or technological), or
- new solutions required as technology vendors cease support for software, or hardware, for example retiring the 4G telecommunication network in the 2030s.

Where these occur between now and the commencement of the 2028 regulatory period there will be increased investments required in the 2028 regulatory period and beyond.

SA Water notes that delaying capital investment not only results in a higher than desired risk tolerance, but it also may lead to higher operating costs in future to maintain ageing assets. This could be further compounded by additional complexity and urgency if assets need to be replaced in a reactive way due to asset failure rather than a proactive way through programmed renewal.

In the short-term, a decision has been made to prioritise affordability for customers without substantially addressing these long-term capital investment pressures. In doing so, SA Water has prioritised those initiatives that have the most pressing needs, foregoing potential investments in service improvements to instead focus on the greatest risks to the Corporation. This section therefore covers fewer new initiatives that seek to improve services. Following a formal request from government to reduce sought operating revenue, SA Water has reduced some capital and associated operating expenditure related to security operations in this submission. This comprises approximately $4 million in capital and $3 million in operating expenditure.

[89] Helm D, (2023) *Who should pay for the sewers?*, Oxford University, accessed 26 June 2023; McDermott R, Solan B, McCord S and Littlewood K (2019) Irish Water and Scottish Water: A Comparison, Journal of Water Resource and Protection, 11: 1064-1089.

To assist ESCOSA, customers, and stakeholders understand, review and evaluate these new initiatives and their drivers, the following sections list each capital initiative:

- by regulatory driver (sustain services, external obligation, growth or improve services) and details whether it will be delivered through the water, wastewater, or technology parts of the business
- with a description
- with the amount of capital expenditure and, where required, the associated operating expenditure to deliver it.

In addition, further information is provided for capital initiatives that are estimated to affect the average customer bill by $1.00 or more.

Information on initiatives that only have an operational expenditure component can be found in Chapter 9.

8.2.1 Sustain services

SA Water is required to renew and maintain assets to maintain current levels of service and ensure the long-term sustainability of the services it provides. SA Water has determined it will require $1,337.8 million in capital expenditure, with $58.6 million in supporting operating expenditure, over the 4 years of RD24 to renew and maintain assets. The proposed water, wastewater and technology initiatives are detailed following.

8.2.1.1 Water

SA Water has a legislated responsibility through Section 7 of the *South Australian Water Corporation Act 1994* and through licences established under Section 25 of the *Water Industry Act 2012* to provide a reticulated supply of drinking water to customers across South Australia. The water supplied by SA Water must also be compliant with Section 24 of the *Safe Drinking Water Act 2011*, ensuring the water supplied to customers is safe to drink.

To deliver sustained water services for customers in accordance with current service standards, the capital initiatives listed in Table 8-3 are required to be funded in RD24. A more detailed explanation is provided in the following sections for those initiatives that are estimated to contribute $1.00[90] or more to the average residential customer bill.

Table 8-3 Sustain services capital expenditure – water

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
Water trunk mains and major pipeline reliability	Optimise asset performance and life cycle of the water trunk mains and major pipeline network. The focus is on ensuring reliability to meet service expectations while minimising life-cycle costs. (Detailed further in Section 8.2.1.1.1)	$107.1	$0.0
Water reticulation management reliability	Optimise asset performance and life cycle of the water	$146.0	$4.9

[90] Note bill impacts of initiatives will vary depending on the regulatory segment (water or wastewater), the type of asset (as useful lives vary from 7 – 100 years) and the type of expenditure (capital expenditure compared to operating expenditure).

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
	reticulation network to ensure service expectations are met while minimising lifecycle costs. (Detailed further in Section 8.2.1.1.2)		
Water minor ancillaries	Optimise asset performance of the minor water network ancillaries to ensure service reliability expectations are met while minimising lifecycle costs.	$0.8	$0.0
Water customer meters	The customer meter program funds the proactive and reactive replacement and upgrade of meters to monitor customer consumption and customer demand management. It also addresses the secondary function of these assets as backflow prevention for the network, to ensure compliance with requirement of the Office of the Technical Regulator, as well as improving relevant asset information systems.	$38.6	$0.2
Water master meters	An asset creation and replacement program for flowmeters used in the SA Water network. Flowmeters provide data on volumes of water extraction from the environment, its flow through parts of the network, and flow through facilities such as tanks, pump stations and control installations.	$6.5	$0.0
Accommodation	Includes renewal works for regional and metropolitan accommodation facilities, such as offices, laboratories, workshops, and storage, to support SA	$25.3	$0.0

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
	Water's workforce to deliver wastewater and water services.		
Major and minor plant	Appropriate plant and equipment to enable safe and efficient operation to provide water services to customers.	$28.0	$0.
Maintaining physical water security	The provision and renewal of capital security assets across SA Water sites, including more than 300 with business-critical infrastructure. The main objective is to meet the requirements of the South Australian Protective Security Framework, protecting staff, assets and information to ensure levels of service associated with managing water supply and wastewater are met.	$38.4	$0.0
Water network facility - maintain reliability	Includes several infrastructure projects across regional and metropolitan areas such as pump stations (network and major pipeline), control installations, structures (major pipelines and network), and bores, springs and wells that require renewal to ensure reliable service. (Detailed further in Section 8.2.1.1.2)	$130.3	$0.3
Water treatment plant facility - maintain reliability	A range of infrastructure projects across regional and metropolitan areas to ensure reliable service including structures, and mechanical and electrical plant, that require renewal due to poor condition or performance.	$28.8	$0.2

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
Water network facility - maintain water quality health	Infrastructure projects across regional and metropolitan areas, including water dosing stations, structures (major pipelines and network), and bores, springs and wells that require renewal to meet existing water quality standards and provide water quality barrier protection.	$35.8	$0.7
Water treatment plant facility - maintain water quality health	Infrastructure projects across regional and metropolitan areas, including structures, and mechanical and electrical plant, that require renewal to meet existing water quality standards.	$9.4	$0.0
Water quality program	Delivering system improvements and upgrades to ensure water supplied is safe to drink and meets legislative requirements.	$34.9	$1.1
Water security	Ensuring SA Water has access to an acceptable quantity and quality of water to reliably supply its customers into the future.	$1.1	$0.0
System planning tools program	Supports planning to deliver optimal investment and renewal across several asset programs.	$2.7	$0.0
Metropolitan future process strategy - health risk mitigation	Investment to address high or extreme water quality hazards and risks identified through assessments in RD20.	$17.6	$0.0
Improved asset protection against bushfire initiative	Investment in bushfire preparedness across vulnerable SA Water assets to incorporate updated intelligence from major bushfires in RD20.	$1.0	$1.0
River Murray licence rebalancing	Investment in River Murray water licences	$14.8	$0.0

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
	to support greater water security.		
Climate change response - Willowie system	Prevailing drought conditions and low aquifer recharge have resulted in a significant decline in availability of groundwater in the area. The spring has experienced seasonal failures and the groundwater in the aquifer is nearly depleted requiring an alternative supply.	$23.3	$1.2
Dams and weirs management reliability	Condition-based assessments of dams and weirs to maintain acceptable levels of service and reliability to SA Water customers.	$0.2	$0.0
SCADA system renewals	To reduce the risks of obsolescence and security vulnerabilities of Supervisory Control and Data Acquisition (SCADA) infrastructure.	$1.0	$0.0
Eyre Peninsula desalination plant and system upgrade	Continuing the RD20 Eyre Peninsula desalination plant investment. (Detailed further in Section 8.2.1.1.4)	$238.0	$35.9
Purified recycled water demonstration plant	In response to a changing climate and increased demand from growth, this project will trial and model purified recycled water as a cost-efficient alternative to desalination. (Detailed further in Section 8.2.1.1.5)	$4.7	$6.4
Adelaide Desalination Plant ultrafiltration and reverse osmosis membranes	Renewing the Adelaide Desalination Plant ultrafiltration and reverse osmosis membranes that remove impurities and salts from seawater to provide a climate independent source of drinking water.	$34.2	$0.0

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
Kangaroo Island earth bank storage (EBS) and Middle River rehabilitation	To rehabilitate the Middle River Water Treatment Plant to extend its useful life and construct an additional 32 ML EBS at Penneshaw. The additional 32 ML water storage is required to meet customer demand and significant uptake of new customer connections on the Island, particularly within the townships of American River, Baudin Beach, Island Beach and Sapphiretown.	$15.0	$0.0
TOTAL		$983.4	$51.8

Figures may not total due to rounding.

8.2.1.1.1 Water trunk main and major pipeline reliability

Trunk mains and major pipelines are operated and maintained to enable transport of water from the source supply to the water treatment plant and then to the reticulation network to reach homes and businesses.

This initiative will optimise the asset management life cycle of the trunk mains and major pipeline assets, including the ancillary assets that support their operation. This is to ensure a reliable water service for customers while minimising life cycle costs.

Works are included in the program based on either an intolerable risk level or service impact. The focus in RD24 will be on maintaining the current failure rate (at 153 unplanned interruptions per 1,000 properties per year).

Asset reliability will be maintained through a blend of pipe, ancillary and cathodic protection works, as follows:

- Targeted replacement of sections of trunk mains and major pipelines

  Across the network, trunk mains and major pipelines range in size from 375 millimetres to 2,100 millimetres in diameter. They have a total length of 3,657 kilometres and make up 13 per cent of the water pipe network asset base. The gross replacement value for all trunk mains and major pipelines is $3.83 billion.

  Under this proposal, a strategy to maintain the failure rate will be applied to the regulatory period. This will focus on replacing sections that have high or extreme risk of future failures in the short- to medium-term, confirmed through condition assessments. This includes replacement of approximately16 kilometres of water trunk mains and 3 kilometres of major water pipelines.

  Trunk main and pipeline replacement was only briefly discussed with the CCG and PBEF, yet both typically supported investments that continued existing levels of service. This was further clarified with the CCG and PBEF in late 2022 when both groups endorsed the investments required to maintain current levels of service to existing customers as a high priority.

- Replacement of ancillary assets, such as inline valves, scour valves and air valves (excluding minor ancillaries, which are detailed in a separate initiative)

Ancillary assets are equipment attached to pipework to support its operation and maintenance. Expenditure will focus on assets likely to require operation in RD24 and which would have significant impacts on the ability for field teams to meet service standards if the assets remain in their current poor condition.

This likelihood of failure is linked to the probability of a mains break and the location of the ancillary asset within the system. Ancillaries that are not functioning as designed but have a low likelihood of requiring operation in RD24 have been deferred to future regulatory periods.

As with main and pipeline replacement above, ancillary asset replacement was only briefly discussed with the CCG and PBEF. There was general support for initiatives that maintain existing service levels. There is research from Sydney Water that supports efforts by SA Water to reduce inconvenience and the number of customers affected by service outages, aligned to this investment.[91]

- Replacement of failed cathodic protection systems

Cathodic protection systems are currently protecting approximately $1.7 billion of buried pipelines assets. These systems are used to provide a barrier to metal pipe wall deterioration due to corrosion. SA Water uses impressed current and sacrificial cathodic anode protection systems to cause the pipe to act as a cathode to slow pipe deterioration.

SA Water has determined that 22 per cent of the cathodic protection systems protecting assets need to be replaced or upgraded. This work is required to meet the projected asset life of the pipeline. If not addressed, this will result in metallic pipelines having a shorter asset life (reduced by approximately 50 years), which accelerates the need for capital replacement and brings a higher bill impact for customers. This component of the investment strongly aligns with feedback from the CCG and PBEF that proactive investment in the short-term is preferred to reduce long-term costs for SA Water customers.

For this initiative, SA Water requires a total capital expenditure of $107.1 million over the RD24 period. Some reprioritisation work may be required within RD24 to manage any changes in risk identified through condition assessment programs.

8.2.1.1.2 Water reticulation management reliability

The water reticulation mains operated and maintained by SA Water transport water between the trunk mains and customer connections. These pipes range in diameter between 63 millimetres and 374 millimetres. They have a total length of 23,526 kilometres and make up 87 per cent of SA Water's water pipe network type. The reticulation network is one of the largest components of SA Water's asset bases with a gross replacement value of $3.55 billion.

As with trunk mains and major pipelines, the 3 drivers of failure rate increase in the reticulation network are:

- pressure, whereby the pipe wall strength can no longer withhold the water operating pressure due to deterioration or system issues. Pressure-related failures on the reticulation network have the largest impact to customer service standards and require a larger number of resources for a longer period. They represented 40 per cent of all water main breaks in 2021-22, and 53.4 per cent of the repair cost budget.

[91] Zhang, Crawley & Kane (2015) Build Level of Services and Customer Value Into Decision Making: Sydney Water's Water Main Asset Management Strategy, Australian Journal of Multi-Disciplinary Engineering, 11: 179-190.

- external loading (soil movement / thermal / traffic), whereby the pipe wall strength or pipe joint can no longer withhold the external loading being applied. These types of failures on the reticulation network have a lower impact to customer service standards around outage times. However, they can strain available resources during drier conditions when the frequency of failures increase. External loading failures represented 52 per cent of all water main breaks in 2021-22, and over 40 per cent of the repair cost budget.
- third party events damaging pipes, for example service strikes and natural disasters. Third party damage failures on the reticulation network represented 7.4 per cent of all water main breaks in 2021period, and 2.4 per cent of the repair cost budget. This is a growing threat due to the increased density of other third party services being installed underground.

Modelling through the Pipeline Assessment Risk Management System (PARMS) shows that without capital and operating interventions, the failure rate will continue to increase over time. This has a flow on impact on multiple measures of customer service. Without intervention, by 2048 the metropolitan network failure rate is modelled to increase to 26.1 breaks per 100 kilometres a year and the country network is forecast to be 14.3 breaks per 100 kilometres a year (Figure 8-2). This would equate to a percentage increase in failure rate of 21.4 per cent in the metropolitan network and 30.0 per cent in the regional network by 2048. PARMS modelling software has been used by SA Water since 2001 to model different investment scenarios and their impacts on service measures. It is leading software that is also used by most of Australia's major water utilities.

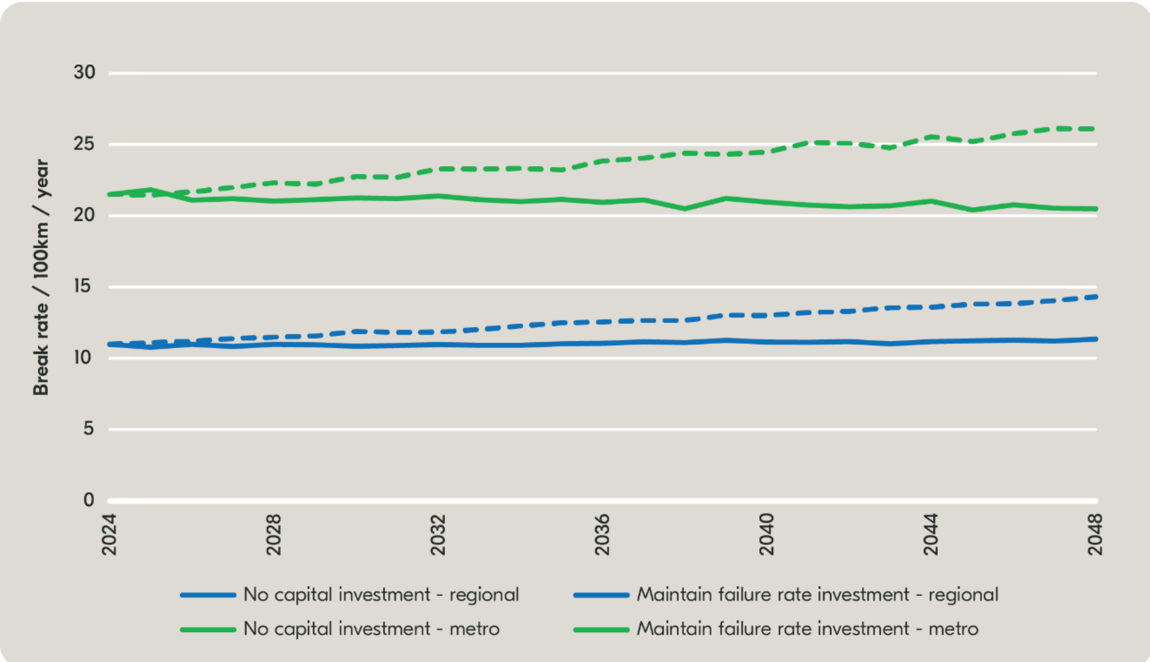

Figure 8-2 Pipeline assessment risk management system

As part of a longer-term program of works, it is proposed to manage the failure rate due to threats impacting the reticulation network at current levels through a multifaceted and innovative investment approach. This investment in RD24 includes capital mains replacement, pressure management, changes to water conditioning at metropolitan water treatment plants, installing isolation valves to reduce number of customers impacted, and operational uplift programs.

The capital mains replacement program, which is the core part of this investment strategy, involves replacement of water mains that are at risk of failure and impacting service levels. A baseline investment is calculated through the PARMS software and then individual mains are assessed annually to determine priority through customer, community, and economic impacts. Through the multifaceted approach of this investment option, it is proposed to decrease the amount of water main length to be replaced in RD24 compared to RD20 (replacing around 208 kilometres of water reticulation mains) and instead invest in pressure management programs, which have been shown to decrease water main breaks when implemented. The CCG was consulted on this approach and supported this initiative provided that pressure reduction strategies did not see pressure drop below required standards regulated by the Office of the Technical Regulator.

To decrease the rate of deterioration of asbestos cement pipes within the network and manage the sequence of future investment, water conditioning will be implemented to lower the alkalinity loss within the pipe wall structure. This water treatment adjustment, which will continue to meet Australian Drinking Water Guidelines, will enable SA Water to defer significant future capital and operational expenditure upgrades over the medium- to long-term and will result in a forecast reduction in main breaks. For the long-term forecast period (30+ years), the reduced alkalinity loss enables SA Water to extend the predicted remaining useful life of pipes and flatten the capital renewal peaks over a longer period.

Customer feedback through the CCG was supportive of this innovation, noting the benefit of short-term investment in reducing long-term cost. Feedback through the willingness to pay research was less strong. As a result, it is proposed to install water conditioning at Anstey Hill Water Treatment Plant (WTP) only in RD24. Lessons learned through this process would then enable the efficient deployment to the other 4 metropolitan water treatment plants in future regulatory periods.

Anstey Hill WTP is selected for the RD24 installation as it has the highest water aggressiveness rating as measured using the Langelier Saturation Index (-1.4 LSI) and the lowest predicted remaining useful life of asbestos cement pipe due to the higher operating pressure. Funding will be available in RD24 to design the solution for the remaining metropolitan treatment plants and undertake further consultation with customers for a larger role out in RD28.

SA Water will continue its program of installing isolation valves to manage customer disruptions and infill growth. This will enable the Corporation to reduce the number of properties experiencing a supply interruption due to pipe breaks. This element is focused on managing the number of customers impacted by an event rather than the event itself, which is a management approach supported by targeted engagement for RD24.

Work will involve installing an additional 40 valves per year, with the program continuing through to 2033. The valves would be located at shut off blocks that currently have more than 50 customer connections, eventually having this coverage across the whole network. By reducing the average size of shut off blocks in the metropolitan and regional networks in this way, it is expected SA Water will maintain the number of properties that experience 3 or more unplanned interruptions in a rolling 12-month period (target 1,750) rather than this number increasing due to growing customer density resulting from urban infill.

SA Water has included an operating expenditure uplift in addition to the capital works program for managing response, restoration and overall customer impacts because of a water main break. The operational expenditure is designed to clear the backlog of corrective maintenance on ancillary assets (valves and fireplugs). At present, there are more than 1,049 failed ancillary assets and this is growing annually as these assets move into the maintenance phase of their asset life cycle. In the case of fireplugs, this is to meet statutory requirements under the *Water Industry Act 2012*.

SA Water is proposing to progress 2 innovative trials to reduce required reticulation main investment. The first involves trialling satellite monitoring of ground movement changes in the northeast of Adelaide. This area covers an 828 kilometre section (8.8 per cent) of the metropolitan network which had 19.4 per cent of the metropolitan area's movement-related failures in 2018-19. A third party will be contracted to monitor seasonal changes in ground movement via satellite and determine if it will help early detection and improved allocation of crew resources.

The second trial is to use flood prediction modelling to identify which water mains have the highest consequence of property damage when a major break occurs, thereby supporting prioritisation for proactive replacement before a flood event occurs. Under this proposal, mapping will enable over 9,000 kilometres of water mains in built up areas to be assessed for the consequences associated with a water main break at 5 metre spacings.

The results from the study will inform the calculation of costs to mitigate the likelihood and consequence. It would also give adequate data to present to customers to determine if there is a willingness to pay to mitigate the risk proactively or to establish a condition assessment program to assess the overall risk profile. If the methodology proves effective and efficient, SA Water will consider expanding the modelling to other sections of the network.

Work to maintain the current failure rate within the water reticulation network as detailed above, along with operating uplift, will require $146.0 million in capital expenditure and $4.9 million in operating expenditure. Customer feedback through the CCG was supportive of the innovative elements of this investment and noted the focus on continuing to deliver current service levels to existing customers.

8.2.1.1.3 Water network facility maintain reliability

SA Water operates and maintains various facilities which support water distribution in the bulk water transmission and reticulation networks. These assets, which are located across both regional and metropolitan areas of South Australia, including network pump stations, major pipeline pump stations, control installations, water storages, structures for major pipelines and water networks, bores, springs and wells.

These assets contribute to the reliability of water supply and their consistent operation is required as outages may cause loss of supply to customers or inefficient and costly operational workarounds to maintain supply. In some cases, other critical infrastructure and facilities may be impacted, especially on the bulk water major pipeline systems, with larger customer impact risks.

The likelihood of an unplanned interruption to a facility is linked to its condition and functional performance. To determine this, SA Water undertakes condition monitoring of facilities in the water network and major pipeline systems. For those assets determined to be in poor condition, the consequence of failure is assessed, and linked with the likelihood of failure to determine the risk. Additionally, facilities with a history of poor performance can lead to deteriorating water system reliability. This can be measured via breakdown data and incorporated into the risk assessment process.

Facilities that are assessed as critical or high risk are then prioritised for investment, which may include maintenance or operational interventions as well as capital upgrades.

To maintain network reliability, works progressed during RD24 will focus on ensuring those assets with a history of poor condition, poor performance or which otherwise demonstrate a critical or high risk associated with reliability of the system, are addressed in a proactive and predictive manner. Considerations for selection of the most appropriate option include:

- work health and safety
- life cycle cost and economic life
- asset criticality
- materials selection and durability
- obsolescence of components and ease of procurement
- maintenance requirements of components (retained and replacement)
- water quality risks.

The actual works and investment required will depend on the individual projects delivered within the program.

SA Water requires total capital expenditure of $130.3 million and total operating expenditure of $0.3 million over the RD24 period. The program costs cover the delivery of network facility renewals required to maintain reliability as well as any applicable ongoing operational expenditure.

8.2.1.1.4 Eyre Peninsula desalination plant (continuation from RD20 project)

A climate-independent water source is required for customers on the Eyre Peninsula to supplement supplies from the Uley South Basin which is reaching its sustainable limit. In the absence of other viable water sources, SA Water is proposing to construct a seawater desalination plant at Billy Lights Point on the Eyre Peninsula.

The plant will initially produce 5.3 gigalitres per annum with marine works constructed to enable production of up to 8 gigalitres per annum when required. Ancillary works will include construction of 7.4 kilometres of pipeline infrastructure to connect into the existing water network and 4 kilometres of electricity infrastructure.

This project was identified as prudent as a part of the RD20 process, with works originally planned to complete during RD20. However, more favourable monitoring results from the Uley South Basin enabled greater local consultation and engagement to occur as required by the State Government during 2021 and through 2022. As already covered in Section 3.3.2 of this submission, works to the end of the period will involve preparation of approval documents, concept and detailed design, and long lead time procurement.

Major construction is now scheduled to commence in 2024 as the project obtains all regulatory approvals, with water being supplied from the plant to customers by December 2025. Ongoing marine monitoring and environmental assessment will continue after practical completion to ensure the plant operates within its licence and required performance criteria. A 2 year operate and maintain contract is also proposed to optimise the plant and ensure ongoing local workforce capability.

SA Water requires total capital expenditure of $238.0 million and operating expenditure of $35.9 million to fund activities including construction, commissioning, and operation (including energy) and to undertake ongoing marine monitoring during RD24.

8.2.1.1.5 Purified recycled water demonstration plant

As discussed in Section 2.3.1.5, water security is an important consideration in providing reliable water services to customers now and into the future. To achieve water security, SA Water has several supply options, but most of these are climate dependent.

Climate change will impact future water resource availability, while growth will increase demand on existing resources. Investigations into Adelaide's future water supply and demand balance have identified a resource gap beginning to emerge in 2032, growing into a larger supply deficit of up to 51 gigalitres a year by 2050. Meeting future water needs in metropolitan Adelaide will require new climate-independent water sources to be identified.

To date, the approach to developing climate-independent sources of drinking water has been to use desalination, but advances in technology and greater community acceptance have enabled SA Water to explore other options. In RD24, it is proposed to invest in a pilot purified recycled water (PRW) plant to trial its use to supplement supplies of drinking water. This is part of an approach that considers all potential drinking water sources. The Urban Water Directions Statement produced in 2022 by the Department for Environment and Water reinforces that innovative drinking water supply approaches are required to meet all the basic and strategic water requirements for Greater Adelaide. [92]

PRW is climate-independent and is being used in Australia and globally to address water security needs. As supported by analysis by the Water Services Association of Australia (WSAA) (Figure 8-3), PRW often has a favourable cost profile when compared with seawater desalination, making it an economically prudent alternative worthy of further investigation.

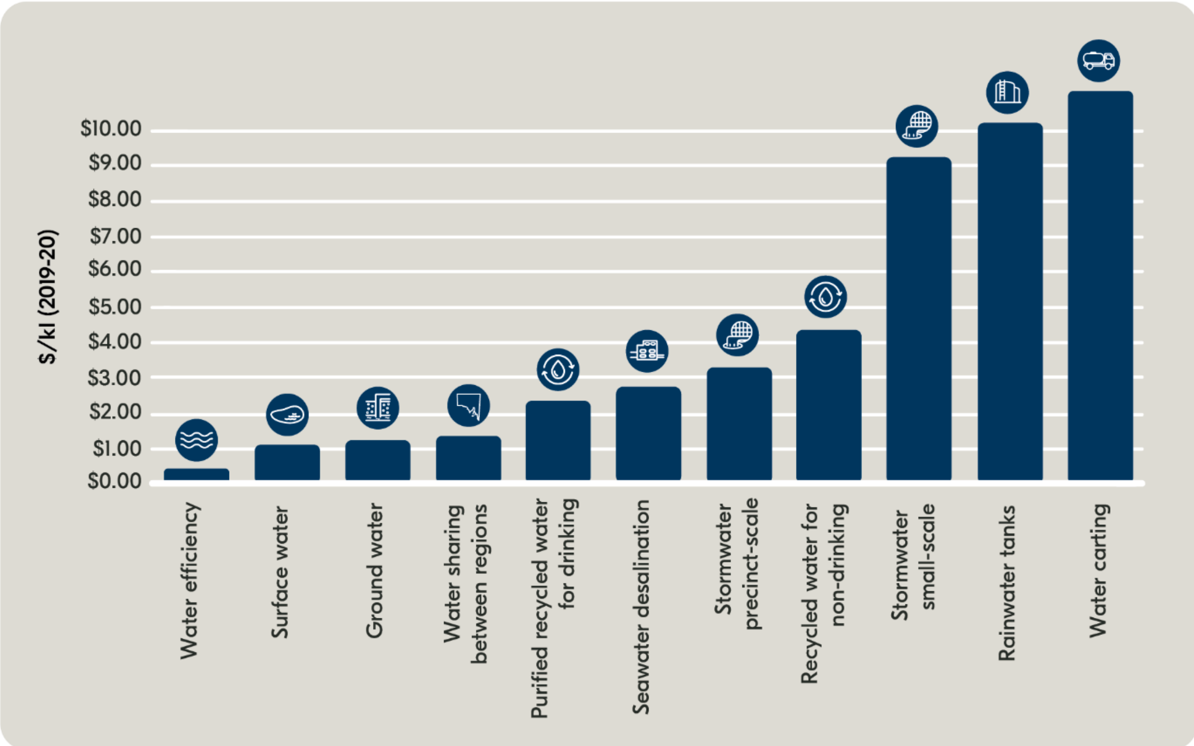

Figure 8-3 Cost comparison of water supply options for Australia study (WSAA, 2020) levelised $/kl 2019-20[93]

To enable the introduction of PRW as a future supply option and realise the economic, social, and environmental benefits of the approach, SA Water needs to:

- obtain customer support for the use of PRW as a drinking water option
- verify treatment process effectiveness on various source waters aligned with drinking water regulation approval.

The use of a demonstration plant and community engagement to address these 2 points is a recognised approach in the water industry to support introduction of PRW.

To enable this, and to explore future deployment options, SA Water requires total capital expenditure of $4.7 million and total operating expenditure of $6.4 million over the RD24 period.

The CCG and PBEF were extensively engaged on this option and were strongly supportive of exploring alternative options for future water supply for metropolitan Adelaide. Views were mixed on whether PRW is socially acceptable, but through greater discussion, the groups recognised the potential benefits of adopting this approach in South Australia.

[92] Department for Environment and Water (2022) 'Urban Water Directions Statement', Department for Environment and Water website, accessed 17 June 2023.
[93] Water Services Association of Australia (2020), All options on the table Urban Water Supply Options for Australia, WSAA, accessed 21 June 2023.

8.2.1.2 Wastewater

As with water services, SA Water has a legislated responsibility through Section 7 of the *South Australian Water Corporation Act 1994* and through licences established under Section 25 of the *Water Industry Act 2012* to provide a reticulated sewerage services to customers across South Australia.

The initiatives listed in Table 8-4 are proposed to sustain wastewater services to existing customers in accordance with current customer service standards. A more detailed explanation for those initiatives that will have an impact on customer bills upwards of $1.00 is provided. [94]

Table 8-4 Sustain services capital expenditure - wastewater

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
Wastewater reticulation main renewals	Optimise the asset management life cycle of the sewer reticulation network to ensure service expectations are met while minimising life cycle costs.	$19.6	$0.0
Wastewater pumping main renewals	Management of wastewater pumping mains across the state to ensure service expectations are met while minimising life cycle costs.	$27.1	$0.2
Wastewater trunk main renewals	Optimise the asset management life cycle of the sewer trunk network to ensure service expectations are met while minimising life cycle costs.	$26.5	$0.0
Wastewater ancillaries renewal	Management of wastewater ancillary infrastructure, encompassing access chambers (inspection points), air extraction points, customer connections and castings across the state.	$22.5	$0.0
Recycled water mains renewals	Optimise the asset management life cycle of the recycled water mains network to ensure service expectations are met	$5.4	$0.0

[94] Note bill impacts of initiatives will vary depending on the regulatory segment (water or wastewater), the type of asset (as useful lives vary from 7 – 100 years) and the type of expenditure (capital expenditure compared to operating expenditure).

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
	while minimising life cycle costs.		
Wastewater and recycled water treatment plant reliability	Wastewater and recycled water treatment plant facility renewals programs enabling the continued provision of reliable wastewater treatment, reuse, and dispersion services while minimising life cycle costs. (Detailed further in Section 8.2.1.2.1)	$58.1	$0.0
Wastewater and recycled water pump station reliability	Investment in wastewater and recycled water network facilities, including wastewater pumping stations, recycled water pumping stations, fan stations and odour control stations.	$22.6	$0.0
Adelaide wastewater trunk main renewal	This investment relates to the Adelaide wastewater trunk main situated beneath the Adelaide Railway Station rail yard.	$35.3	$0.0
Wastewater inflow and infiltration management	Managing inflow and infiltration impacts in wastewater networks to minimise wastewater overflows, ensuring compliance with treated wastewater parameters, and reducing operational impact on wastewater assets across the state.	$5.3	$0.0
Wastewater pump station improve performance	Based on the wastewater pump station overflow abatement program, to address the requirements of the Code of Practice for Wastewater Overflow Management.	$6.4	$0.1
Finger Point sludge management	Install a permanent mechanical dewatering plant at the Finger Point Wastewater Treatment Plant to meet legislated responsibilities under	$8.0	$0.3

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
	the S.25 General Environmental Duty of the *Environment Protection Act 1993*.		
TOTAL		**$236.7**	**$0.6**

Figures may not total due to rounding.

8.2.1.2.1 Wastewater and recycled water treatment plant reliability

SA Water has 29 wastewater treatment plants and 24 recycled water treatment plants across the state which collect and treat wastewater and produce recycled water. In 2021, these treatment plants were responsible for the collection and treatment of 127 gigalitres of effluent and produced 36 gigalitres of recycled water.

The performance of these assets is dictated by measures including customer levels of service, compliance with Environment Protection Authority licences, and Department for Health and Wellbeing recycled water use approvals.

SA Water undertakes renewal of wastewater and recycled water treatment plant mechanical, electrical and civil structural assets to extend their usable life and reduce the risk of asset failure. This work enables SA Water to manage risks for existing assets and can drive innovation in delivering these works to achieve prudent and efficient expenditure outcomes that maintain levels of service and meet external obligations.

The renewals programs for wastewater and recycled water treatment plants grade the condition of assets based on their current condition and expected remaining asset life. These condition grades are categorised from 1 to 5, with grade 5 being assets in the poorest condition.

Assets assessed as grades 4 and 5 are prioritised for inspection and further investigation. By applying a risk and priority ranking against these assets, along with estimated pricing for renewals work, SA Water can select the most efficient capital interventions. Using this process, SA Water can:

- manage the risk of asset failure and intervene at the right time to avoid catastrophic failure of these assets
- achieve a balance between managing operational risks, customer and stakeholder expectations, and expenditure to achieve the best outcomes possible to maintain levels of service.

Expenditure required for the RD24 period has been determined to target the renewal of assets that are of condition grade 4 or 5, including critical assets, with a focus on:

- assets that pose an immediate risk of failure and need renewals (grade 5)
- assets where the risk of failure is increasing and will require renewal in the foreseeable future (grade 4).

By using this method there is a lower overall cost on the program, and appropriate intervention means there is a lower risk that a failure will occur.

In the early stages of engaging the CCG and PBEF, both groups were consulted on plant management at a general level. Based on their feedback, SA Water did not deeply engage on treatment plant programs but this initiative forms part of the group of programs that involve maintaining current levels of service to current customers, which both the CCG and PBEF identified as priorities for investment in RD24.

For this work, SA Water requires an investment of $58.1 million in capital expenditure over the RD24 period.

8.2.1.3 Technology

Where deemed prudent and efficient, SA Water uses technology to enable the operation and maintenance of its assets and services, and to support customers. The Corporation uses technology services, such as Backup and Webchat, and 643 applications, including the Microsoft Office Suite. Together, these technology assets provide an efficient platform that enables critical business capabilities, processes, and shared management of business data.

Maintenance of technology and applications involves systematic and ongoing updates, upgrades, and replacement of key technology assets, which is managed by monitoring and assessing current and future needs.

During the current regulatory period, multiple vendors including Microsoft and IBM have announced that they are ceasing support for on-premises software solutions and moving to cloud-based software-as-a-service (SAAS) approaches. This means that SA Water will no longer receive updates, patches or other critical security updates for its software. While historically SA Water may have found alternate on-premise solutions, increasingly vendors are migrating solutions to SAAS approaches, forcing SA Water to adopt these approaches for core service provision.

To sustain services in RD24, capital expenditure is required to invest in these key technology asset areas (Table 8-5). More detail regarding these initiatives and other expenditure with an estimated bill impact of more than $1.00 for the average residential customer is provided in the sections following. [95]

Table 8-5: Sustain services - technology

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
Desktop productivity and end user computing	Provide reliable devices and desktop applications through patches and upgrades to devices and the application portfolio. Examples include desktop operating system, asset and works management mobile applications, Office 365 and related collaboration tools. (Detailed further in Section 8.2.1.3.2)	$16.8	$0.3
Application environment platforms	Patch and upgrade enterprise systems such as the Geographic Information System, human resource management and risk management platforms, SharePoint, PowerBI reporting environment, and MS Exchange.	$13.4	$0.2

[95] Note bill impacts of initiatives will vary depending on the regulatory segment (water or wastewater), the type of asset (as useful lives vary from 7 – 100 years) and the type of expenditure (capital expenditure compared to operating expenditure).

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
	(Detailed further in Section 8.2.1.3.6)		
Hardware and infrastructure systems	Upgrade and replace the physical and virtual infrastructure on which enterprise services operate, such as data centres, storage, and server computing environments. (Detailed further in Section 8.2.1.3.3)	$14.2	$0.2
Network and communication systems	Upgrade and replace the local and wide area networks, wired and wireless networks, call management, and phone services.	$9.2	$0.2
Operations collaboration	Technology changes required to support the transition in 2025 of 10 water treatment plants in the Riverland, and one wastewater treatment plant in Victor Harbor from TRILITY to SA Water. This requires a consistent, standardised and aligned SCADA environment at these sites, including implementation of SA Water's SCADA Technical Standard (TS 0350) to maintain service continuity, quality and efficiency across these treatment plants.	$6.0	$0.0
Billing modernisation	The replacement of the bespoke customer billing system is required as maintenance risks are increasing. This is the first component of the investment that is planned over 2 regulatory periods. (Detailed further in Section 8.2.1.3.1)	$21.0	$1.4
Finance management system migration	SA Water's current core financial management	$3.6	$0.1

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
	system product is being withdrawn from the market and reaches end-of-vendor active support in December 2028.		
Customer Relationship Management system migration	The current on-premises version of the system is reaching end-of-support life in January 2027, requiring a migration to the cloud or an alternative solution. (Detailed further in Section 8.2.1.3.5)	$12.6	$0.5
Asset management platform system migration	The current on-premises version of the system is reaching end-of-support life in September 2027, requiring a migration to the cloud or an alternative solution. (Detailed further in Section 8.2.1.3.4)	$10.5	$1.1
Legacy integration migration	The current integration management system is at end of life and requires existing integrations to be migrated to the new integration management solution.	$6.5	$1.5
Operations site enhancements	Addressing issues of inconsistency in service quality experienced with network connectivity. Prioritised investment in site Wi-Fi services and improved cellular mobile coverage for data/voice at sites where existing performance is not acceptable will mitigate work, health, and safety risks, and improve operational efficiency.	$3.8	$0.7
TOTAL		**$117.7**	**$6.3**

Figures may not total due to rounding.

8.2.1.3.1 Billing modernisation

The Corporation's current Customer Service Information System (CSIS) has been active since 1996. It is a bespoke business-critical system that is central to customer billing and revenue collection. Each year it is used to manage customer information, and to build and send bills to SA Water's customers for services across a broad range of property and meter types.

While it has been modernised over time, it carries a compounding risk profile, which has also grown over time. Consideration was made in RD16 to replace the CSIS billing system, consistent with the recommendations in the 2015 Billing System Assessment and Recommendations Report produced by Ernst & Young Global Limited. Replacement was deferred due to time, cost, risk and changing strategy, with the intent that it would be revisited in the future.

SA Water requires a modernised billing platform to minimise business and technical risks and enable customer outcomes and business growth, such as through the enablement of flexible billing options and solutions. Investing now, rather than in future regulatory periods, ensures the Corporation is not continuing to defer the inevitable and creating greater risk and complexity as time goes by.

Replacement of the system is considered prudent now as:

- the user interface, core functionality and data model has not been updated and is still written in legacy code
- operating an outdated and unsupported system has the potential to impact SA Water's ability to meet customer expectations and enable business growth.

Furthermore, as the CSIS product is used by only 3 organisations, Water Corporation (Western Australia), City of Gold Coast (Queensland) and SA Water, the costs of any research or product enhancements for the CSIS platform must be borne by this very small group of clients.

SA Water is proposing to replace its current billing system with a modernised billing platform by 2032, with further extension of the billing platform prioritised during RD28.

Replacement of the CSIS will:

- reduce the risks from the current legacy platform, which is nearing the end of its life
- enable the billing platform to have the capability and flexibility to grow and adapt to align to customer, billing, and other related strategies.

SA Water requires a total capital expenditure of $21.0 million and total regulated operating expenditure of $1.4 million over the RD24 period.

SA Water engaged on updating the CSIS platform at 2 CCG meetings in August and November 2022. Feedback at the first meeting was that the costs and benefits of the proposal (which was included with several others) were unclear. Feedback at the following session in November 2022 was more supportive, recognising the risks associated with deferral, with most members supporting progression in RD24. One member supported deferral to a future regulatory period due to the cost of the initiative.

8.2.1.3.2 Desktop productivity and end user computing

SA Water is dedicated to equipping its employees with the necessary tools and technology for their job performance, driving innovative approaches to meeting customer needs. SA Water's workforce is provided with computing devices, such as laptops, tablets and mobile phones, which are equipped with essential software and applications required for daily tasks. This enables connectivity and supports critical business functions such as plant monitoring, workforce management, job dispatch, and asset management.

To maintain the security and reliability of the devices, regular updates and maintenance of both hardware and software are necessary. Failing to update and maintain software poses risks, as it can lead to:

- loss of interoperability with upgraded technologies
- increased support costs and non-compliance with government information security policies
- heightened vulnerability to cyberattacks.

Therefore, an investment is required to ensure SA Water's standard set of device software receives regular updates and maintenance.

This initiative is part of a broader program to continually improve, modernise, and streamline SA Water's technology services to meet the evolving needs of the business and its customers. The key drivers for this investment include mitigating risks associated with outdated software, modernising infrastructure, ensuring business application availability, complying with technology operations and cybersecurity requirements, and providing a secure environment for data management and foundational technology services.

With more than 120 business services and 643 applications supporting SA Water's operations, this investment is crucial to maintain an efficient technology platform, enable business capabilities, and facilitate future changes. Adhering to the principles of current vendor support and avoiding legacy status, the investment ensures SA Water's systems remain up to date, integrate with other technologies, and are ready for future scalability.

Initial feedback from the CCG was critical of the proposed technology program when it was presented in August 2022, identifying that the benefits to SA Water were not clearly articulated. In response to this feedback, further work was undertaken on refining and optimising proposed investments and benefits. These adjustments saw subsequent support from the CCG for the investment program.

SA Water requires a total capital expenditure of $16.8 million and total regulated operating expenditure of $0.3 million over the RD24 period.

8.2.1.3.3 Hardware and infrastructure systems

SA Water manages a substantial portfolio of 643 applications that are essential for supporting critical business functions and managing business data. The majority of these applications, more than 500, are on-premises solutions relying on a combination of hardware devices and underlying infrastructure to ensure reliable and secure operation.

During RD24, some of these hardware and infrastructure systems will age, become outdated, and may no longer receive support from vendors. This situation poses a significant risk, as the reliability, stability, and resilience of these systems, along with the applications they support, are crucial for maintaining connectivity and supporting vital business operations such as plant monitoring, workforce management, job dispatch and asset management.

To address this challenge, this initiative focuses on refreshing, updating and modernising various components including:

- servers in SA Water's data centres
- virtualisation solutions for optimised server management
- operating systems
- relational database management systems
- virtual desktop capability and remote access solutions
- backup solutions for virtualisation
- identity and access management solutions
- IT monitoring tools
- multifunction printers and other hardware devices.

The upgrade and maintenance requirements of SA Water's technology assets are reviewed on an ongoing basis. Due to the rapid rate of technology change and the relatively short notice vendors provide regarding product changes, the forecast investment priorities are regularly reassessed. This is done to mitigate emerging risks and maximise the effectiveness of technology investments.

These hardware and infrastructure systems serve as critical foundational components of SA Water's technology environment, and as these assets age, the likelihood of failures and disruptions to business operations and customer service increases. As such, they will be a focus for investment in RD24, with this investment being part of a broader program aimed at continuous improvement, modernisation, rationalisation, and evolution of SA Water's technology services to meet the growing needs of the business and its customers.

As with desktop productivity and end user computing above, initial feedback from the CCG was critical of the proposed investment. Following refinement and optimisation of the proposed investment, CCG members supported this investment program.

SA Water requires a total capital expenditure of $14.2 million and total regulated operating expenditure of $0.2 million over the RD24 period.

8.2.1.3.4 Asset management platform system migration

The asset management platform is crucial for SA Water to effectively manage its network of water and wastewater assets. It enables effective planning and maintenance of these assets, which can result in reduced costs and increased profitability through making better informed decisions, such as for network expansion, prioritising maintenance work, and minimising faults and outages.

Currently, SA Water uses an on-premise version of IBM's Maximo product as its asset management platform. This system enables the maintenance and operation of network assets, provides asset planning information, schedules maintenance tasks, optimises the use of resources, and measures key performance indicators. It also serves as SA Water's asset register for non-linear assets including tanks and pump stations,) and integrates with other systems such as the Customer Relationship Management platform and mobile field solutions.

The existing Maximo version will reach end-of-life in September 2028, with no further enhancements or new features available after that point. To ensure continued support, access to new functionality, and to mitigate risks associated with outdated software, SA Water needs to migrate to the cloud-based IBM Maximo Application Suite (MAS).

This investment would establish a new cloud provider contract, migrate the existing on-premises Maximo platform to MAS, and cover associated costs such as software, hosting and managed services.

By doing so, SA Water will maintain a supported and available asset management platform, avoid disruptions to critical business functions and customer service, and be able to leverage expanded functionality, including predictive maintenance capabilities and artificial intelligence.

While the CCG was initially critical of this investment (requesting more information relating to the benefits and costs), adjustments made to the proposed program were supported when subsequently presented to the CCG.

SA Water requires a total capital expenditure of $10.5 million and total regulated operating expenditure of $1.1 million over the RD24 period.

8.2.1.3.5 Customer Relationship Management (CRM) system migration

The CRM system plays a crucial role in managing SA Water's interactions with current and potential customers. Effective customer relationship management can lead to reduced costs and increased profitability by automating processes that also enhance customer satisfaction and loyalty.

SA Water's existing CRM platform serves multiple purposes, including customer service, stakeholder relationship management, case management, customer fault reporting, and generating customer notifications. It acts as the primary system for the Customer Care Centre to interact with customers and manage their accounts. The CRM platform integrates with various other applications used by SA Water, such as the billing platform, asset management system, messaging platform, corporate website, and mySAWater, its customer-facing online account management portal.

The current CRM platform is based on an on-premises version of Microsoft's CRM/Dynamics 365 product. Microsoft has announced that support for SA Water's version will end in January 2029, meaning no new updates or assistance will be available after that date. To ensure system reliability, stability, and resilience, SA Water needs to evaluate options for its CRM platform and plan a migration to either Microsoft's Dynamics 365 (Cloud) or an alternative solution.

The key drivers for this initiative are to ensure the CRM remains operational without disrupting critical business functions or customer service, mitigate risks associated with unsupported software, and position SA Water to leverage enhanced functionality offered by the vendor while meeting cybersecurity compliance requirements.

The CCG was initially unsupportive of this initiative when it was presented in August 2022, but a revised proposal presented later in the year was supported.

The project is expected to span up to 3 years and requires a total capital expenditure of $12.6 million and regulated operating expenditure of $0.5 million over the RD24 period.

8.2.1.3.6 Application environment platforms

With a portfolio of 643 applications, SA Water organises its applications into 5 programs of work that align with specific business streams:

- enterprise applications
- customer-related applications
- integrated operations applications
- smart infrastructure applications
- data intelligence platforms.

To ensure its application environment effectively supports business processes and has the flexibility to enable future initiatives, continuous investment is required to maintain and modernise SA Water's technology services. This ensures SA Water can better support the needs of its business and customers.

The focus of this investment is on refreshing enterprise applications used by multiple business units. This will require integration with other applications, and rigorous testing. The refresh of the most significant applications, including for financial, billing and customer relationship management, have been addressed in individual expenditure initiatives and so are excluded from this initiative.

Achieving an ongoing effective and resilient application environment will involve a combination of activities, including:

- maintaining support and cybersecurity compliance for end-of-life software
- consolidating or decommissioning low-use and redundant applications
- achieving cost-saving measures through consolidation or using out-of-the-box solutions
- modernising applications or migrating them to new platforms

- optimising existing applications to reduce risk and maintenance costs
- improving overall business capabilities.

As with other parts of the technology program, the CCG initially did not support these proposed investments, but they were supported following adjustments.

SA Water requires a total capital expenditure of $13.4 million and total regulated operating expenditure of $0.2 million over the RD24 period for this initiative.

8.2.2 External obligations

SA Water is required to comply with its external obligations which include environment, safety, health, service and other regulatory obligations, codes and standards under its legislative obligations discussed in Chapter 2, or as directed by its owner.

Given the nature of these obligations, the CCG and PBEF have endorsed these initiatives as the first priority for investment in the RD24 submission.

To support meeting its external obligations over RD24, SA Water has determined it requires $751.3 million in capital expenditure, and $47.7 million in supporting operating expenditure.

8.2.2.1 Water

For SA Water to meet external obligations in RD24, it is seeking to make the following capital investments in its water services, as listed in Table 8-6. More detail regarding initiatives with an estimated bill impact of more than $1.00 for the average residential customer is provided in the sections following. [96]

Table 8-6 External obligation capital expenditure – water

Investment	**Description**	**Capital expenditure** ($m, real 2022-23)	**Operating expenditure** ($m, real 2022-23)
Water reticulation management – water quality	A regional mains cleaning and replacement program to ensure water supplied to customers is safe to drink and complies with Section 24 of the *Safe Drinking Water Act*. (Detailed further in Section 8.2.2.1.1)	$8.0	$3.5
Water mandated growth	The regulated contribution for water and wastewater main extensions and upsizing.	$8.4	$0.0
Water third party works	When a third party undertakes works near existing SA Water assets, they are required under the *Water Industry Act*	$27.0	$0.0

[96] Note bill impacts of initiatives will vary depending on the regulatory segment (water or wastewater), the type of asset (as useful lives vary from 7 – 100 years) and the type of expenditure (capital expenditure compared to operating expenditure).

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
	2012, Section 52, to notify SA Water if their proposed works poses any risk or interferes with the operation of existing SA Water assets. If SA Water deems it necessary to alter any of its assets either due to the assets obstructing the third party's works, for the protection of the assets, or for the safety of those working near the assets, then these alterations will constitute third party works. This program covers the balance of works not covered by funding from the third party.		
Dams and weirs management – dam safety	The investment to upgrade dams and associated assets to ensure asset integrity and safety. (Note Warren Dam and Mt Bold Dam are detailed as separate projects below).	$8.8	$0.5
Dams and weirs management – water quality	The investment needed to maintain the assets related to source water quality and catchment areas. The program ensures that water supplies are sustainable and secure and protected from contamination. Through condition-based assessments, this program outlines expenditure to maintain acceptable levels of service and quality to SA Water customers.	$7.9	$0.
Warren Dam safety upgrade	Upgrade Warren Dam and improve safety by ensuring stability during flood conditions.	$12.0	$0.0
Health and safety improvement (water portion)	This is the water component of a health and safety improvement program	$23.1	$0.2

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
	which covers all facilities statewide, including water, wastewater, stormwater, and recycled water assets. The program continuing from RD20 involves capital interventions to address non-compliant and unsafe assets to ensure a safe and compliant work environment.		
Mount Bold Dam safety upgrade project escalation	Continuation of the RD20 Mount Bold safety project. (Detailed further in Section 8.2.2.1.2)	$110.0	$0.0
TOTAL		**$205.3**	**$4.1**

Figures may not total due to rounding.

8.2.2.1.1 Water reticulation management – water quality

Under Section 24 of the *Safe Drinking Water Act 2011*, SA Water needs to ensure that the water supplied to customers is safe to drink. The enclosed water distribution systems used by SA Water protect the water from external contamination. However, the pipe wall structure can deteriorate over time, grow biofilm, and deposit sediment from the treatment process if the pipe cannot allow sufficient flows of water to achieve self-cleaning velocity.

The sediment sitting in the bottom of the pipe and the growth of biofilm on the pipe wall can harbour micro-organisms and other contaminants, which, when disturbed, can cause non-compliances with water quality standards. In addition, built-up sediment and local bacteria-driven corrosion (tuberculation) can lead to lower flows and eventual loss of supply to customers.

Through trials, SA Water has found that pipe flushing provides a method for managing sediment build up. In some cases, it only provides a short-term solution, (1-3 months), which results in repeat call outs and customer complaints. Manual cleaning can provide a more financially efficient and effective approach over the longer-term (3 to 4 years).

As such, the Corporation has determined that it requires funding for staff, vehicles, and equipment to monitor the network for sedimentation issues and to establish 2 cleaning teams to address regional water quality issues.

In addition, a capital works program would renew mains that are blocked too heavily and can no longer be cleaned. This would involve approximately 1.75 kilometres of water mains in the metropolitan network and 1.33 kilometres of water mains in the regional network.

To enable this, SA Water requires total capital expenditure of $8.0 million and total operating expenditure of $3.5 million over the RD24 period.

8.2.2.1.2 Mount Bold Dam safety upgrades

Mount Bold Reservoir, sited on the Onkaparinga River near Clarendon supplies water to metropolitan Adelaide customers and is SA Water's largest water storage facility.

This capital program, which commenced in RD16, is to upgrade the Mount Bold Dam and improve safety by addressing 2 failure modes related to:

- modelled flood conditions which can cause structural damage from the weight of water overtopping the dam
- earthquake condition design requirements.

The upgrade of Mount Bold Dam will be one of the largest dam projects delivered by SA Water.

The program was initially approved in RD20 to occur over 2 regulatory periods. Due to design changes and price escalations within the construction industry, there has been a material change in the expected cost to complete the upgrade. SA Water has determined that the cost of the project cannot be absorbed in proposed capital expenditure by sacrificing investment in other required activities.

As a result, there has been a change in the delivery timeframe to allow for the design options to be challenged and optimised. This delivery pathway provides more time to optimise the design to ensure it delivers an upgrade that elevates dam safety at Mount Bold and provides some flood attenuation measures, in a way that is financially prudent. Based on this review process, early construction work is expected to commence in 2027 within the RD24 period, with the upgrade completed in 2034. SA Water will continue to undertake daily inspections of Mount Bold to comprehensively assess the dam's condition and ensure the safety of the dam is maintained.

SA Water requires a total capital expenditure of $110.0 million for this project over the RD24 period.

8.2.2.2 Wastewater

SA Water is seeking to make the following external obligations capital investments listed in Table 8-7. More detail regarding initiatives with an estimated bill impact of more than $1.00 for the average residential customer is provided in the following sections. [97]

Table 8-7 External obligation capital expenditure – wastewater

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
Wastewater third party works (major and minor)	When a third party undertakes works near existing SA Water assets, they are required under the *Water Industry Act 2012*, Section 52, to notify SA Water if their proposed works poses any risk or interferes with the operation of existing SA Water assets. If SA Water deems it necessary to alter any of its assets either due to the assets obstructing the	$31.5	$0.0

[97] Note bill impacts of initiatives will vary depending on the regulatory segment (water or wastewater), the type of asset (as useful lives vary from 7 – 100 years) and the type of expenditure (capital expenditure compared to operating expenditure).

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
	third party's works, for the protection of the assets, or for the safety of those working near the assets, then these alterations will constitute third party works. This program covers the balance of works not covered by funding from the third party.		
Millicent Environment Improvement Plan	This project address the Environment Improvement Program compliance requirement issued by the Environment Protection Authority for the Millicent Wastewater Treatment Plant. This investment has been developed to meet a licence condition obligation under the *Environmental Protection Act 1993*. (Detailed further in Section 8.2.2.2.2)	$48.9	$0.1
Port Augusta East Environment Improvement Plan	This project addresses the Environment Improvement Program compliance requirement issued by the Environment Protection Authority for the Port Augusta East Wastewater Treatment Plant. This investment has been developed to meet a licence condition obligation under the *Environmental Protection Act 1993*.	$30.0	$0.2
Improve environmental performance of wastewater and recycled water systems	Several investments are required to improve environmental performance across both the wastewater and recycled water networks, and treatment plants. These investments are to maintain compliance with licence conditions and	$54.8	$2.2

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
	statutory obligations, which are largely driven by obligations set by the Environment Protection Authority. (Detailed further in Section 8.2.2.2.3)		
City of Tea Tree Gully sustainable sewers program	The capital investment required to construct a new wastewater network service to transfer customers from the existing Community Wastewater Management System to SA Water's sewer system. This investment strategy has been developed to meet an expected direction pursuant Section 6 of the *Public Corporations Act 1993*. (Detailed further in Section 8.2.2.2.1)	$284.0	$27.9
Wastewater network odour management	This program addresses odour issues associated with managing operations of wastewater networks across the state.	$21.5	$0.5
Health and safety improvement (wastewater portion)	This program covers all facilities statewide, including all water, wastewater, stormwater and recycled water assets. It outlines investments required to address safety risks.	$21.5	$0.0
TOTAL		**$492.0**	**$31.0**

Figures may not total due to rounding.

8.2.2.2.1 City of Tea Tree Gully sustainable sewers program

During RD20, SA Water has taken over ownership and operation of the City of Tea Tree Gully's (CTTG) community wastewater management system (CWMS), inclusive of approximately 4,700 properties that were serviced by a septic tank system.

In addition to taking over the system, SA Water has commenced a project to convert the CWMS network to SA Water sewer standard as directed by the state government. Commencing in RD20, the project includes the construction of gravity mains, wastewater pump stations and associated rising mains, and low-pressure sewer systems.

Progress to transition customers during the current regulatory period has been impacted by cost escalations and a requirement to manage on-property works (including connections to the existing sanitary drainage system and property reinstatement) as part of the upgrade. This expanded scope means that funds beyond those approved as part of the RD20 direction are required for this project to continue.

It has been confirmed that SA Water will receive a direction pursuant the *Public Corporations Act 1993* to undertake this activity.

During RD24, SA Water requires $284.0 million of capital expenditure and $27.9 million of operating expenditure to continue works that will convert properties to SA Water's sewer standard, operate the new sewer system and to decommission the existing CWMS network, with this activity projected to be completed in the early part of RD28. Operation of the remaining areas connected to the CTTG CWMS prior to transition is covered in Chapter 9.

8.2.2.2.2 Millicent Wastewater Treatment Plant Environmental Improvement Plan

The Millicent Wastewater Treatment Plant (WWTP), commissioned in 1968, is located south of the Millicent township and is operated under Environment Protection Authority (EPA) licence 1768. The plant currently serves more than 4,500 people from the township.

The WWTP uses relatively simple technology consisting of 4 elevated tanks and 3 lagoons to treat wastewater. The lagoons are operated in series or parallel, depending on low or high flows respectively. The effluent from lagoons 2 and 3 is further disinfected by chlorine before it is reused by a customer adjacent to the WWTP site to irrigate land for pasture and grow food crops from late spring to early autumn. The surplus effluent is discharged to the environment through a drainage channel that flows into Lake Bonney.

The plant currently has issues with operating above hydraulic design capacity resulting in high nutrients loads in outflows.

In 2018, the EPA placed a condition on the licence requiring the development of and compliance with an Environment Improvement Program (EIP) for the Millicent WWTP to minimise potential harm from discharge. The EIP is entered into under the *Environment Protection Act 1993* and, as such, is a regulatory obligation.

The proposed program of capital works seeks to make major treatment improvements to enable compliance with the EIP. This will involve constructing a new treatment process, maximising the ability for reuse of water and reducing discharge to the local environment.

SA Water requires a total capital expenditure of $48.9 million and total operating expenditure of $0.1 million over the RD24 period.

8.2.2.2.3 Improve environmental performance of wastewater and recycled water systems

SA Water has 29 wastewater systems and 24 recycled water systems across the state, which are operated and maintained in accordance with applicable licence and approval conditions to either discharge effluent or store, use and supply recycled water.

SA Water monitors effluent quality from all wastewater treatment plants (WWTPs) and recycled water treatment plants (RWTPs) to ensure the plants achieve internal targets and perform in accordance with licence or regulatory approval conditions. Ongoing monitoring, as prescribed in operating licences and approved programs, enables assessment of changes in influent and effluent quality, which may contribute to changes in environmental emissions (for example, overflow volumes, effluent volume and pollutant loading, and odour) or impact the ability to supply to recycled water customers.

Capital investments proposed for RD24 are largely driven by EIPs entered into under the *Environment Protection Act 1993* to meet regulatory obligations.

This initiative covers a general program of works at WWTPs, including at Whyalla, Finger Point, Naracoorte, Bolivar and Glenelg, to improve environmental performance and address identified performance shortfalls and constraints within SA Water's wastewater and recycled infrastructure. This is necessary to effectively deliver services and protect the receiving environment.

This program of works will include:

- achieving compliance with EIPs at Whyalla, Finger Point, Naracoorte, Bolivar and Glenelg
- improving effluent water quality performance across wastewater and recycled water systems at Finger Point, Normanville and Port Pirie
- installing flow meters at critical sites to improve accuracy of water balance by measuring inflows and outflows
- improving odour management
- real time lagoon monitoring and lagoon leakage management over metropolitan and regional sites
- monitoring and investigating emerging contaminant risks such as PFAS at Glenelg WWTP
- ensuring compliance with recycled water guidelines
- optimising activities to delay significant capital investment.

SA Water requires a total capital expenditure of $54.8 million and total operating expenditure of $2.2 million over the RD24 period. Individual sites that require major investment, such as Millicent, are planned and costed as separate initiatives, and so are not included under this program.

8.2.2.3 Technology

As an identified critical infrastructure provider, SA Water is required to comply with the Critical Infrastructure Centre's compliance requirements under the Commonwealth *Security of Critical Infrastructure Act 2018* (SoCI Act). This is in addition to state government requirements.

An ongoing investment in cybersecurity is required to effectively address and respond to cybersecurity threats as they evolve during RD24 to ensure technology systems that provide services to customers are reliable, available, and trustworthy, and that the Corporation meets its regulatory obligations.

These investments quantified in Table 8-8 ensure that business applications meet compliance obligations and enable SA Water to maintain current levels of service to customers. More detail regarding initiatives with an estimated bill impact of more than $1.00 for the average residential customer is provided in the sections following. [98]

Table 8-8: External obligation – technology

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
Cybersecurity	Address increasing cybersecurity risks and comply with the amended *Security of*	$22.6	$9.5

[98] Note bill impacts of initiatives will vary depending on the regulatory segment (water or wastewater), the type of asset (as useful lives vary from 7 – 100 years) and the type of expenditure (capital expenditure compared to operating expenditure).

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
	Critical Infrastructure Act 2018 (Cth). The primary investments are to improve identity and access management, provide cyber monitoring of the plant control network, and introduce cyber detection and prevention on mobile and cloud environments. (Detailed further in Section 8.2.2.3.1)		
Storage resilience	To separate corporate and operational technology data storage to meet SoCI and technology resilience requirements.	$9.5	$0.0
Operations security	Address increasing cybersecurity risks in the operational control systems environment and comply with the mandatory minimum security requirements of both the amended *Security of Critical Infrastructure Act 2018 (Cth)* and the *Security Legislation Amendment (Critical Infrastructure Protection) Act 2022 (Cth)*. The primary investments are to integrate the Cyber Security Operations Centre and Operations Control Centre, increase resilience of control signal transmission, and provide secure remote access.	$6.5	$0.6
Modernise SCADA architecture	To prevent increasing cybersecurity risks in the operational control systems environment, SCADA requires a consistent, scalable and rapid upgrade pathway to deliver critical security changes and support ongoing use of modern and secure versions. The primary investment	$15.5	$2.5

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
	is to simplify and standardise the statewide SCADA implementations. (Detailed further in Section 8.2.2.3.2)		
TOTAL		**$54.1**	**$12.6**

Figures may not total due to rounding.

8.2.2.3.1 Cybersecurity and compliance

Cybersecurity is a fundamental necessity in the delivery of safe and reliable water and wastewater services. Effective implementation is required to ensure business application systems remain available, and data is protected from unauthorised access or modification. In doing this, as an essential service provider, SA Water must ensure compliance with state and federal statutory requirements regarding managing cybersecurity risk, such as the federal government's compliance requirements under the *Security of Critical Infrastructure Act 2018 (Cth)*.

The RD24 cybersecurity investment proposals build on modest RD20 investment levels, with prudent and efficient uplift in funding required to address a significant escalation in threats to critical infrastructure driven by the degrading cyber environment, resulting in part from the war in Ukraine and unstable relations in the Asia-Pacific region.

Investments will focus on risk mitigation, with expenditure concentrating on identity and access management, cyber monitoring, and cyber detection and prevention.

For this uplift, SA Water will require capital expenditure of $22.6 million and operating expenditure of $9.5 million over the RD24 period.

8.2.2.3.2 Modernising SCADA architecture

The ability to monitor and control SA Water's critical water and wastewater infrastructure networks and assets remotely is a critical capability required to securely deliver services to customers. SA Water uses its Supervisory Control and Data Acquisition (SCADA) system to monitor, control and collect data from assets statewide.

The SCADA environment has grown organically over time as both the number of physical assets and use of technology has expanded. The increase in system growth and coverage has resulted in an increasingly complex and customised SCADA environment. Future growth pressures are expected to exacerbate this dynamic.

The current customised SCADA environment presents various challenges including:

- inflexibility, resulting in inherent inefficiencies and associated increases in cost to maintain, support and scale the system
- a complex upgrade pathway, resulting in difficulty maintaining an adequate SCADA cybersecurity posture in response to a landscape of increasing cyber threats
- SCADA environment instability, resulting in increased maintenance effort
- key person and vendor reliance risks to maintain the level of customisation implemented within the SCADA environment.

These factors all contribute to increased risks in maintaining the Corporation's capability to manage, monitor and control its operational control systems environment.

This investment initiative aims to implement a simplified and standardised SCADA reference architecture at SA Water. This will reduce reliance on key personnel and vendors, mitigate security risks, and improve system flexibility, scalability, and efficiency.

The deployment of the standardised SCADA reference architecture across all operational sites will lead to benefits including:

- reduced system customisation and complexity, resulting in a more flexible, scalable, and efficient operational control systems environment
- enhanced cybersecurity resilience against emerging threats that will enable future data-driven initiatives
- reduced effort for maintenance and support
- minimised risks associated with key personnel and vendor dependence.

Implementing the standardised SCADA reference architecture across all regions and sites will require significant resources over multiple years commencing in RD24, with a particular focus on maintaining a high level of cybersecurity resilience supported by the operations security investment.

SA Water requires a total capital expenditure of $15.5 million and total operating expenditure of $2.5 million over the RD24 period.

8.2.3 Enable growth

SA Water needs to expand its network to meet increasing demand and to service new developments which will connect new customers. To cater for growth, SA Water proposes to spend $625.3 million in capital expenditure, and $8.2 million in supporting operating expenditure over RD24, as detailed in Tables 8-9 and 8-10.

8.2.3.1 Water

For SA Water to meet some additional growth in RD24, it is seeking to make the following capital investments in its water services, as listed in Table 8-9. More detail regarding initiatives with an estimated bill impact of more than $1.00 for the average residential customer is provided in the sections following. [99]

Table 8-9 Growth capital expenditure - water

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
Growth program	A range of infrastructure projects within both water networks and water treatment plants that support growth in demand within SA Water's distribution area.	$22.8	$0.0
Wirrina water supply	Investments to reduce the range of risks associated with operating the Wirrina system in an area of customer growth.	$8.2	$0.0

[99] Note bill impacts of initiatives will vary depending on the regulatory segment (water or wastewater), the type of asset (as useful lives vary from 7 – 100 years) and the type of expenditure (capital expenditure compared to operating expenditure).

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
Summit system growth	Infrastructure investment requirements to support current and future water demand in the subsystem supplied by Summit Water Treatment Plant which covers the Adelaide Hills, Mount Barker and Alexandrina regions.	$48.4	$0.0
Metro north subsystem growth	Growth within the metropolitan north supply zone has been occurring at a rate greater than forecast. This investment progresses out-of-cycle capital investment to maintain services to existing customers while also meeting new growth in this area. This investment strategy has been developed to meet an expected direction pursuant Section 6 of the *Public Corporations Act 1993*. (Detailed further in Section 8.2.3.1.1)	$364.8	$0.4
TOTAL		**$444.2**	**$0.4**

Figures may not total due to rounding.

8.2.3.1.1 Metropolitan north subsystem growth

Most of the future greenfield growth in the Adelaide metropolitan area is expected in the metropolitan north supply zone. Growth in this zone has been occurring at a rate greater than the rest of South Australia for some time (Figure 8-4). The area has seen an average annual growth in number of connections of 1.37 per cent over this period, compared with 0.84 per cent for the rest of South Australia (based on SA Water connections data).

Figure 8-4 Annual growth in number of connections

In recent times there has been limited infrastructure investment in this area. Issues in the water network in this zone are currently arising that indicate the system requires augmentation. It has been determined that significant investment will be required in RD24 to support projected ongoing growth of new customers and to sustain the levels of service to current customers.

SA Water is proposing a range of solutions to satisfy the pressure requirements of the network, as determined through hydraulic modelling and expected future development. Solutions planned for RD24 growth include:

- duplication of approximately 37 kilometres of water mains
- installation of approximately 12 kilometres of new water mains
- replacement of approximately 23 kilometres of water mains
- new tanks
- 2 new pump stations
- upgrade of 2 pump stations
- new hydraulically operated control valves at 3 tank sites.

The selected solutions have been identified to deliver low life cycle cost solutions that provide the required customer service levels. SA Water expects this initiative to be the subject of a direction pursuant Section 6 of the *Public Corporations Act 1993*.

SA Water's Customer Challenge Group recognised the need for investment but expected that new customers in developments and also developers would pay for the benefits they received from the investment. Feedback from the Peak Bodies Engagement Forum for this initiative was supportive amongst members from the development industry, but less strong from environmental representatives.

SA Water requires capital expenditure of $364.8 million and operating expenditure of $0.4 million over the RD24 period in response to confirmation that a direction will be issued pursuant Section 6 of the *Public Corporations Act 1993* by the government for this initiative.

8.2.3.2 Wastewater

For SA Water to meet some additional growth in RD24, it is seeking to make the following capital investments in its wastewater services, as listed in Table 8-10.

More detail regarding initiatives with an estimated bill impact of more than $1.00 for the average residential customer is provided in the sections following. [100]

Table 8-10 Growth capital expenditure – wastewater

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
Bolivar activated sludge reactors capacity upgrade	To manage growth-related impacts on activated sludge reactors at the Bolivar Wastewater Treatment Plant. This proposed investment increases reactor capacity to meet growth in the	$30.0	$0.2

[100] Note bill impacts of initiatives will vary depending on the regulatory segment (water or wastewater), the type of asset (as useful lives vary from 7 – 100 years) and the type of expenditure (capital expenditure compared to operating expenditure).

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
	Bolivar catchment while meeting Environment Protection Authority licence conditions. (Detailed further in Section 8.2.3.2.1)		
Bolivar wastewater network growth	To manage growth impacts within the Bolivar wastewater network catchment area. While meeting growth demands, the investment will help SA Water to meet agreed levels of service, regulatory obligations of minimising overflows, emission from network to environment and public health impacts. (Detailed further in Section 8.2.3.2.2)	$68.3	$6.0
Wastewater and recycled water treatment plants support growth	This program manages growth related impacts on wastewater and recycled water treatment plants across the state. While meeting growth demands, the investment will help SA Water meet agreed levels of service, as well as regulatory obligations to minimise overflows and emissions from the network to the environment, and public health impacts.	$47.6	$1.4
Glenelg wastewater network growth	To manage growth impacts within the Glenelg wastewater network catchment area. While meeting growth demands, the investment will help SA Water to meet agreed levels of service, as well as regulatory obligations to minimise overflows and emissions from the network to the environment, and public health impacts.	$32.9	$0.1
Growth of the wastewater and	To manage growth impacts in wastewater and recycled water	$2.3	$0.2

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
recycled water networks	networks across the state. While meeting growth demands, the investment will help SA Water to meet agreed levels of service, as well as regulatory obligations to minimise overflows and emissions from the network to the environment, and public health impacts.		
TOTAL		**$181.1**	**$7.8**

Figures may not total due to rounding.

As with water projects, SA Water's Customer Challenge Group recognised the need for investment but expected that new customers in developments and developers would pay for the benefits they received from wastewater capital investment. Feedback from the Peak Bodies Engagement Forum showed that growth initiatives were strongly supported by the development industry.

Key projects within this category are detailed below.

8.2.3.2.1 Bolivar activated sludge reactor (ASR) capacity upgrade

The Bolivar Wastewater Treatment Plant (WWTP) is SA Water's largest wastewater treatment facility. It was commissioned in 1966 with a design capacity to treat up to 165 megalitres a day (ML/d) of annual average flows. Over the past 6 decades, it has undergone several capacity upgrades.

The Bolivar WWTP has been operating close to plant capacity since 2017 and surpassed the nominal average design hydraulic capacity of 165 ML/d with highest recorded annual average flows of 171 ML/d in 2016-17. Inflows are expected to steadily increase from 2021-22 onwards, as shown in Figure 8-5.

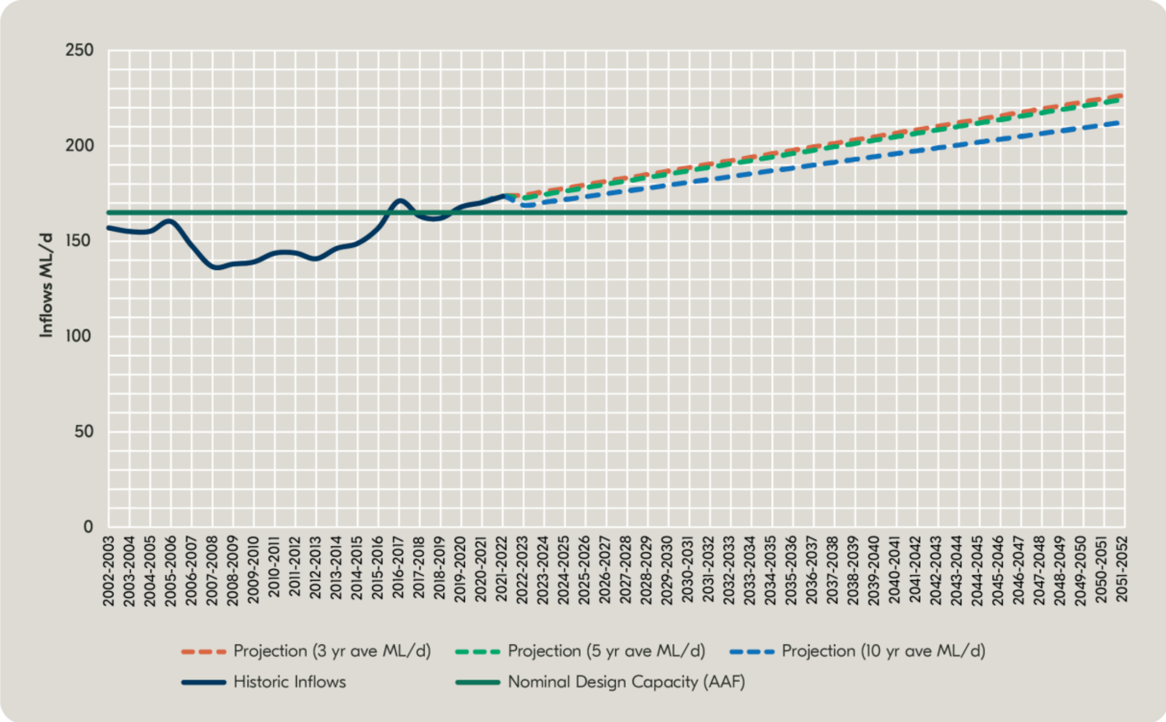

Figure 8-5 Historic and projected inflows at Bolivar WWTP

To manage this increase, this RD24 investment initiative at the Bolivar WWTP needs to focus on addressing capacity constraints in the ASR within the secondary stage of wastewater treatment. An upgrade to ASR capacity will address a decline in performance and ensure processing remains compliant with EPA discharge water quality obligations.

The primary objective of this investment is to enable growth in the Bolivar catchment. A staged and adaptive investment will ensure alignment with projected growth rates and minimise risks to meeting the levels of service while taking a system-wide approach to balance both capital and operational investments across the wastewater network and treatment plant.

SA Water requires capital expenditure of $30.0 million and operating expenditure of $0.2 million over the RD24 period.

8.2.3.2.2 Bolivar wastewater network growth

The Bolivar wastewater catchment is SA Water's largest metropolitan catchment area. Spanning 530 square kilometres, it services approximately 750,000 customers in the central and northern regions of Greater Adelaide.

This catchment has an identified requirement for ongoing investment to keep pace with growth. In the past 3 years, the Bolivar catchment has experienced an increase of 0.9 per cent growth a year in the annual connection rate (compared with the typical growth rate across South Australia of 0.2 to 0.5 per cent each year). Hydraulic modelling of network performance under current and future growth projections shows that existing wastewater infrastructure in the Bolivar wastewater catchment will be unable to cope with future demand without system augmentation.

Risks to levels of service caused by network constraints have been identified and analysed using SA Water's wastewater growth risk framework. Constraints with medium and high risks underwent detailed investigation with mitigation options and costs established for the preferred options.

Based on the findings regarding risk and the potential impacts from constrained assets, it was identified that key risks from failure to provide the necessary infrastructure to support growth are:

- increased environmental incidents from wastewater network overflows
- increased operating expenditure through the use of tankers to transport waste to reduce network overflows
- increased environmental and public health risks due to spillage or overflows to the environment and associated regulatory non-compliances
- increased odour complaints due to the propensity for odour in networks with limited capacity.

To balance network performance and cost to customers, SA Water is focusing on interventions that predominantly treat environmental risks associated with the growth in demand for wastewater services. This demand is resulting from higher wastewater discharge per connection. This approach will require capital interventions to manage high risks to the network being reprioritised to RD28.

SA Water requires capital expenditure of $68.3 million and operating expenditure of $6.0 million over the RD24 period.

8.2.3.2.3 Wastewater and recycle water treatment plants support growth

Demand for wastewater and recycled water services is expected to grow as South Australia's population grows. Additional demand may also be driven by more increased commercial and industrial activity, the promotion and use of recycled water schemes, or extreme weather events that cause groundwater or stormwater infiltration.

Analysis of SA Water's wastewater and recycled water treatment infrastructure's ability to cope with increased demand due to growth has been undertaken. While some high growth areas can be accommodated by existing infrastructure, in other cases, projected growth will result in wastewater treatment plant and recycled water treatment plant assets reaching capacity, which will subsequently affect new and existing customers.

Where SA Water's current infrastructure is unable to support future demand, a program of growth-related projects has been developed, involving treatment plant capacity upgrades.

As part of this longer-term program of works, investments during RD24 will initially focus on addressing risks from significant catchment growth impacting the Bolivar and Finger Point wastewater and recycled water treatment plants.

SA Water requires capital expenditure of $47.6 million and operating expenditure of $1.4 million over the RD24 period.

8.2.4 Improve services

To improve services, SA Water proposes to spend $161.6 million in capital expenditure, and $0.1 million in supporting operating expenditure over RD24, as detailed in Table 8-11.

Table 8-11 Improve services capital expenditure - water

Investment	Description	Capital expenditure ($m, real 2022-23)	Operating expenditure ($m, real 2022-23)
Metropolitan water quality improvement (RD20 continuation)	Investments that will deliver water safety and quality improvements for metropolitan Adelaide to reduce public health risks. This initiative is a continuation of the RD20 initiative. (Detailed further in Section 8.2.4.1)	$161.6	$0.1
TOTAL		**$161.6**	**$0.1**

8.2.4.1 Metropolitan water quality improvement

This investment to deliver water safety and quality improvements for the Adelaide metropolitan region to reduce public health risks in the long-term is a continuation of work approved in RD20. While it has an external responsibility driver, it will result in water quality improvement, so it is included under improve services.

SA Water uses a risk management framework endorsed by SA Health to determine management strategies that ensure the safety of its water supplies. System risk assessments for the Greater Adelaide region have identified a number of areas of the network at high or extreme risk. These risks relate not only to the quality of water leaving water treatment plants but its safety right through the network to the customer tap.

Reactive controls such as routine water quality monitoring and incident response are relied on to mitigate these risks in the short-term, but a longer-term approach is required for ongoing suitable management of these risks.

One of the risk management measures is disinfection and, SA Water disinfects its water supplies with chlorine, ensuring water remains safe all the way to customers' taps. Several parts of the metropolitan network fail to maintain target chlorine levels, which presents a risk of microbiological, viral and amoebic contamination within the network. In addition, levels of chlorine disinfection by-products in parts of the water network periodically exceed Australian Drinking Water Guidelines, which poses potential health risks for customers if it continues for an extended period.

The proposal will include a process upgrade at Barossa Water Treatment Plant, and Happy Valley Water Treatment Plant, which supplies half of Adelaide. Barossa Water Treatment Plant currently has an extreme risk for disinfection by-products and Happy Valley Water Treatment Plant has a high risk for disinfection by-products and bacterial/viral contamination. Upgrades at these plants will include the installation of ozone disinfection units and activated carbon.

SA Water requires capital expenditure of $161.6 million and operating expenditure of $0.1 million over the RD24 period to reduce the public health risk.

8.3 Efficiency

In an environment of escalating costs, SA Water has considered where it could make efficiencies within its capital expenditure. When also considering the growing maturity of regulation, SA Water has found it more difficult to identify and achieve efficiencies to the same levels in RD24 than it has in previous determinations.

While efficiencies are more difficult to achieve, SA Water is committed to reducing costs as part of efforts to manage customer affordability.

As part of Guidance Paper 3, the Commission sets out its expectations for efficiency, specifically:

> *"For SAWRD24, the Commission expects SA Water to propose expenditures that are net of efficiency and productivity gains…. For clarity, the Regulatory Business Plan should include information about the efficiency and productivity gains included in SA Water's proposed revenue requirement: these should be explained, quantified and split by capital and operating expenditure".* [101]

In keeping with this requirement, SA Water sets out the full costs of delivering its proposed initiatives as part of this submission, but clearly stating expected efficiencies to arrive at a net proposal for expenditure.

The Commission also sets out its expectation that:

> *"Compared to the SAWRD20 approach, the Commission considers that the planned approach to efficiency for SAWRD24, setting 'outcome' rather than 'input' targets, will provide SA Water with greater flexibility to run its business while achieving the outcomes required…".*[102]

Consistent with this expectation, SA Water presents its efficiencies as outputs within this submission.

SA Water has applied a stretch target for a general capital efficiency of $44.6 million to be applied to RD24 proposed capital expenditure. This is equivalent to around 2 per cent of capital expenditure (after expected Ministerial directions are removed), as shown in Table 8-12. These efficiencies are planned to be achieved through continued innovations in capital delivery approaches across the full portfolio.

Table 8.12 Capital expenditure efficiency

Capital efficiency	2024-25	2025-26	2026-27	2027-28	Total
($m, real 2022-23$)					
Total capital expenditure before efficiency	$722.1	$731.3	$720.0	$702.6	$2,876.0
Less expenditure for Ministerial directions	-$162.2	-$162.2	-$162.2	-$162.2	-$648.8
Remaining capital expenditure before efficiency	$559.9	$569.1	$557.8	$540.4	$2,227.2
2% efficiency	-$11.2	-$11.4	-$11.2	-$10.8	-$44.6
Capital expenditure after efficiency (excluding Ministerial directions)	$548.7	$557.7	$546.6	$529.6	$2,182.6

Figures may not total due to rounding

Note that efficiencies applied to operating expenditure are detailed in Chapter 9.

[101] ESCOSA (2022) '*SA Water Regulatory Determination 2024: Guidance Paper 3 - Assessing the Regulatory Business Plan*', ESCOSA, accessed 13 March 2023.

[102] ESCOSA (2022) '*SA Water Regulatory Determination 2024: Guidance Paper 3 - Assessing the Regulatory Business Plan*', ESCOSA, accessed 13 March 2023.

8.4 Total proposed capital expenditure

To deliver the initiatives detailed in Section 8.2, RD24 will have a primary focus on sustaining services and meeting external responsibilities. To deliver these initiatives SA Water proposes to make a total investment of $2,831.4 million (real 2022-23 dollars) over the 2024-28 regulatory period, with $1,849.6 million allocated to investment in water services and $981.8 million in wastewater services. This capital expenditure is summarised in Table 8-13 by driver.

Table 8-13 Capital expenditure by driver

Driver	2024-25	2025-26	2026-27	2027-28	Total
($m, real 2022-23$)					
Sustain services	$337.5	$346.7	$335.4	$318.1	$1,337.8
External responsibility	$187.8	$187.8	$187.8	$187.8	$751.3
Enable growth	$156.3	$156.3	$156.3	$156.3	$625.3
Improve services	$40.4	$40.4	$40.4	$40.4	$161.6
Efficiency	-$11.2	-$11.4	-$11.2	-$10.8	-$44.6
Total	**$710.9**	**$719.9**	**$708.8**	**$691.8**	**$2,831.4**

Figures may not total due to rounding.

SA Water is also forecasting to receive capital contributions from customers of $10.1 million (real 2022-23 dollars) over the RD24 period (allocated $7.0 million to water and $3.1 million to wastewater). This results in a proposed net capital expenditure of $2,821.3 million to be added to the regulated asset base, further detailed in Chapter 12.

Figure 8-6 provides a comparison of the percentage of capital expenditure assigned to each regulatory driver of the RD24 regulatory submission and the previous determination for RD20. In percentage terms, this shows SA Water is planning for a greater proportion of expenditure to enable growth in networks predominantly at the expense of improving services.

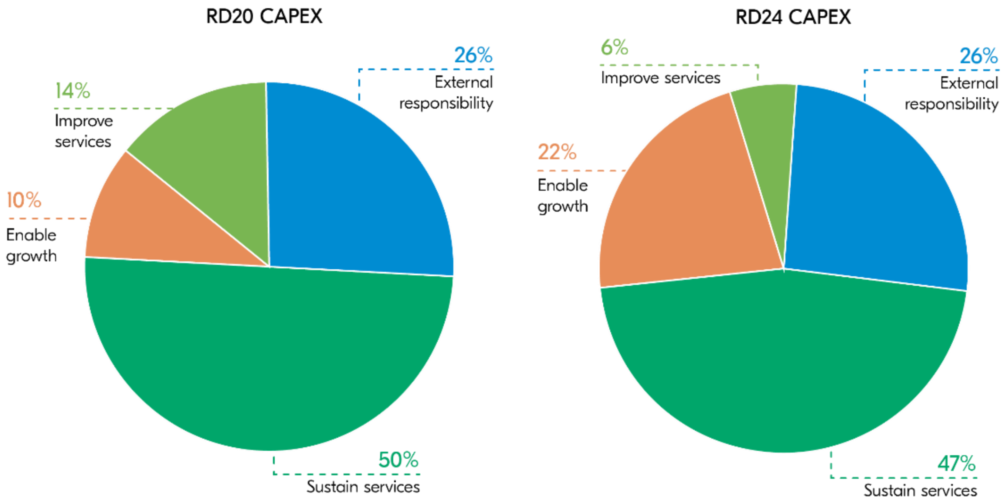

Figure 8-6 Percentage per key driver comparison RD20 vs RD24

The supporting operating expenditure relating to the capital expenditure is summarised in Table 8-14. These figures are net of efficiencies, which are further detailed in Chapter 9.

Table 8-14 – Supporting operating expenditure relating to capital expenditure

Driver	2024-25	2025-26	2026-27	2027-28	Total
($m, real 2022-23$)					
Sustain services	$3.9	$12.4	$20.9	$21.5	$58.6
External responsibility	$6.5	$8.9	$15.2	$17.1	$47.7
Enable growth	$2.8	$4.0	$0.7	$0.7	$8.2
Improve services	$0.0	$0.0	$0.0	$0.0	$0.1
Total	**$13.3**	**$25.3**	**$36.8**	**$39.3**	**$114.7**

Figures may not total due to rounding.

8.5 Risk position

As already stated in the discussion about SA Water's risk framework in Chapter 2, risk is an integral part of decision-making in SA Water. It is integrated throughout the organisation, informing activity from strategy through to implementation. As such, all capital investments (whether physical or technology-based) have been determined in consideration of risk and assessed for inclusion in RD24 having regard to:

- the risk SA Water will carry from not implementing an individual initiative in this period and the inherent risk achievable through implementation
- the Corporation's risk appetite as set out in its risk statements
- whether inclusion of an initiative is prudent, based in part on the level of unmitigated risk the organisation will carry should an initiative not proceed.

Under this risk-based approach, risks have been assessed as either low, moderate, high or extreme. SA Water's investments aim to address unacceptable high or extreme risks only. That is, risks to service standards, safety and compliance, and reduce them to medium or low.

In RD24, SA Water will be focusing investment on managing high to extreme risks to service delivery only and will therefore be carrying a higher than desired level of risk during the period. This approach is being taken partly due to the current period cost pressures driven by COVID-19, global conflict, and supply chain disruptions (detailed in Chapter 3) resulting in rising costs and deferrals of capital works in RD24. In addition, with higher costs projected to continue into the forward regulatory period, the Corporation is having to constrain the new capital expenditure planned in this period to manage customer affordability, focusing mainly on sustaining current services and external responsibilities.

As a result, the Corporation has prioritised capital initiatives in RD24 that address only high and extreme risks to help manage costs and keep bill increases as low as possible, while maintaining current service standards. However, this approach will not be sustainable in the longer-term. It is estimated that SA Water enters the RD24 period with more than $2.5 billion in high and extreme capital investment risks. Based on proposed investments in RD24 it is estimated that SA Water will still carry hundreds of millions of dollars in risk into the 2028 regulatory period and beyond. This estimate does not include any further asset deterioration, new external obligations, or cessation of technological support (as discussed in 8.2) that will occur between now and the commencement of the 2028 regulatory period.

In future regulatory periods, SA Water will need to make more significant levels of investment to ensure all risks can adequately be addressed so as not deteriorate further. For infrastructure and technology assets reaching the end of their useful life, replacement and renewal can be delayed for a short time but cannot be avoided. Expected deterioration to the network will need to be addressed and will grow worse with each regulatory period it remains unaddressed. For each period where these capital investments are not addressed they will cost more to resolve, creating even higher costs for future.

9 Proposed operating expenditure

SA Water's operating expenditure comprises a significant component of required revenue for any regulatory period. The following sections provide information on SA Water's operating expenditure requirements, including proposed operating expenditure, changes to base year, and efficiencies for the forward regulatory period. Where operating expenditure is connected to a capital expenditure initiative, this has been considered in Chapter 8. In developing the RD24 submission, SA Water has been formally requested by the State Government to reduce the operating revenue it is seeking through the RD24 submission process.

9.1 Operating environment

SA Water is responsible for operating and maintaining an extensive network of assets to deliver water and wastewater services to customers across a large geographical area, and in small and often remote communities. Figure 9-1 shows the spatial extent of SA Water's operations compared to other water utilities. Of the 13 major water utilities in Australia, SA Water is the only utility responsible for providing water services to almost an entire state, and, as detailed in Section 3.5, accordingly has the largest operating footprint.[103]

Map of Australian water service providers (2020-21)

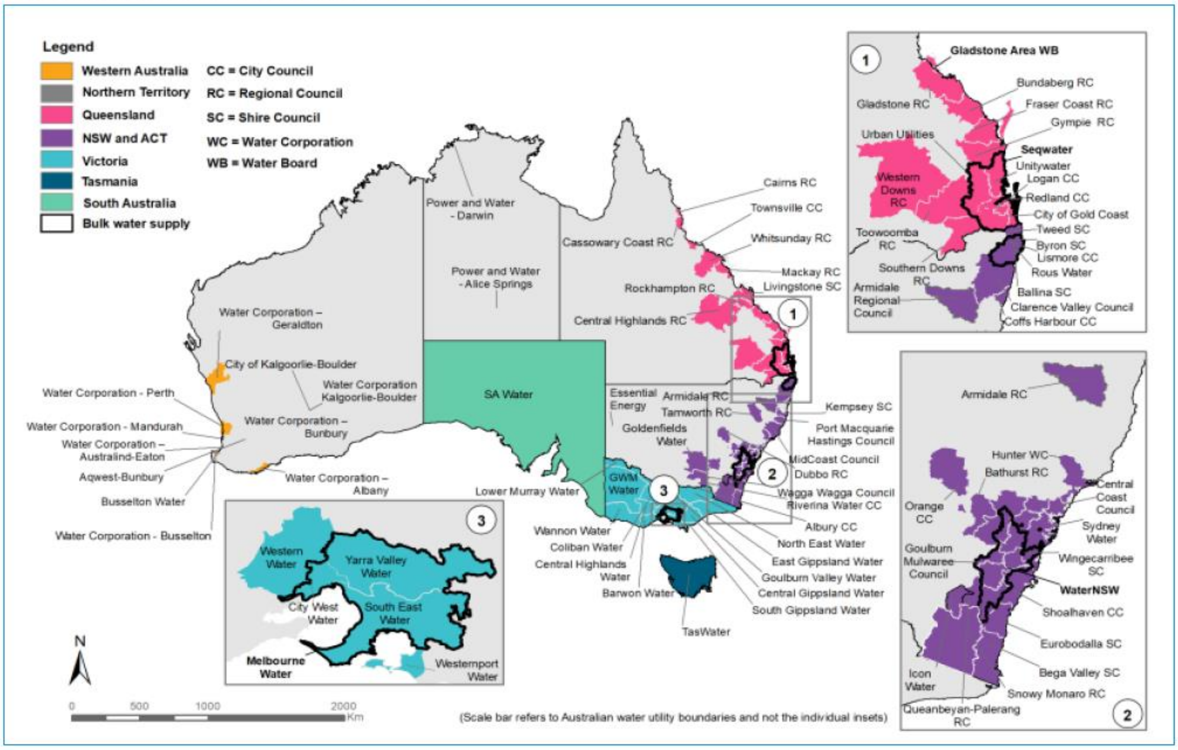

Figure 9-1 Map of Australian water service providers (2020-21)[104]

Consistent with this operating remit, SA Water has the largest system of water mains of any retailer in Australia and its sewerage network is among the largest.[105] Therefore, operating and maintaining infrastructure involves extensive operating requirements. The following sections provide an overview of the key operating expenditure across all services for 2021-22.

[103] KPMG (2022) *SA Water NPR Cost Benchmarking Study*, KPMG. Appendix 3.2
[104] The Bureau of Meteorology (BOM) (2022) *National Performance Report 2020-21 Urban water utilities*, BOM, Australian Government, accessed 13 March 2023.
[105] The Bureau of Meteorology (BOM) (2022) *National Performance Report 2020-21 Urban water utilities*, BOM, Australian Government, accessed 13 March 2023.

9.1.1 Employees

SA Water is a large employer in South Australia, employing approximately 1,700 people (around 1,650 full time equivalent staff) across metro and regional South Australia, in a range of professions including trades, construction and professional services.

9.1.2 Contract delivery arrangements

SA Water has contract delivery arrangements in place with several service delivery partners. Contract delivery is used where this has been deemed the best model for delivering core services in the most efficient and cost-effective manner possible at the current time. This includes:

- metropolitan field services, and production and treatment
- operation of the Adelaide Desalination Plant
- operation of the Riverland and Victor Harbor treatment plants
- various other contracted arrangements for technology services and maintenance contracts.

These arrangements are reviewed from time to time to ensure they are fit for purpose, present the most suitable market offering, and provide a better outcome than in-house delivery.

9.1.3 Energy

SA Water is one of the highest energy users in the state. This is in part due to having to operate the longest and most geographically dispersed water mains network of any Australian utility. This is exacerbated by the mix of supply sources which require transfer of large volumes of water over long distances from the River Murray rather than relying on major dam storages like water utilities in eastern Australia. Having such a large network requires SA Water to pump water across its operating footprint to deliver services to its customers, including substantial pumping to move it over the Mount Lofty and Flinders Ranges and over long distances with minimal falls. Combined with other asset and site energy needs, this equates to significant energy consumption to power operations and ensure continuity of service for customers.

SA Water aims to manage its energy use costs by optimising its pumping and energy use profile. It achieves this through wholesale market procurement, energy production, and the use of curtailment timing to optimise market prices.

Energy management practices have been integrated into daily operations controlled from the Operations Control Centre. These practices enable the centre to respond to rapidly changing energy prices, saving the Corporation an average of $16.8 million per year over the past 4 years compared to benchmark electricity retail arrangements.

Even with this approach, SA Water is still heavily affected by changes and volatility in the energy market. For instance, during hot weather, increases in total market demand and available supply in the wholesale market result in short-term spikes in electricity that must be carefully managed. However, the approach of procuring from the wholesale electricity market is still preferred. The Corporation has found the cost of lock-in contracts on the retail market, that include paying significant premiums for others to take on wholesale market risks on its behalf, are higher than those SA Water has achieved through wholesale procurement.

In 2021-22, SA Water consumed 405 gigawatt hours (GWh) of electricity within its regulated business with a total cost of $70.1 million. This equated to approximately 13 per cent of total operating expenditure.

9.1.4 Chemicals

SA Water is a significant user of chemicals for its water and wastewater activities. For water supply, chemicals are used to maintain reservoir water quality (for example, to prevent algal blooms), and in treatment plants to ensure drinking water supplied to customers through the reticulated pipe network is safe and of the required quality. Compliance with the Australian Drinking Water Guidelines (ADWG), required under statutory obligations set by SA Health, drives the types and volumes of chemicals used.

The mix of chemical type and volume required can change over time, with both the extensive length of water mains and quality of the source water directly influencing the type and amount of chemicals required to ensure ADWG compliance.

Chemicals are also used in wastewater processing and in the management of sewerage networks. Chemicals support biological treatment processes to achieve statutory discharge and odour requirements of the Environment Protection Authority (EPA) and to achieve statutory health requirements in recycled water.

9.1.5 Operations and maintenance

SA Water is an asset intensive business with a regulated asset base of more than $14 billion. This includes many different types of assets such as water and wastewater pipes, reservoirs and water storages, water and wastewater treatment plants, pump stations, desalination plants, land holdings, buildings, and technology assets. To ensure continuity of water and wastewater services, the extensive network of assets and sites requires ongoing proactive and reactive maintenance.

Decisions are continually being made on the costs and benefits of performing ongoing maintenance compared to asset replacement. The costs and therefore the benefits of maintenance approaches will vary through time as new innovations to maintenance and asset renewals are developed. Nonetheless, with all things being equal, the increasing average age of the water and wastewater infrastructure means that SA Water has needed to increase its preventative maintenance efforts. Preventative maintenance is performed to:

- decrease the costs in maintaining assets where reactive maintenance is more costly, or where catastrophic failure requires full asset replacement
- extend the life of assets, reducing the long-term cost of ownership and enabling asset renewals to be sequenced to avoid investment peaks.

Customers and key stakeholders strongly supported efforts to manage assets to reduce all-of-life costs of assets and to avoid cost spikes in bills.

9.1.6 Technology

Technology plays a critical role in the efficient delivery of services by SA Water to its customers. Across various aspects of its operations, technology enables remote monitoring of the network and assets, enhances customer services, and supports corporate functions.

Remote monitoring is a key area where technology delivers efficiencies for SA Water. By employing advanced monitoring systems, the business can remotely oversee the performance, condition, and integrity of its network infrastructure and assets. Data collection and analysis enable proactive maintenance and rapid response to potential issues. This approach minimises downtime, optimises asset performance, and ensures the reliable delivery of water and wastewater services to customers.

Technology also contributes to improved customer services. SA Water utilises customer-centric systems and applications that provide enhanced interactions and self-service options. Through web portals, customers can conveniently access their accounts, report issues, and receive updates. Automated processes streamline customer service operations, reduce response times, and increase overall customer satisfaction.

Moreover, technology supports various corporate functions within SA Water. Financial management systems, human resources tools, and administrative software facilitate streamlined internal operations. These systems handle tasks such as data management, reporting, and communication, enabling efficient workflows and promoting effective collaboration among teams.

While a large percentage of technology expenditure is capital expenditure, discussed in Chapter 8, operational expenses predominantly relate to software licenses and support, and increasing internet data requirements. These ongoing costs are crucial for maintaining and upgrading the software applications that underpin SA Water's operations.

9.1.7 Regulatory fees and equivalent charges

SA Water is a regulated entity that is required to pay various regulatory licences fees and equivalent charges. Some of the more significant annual fees in 2021-22 included:

- water planning and management charge of $32.345 million paid to the Department for Environment and Water (as required by the 2020 direction to SA Water pursuant to section 6 of the *Public Corporations Act 1993*)
- water retail licence fees of $8.272 million paid to ESCOSA (as per section 24 of the *Water Industry Act 2012*)
- reimbursement of $4.311 million in fees paid for copies of the valuation rolls, paid to the Valuer-General (as required by the 2020 direction to SA Water pursuant to section 6 of the *Public Corporations Act 1993*), an equivalent charge to ensure competitive neutrality
- catchment levies paid to the Department for Environment and Water (as required under section 78 of the *Landscape South Australia Act 2019*), which totalled $5.857 million in 2020-21
- EPA licence fees totalling $2.335 million (as required under section 48 of the *Environment Protection Act 1993*).

In 2021-22, fees and charges comprised approximately 10 per cent of SA Water's total operating costs.

9.2 Approach to efficiency

As part of Guidance Paper 3, the Commission sets out its expectations for efficiency, specifically:

> *"for SAWRD24, the Commission expects SA Water to propose expenditures that are net of efficiency and productivity gains…. For clarity, the Regulatory Business Plan should include information about the efficiency and productivity gains included in SA Water's proposed revenue requirement: these should be explained, quantified and split by capital and operating expenditure."* [106]

In keeping with this requirement, SA Water sets out the full costs of delivering its proposed initiatives as part of this submission, clearly stating expected efficiencies to arrive at a net proposal for expenditure.

[106] ESCOSA (2022) '[SA Water Regulatory Determination 2024: Guidance Paper 3 - Assessing the Regulatory Business Plan'](), ESCOSA, accessed 13 March 2023.

Guidance Paper 3 also sets out the Commission's expectations of efficiency regarding benchmarks and historic performance, specifically:

> *"in assessing the Regulatory Business Plan, the Commission will form a view on areas where SA Water's efficiency may be below relevant benchmarks or to reflect continuous improvement in systems and processes, with reference to the efficiencies that SA Water has historically been able to achieve."* [107]

In responding to this requirement, SA Water has sought independent external reviews of its operations from both KPMG and Stantec, which are discussed in greater detail in Chapter 3 of this submission, with summaries in Section 9.4. These independent analyses suggested that SA Water is already operating more efficiently than most of its water industry peers, and, in the case of Stantec's analysis, suggests SA Water is operating at or near the efficient frontier.

The Commission also sets out its expectation that:

> *"compared to the SAWRD20 approach, the Commission considers that the planned approach to efficiency for SAWRD24, setting "outcome" rather than "input" targets, will provide SA Water with greater flexibility to run its business while achieving the outcomes required…".* [108]

Consistent with this expectation, SA Water presents its efficiencies as outputs within this submission. These are detailed further in this chapter, and in chapter 8 relating to capital expenditure.

9.3 Base year

To assess the prudent and efficient level of operating expenditure for the forward regulatory period, ESCOSA requires SA Water to provide evidence for what the Corporation deems to be an efficient base year. ESCOSA indicated in Guidance Paper 3 that 2021-22 is an efficient base year for the RD24 period[109]. SA Water supports using this period as the base year for the following reasons:

- 2021-22 has the most recent full year audited financial statements available at the time of writing the regulatory submission
- 2021-22 reflects the step change increase in costs that have occurred through the COVID-19 pandemic, Ukraine conflict and domestic shocks which have caused significant increases in key input costs such as chemicals, materials, and electricity
- 2021-22 year did not see blackwater events, floods or significant fire events that could skew observed expenditure
- base expenditure is expected to continue at 2021-22 levels or further increase throughout the 2024-28 determination period (as further detailed in Section 9.3.2).

SA Water's actual operating expenditure incurred in 2021-22 is provided in Table 9-1. To be consistent with the treatment of expenditure in this RBP, the 2021-22 actuals have been converted to real 2022-23 dollars. Adjustments have also been applied to 2021-22 actual operating expenditure to derive a normalised base year as also shown in Table 9-1.:

- 2021-22 actual operating expenditure allocation split was adjusted between the regulated water and regulated wastewater segments of the business because of changes to the Cost Allocation Model (CAM) methodology used
- To provide a representative base year for RD24, the actual base has also been adjusted for:

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107 ESCOSA (2022) '*SA Water Regulatory Determination 2024: Guidance Paper 3 - Assessing the Regulatory Business Plan'*, ESCOSA, accessed 13 March 2023.

108 ESCOSA (2022) '*SA Water Regulatory Determination 2024: Guidance Paper 3 - Assessing the Regulatory Business Plan'*, ESCOSA, accessed 13 March 2023.

109 ESCOSA (2022) '*SA Water Regulatory Determination 2024: Guidance Paper 3 - Assessing the Regulatory Business Plan'*, ESCOSA, accessed 13 March 2023.

- differences between the regulatory treatment and accounting treatment of expenditure
- any abnormal or once-off operating costs or savings that occurred in 2021-22
- roll forward items.

Further information on each adjustment is provided in Sections 9.3.1and 9.3.2.

Table 9-1 2021-22 normalised base year (real 2022-23 $m)

Items	Chapter section reference	Total operating expenditure	Water operating expenditure	Wastewater operating expenditure
($m, real 2022-23)				
Total regulated operating expenditure Actual 2021-22 (as per regulated accounts)		$577.6	$413.3	$164.3
RD24 CAM realignment*	9.3.1.1	-$3.7	-$20.3	$16.6
Accounting adjustments				
Cloud computing	9.3.1.2.1	-$8.7	-$4.3	-$4.4
Leases including Build Own Operate Transfer (BOOT) arrangements	9.3.1.2.2	$21.3	$13.9	$7.4
Normalisation adjustment				
EBA one-off payment	9.3.1.3.1	-$1.6	-$1.1	-$0.5
Adelaide metropolitan contract delivery transition	9.3.1.3.2	-$2.2	-$1.2	-$1.0
Other once-off costs	9.3.1.3.3	-$27.8	-$16.1	-$11.7
Drinking water for regional areas	9.3.1.3.4	$1.1	$1.1	$0.0
Roll forward items				
RD20 efficiencies	9.3.1.4.1	-$6.5	-$3.2	-$3.3
RD20 asset and investment uplift	9.3.1.4.2	$11.2	$5.8	$5.4
Base efficiency target for RD24				
Base general efficiency	9.3.1.5	-$5.0	-$2.3	-$2.7
Normalised base for RD24		**$555.7**	**$385.4**	**$170.2**

Presented using the CAM for the fourth regulatory period. 2021-22 actuals converted to 2022-23 dollars using March consumer price index (CPI) of 5.1 per cent.

Figures may not total due to rounding.

9.3.1 Base year adjustments

SA Water's actual regulatory accounts (independently reviewed by PWC) have been used as the starting point for the 2021-22 operating expenditure base year assessment. While the 2021-22 actual operating expenditure is a reasonable and appropriate base year, SA Water proposes the following adjustments to normalise the base year to ensure it best represents a 'normal' operating year for RD24. Each adjustment and an explanation for why it is necessary to ensure a reasonable and appropriate base year, is provided below.

Some elements of the base year have been affected by the formal request from government for SA Water to reduce the operating revenue sought as part of its RD24 submission.

9.3.1.1 Cost allocation realignment

In determining the base year for RD24, the actual operating expenditure from 2021-22 is split between the regulated water and regulated wastewater segments of the business. The actual operating expenditure split was determined using the RD20 Cost Allocation Model (CAM).

The model's methodology was previously updated by SA Water for RD20. This update amended the CAM to use a consistent weighted average percentage allocation at the business group level. This revision was designed to reduce the complexity of the CAM while maintaining the overarching methodology.

For RD24, SA Water reviewed the CAM, and, as a result, further refined the methodology to increase the level of detail informing the allocations and to recognise changes in the organisational structure. This has resulted in a change in the allocation of base expenditure across water and wastewater.

A major driver of the variance in the water and wastewater allocation is the Adelaide metropolitan contract. The main reasons for the movement of base actuals from water to wastewater are:

- moving to separate contracts for managing field operations and treatment plants. Through this, individual contract expenditure can be reflected in the CAM allocation.
- a significant improvement in holistic reporting and tracking of data and information for the new contracts, giving more granular details on types of job, job costs and detailed splits of waste versus water jobs, not previously available.

The allocation informed by the CAM in RD20 was based on information from the previous contract with Allwater. In this case, costs were predominately apportioned in the water network and driven by the Field Operations expenditure base using 2018-19 data. These were based on work types and volumes used at the time.

As the previous contract combined both network operations, production and treatment, the same basis for the water and wastewater split was initially assumed for both new Adelaide service delivery contracts. However, as the contracts are now serviced by two separate operators, the CAM has been adjusted based on each contract's actual water and wastewater expenditure.

For example, the CAM allocation for production and treatment expenditure now reflects a more even apportionment between water and wastewater when compared to the previous CAM. This is evident in the 2021-22 actual expenditure, which is detailed in new reports developed to track and validate flow, chemical use and price at a more granular level.

The improvement in the level of data collected since the change in contract has also provided a more accurate representation of work volumes and job types. This has been proven by analysing the 2021-22 data, where a more even split of volumes and costs between water and wastewater jobs has been identified. SA Water has developed a financial monitoring report for field operations which tracks and categorises work into 84 field activities that are used to provide granular cost information.

Collectively these improvements have led to changes to the allocations for RD24. The update to the allocations has led to a reduction in base allocation to the water business with a corresponding increase to the wastewater business. A proportion was also reallocated to the non-regulated business. This movement reflects the current operations of the business based on the updated transaction data.

The updated allocation for 2021-22 is also a more accurate base for the mix between water and wastewater expenditure for future years.

9.3.1.2 Accounting adjustments

Accounting adjustments have been applied to alter actual operating expenditure for items that are treated differently for regulatory purposes compared to accounting purposes. These include items discussed in the following sections.

9.3.1.2.1 Accounting for cloud computing

In April 2021, the International Financial Reporting Standards Interpretations Committee (IFRIC) provided an agenda decision on accounting for configuration or customisation costs in a cloud computing environment. The decision determined that implementation costs for cloud computing projects should be included as an operating expense where they were previously treated as a capital expense.

In SA Water's case, treating these costs as an operating expense would create a price increase without any change in service or cashflow, with alignment to the accounting standards causing an approximate $15 bill impact to the average residential customer in RD24. SA Water believes customers should not pay higher bills to align with a change in accounting treatment for cloud-based services.

To ensure ongoing equitability, SA Water has chosen to treat cloud computing expenses as capital expenditure for allowable revenue purposes for RD24, consistent with previous determinations. Therefore, this item has been adjusted out of the base year operating expenditure and included in the capital expenditure instead. SA Water understands that this proposed approach is consistent with that being adopted by several utilities across the water sector.

9.3.1.2.2 Accounting for leases

As of January 2019, under Australian Accounting Standards Board standard number 16 (known as AASB 16), operating leases are required to be recognised on the balance sheet to provide transparency regarding company lease commitments. To best reflect SA Water's cash flow, and consistent with the ESCOSA-approved treatment in RD20, lease payments will continue to be treated as operating expenditure. Therefore, this item has been included in the base year.

9.3.1.3 Normalisation adjustments

Normalisation adjustments have been made to the base year to adjust the actual expenditure incurred to better represent a normal operating year. This has included adjusting for expenditure that was a one-off in 2021-22 and not expected to continue in future years, and for expenditure that is normally incurred but was not spent in 2021-22 due to unforeseen circumstances. These adjustments for 2021-22 are as follows.

9.3.1.3.1 Enterprise agreement payment

In 2021-22, SA Water entered into a new enterprise agreement that was ratified by Fair Work Australia on 18 February 2022. The agreement included a once-off payment to employees, which resulted in extraordinary labour expenses totalling $1.6 million. As this payment is not going to be incurred on an ongoing basis, it has been adjusted out of the base year.

9.3.1.3.2 Adelaide metropolitan contract delivery transition

In July 2021, SA Water transitioned from its Allwater Alliance contract to new contract providers, Service Stream (formerly Lendlease) for field services and SUEZ for production and treatment. As part of the closure of the Allwater Alliance contract arrangement, SA Water incurred some once-off closure and transition costs. These costs have been adjusted out of the base year.

9.3.1.3.3 Other once-off operating costs

Through a detailed review of the 2021-22 actuals, SA Water has identified several other once-off costs that have also been adjusted out of the base year. These includes items such as:

- site upgrades undertaken in various SA Water regional depots and workshops to bring them up to satisfactory condition ($2.1 million)
- decommissioning of various water and wastewater assets including Baroota chloramination station and control room ($1.9 million)
- construction of office spaces and meeting rooms to better accommodate COVID-19 and hybrid working requirements ($1.5 million)
- a high voltage switchboard investigation (146 statewide) to address arc flash safety issues and fault load issues ($2.0 million)
- digital adaptive planning activities carried out to ensure SA Water meets its regulatory responsibilities to provide healthy and sustainable water and wastewater services to its customers ($0.5 million)
- Adelaide metropolitan contract resource adjustment ($12.9 million)
- Base electricity adjustment requested from regulated revenue ($3.8 million)
- cleaning of bioreactor at Finger Point Wastewater Treatment Plant ($0.7 million)
- uplift for data capability for business intelligence backlog ($0.3 million)
- work carried out for waste management initiatives including Bolivar pipe store yard remediation and Service Stream compound extension ($0.3 million)
- technical analysis project relating to assessment on Water for Hydrogen ($0.1 million)
- replacing odour control units to improve current odour complaints ($0.1 million).

9.3.1.3.4 Drinking water for regional areas

The 2021-22 actual expenditure was below previous year’s levels due to unavoidable external factors limiting the work that would normally be conducted in regional areas. These unavoidable factors include the COVID-19 pandemic, (where access was limited for high-risk communities), contractor availability and community approval processes. Therefore, the base has been adjusted back to previous years’ levels to ensure service requirements can continue to be met across the 2024-28 determination period.

9.3.1.4 Roll forward items

Roll forward adjustments are made to account for differences between the base year 2021-22 actuals (incurred during the second year of the current regulatory period) and the operating allowance for 2022-23 and 2023-24 (budgeted for the last 2 years of RD20). They include efficiencies that compound each year of the regulatory period or operating expenditure that forms part of RD20, but which is yet to be fully incurred due to the timing of the base year. Accounting for these ensures an accurate starting cost base for RD24.

The following sections summarise the proposed adjustments for RD20 efficiencies and expenditure items.

9.3.1.4.1 RD20 efficiencies

A downward adjustment has been made to the base for the continuation of the 0.5 per cent efficiency target and IT-enabled business efficiencies required through the 2020 regulatory determination.

9.3.1.4.2 Asset and technology uplift

Adjustments have been made to the base for asset and information technology investment programs that are partially delivered or are scheduled for delivery after the 2021-22 financial year (as per the RD20 determination timing). Additional operating expenditure has been included in the normalised base for 2021-22 to account for several capital projects scheduled to be delivered in the second half of the current regulatory period. Ongoing operating expenditure associated with these programs will be required after the projects are delivered, and therefore it has been added to the normalised base.

9.3.1.5 General efficiencies to be achieved for the RD24 base

General efficiency targets have been identified in the base year of around $5 million per annum . This efficiency acknowledges that SA Water will strive to reduce costs to manage customer affordability. SA Water plans to achieve these efficiencies through a mixture of innovation and general business improvement initiatives in its operating activities.

This approach is consistent with Guidance Paper 3, which states:

> *"Compared to the SAWRD20 approach, the Commission considers that the planned approach to efficiency for SAWRD24, setting "outcome" rather than "input" targets, will provide SA Water with greater flexibility to run its business while achieving the outcomes required…".*[110]

The quantification of efficiency in percentage terms has been complicated through adjustments to the operating revenue sought by SA Water following a formal request from the State Government.

9.3.2 Justification for re-basing

In comparison to the RD20 approved operating expenditure allowance for 2021-22, SA Water's normalised base has increased by $30.6 million, shown in Table 9-2.

[110] ESCOSA (2022) '*SA Water Regulatory Determination 2024: Guidance Paper 3 - Assessing the Regulatory Business Plan'*, ESCOSA, accessed 13 March 2023.

Table 9-2 Comparison of RD20 operating expenditure allowance to actual normalised base

	Chapter section reference	Total	Water	Wastewater
2021-22 approved operating expenditure allowance - RD20 Final Determination		$535.3	$387.6	$147.7
Accounting adjustments				
Leases including Build Own Operate Transfer (BOOT) arrangements and impacts of the Cost Allocation Model (CAM)		$4.4	$1.6	$2.8
Roll forward items				
RD20 efficiencies		-$6.5	-$3.2	-$3.3
RD20 asset and investment uplift		$11.2	$5.8	$5.4
Re-basing items				
Electricity costs	9.3.2.1	$12.2	$15.4	-$3.3
Adelaide metropolitan contract delivery costs	9.3.2.2	$0.0	-$22.6	$22.6
Maintenance and other contractors	9.3.2.3	$2.2	$1.8	$0.4
Labour	9.3.2.4	$3.3	$2.4	$0.9
Chemicals	9.3.2.5	$1.8	$2.0	-$0.2
Materials	9.3.2.6	$1.3	$1.9	-$0.6
Insurance	9.3.2.7	$1.2	$0.8	$0.4
Eyre Peninsula desalination	9.3.2.8	-$5.7	-$5.7	$0.0
Base efficiencies for RD24				
Base efficiencies for RD24	9.3.2.9	-$5.0	-$2.3	-$2.7
Normalised base		**$555.7**	**$385.4**	**$170.2**

As detailed in Chapter 3, a significant proportion of this increase has occurred due to external factors, such as the enduring impact of COVID-19, global supply chain impacts and higher energy costs. An additional influence is the age and condition of assets operated and maintained by SA Water and under the Adelaide metropolitan delivery contract affecting expenditure.

Increases in operating expenditure incurred in 2021-22 greater than the regulatory allowance have been analysed by SA Water to determine whether they need to be a consideration in RD24 expenditure. Where it has been determined that specific operating expenditure will be sustained into the forward regulatory period, the justification for carrying these increases through in the base are provided in the following sections.

9.3.2.1 Energy

As discussed in Section 9.1.3, with electricity being a large component of operating expenditure, SA Water has taken significant and material steps to actively mitigate electricity price volatility through management of energy usage and procurement from the wholesale market.

The cost of electricity supply and use to support SA Water's operations is mainly comprised of the following components:

- wholesale electricity cost (volumetric, metering charges, pool fees, market charges and ancillary services charges)

- predominantly fixed network charges
- mandatory renewable charges.

Of these components, there were variances to the RD20 allowance for volumetric cost, network charges and renewable charges. Table 9-3 shows the RD20 allowance, actuals, and variance in real 2021-22 and real 2022-23 dollars for comparison. Following is an explanation for the variance for each component in 2021-22. Noting that SA Water will not seek to recover the full base uplift from regulated revenue in RD24.

Table 9-3 2020-21 electricity variances

	2021-22 $ real			2022-23 $ real		
$million	RD20 allowance	Actuals	Variance	RD20 allowance	Actuals	Variance
Volumetric	$21.0	$34.4	$13.4	$22.1	$36.2	$14.1
Network	$25.8	$26.8	$1.0	$27.1	$28.2	$1.1
Mandatory renewables	$7.8	$8.6	$0.8	$8.2	$9.0	$0.8
Total	**$54.6**	**$69.8**	**$15.2**	**$57.4**	**$73.4**	**$16.0**

9.3.2.1.1 Wholesale electricity costs (volumetric)

The RD20 allowance for electricity for 2021-22 was set by ESCOSA based on a set of assumptions including 358,080-megawatt hours (MWh) usage, and wholesale market price of $62.93 per megawatt hour (MWh) shown in Table 9-4. This equated to a revenue allowance capped at $54.6 million.

Table 9-4 Wholesale electricity variance RD20

	RD20 allowance	Actuals	Variance
	2021-22 $ real		
Volume MWh	358,080	404,844	46,764
Price $/MWh*	$62.93	$65.28	$2.35

While the actual average South Australian wholesale market price for the same time period was $104.35 per MWh, the average wholesale price SA Water achieved was $65.28 per MWh (Figure 9-2). SA Water was able to achieve this average wholesale price, which is close to what ESCOSA projected, through planning and load management as already discussed in Section 3.1.3.2. Without SA Water proactively managing the risk of volumetric energy costs and instead accepting the prevailing market rate, expenditure would be $16.7 million higher in 2021-22, all else being equal.

However, SA Water's actual volume of electricity used varied considerably from ESCOSA's projection, with SA Water's actual electricity use in 2021-22 at 404,844 MWh, more than 13 per cent higher than the allowance set by ESCOSA in RD20. This was due to above average demand predominantly driven by weather factors when compared to the same conditions that occurred for the RD20 base year of 2018-19. The factors influencing demand were unavoidable and will continue to vary from year to year. As a result of this much higher volume and the marginally higher wholesale price achieved, SA Water expenditure in 2021-

22 was $16.0 million higher (in real 2022-23 dollars) than the allowance for RD20. This includes a $1.5 million increase in ancillary charges. Market charges and metering costs also increased by $1.5 million.

Figure 9-2 highlights the significant increase in annual average South Australian wholesale market price between 2020-21 and 2021-22 (increased by 133 per cent) and the variability in the average annual market price since the start of economic regulation.

Figure 9-2 Historic average electricity prices (pool price and SA Water achieved price)

SA Water's actual electricity costs due to volumetric consumption were approximately $14.1 million higher (in real 2022-23 dollars) when compared to the RD20 allowance for 2021-22 set by ESCOSA. These volumes, prices and market charges are expected to continue (and increase) into RD24 as detailed in Section 9.6 of this chapter.

9.3.2.1.2 Network Charges

The network supply charges comprise an SA Power Networks tariff schedule and an ElectraNet tariff schedule. These charges have increased compared to the allowance amount set in RD20, which has contributed to a $1.1 million increase to required expenditure in 2021-22, mainly due to direct transmission charges.

Additional to this increase in 2021-22 actuals, costs have increased by $6.1 million due to a 25 per cent increase in the regulated network supply charges between 2021-22 actual spend and 2022-23 year-end forecast (as of January 2023). This cost cannot be mitigated through energy management.

There is also an estimated $0.5 million increase in real terms to the cost of network supply charges from ElectraNet beginning in 2023-24, following the establishment of a modern transmission connection agreement.

The above increases are noted in Figure 9-3 showing the combined electricity fixed charge since 2018-19. This highlights the regulatory network charges increase of 25 per cent between 2018-19 and 2019-20 and increase of 50 per cent between 2018-19 and 2023-24.

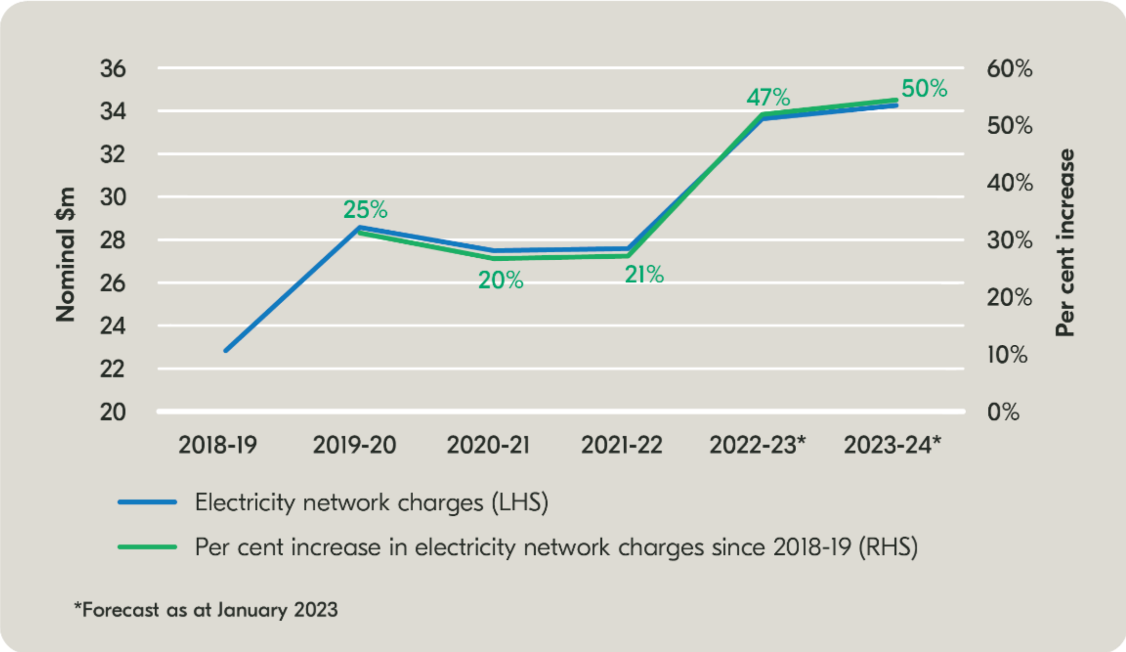

Figure 9-3 Historic and forecast electricity fixed charges

9.3.2.1.3 Mandatory renewables charges

Under the *Renewable Energy (Electricity) Act 2000 (Cth)*, SA Water is obliged to surrender Large-Scale Generation Certificates (LGCs)and Small-Scale Technology Certificates (STCs) to the Clean Energy Regulator in proportion to the volume of electricity purchased in each calendar year. SA Water calculates the cost of acquiring the required number of certificates to meet its obligations under the legislation.

In 2021-22, an additional $0.8 million of mandatory renewable charges were incurred compared to the ESCOSA allowance, driven by additional electricity consumption-related renewables costs.

9.3.2.1.4 Overall electricity costs

Although SA Water takes significant and material steps to manage electricity prices and use (achieving volume-weighted prices below the time-weighted average pool prices), the above factors have resulted in a net increase to the allocated spend on electricity. Market prices on the Australian Stock Exchange energy futures market are forecast to remain high in the first 3 years of the next regulatory period. These futures projections have been used to forecast future electricity prices for SA Water.

The 2021-22 actual electricity expenditure provides a more accurate representation of the costs borne and electricity use required to maintain a level of service to SA Water's customers compared to the allowance set by ESCOSA as part of RD20. An adjustment providing additional base expenditure for the RD24 period is sought. This adjusted base has been accounted for when determining the revenue sought in the electricity business case in Section 9.6.1.1, with total expenditure for RD24 based on modelling.

9.3.2.2 Adelaide metropolitan contract – ongoing delivery costs

Beginning in 2011, the delivery of field services and the operation of 5 water treatment plants and 5 wastewater treatment plants in the Adelaide metropolitan area were undertaken by Allwater. This contract concluded at the end of its 10-year period on 1 July 2021.

Before this contract ended, the decision was made to move to a new delivery model, with separate contracts and arrangements for the metropolitan field services and plant operation. This decision was informed by consultation within the organisation, with other utilities regarding their approaches, and benchmarking against best practice delivery models. SA Water deemed a change to the contract model during the regulatory period was prudent to deliver better, more efficient long-term outcomes for its customers.

Following an extensive open-market and competitive procurement process, SA Water awarded 2 contracts that commenced on 1 July 2021 to support the delivery of services in metropolitan Adelaide.

SUEZ was contracted to operate the 5 water treatment plants and five wastewater treatment plants, and Service Stream was contracted to deliver field services that support the maintenance of approximately 9,200 kilometres of water mains and 7,500 kilometres of wastewater mains.

Because the value of these contracts was established through a competitive, open book process, which included participation by incumbents, it is considered an efficient mechanism to deliver the best value for SA Water customers.

Notwithstanding this process, and, based on actual expenditure in 2021-22, SA Water determined that an additional $12.9 million adjustment above the 2021-22 allowance would be required for Adelaide metropolitan contract delivery costs. The field operations contract contributes $11.9 million to this adjustment and the production and treatment contract contributes the remaining $1 million. The production and treatment portion of this adjustment relates to an increase in chemical purchase price.

The increases during 2021-22 in the field operations contract were driven by an increase in job volumes, in which the ageing of assets is a contributing factor together with cost escalations for inputs as described in Chapter 3. The following provides context and reasoning for the increase related to job volume.

SA Water recognises that these operating increases are considerable in the context of SA Water customer bills. Furthermore, in the context of only one year of data from the field operations contract during 2021-22, there is limited opportunity for SA Water to analyse trends in costs and activities.

SA Water is not proposing to recover this increase from regulated revenue in RD24.

9.3.2.2.1 Field operations job volumes

Adelaide's metropolitan field services deliver more than 100,000 water and wastewater work activities each year in metropolitan Adelaide. The majority of these are for reactive works such as responding to faults.

The field services contract is volume-based where SA Water costs are linked to the number of work activities performed by the contractor. About 80 per cent of the total volume are generated directly by customers as reactive works which cannot be avoided or deferred without compromising service standards. The balance of work is proactive, which functions to mitigate the number of reactive jobs required and to maximise the value that the Corporation achieves from its capital investments.

For the RD20 forecast, the field operations contract budget was based on job volumes experienced in 2018-19, as this was considered, at the time, to be a "typical" year for job volumes. RD20 volumes were forecast to be 102,211, however, the 2021-22 actual volumes of jobs in total were 105,399, representing an increase of more than 3 per cent.

Through RD20 to date the number of reactive jobs required has increased, therefore driving an increase in expenditure. Specifically, compared to budgeted for volumes (2018-19) there has been a 47.1 per cent increase in the number of wastewater work activities, or jobs, overall. The difference between budgeted and actual work volumes during 2021-22 is shown in Figure 9-4.

In part, this increase is expected to have been driven by the increasing age of the wastewater network. However, age increase alone is unlikely to explain the large increase of more than 47 per cent. Further drivers of the increase could include:

- weather (where wet conditions are associated with additional wastewater network work orders)
- changes to the work profile in the final year of the Allwater contract
- COVID-19-related changes to the geographic and time profile of customer's network use and the increased use of wet wipes that create blockages in the system.

Growth will also have increased the number of workorders by around 4 to 5 per cent.

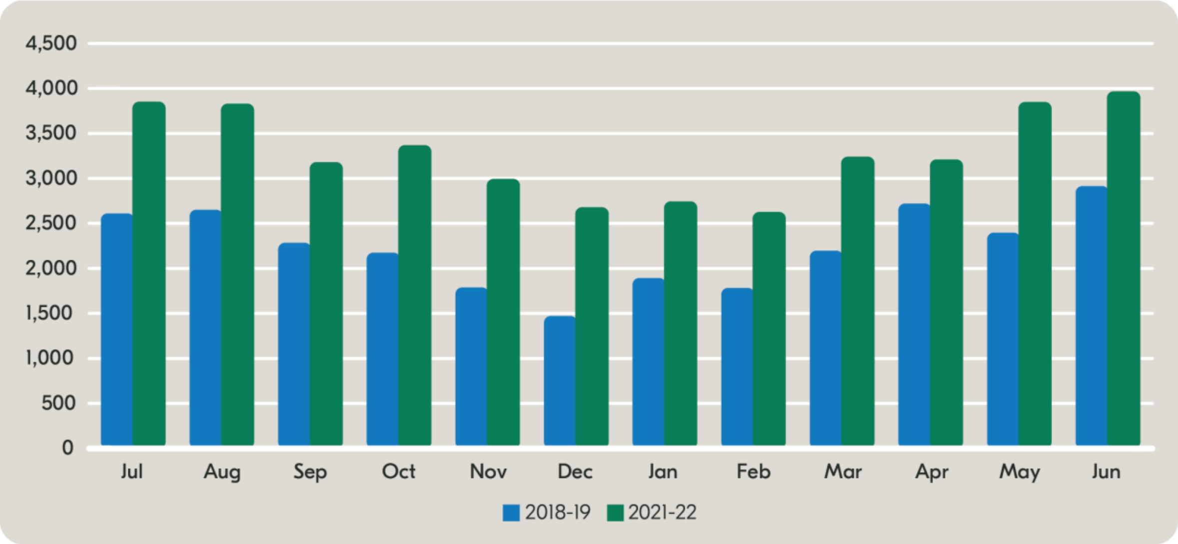

Figure 9-4 The number of metropolitan wastewater events in 2021-22 compared to budgeted

While the number of wastewater jobs has increased, the number of water jobs has decreased, reducing by 9.8 per cent reduction in 2021-22 when compared to budgeted volumes based on 2018-19. Drivers for this decrease could include weather (where wet conditions are associated with fewer water network work orders), changes to the work profile in the final year of the Allwater contract, or COVID-19-related changes to the geographic and time profile of customer's network use. These assets would also be affected by age and associated increases in the frequency of water-related jobs.

This decrease in water network jobs in 2021-22 is associated with a $5.6 million reduction in water network expenditure, whereas the increase in wastewater job volumes of 47 per cent above the original allocation resulted in a $17.5 million increase in wastewater expenditure. This results in a total adjustment of $12.9 million from 2021-22 related to the Service Stream contract.

SA Water has considered managing this increase in reactive works on the wastewater network within existing budget by deferring proactive works. But using this operate-to-failure approach to manage costs, increases the risk that wastewater events will escalate and result in more expensive repair options, such as those requiring dig-up activity or extensive field investigations. This will affect service standards compliance and create more clean-up requirements for customer properties and homes affected by wastewater overflows. Furthermore, an operate-to-failure approach is at odds with feedback received in consultation with customers and key stakeholders who have indicated a preference for investing upfront to reduce whole-of-life costs.

The preferred preventative maintenance approach also has the potential to reduce reactive works and extend the life of assets. As such, SA Water continuously looks for ways to optimise and innovate the types of preventative programs to reduce the frequency of reactive works and the overall cost of jobs, noting that reactive jobs are typically more expensive than preventative maintenance activities.

SA Water also recognises that the observed pattern of works and costs incurred are significantly different to those projected at the commencement of the new contract.

SA Water will not seek to recover this from regulated customers.

9.3.2.2.2 Age of assets and material used

The age of an asset and its material properties can influence the complexity of individual work activities, or jobs. As jobs become more difficult, they typically become more costly to repair. These issues are experienced across both water and wastewater assets. This complexity can result in more catastrophic failures (such as major breaks rather than slow leaks) or require larger excavations and more time-consuming repairs. They can also require more frequent interventions, raising the cost beyond the agreed contractual rates. Costs above the agreed rate are passed to SA Water through a commercial mechanism called an adjustment event.

For water assets, while there has not been an increase in the overall number of water jobs, there has been a substantial increase in the complexity of the individual jobs, including those involving asbestos cement pipe that must be carefully managed for public health reasons. As can be seen from the age profile for water main assets shown by Figure 9-5, a significant portion of assets are aged between 40 and 70 years. This suggests a large proportion of the water asset network is in the mid- to upper-end of its useful life.

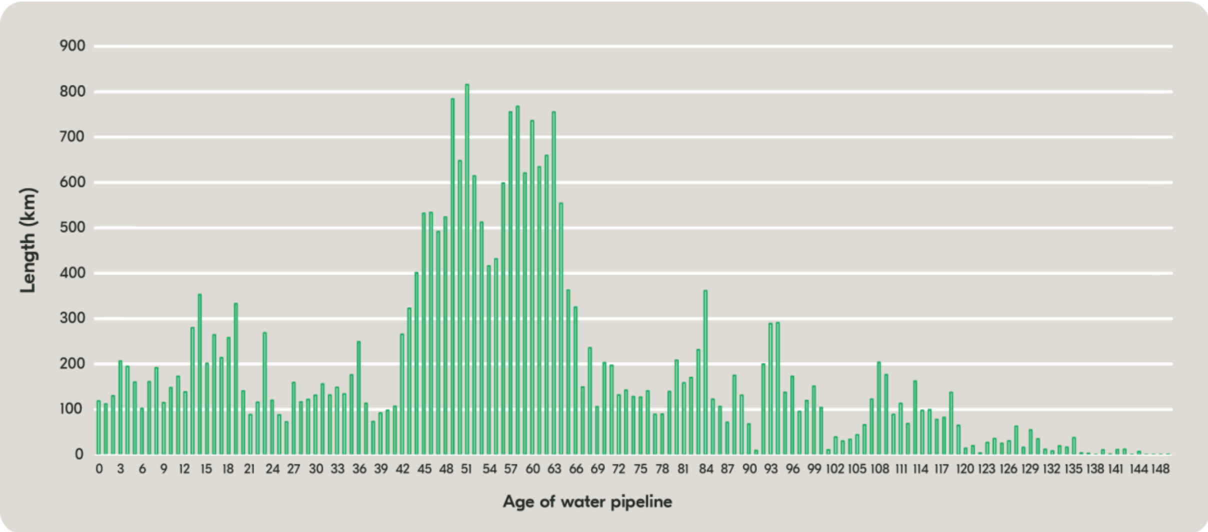

Figure 9-5 Water main age profile

This age profile can contribute to the complexity of large, reactive water network repairs and subsequent increase in costs above the contractual rate. For example, in 2021-22, there were 139 water-related adjustment events with the top 10 jobs contributing to more than $1.3 million in total cost.

SA Water's wastewater assets, while experiencing a steady increase in age since 1980 (Figure 9-6), are, on overage, in the mid to upper end of their expected useful life. The majority (approximately 60 per cent) of wastewater pipe assets are older than 45 years old, with most between 40 and 70 years old.

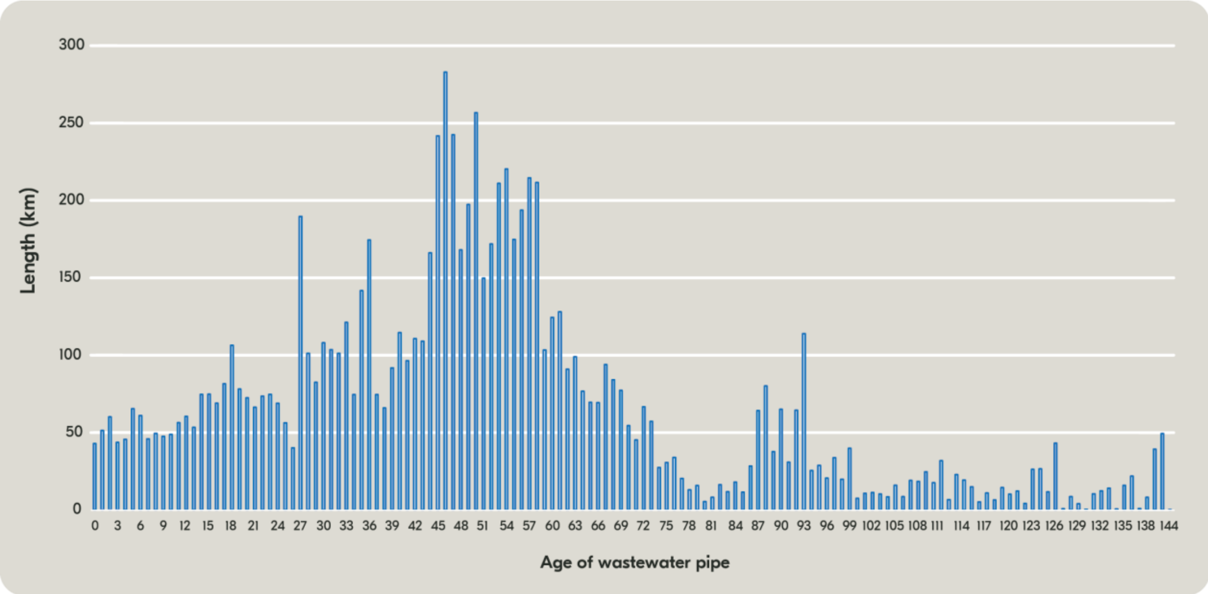

Figure 9-6 Wastewater main age profile

While modern design standards for new buried pipe installations typically require a design life of about 100 years, many older wastewater pipes are more significantly impacted by external or environmental factors including tree root intrusion, or hydrogen sulphide corrosion. This can reduce the performance and the expected useful life of these assets.

For example, ceramic (vitreous clay) pipes are more prone to tree root-related failures, escalating performance-related issues over their useful life. These pipe materials account for approximately 52 per cent of total wastewater pipe length (Figure 9-7). The prevalence of ceramic pipework, combined with decreasing asset performance with age, increases the proportion of the wastewater network assets progressively becoming more expensive to operate and maintain. This trend is expected to continue in the coming years.

SA Water has introduced strategies to sustain the operational life of assets and manage the consequential financial impact to maximise the whole-of-life value achieved from these assets, while reducing the long-run operating investments required. These strategies will be continuously refined to respond to changing asset and environmental conditions, novel ways of addressing issues coupled with asset investment strategies supported by preventative maintenance regimes are discussed in Section 9.2.2.3.

The impacts of managing operations through 2021-22, as detailed in this section, will be ongoing, with SA Water data indicating that the work volumes and job-type trends observed thus far in this regulatory period will continue to apply in 2022-23. As the average age of infrastructure continues to increase, greater preventative and reactive intervention will be required to avoid performance declines.

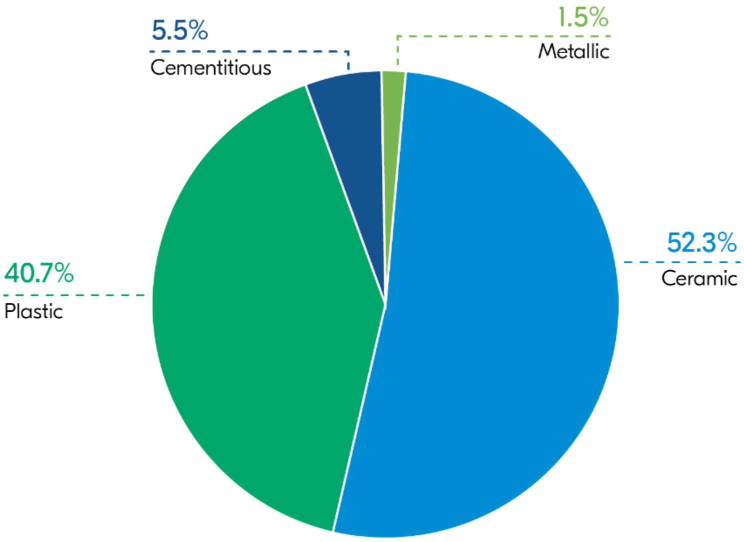

Figure 9-7 Wastewater pipe material comprising SA Water's network

9.3.2.2.3 Chemicals

Chemical spend comprises almost a quarter (23 per cent) of total operational spend in the production and treatment alliance metropolitan contract.

SA Water's chemical contracts are jointly negotiated and held between SA Water and its metropolitan contract partner to ensure best procurement outcomes. As such, the factors affecting chemical prices and driving an increase in expenditure relate to both SA Water and its contract partners in metropolitan and regional areas. This has contributed an additional $1.0 million to the base. Chemical cost increases (not related to the metropolitan contract) are discussed in more detail in Section 9.3.2.5.

9.3.2.2.4 Adjustment to base uplift

SA Water will not be seeking base operating expenditure uplift for the Adelaide Service Delivery Contract through regulated revenue. This decision is reflected in Table 9-2.

9.3.2.3 Maintenance

In addition to operational activities (Section 9.1.5), SA Water undertakes regular maintenance that assists in maximising the long-term value that SA Water achieves from its capital investment and to reduce operational costs. Additionally, some maintenance forms a statutory obligation and is required to ensure the Corporation meets its external obligations.

An additional $2.2 million (incurred in 2021-22) is required to support uplift in maintenance activities as part of SA Water's ongoing efficient base when compared with the allocated RD20 allowance.

This additional uplift relates to regional maintenance and is primarily a function of increased maturity within this maintenance program, where predictive maintenance activity can reduce total life cost.

As with operations efforts (Section 9.2.2.2), maintenance efforts are predominately tied to asset age and condition, where ageing assets require greater maintenance than newer assets. Accordingly, as the age of assets increase, so does the effort required to satisfactorily maintain them.

SA Water will adopt different maintenance strategies at different stages of the asset lifecycle. These are informed by asset condition and includes both preventative and corrective maintenance. This approach is informed by observations that the risks, service continuity impacts and costs associated with sustained downtimes for repair or replacement are greater than the investment required for a maintenance program.

SA Water's ageing asset profile has required increasing levels of corrective maintenance, with a more frequent schedule of preventative activity. While this is most easily seen in linear pipe assets, with their comparatively simple construction and estimated life, it also affects non-linear assets, such as tanks and pump stations. Non-linear assets condition measurement is complicated by the number of component parts that can comprise assets, and the ability to replace or renew these. Nonetheless this complex (Figure 9-8) informs planning and prioritisation activities.

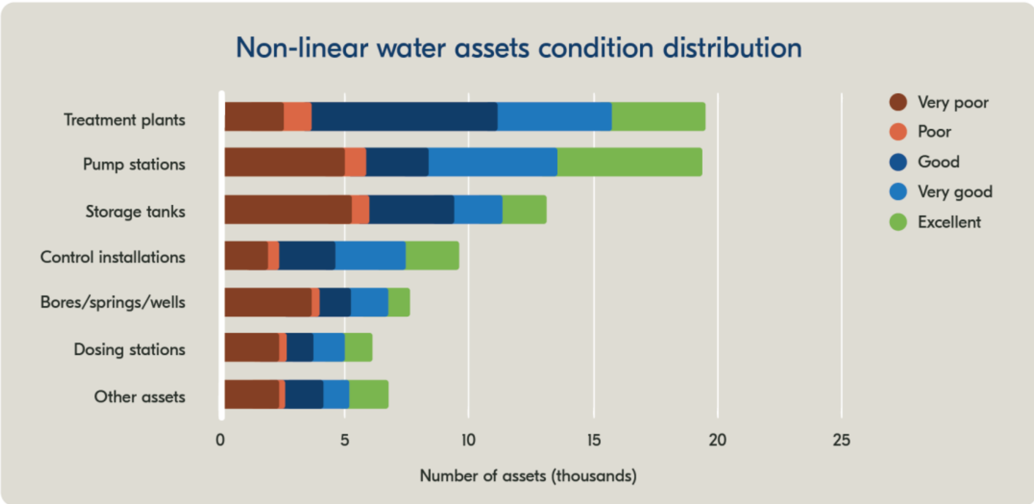

Figure 9-8 Non-linear water assets condition distribution

Based on observed activities in RD20, together with ongoing increasing costs, similar levels of investment to those observed thus far in RD20 have been planned in RD24. While sustained uplift is observed across the maintenance portfolio, 2 of the largest contributors to uplift are detailed below.

9.3.2.3.1 Regional water storage maintenance

Increased tank maintenance has been required to prevent water sources from becoming contaminated by corrosion by-products or compromised through structural failures. The proactive removal of contamination sources, or remediation of deteriorated infrastructure, is critical to ensuring the water quality is maintained and compliant with the Australian Drinking Water Guidelines (ADWG).

In 2021-22 additional expenditure was incurred for inspection, cleaning and repairing critical water storages throughout the state. Figure 9-8 shows the ratio of very poor- and poor-quality storages at the end of 2021-22 compared with good, very good and excellent quality. The number of assets in very poor condition (more than 5,000), is an indicator of the need for this work to continue, supported by ongoing expenditure at 2021-22 actual levels at around $1.3 million a year.

9.3.2.3.2 Motor rewinds

SA Water operates 119 critical high-voltage (HV) electric motors, predominantly to transfer bulk water from water sources to water storage facilities, water treatment facilities and customers. In operating these motors to reduce costs and to take advantage of electricity spot market prices, the risk of motor failure has increased. This has become more pronounced with the energy market moving to 5-minute settlement increments in 2021. Under normal operations, the mean time between failure is 10,000 hours, but with a degraded motor, this can be reduced to only a few hundred hours. The efficiencies gained in energy cost through managing the pumping frequency still outweigh the cost incurred in rewinding the motors. Failure of these high-voltage motors exposes SA Water to risks in continuity of supply.

Continuing maintenance is required on an ongoing basis to ensure the motors operate effectively under the altered operating conditions arising from the changes in the energy market.

9.3.2.4 Labour costs

SA Water employs more than 1,700 South Australians across a broad range of disciplines. An increase to the RD20 allowance of $3.3 million has arisen because of variations to remuneration required and changes in superannuation legislation as discussed below.

9.3.2.4.1 Labour market responses

SA Water is heavily reliant on specialist labour for the delivery of its services. During RD20 the Corporation has competed to retain labour and fill its vacant positions in a market with a much higher private sector wage band.

Recent data from the Reserve Bank of Australia reflects that competition in the labour market has been tight, with the lowest rates of unemployment in nearly 50 years and the highest vacancy to unemployment rate since records began. [111] These conditions created an environment where staff attraction, retention and recruitment has been difficult. This has impacted program delivery, timeliness and cost, as outlined in Section 3.1.

In this environment, it is unsurprising that competition for employees is increasing. In its April 2023 report, Mercer identified that more than one million Australians changed employers in the year to February. [112] It also found, as part of an associated survey, that these labour market conditions have been creating additional salary demand. Specifically, ‘Engineering & Science’ and ‘Information Technology’ job families have been commanding up to 22 per cent and 16 per cent higher starting salaries respectively when compared with the previous year.

Associated with increasing salary demands, Mercer also reported growing voluntary turnover rates since 2020 (Figure 9-9).

[111] Reserve Bank of Australia (RBA) (2023) February Statement of Monetary Policy, RBA, accessed 7 April 2023.
[112] Mercer (2023) Australian Total Remuneration Survey, Mercer Australia, accessed 6 April 2023.

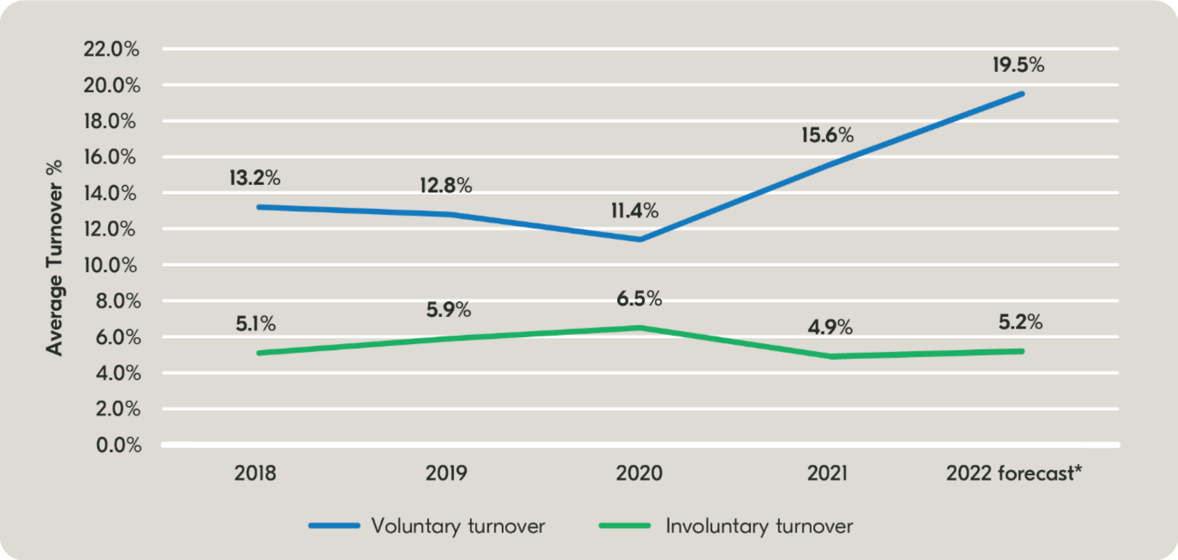

Figure 9-9 Turnover trends[113]

This trend has been observed at SA Water (Figure 9-10), with voluntary separations increasing in line with Mercer's projection (Figure 9-9).

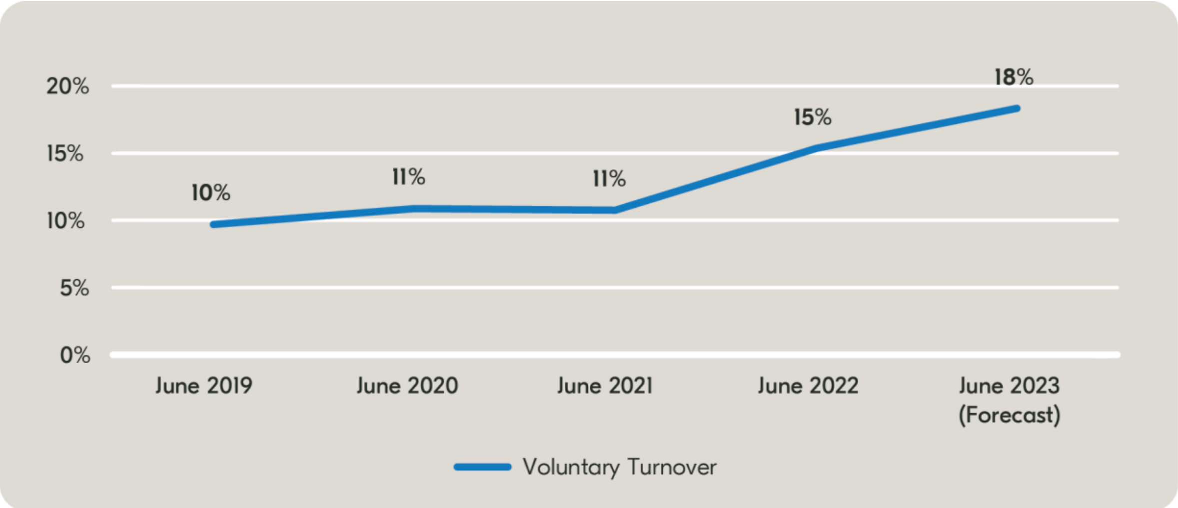

Figure 9-10 – SA Water voluntary staff turnover 2019-23

In line with Mercer's findings and other key international studies, it can be extrapolated that remuneration is a key driver in staff retention. [114]

SA Water assesses its comparative remuneration profile against other employers using a tool called a compa-ratio. This tool considers the position of SA Water salaries against the market median, providing a ratio. Where the ratio sits below 1.0, the salary is below the market median, and ratios above 1.0 indicate where a salary is above the median. Figure 9-11 demonstrates the compa-ratio across SA Water remuneration compared with market conditions. To remain competitive in the market, SA Water seeks to maintain most of its workforce as close to the 1.0 compa-ratio as possible.

[113] Mercer (2023) Australian Total Remuneration Survey, Mercer Australia, accessed 6 April 2023.
[114] Mercer (2023) Australian Total Remuneration Survey, Mercer Australia, accessed 6 April 2023; PrideStaff (2019) The High Cost of Low Pay Rates whitepaper, Pridestaff, accessed 7 April 2023.

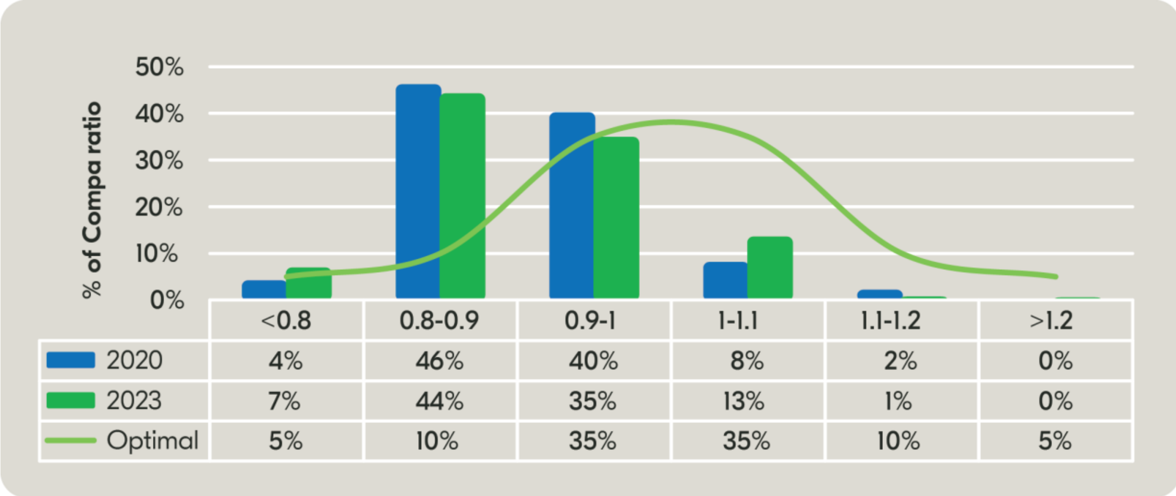

Figure 9-11 – SA Water staff population by compa-ratio

Most wages are set through an enterprise agreement (EA) and have moved by less than the average national movement. Higher market wage increases have affected SA Water's ability to compete in a highly competitive job market during the RD20 regulatory period. In filling vacant roles due to voluntary turnover in a competitive labour market, SA Water has required a greater number of positions to be increased to remuneration at the mid-compa-ratio (100-110 per cent) when compared to 2020.

Various sources[115] cite the costs associated with staff turnover, suggesting they range from about a third of an employee's salary to many times an employee's salary. Given current market conditions, SA Water contends that investment in employee remuneration to drive retention is an efficient investment which is required into RD24.

While one option may have been the use of more expensive specialist contractors short-term, the escalation of salaries through RD20 was assessed as a more efficient approach in delivering long-term affordability for customers.

9.3.2.4.2 Statutory superannuation

As a company operating in Australia, SA Water is required to apply the superannuation guarantee in accordance with the Commonwealth *Superannuation Guarantee (Administration) Act 1992* (SGA Act). Statutory obligations for superannuation are increasing from 9.5 per cent in the 2020-21 year to 12 per cent in 2025-26 (Table 9-5).

Table 9-5 – Superannuation guarantee rates 2020-21 to 2027-28

Period	General Super Guarantee (%)	Super Guarantee increase from prior year (%)
1 July 2020 – 30 June 2021	9.50	-
1 July 2021 – 30 June 2022	10.00	0.50
1 July 2022 – 30 June 2023	10.50	0.50
1 July 2023 – 30 June 2024	11.00	0.50
1 July 2024 – 30 June 2025	11.50	0.50
1 July 2025 – 30 June 2026	12.00	0.50

[115] Bersin, J (2013) Employee Retention Now a Big Issue: Why the Tide has Turned, LinkedIn, accessed 7 April 2023, and Work Institute (2022) Retention Report 2022, Work Institute, accessed 7 April 2023.

Period	General Super Guarantee (%)	Super Guarantee increase from prior year (%)
1 July 2026 – 30 June 2027	12.00	-
1 July 2027 – 30 June 2028 and onwards	12.00	-

When preparing the RD20 regulatory submission, there was uncertainty about revisions to the SGA Act being enacted to enable these changes and, as such, increases to operating expenditure were not sought.

With superannuation increases now legislated, SA Water is making a correction to the base to account for the changes in superannuation contributions that have occurred during RD20. This has an impact of $0.7million to the base. Legislated Superannuation increases that will apply during RD24 have been covered in proposed operating expenditure in Section 9.6.2.

9.3.2.5 Chemicals

As mentioned in Section 3.1.3.1, chemicals are necessary for the water treatment process to produce safe and clean drinking water and to meet statutory discharge requirements for wastewater and recycled water. Therefore, chemical expenditure is an essential and unavoidable expense in SA Water's operating costs. During RD20, chemical prices have increased due to global events and higher production, shipping, fuel, raw materials and labour costs.

Chemicals are procured under various managed contracts, and awarded based on value for money, with numerous controls in place such as quality specifications and agreed price variation mechanisms. SA Water's chemical contracts are jointly negotiated and held between SA Water and its metropolitan contract partner to ensure best procurement outcomes. Chemical procurement and use at regional water and wastewater treatments plants is managed by SA Water alone.

The current major contracts for water treatment chemical supply were awarded following an open request for tender process undertaken in 2019. In aggregating and leveraging buying power, SA Water led this exercise as a joint procurement with the then operator for metropolitan Adelaide (Allwater) and the operator for Riverland and Fleurieu (TRILITY). Suppliers were selected based on a value-for-money evaluation process informed by 2019 market information.

Contract pricing for chemicals is subject to variance during the contract period. For example, unit prices are periodically varied in accordance with predetermined, agreed price review mechanisms in the contracts. Price variances and any other request for price changes are reviewed by SA Water to assess competitiveness within the context of any relevant market forces.

As discussed in Section 3.1.3.1, external factors have driven increases in chemical costs during the current regulatory period. Across SA Water operations, this has resulted in an additional $1.8 million of expenditure incurred in 2021-22 compared with the original RD20 allowance.

It is projected this uplift will be required for the remainder of RD20 with prices expected to remain high under the current economic outlook, as suggested by cost research carried out by Equifax in its March 23 review (provided in Appendix 8.1). Based on assumptions concerning current and anticipated supply and market constraints, as well as movement in CPI, it is anticipated that chemical prices will continue to rise until 2027-28, with an annual increase of 3 to 5 per cent for all chemicals. SA Water proposes to manage future chemical price increases within a CPI increase allowance for RD24 provided the re-basing amount in 2021-22 is approved and maintained.

9.3.2.6 Materials

SA Water carries out preventative and corrective maintenance activities that require materials. Requirements are informed by operations and maintenance planning processes, with a focus on ensuring efficient costs and maintaining levels of service. Costs for materials used to support proactive and corrective maintenance, such as pipes and valves, rose by $1.3 million during 2021-22 due to increases in both the volume of materials consumed (associated with asset age) and the unit cost. These impacts are exacerbated by the impacts of a changing climate that are expected to see some assets deteriorate more quickly. The cost pressure on materials has been driven by both global supply chain disruptions and increased production costs, as discussed previously in Section 3.1.3.4.

Donald Cant Watts Corke (DCWC) was engaged to analyse historical escalation on SA Water's proactive and corrective maintenance program for RD20 and projected escalation for the RD24 submission. DCWC reported the price escalation baseline is projected to be on a continued upward trend in cost, as illustrated in Figure 9-12 DCWC noted that:

> "*while national and global events may produce cycles of increase and decrease in escalation rate, over a ten-year period it is a known fact that escalation will average out at approximately 3% per annum. This is demonstrated in the data gathered from ABS schedules for all commodities over a twenty-three year period where escalation averaged out at 3.1%. It is therefore reasonable to assume that a Baseline showing average annual escalation of 3.0% per annum can be used for the prediction of escalation for a considerable period into the future. It is also reasonable to assume that this Baseline be represented as the aggregate of the three predictable commodities of labour, cement / concrete, and fill / disposal materials.*"

The report continues, "In summary, the three stabilising and predictable factors of Escalation Cycle, Predictable Commodities and Baseline will form the foundation of the prediction of annual escalation for the period 2022 – 2028 in this Report. With this foundation, the only necessary prediction that needs to be made is the timing and magnitude of the next Escalation Cycle. DCWC Infrastructure believes that the next Escalation Cycle has already commenced."

DCWC also noted in the RD20 delivery period, that the average annual escalation rate for the period 2020-24 is expected to be 7.90 per cent per annum, and this should be taken into consideration for RD24 cost estimates.

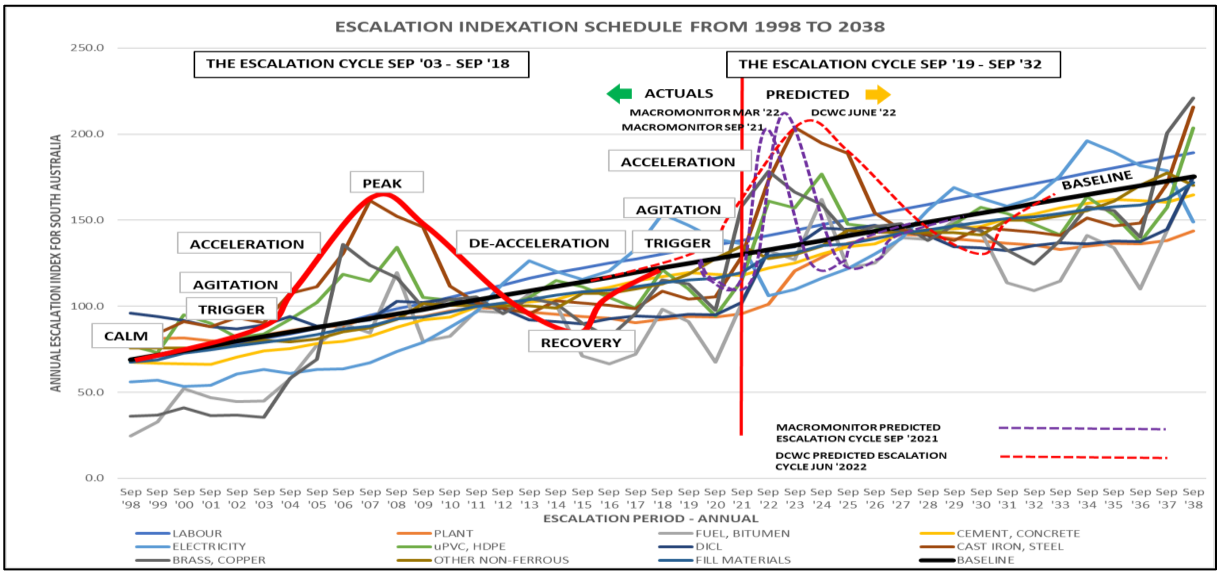

Figure 9-12 SA Water predicted escalation for 2022-28[116]

Based on this analysis, SA Water has assumed the pressures that have escalated costs upward from the baseline from RD20 will continue to persist through RD24. As such, the baseline of RD20 is no longer deemed an appropriate base to carry forward, and a revised, uplifted amount is required to support business activities at the baseline level.

9.3.2.7 Insurance

SA Water is insured through the South Australian Government Financing Authority (SAFA), which provides comprehensive insurance protection to the Corporation and other South Australian Government agencies.

Several factors that have driven the general cost increases across SA Water's cost base during RD20, including the COVID-19 pandemic, natural disasters, climate change and cybersecurity incidents, have also contributed to increased insurance costs.

To demonstrate the impact, KPMG insights indicate that, in the 12 months to 31 December 2022, gross written premiums for direct and indirect general insurers across Australia have increased by 9 per cent.[117]

Insurance for SA Water through SAFA has been affected, albeit at a different rate, with 2021-22 premiums increasing by $1.2 million (or around 40 per cent) over the baseline set in RD20.

SA Water considers insurance premiums to be prudent expenditure in reducing the risks of extraordinary costs being borne by the Corporation. As these increased premiums are not expected to reduce in future years due to more climate change-related natural disasters, an adjustment to the efficient base year is required.

9.3.2.8 Eyre Peninsula desalination plant

An operating allowance of $5.7 million (real 2022-23 dollars) was provisioned in 2021-22 for operating the Eyre Peninsula desalination plant.

[116] DCWC (Donald Cant Watts Corke) (2022) Predicted Escalation for the Period 2022-28, Independent Opinion – Cost Escalation (unpublished document).
[117] KPMG (2023) General Insurance Insights Dashboard - KPMG Australia, KPMG, accessed 7 April 2023.

The need to investigate alternative sites for a desalination plant on the Eyre Peninsula meant the operating expenditure allowed for in 2021-22 was not required. As such, downward adjustments have been made to the base year.

A business case and associated operating expenditure is included in the capital initiatives chapter (Chapter 8).

9.3.2.9 Base operational efficiency

As detailed in Section 9.4.4, SA Water has applied a base efficiency of $5.0 million per annum. SA Water plans to achieve these efficiencies through innovation and ongoing business improvement initiatives.

9.4 Efficiency

SA Water operates efficiently in the interest of keeping customer bills as low as possible. It is also an ESCOSA requirement that SA Water demonstrates that its expenditure represents the lowest sustainable cost for achieving the intended outcome.[118]

As detailed in Section 3.5, SA Water's historic costs are shown to be efficient when compared with similar interstate water utilities. For RD24, as part of developing business cases for new expenditure, consideration was given to efficiencies that might be achieved within ongoing operational expenditure.

9.4.1 Efficiency performance

To provide guidance on future operating expenditure efficiencies, SA Water engaged Stantec to analyse the Corporation's efficiency performance since economic regulation began. Stantec's report can be found in Appendix 3.1.

Stantec determined that SA Water has achieved substantial reductions in its operating expenditure since the start of economic regulation in 2013-14. SA Water's operating expenditure decreased by a total of $112 per customer over the 8-year period, equating to a 2 per cent per annum real reduction, as shown by Figure 9-13. [119]

This demonstrates that SA Water has been effective in achieving efficiencies to reduce operating expenditure since the beginning of economic regulation.

Consideration was also given to how SA Water's achievements compare to other similar water utilities in terms of:

- operating expenditure over time
- long-term trends and sustainability of efficiencies that can be expected to be achieved.

These considerations for similar water utilities, including Scottish Water, which has been under economic regulation for a longer period, are discussed in the following 2 sections.

[118] ESCOSA (2022) SA Water Regulatory Determination 2024: Guidance paper 3 – Assessing the Regulatory Business Plan, ESCOSA, accessed 7 April 2023.
[119] Stantec (2023) Scope of future efficiencies Report, Stantec.

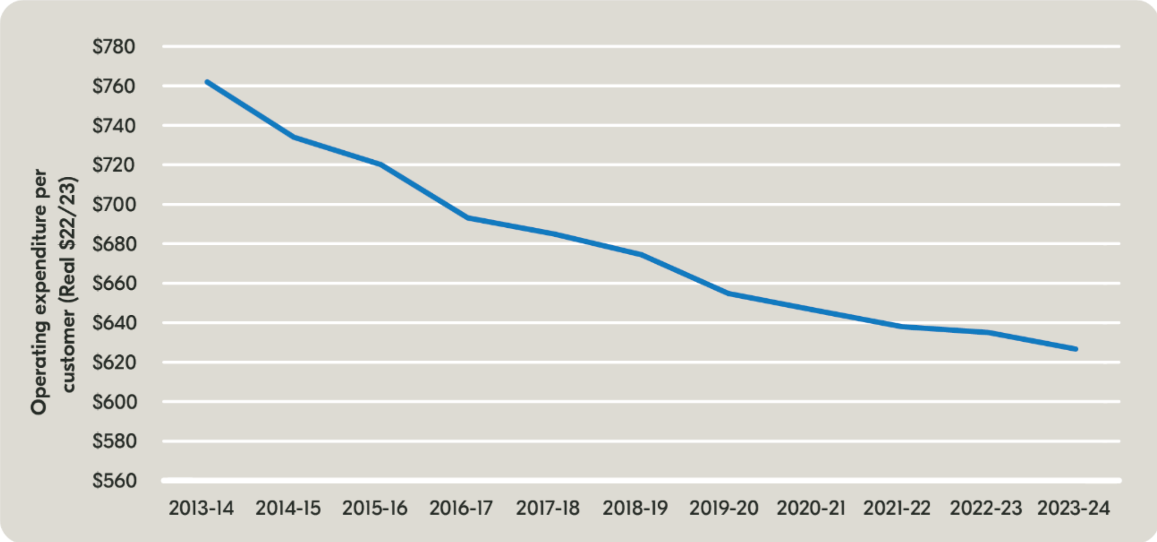

Figure 9-13 SA Water operating expenditure per customer 2013-14 to 2021-22 (real 2022-23 $)[120]

9.4.2 Efficiency trends with similar Australian water utilities

To determine how effective SA Water has been in achieving efficiencies in operating expenditure since 2013, a comparison was conducted between Hunter Water, Sydney Water and SA Water. The level of operating expenditure proposed by each business in regulatory submissions, that was determined as efficient by regulators (and included in the notional revenue requirement (NRR)), and what was actually incurred by each business was analysed. How each utility has performed over time is shown in Figure 9-14 for Hunter Water, Figure 9-15 for Sydney Water, and Figure 9-16 for SA Water.

Stantec found that in comparison,

> *"Sydney Water and SA Water showed similar trends, with actual expenditure significantly lower than forecast in the first regulatory period before convergence in the second period. The expenditure by Sydney Water in the second period has exceeded its regulatory determination which can be in part explained by the drought, floods and bushfires that occurred in this second period. For Hunter Water, in the first regulatory period, actual expenditure was broadly in line with that allowed as efficient in its determination but the second regulatory period, actual expenditure has materially exceeded the determination level."*[121]

This analysis shows that efficiency gains (as measured by the difference between operating expenditure proposed by the utility and that actually incurred) have been harder to achieve as time has progressed.

[120] Stantec (2023) Scope of future efficiencies Report, Stantec
[121] Stantec (2023) Scope of future efficiencies Report, Stantec

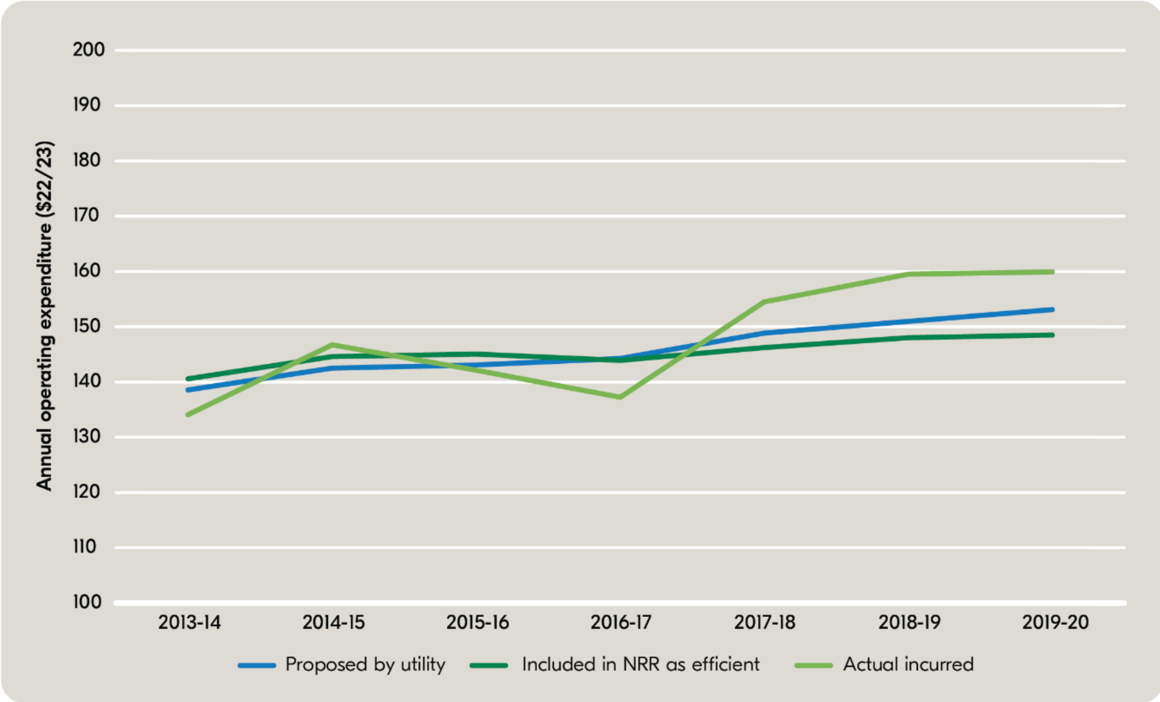

Figure 9-14 Operating expenditure efficiency achieved by Hunter Valley Water 2013-14 to 2019-20[122]

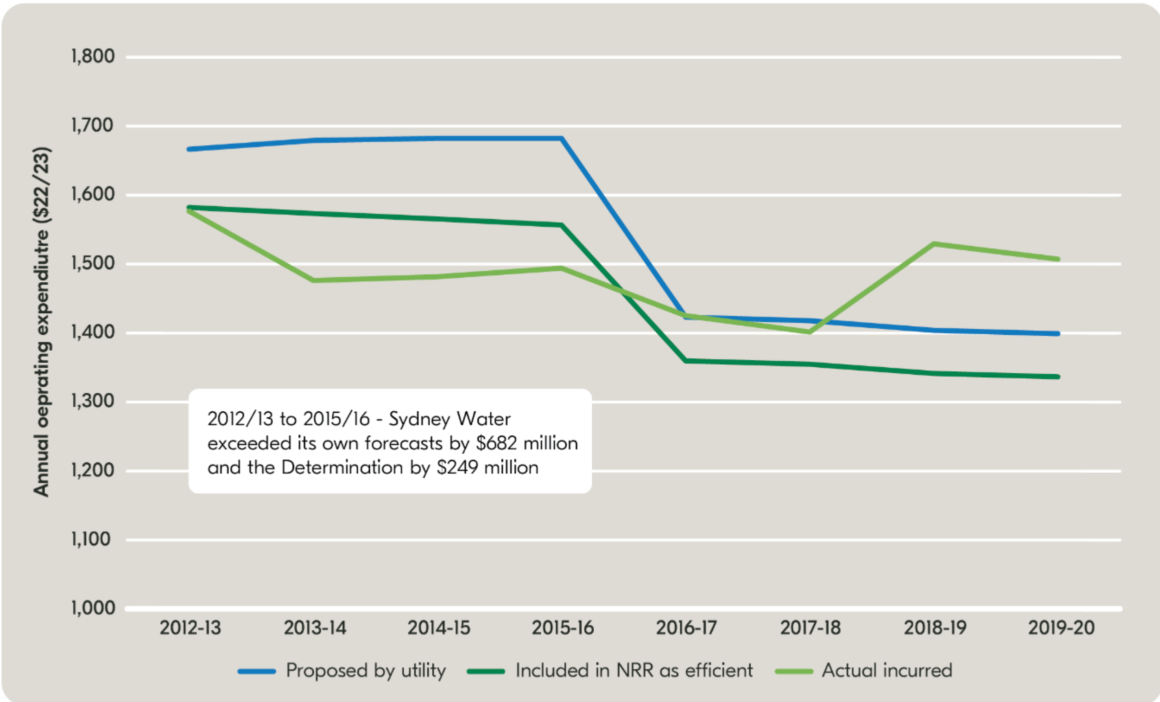

Figure 9-15 Operating expenditure efficiency achieved by Sydney Water 2012-13 to 2019-20[123]

[122] Stantec (2023) Scope of future efficiencies Report, Stantec
[123] Stantec (2023) Scope of future efficiencies Report, Stantec, Appendix 3.1.

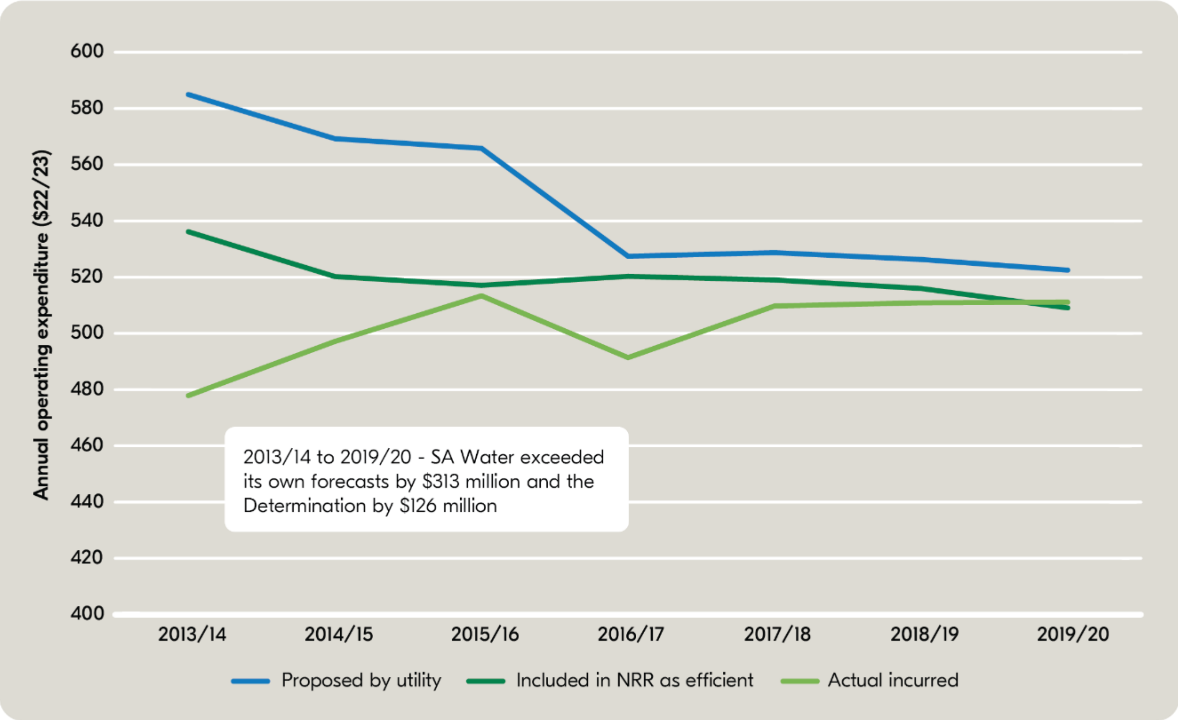

Figure 9-16 Operating expenditure efficiency achieved by SA Water 2013-14 to 2019-20[124]

9.4.3 Efficiency lessons from the Scottish Water Industry

Stantec also considered efficiency advice provided by Scotland's economic regulator to the New Zealand government in 2021 on how efficiency gains may be generated in the water and sewerage sector. This advice was based on observations from the analysis of efficiency gains achieved in Scotland's water services over the past 20 years. Population size and geographic spread may influence the level of efficiency achievable.

Stantec cautioned that

> *"(t)he magnitude of SA Water's efficiency gains may not be at the same level as those achieved by Scottish Water, due to differences in the size of the serviced population. SA Water services nearly 1.4 million people spread over a large area that is not comparable to anywhere in the United Kingdom, which likely contributes to lower potential efficiency gains."*[125]

- Level of efficiency achievable will reduce over time.

In terms of achieving ongoing efficiencies, Stantec highlighted evidence from Scotland that,

> *"After the initial large gains achieved in the first 10 years, both investment unit costs and operating costs tapered off to 0.5-2% per annum."*[126]

In relation to trends from when regulation first commences, Stantec said that

> *"SA Water has been operating in a regulated environment for an extended period which it has achieved significant reductions in both capital and operating costs, which are similar to those gained by Scottish Water."*

In terms of efficiency trends, Stantec found that as Scottish Water's efficiency gains began to slow after 10 years, SA Water's efficiency gains have similarly slowed down. Based on this,

[124] Stantec (2023) Scope of future efficiencies Report, Stantec, Appendix 3.1.
[125] Stantec (2023) Scope of future efficiencies Report, Stantec, Appendix 3.1.
[126] Stantec (2023) Scope of future efficiencies Report, Stantec, Appendix 3.1.

and other evidence provided, Stantec concluded, *"it would be unreasonable to expect that efficiency would be achieved at the same level as previously seen for SA Water."*

The evidence suggested to Stantec *"that a real limit to catch-up efficiency has been reached and any continuing efficiency will be sought but challenging"*. [127]

9.4.4 2024-28 efficiency assessment

In an environment of escalating operating costs, SA Water has considered where it could make ongoing efficiencies within its operating expenditure. Consistent with analysis by Stantec, SA Water has found it more difficult to identify and achieve efficiencies to the same levels in RD24 as in previous determinations.

However, while efficiencies are more difficult to achieve in the current environment of escalating costs and maturity of regulation, SA Water is committed to reducing costs as part of efforts to manage customer affordability.

SA Water has applied a stretch target for a general efficiency of $13.5 million to be applied to RD24 proposed operating expenditure (incremental to the base). This efficiency directly offsets the proposed operating uplift required and is equivalent to a 0.6 per cent efficiency from the base. This efficiency value is proportional to the proposed operating expenditure, and so any changes to the proposed uplift will also reduce the efficiency able to be achieved. This is additional to sought revenue reductions agreed by SA Water following a formal request from government.

SA Water plans to achieve this efficiency target using innovative and general business improvement initiatives, in addition to carrying higher operating risks. These efficiencies will improve the short-term affordability for customers but may risk service level outcomes in the long term. These will be monitored accordingly and may require review in RD28.

Table 9-6 shows the RD24 total efficiency target for the forward regulatory period and its allocation across water and wastewater segments, including the base year efficiency described in Section 9.4.4. Total efficiency to be achieved by SA Water for 2024-28 is therefore $33.5 million. This efficiency value is proportional to the proposed operating expenditure, and so any changes to the proposed uplift will also reduce the efficiency able to be achieved.

Table 9-6 Operating efficiency target 2024-25 – 2027-28 (real 2022-23 $m)

$m, 2022-23 real	2024-25	2025-26	2026-27	2027-28	Total RD24 operating efficiency
RD24 uplift					
Water	-$2.1	-$2.5	-$2.7	-$2.9	**-$10.2**
Wastewater	-$0.7	-$0.9	-$0.8	-$0.9	**-$3.3**
RD24 uplift total	**-$2.8**	**-$3.4**	**-$3.5**	**-$3.8**	**-$13.5**
Base year					
Water	-$2.3	-$2.3	-$2.3	-$2.3	**-$9.2**
Wastewater	-$2.7	-$2.7	-$2.7	-$2.7	**-$10.8**
Base year total	**-$5.0**	**-$5.0**	**-$5.0**	**-$5.0**	**-$20.0**
Grand total	**-$7.8**	**-$8.4**	**-$8.5**	**-$8.8**	**-$33.5**

[127] Stantec (2023) Scope of future efficiencies Report, Stantec, Appendix 3.1.

9.5 Research and engagement informing expenditure

As detailed in Chapter 4, SA Water actively engages with its customers and stakeholders. In doing so, the Corporation seeks to understand their views and preferences on an ongoing basis. This ensures customers' views about what services SA Water delivers, and how they deliver them, inform SA Water's operations in the current period and its plans for future initiatives.

Aligning expenditure with SA Water's strategy ensures the Corporation delivers what its customer value and expect. From its strategy research and prioritisation survey discussed in Chapter 4, SA Water knows customers support investment in the water and wastewater networks to futureproof supply and reduce the number of leaks and breaks.

Ongoing engagement enables the Corporation to track and respond to changes in the views and expectations of its customers and stakeholders. As mentioned in Section 2.5.1, feedback received through RD24 engagement activities is consistent with what was heard from research informing the development of SA Water's strategy. This confirms that RD24 investment decisions are aligned with SA Water's strategic drivers.

As with capital expenditure initiatives, operational expenditure initiatives assessed for inclusion in RD24 were informed by customer and stakeholder research and engagement. This was a key element of prioritisation which informed the final investment proposed.

In addition to relevant ongoing engagement, initiative-specific research and engagement activities related to operational expenditure were conducted with the Customer Challenge Group (CCG) and Peak Bodies Engagement Forum (PBEF) and included in the willingness-to-pay (WTP) survey.

In the early stages of establishing the CCG and PBEF, both groups were consulted on the type of investment initiatives they wished to inform. As part of briefings in 2021 the groups identified a general satisfaction with the ways that SA Water undertakes its capital programs and renewal activities. However, they did indicate a strong interest in reviewing new initiatives that would deliver improvements to customer service and major initiatives that required large investment. Consistent with this feedback, much of the engagement considered improvement and growth initiatives, with less focus on sustain initiatives, or those required by external obligation. Engagement on initiatives that require capital expenditure are discussed in Section 8.1.

As engagement progressed through 2022, rising interest rates and continuing impacts of the COVID-19 pandemic, natural disasters and the Ukraine conflict continued to affect household budgets. The CCG and PBEF began to progressively identify affordability as a focus.

This left SA Water in a situation where it often had strong customer and stakeholder support for initiatives, but this support had been received earlier in the engagement process. Given feedback on affordability, particularly later in 2022 engagement focused on what investments SA Water should prioritise in an environment where SA Water is not able to progress all initiatives.

Feedback was sought from the CCG, by voting on priority themes on a scale of zero to 5, where 5 was the highest priority. The results shown in Figure 9-17 indicated that the investment priorities should be to:

- Priority 1 – meet legal obligations
- Priority 2 – continue to maintain current levels of service to existing customers
- Priority 3 – address long-term affordability
- Priority 4 – deliver services to new customers
- Priority 5 – deliver new service offerings.

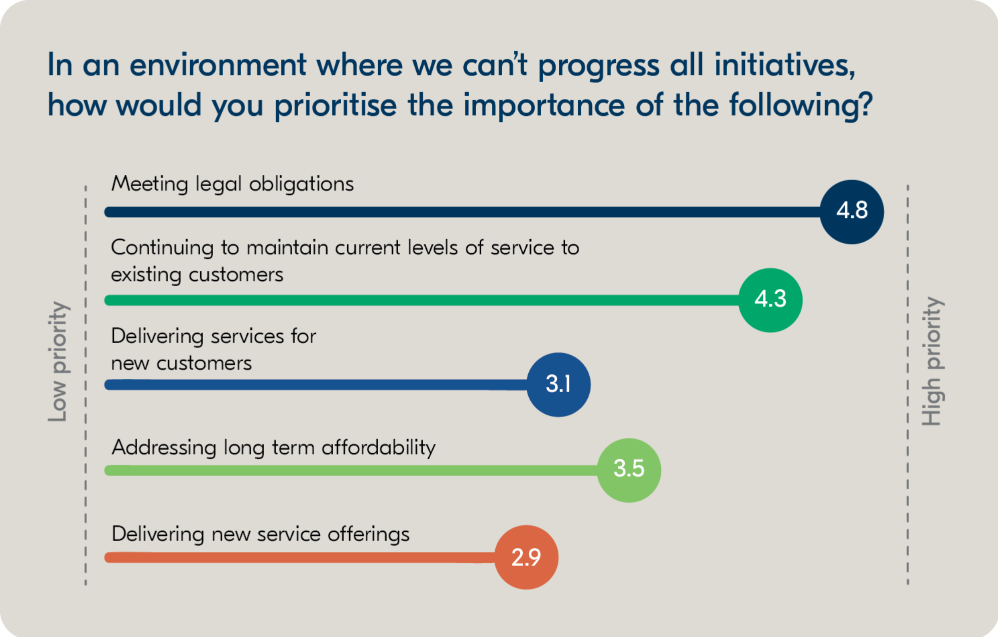

Figure 9-17 CCG feedback of investment priority

This feedback, endorsed by the PBEF, was used to further support the prioritisation criteria adopted by SA Water to determine what initiatives to progress.

This feedback is contradictory with some of the willingness to pay survey outcomes (covered in Section 4.2.3). Many of the initiatives with high operating costs were not prioritised for RD24 for reasons of affordability. These initiatives may be considered in future regulatory periods.

A summary of what SA Water heard from its stakeholder groups and from the willingness to pay survey about new operating expenditure-only initiatives is included in Table 9-7. Engagement on initiatives that include capital expenditure are discussed in Section 8.1.

Table 9-7 Engagement and research outcomes for operating expenditure initiatives not progressed in RD24

Initiatives not progressed in RD24	CCG	PBEF	WTP
Improve initiative: Wider World expansion SA Water's Wider World program exists to provide equitable and accessible services to all South Australians. To ensure customers at the margins (including those with a disability, language barriers and who are ageing) have better access to SA Water's water/wastewater products and services. Additional operating expenditure was considered for more resources to support customers with specific needs due to disability, language barriers or ageing, training to upskill staff on needs of these customers, and a bill allowance for customers who use a large amount of water for medical reasons.	CCG members were supportive of this initiative, particularly ensuring better access and inclusion for all customers. Noting that this would benefit all customers not just those with a disability. CCG suggested collaboration with other utilities and National Disability Insurance Scheme (NDIS) to leverage existing work on other priority services registers. However, it was acknowledged that this initiative may be required to be traded-off with other new initiative due to the cost impact.	The PBEF was pleased to see SA Water's evolution in this area over the years, but, noted that consideration should be given to this initiative as business case usual (within existing revenue cap) rather than an additional requirement. The PBEF also suggested it may be more efficient for other stakeholders to take on this investment (such as the state government or third parties) rather than SA Water as this would impact customer bills.	On average, customers are willing to pay $3.38 extra in their water and wastewater bill to implement measures which improve access to services for vulnerable customers. Customers are also willing to pay $5.77 per year to increase measures to support customers with high water use for medical needs.

Initiatives not progressed in RD24	CCG	PBEF	WTP
Outcome	There was strong support for expanding the Wider World program through customer engagement, but strong recognition that it was costly to deliver under the proposed model. The CCG supported this initiative but recognised that for cost reasons it may not be implemented. The PBEF proposed that these activities should be undertaken by a third party and not SA Water due to the cost impact. The initiative did have strong willingness to pay support. Nonetheless, with a cost impact of around $20 million per regulatory period when fully deployed, and feedback from the CCG and PBEF to prioritise investment on sustain or external obligations, it was not considered a priority for investment for RD24. It may be considered for future investment.		
Improve initiative: Water leakage management SA Water considered implementing an additional program to further identify and reduce system leakage, including improving data quality and additional audits.	Different levels of investment were presented to CCG members which would address leakage. There was mixed support for the different levels of expenditure, while supportive of the concept, the level of expenditure was questioned compared to the benefit.	This initiative was not considered by the PBEF (the PBEF focused on initiatives with a higher bill impact/ greater stakeholder interest).	Customers are willing to pay $3.00 extra on average per year to reduce water lost due to leakage to about 8,400 Olympic-sized swimming pools (about 8 per cent of annual supply) each year. Customers would also expect to be compensated by around $3.35 a year for a reduced level of service which would see about 10,200 Olympic-sized swimming pools (about 10 per cent of annual supply) of water lost a year.
Outcome	This initiative had low support from the CCG, with some willingness to pay support. With a recommendation from CCG and PBEF to prioritise investment on sustain or external obligations it was not considered a priority for investment for RD24. It may be considered for future investment.		

These initiatives were additional to existing services and presented to the CCG, PBEF and assessed under willingness to pay. Given affordability constraints, they were not progressed into SA Water's RD24 proposal. These may be considered in future regulatory submissions.

9.6 Proposed new operating expenditure

This section details new initiatives requiring operational expenditure only during RD24, as determined through internal planning, review, analysis and prioritisation. These initiatives are in addition to base expenditure already detailed in Section 9.3. Where operational expenditure is captured under capital expenditure initiatives, this is accounted for and detailed in Section 8.2.

The revenue sought for these operating initiatives has been reduced by SA Water following a formal request from the government.

A significant proportion of operating expenditure in RD24 is for business-as-usual activities to support SA Water's day-to-day operations, that is, activity required to sustain existing services or meet external obligations. This is disproportionate to previous submissions, when SA Water was not experiencing and responding to exceptional local and global operating conditions but is considered a reasonable outcome for RD24.

To help evaluate the proposed operating expenditure, the following provides details on the initiatives grouped by expenditure driver: external obligations and sustain services. There are no proposed initiatives contributing to service improvement or growth.

9.6.1 Sustain services

Operating expenditure initiatives listed in Table 9-8 are required by SA Water to sustain the services delivered by the Corporation at the existing standards. Engagement feedback indicated that these initiatives should be of the second highest priority after activities that SA Water is obliged to undertake. These initiatives will result in an expenditure uplift totalling $8.3 million (real 2022-23) over the RD24 period. All figures quoted are net of efficiencies applied. The following sections provide summary information on each initiative.

Table 9-8 Sustain services operating expenditure (real 2022-23 $m)

Initiative	Regulated Operating expenditure 4-year total	Water operating expenditure 4-year total	Wastewater operating expenditure 4-year total
Energy cost	$0.0	$0.0	$0.0
Metropolitan service delivery contracts	$0.0	$0.0	$0.0
Planned reliability-based maintenance	$1.8	$1.2	$0.6
Major maintenance	$4.7	$3.2	$1.5
Technology licences	$1.7	$1.1	$0.6
Total operating	**$8.3**	**$5.6**	**$2.7**

9.6.1.1 Energy profile

As one of the largest users of electricity in South Australia, SA Water is uniquely exposed to changes in electricity usage requirements and prices over time. Since 2017, SA Water has taken an innovative approach to the procurement and management of energy as a Market Participant on the National Electricity Market where it purchases energy from the spot market. This approach has delivered significant value to the Corporation and its customers, through directly managing the commodity risk by making use of the extensive operational capabilities and flexibility which had an estimated benefit of $16.7 million in 2021-22.

However, several factors have significantly increased energy costs incurred by SA Water. These include:

- variations in projected demand driven by customer use
- economic factors around the pricing of electricity
- regulatory factors including increases in network supply charges (the fixed costs passed through directly from SA Power Networks and ElectraNet to SA Water).

SA Water takes significant and material steps to manage its electricity portfolio through prudent timing and curtailment of use. However, many of the above factors are uncontrollable for the business and cannot be mitigated through changes in operating behaviours.

To forecast energy costs for RD24, SA Water:

1. uses a complex electricity cost model to forecast each component of energy costs, including the wholesale energy cost, network charges, mandatory renewable charges, metering charges, pool fees, market charges and ancillary service charges
2. forecasts energy usage by considering how much water will need to be pumped from what source and over what distance. Factors considered include customer demand, Mount Lofty Ranges inflows, the Adelaide Desalination Plan production schedule, reservoir storage levels, treatment plant operating costs, and any other key projects or planned infrastructure outages.

SA Water can then apply these forecast input costs to forecast electricity usage estimates across all assets.

The key drivers of operating expenditure increases are detailed in the following sections. These are effectively pass through costs, in that SA Water cannot avoid incurring these. Engagement feedback provided to SA Water supported the use renewable generation and storage to reduce market exposure and energy cost, including the use of non-regulated energy assets constructed through the Zero Cost Energy Future (ZCEF) project. However, ESCOSA has been clear that they will continue to exclude ZCEF assets and activities from RD24:

> *"For SAWRD24, the Commission will continue to exclude the assets and potential electricity expense savings associated with ZCEF from the revenue cap, regulated asset base, and proposed expenditures. As the electricity expense allowed as part of SAWRD24 will need to be based on market pricing, the Commission will only allow energy costs that are prudent and efficient and would reflect a well managed approach to electricity purchasing and management in the absence of the ZCEF assets."*[128]

As such, and in keeping with the Commission's requirements, SA Water's approach to energy management for RD24 has been based on efficient participation in the energy market. Collectively, energy would represent an estimated $86 million operating uplift for existing activity in the RD24 period and a further $29 million in expenditure for new activities. (This is in addition to the base uplift detailed in Section 9.3.2.1). Regulated revenue will not be sought for these charges.

9.6.1.1.1 Volumetric charges

SA Water incurred volumetric charges of $36.2 million in the 2021-22 base year (in real 2022-23 dollars). Based on projected annual average wholesale electricity prices during RD24 compared to historical figures (Figure 9-18), the Corporation has determined it will require an additional $36.9 million in RD24 compared with the base year. Projections show high prices expected in 2023-24 will be sustained for the first 3 years of RD24, with an estimated drop in energy prices in 2027-28. This reduction in 2027-28 is in line with market pool price forecast from ACIL Allen of approximately 19 per cent.

[128] ESCOSA (2022) SA Water Regulatory Determination 2024: Guidance Paper 3, Assessing the Regulatory Business Plan, ESCOSA, accessed 11 June 2023.

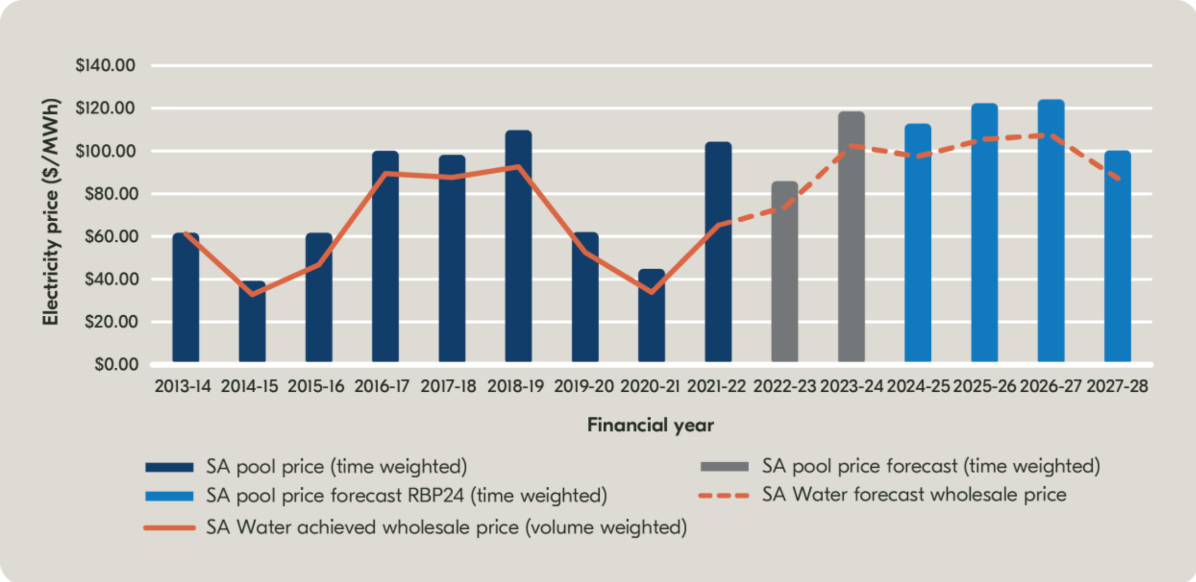

Figure 9-18 Historical and forecast energy prices

Table 9-9 provides the distribution of expenditure for volumetric charges over the regulatory period.

Table 9-9 – Projected incremental volumetric cost uplift for RD24

$m 2022-23 real	2024-25	2025-26	2026-27	2027-28
Electricity volumetric cost uplift	$10.8	$14.5	$11.2	$0.4

Figures may not total due to rounding.

9.6.1.1.2 Network charges

SA Water incurs network supply charges for the connection to the distribution system from SA Power Networks, which is regulated by the Australian Energy Regulator. The Corporation also incurs network connections charges for the transmission system from ElectraNet, via a transmission connection agreement.

As shown in Table 9-10, SA Water incurred $28.2 million of electricity network charges (in real 2022-23 dollars in the 2021-22 base year). SA Water requires an additional $34.2 million in addition to the base year actual to cover increases in network charges over the four-year period.

Table 9-10 – Projected incremental network cost uplift for RD24

$m 2022-23 real	2024-25	2025-26	2026-27	2027-28
Electricity network cost uplift	$9.3	$9.1	$7.9	$7.8

Figures may not total due to rounding.

Network charges are unavoidable costs that must be paid by SA Water where it is connected to the electricity network. As such, increases to network charges are unavoidable expenses that are effectively passed through from electricity service providers to SA Water.

9.6.1.1.3 Mandatory renewables charges and carbon credits

Under the *Renewable Energy (Electricity) Act 2000*, SA Water is obliged to surrender Large Scale Generation Certificates (LGCs) and Small-scale Technology Certificates (STCs) to the Clean Energy Regulator in proportion to the volume of electricity purchased in each calendar year. SA Water calculates the cost of acquiring the required number of certificates to meet its obligations under the legislation.

Under the funding agreement for the Adelaide Desalination Plant, SA Water is required to source renewable energy to power the plant or carbon offset the plant's operations. SA Water continually reviews its approach to meeting this obligation and has determined that the least cost option is to fully carbon offset the operations. As such, SA Water allows for the cost of Australian carbon credit units (ACCUs) to meet this obligation.

SA Water engaged ACIL Allen to provide annual certificate price forecasts for STCs, LGCs and ACCUs. This forecast results in a reduction of $6.9 million of operating expenditure across RD24, compared to the 2021-22 base year expenditure of $9.0 million (in real 2022-23 dollars), as shown in Table 9-11..

Table 9-11 – Projected incremental renewal energy certificates cost uplift

$m 2022-23 real	2024-25	2025-26	2026-27	2027-28
Renewable energy charges cost uplift	$0.1	-$1.1	-$2.4	-$3.4

Figures may not total due to rounding.

These charges set under the *Renewable Energy (Electricity) Act 2000* are a statutory obligation that must be paid by SA Water. The reductions in these compliance costs assist in offsetting other energy-related costs in RD24.

9.6.1.1.4 Internal expenditure

Internal expenditure relates to electricity costs for the regulated business that are recovered through self-generation, including under the Zero Cost Energy Future (ZCEF) initiative. As ESCOSA did not accept ZCEF as a regulated initiative during RD20, energy produced through ZCEF is purchased by the regulated operations of SA Water at market rates.

9.6.1.1.5 Total electricity costs

As stated in 9.3.2.1, SA Water incurred actual total electricity costs of $73.7 million in the 2021-22 base year (in real 2022-23 dollars). Over the RD24 period, SA Water requires $86.0 million of additional operating expenditure, incremental to base year (ranging from $26.6 million in 2024-25 reducing to $9.4 million in 2027-28), to fund the energy requirements necessary to continue to provide essential water and wastewater services to customers (Table 9-12). However, the Corporation will not be seeking additional regulated revenue for these charges.

Table 9-12 - Expenditure per electricity component, incremental to base

$m 2022-23 real	2024-25	2025-26	2026-27	2027-28
Electricity volumetric	$10.8	$14.5	$11.2	$0.4
Electricity network charge	$9.3	$9.1	$7.9	$7.8
Renewable energy certificates	$0.1	-$1.1	-$2.4	-$3.4
Internal expenditure	$6.5	$5.6	$5.2	$4.6
Total	$26.6	$28.0	$21.9	$9.4

Figures may not total due to rounding.

9.6.1.2 Metropolitan service delivery contracts

As discussed in Section 9.3.2.2, SA Water holds 2 Adelaide Service Delivery (ASD) contracts. One contract is with SUEZ to operate of metropolitan Adelaide's drinking water, wastewater and recycled water production and treatment. The other contract is with Service Stream, for field-based operations and maintenance. Both commenced on 1 July 2021, following the expiration of the previous contract.

SA Water's new operating model delivers field operations and production and treatment services for the metropolitan Adelaide area.

SA Water has a different contractual model with each company, designed to optimise service delivery for SA Water customers. Both contractual models:

- employ a combination of fixed and variable cost components
- have built in 'budget efficiency adjustment' targets for the contractor each year to drive ongoing efficiency
- use gain/pain share cost overrun mechanisms to drive shared accountability for financial outcomes
- operate within strict performance (service standard) frameworks.

The baseline costing for these contracts was undertaken using 2018-19 activity levels and, since then costs, such as for chemicals, have increased and the scope has been amended to optimise performance and respond to increased demand by customers (including through development).

As such, incremental operating expenditure is required for RD24. This will include additional operating costs to support increased chemical costs (which have risen faster than inflation due to supply chain challenges detailed in Chapter 3), the new requirement for ultraviolet treatment at the Happy Valley Water Treatment Plant to support the reservoir reserve opening for recreational access, growth in the number of customers forecast for RD24 (one per cent growth in residential customers and 0.5 per cent growth in non-residential customers), and significant service expansion across the northern parts of Adelaide to respond to development.

SA Water has identified an average of $2.2 million per annum of additional expenditure incremental to the base year related to these activities. This is a total of $8.8 million over the RD24. SA Water will not, however, be seeking additional regulated revenue for these activities.

The key drivers for the variance are shown in Figure 9-19 and in table 9-13, noting that SA Water previously proposed to apply an efficiency to this initiative where it formed part of sought revenue.

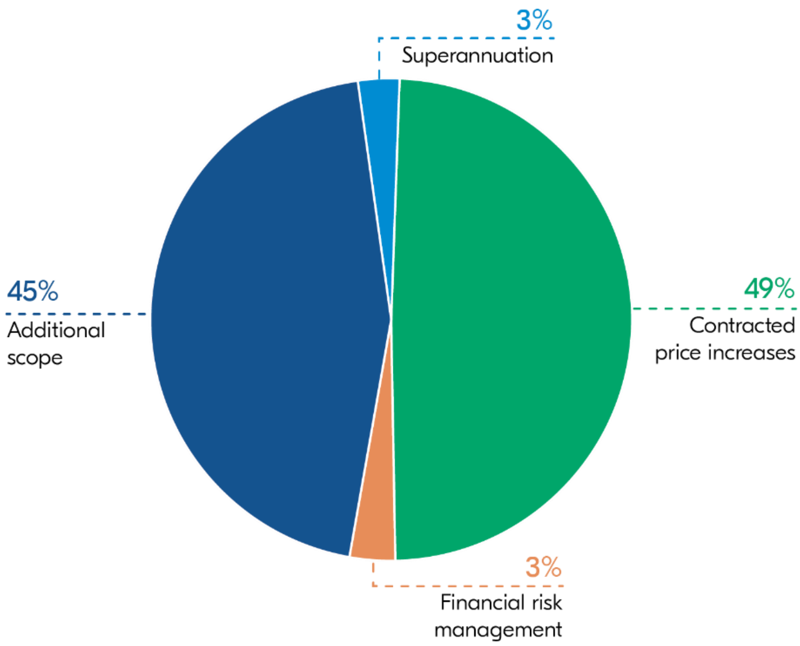

Figure 9-19 Key drivers for metropolitan service delivery variance

Table 9-13 Metropolitan service delivery total operating cost in RD24

$m Real 2022-23	RD24 total operating cost	Driver
Enfield Bolivar drain cleaning	$1.1	Additional scope
Happy Valley Water Treatment Plant ultraviolet	$0.7	Additional scope
New development at Buckland Park	$3.5	Additional scope
External audit and review program	$0.3	Financial risk management
Contracted price increase	$6.1	Contracted price increases
Less: 25% Efficiency applied	-$2.9	
Total	**$8.8**	

Figures may not total due to rounding.

9.6.1.2.1 Examples of initiatives included above include: Additional scope – Happy Valley Wastewater Treatment Plant ultraviolet

The State Government decision to open SA Water's reservoir reserves for recreation access has required additional measures to ensure there is no unacceptable increase in the risks to drinking water quality. At the Happy Valley Reservoir, this has required the introduction of ultraviolet disinfection at the water treatment plant to provide an effective pathogen barrier and to reduce the public health risk of a pathogen (cryptosporidium) breakthrough. Additional capital and operating expenditure has been required to satisfactorily manage pathogen risk at the site. While originally it was envisaged that one ultraviolet reactor would satisfy public health requirements, the risk profile of the site through implementing recreational access has meant that 4 reactors need to be used.

Because multiple reactors need to be operational at the same time there is an incremental cost to lamp and associated component replacement and operating cost.

9.6.1.2.2 Additional scope - new development at Buckland Park

While the Adelaide Service Delivery contracts allow for some growth, the complexity of the wastewater system installed by the developer at Buckland Park means that additional resources are required to support normal operations.

The area uses an extensive vacuum wastewater system (designed and constructed by the developer), which is more expensive to operate and maintain than gravity wastewater systems. The Buckland Park system was constructed using this method due to the high groundwater tables in the region, with the aim of reducing groundwater ingress into the wastewater system.

Development in this area is tracking 2 to 3 regulatory periods ahead of schedule, as previous market and peak body intelligence did not foreshadow allotment creation until the late 2020s in this location.

As such, the service delivery requirements are beyond the initial scope of the contracts, requiring a scope change and extraordinary resources to enable SA Water's contract partners to deliver the work. In addition to labour, this scope change includes funding for the purchase of new equipment, vehicles and, potentially, subcontractors deliver the work.

Upon handover, in addition to operations, SA Water will also be responsible for the cost of the tankering required to transport wastewater for treatment until the system is constructed and connected to the sewer network.

9.6.1.3 Planned reliability-based maintenance

Asset maintenance programs form a fundamental component of the operating life of any asset. In 2020, SA Water initiated a new planned reliability-based maintenance program using a reliability-centred maintenance (RCM) methodology.

The objective of this program is to improve preventative and predictive maintenance programs to increase asset reliability, integrity, and operational availability. This is done by maintaining assets where asset failure condition is detectable and asset performance is reducing, thereby reducing the risk of potential failure. In addition, assets are also managed to mitigate risks to personnel safety.

The program uses modelling informed by historic failure data that is used to forecast the deterioration of assets and then predict future maintenance requirements. This methodology, where applied with robust data and an understanding of the operating context, will provide a result that optimises performance and cost trade-offs.

In the long-term, this approach leads to better use of assets and ensures they are used for as long as possible before needing to be replaced, maximising the value of past capital investments and supporting SA Water's focus on sharing costs over the longer-term aimed at achieving intergenerational equity.

To comprehensively implement the RCM methodology, SA Water requires additional expenditure to execute works that involve:

- high voltage switchboard, transformer, and motor inspections
- oil testing and analysis
- air compressor and emergency generator inspections.

These works are necessary to inform the development of ongoing comprehensive, planned reliability-based maintenance decisions for these assets, including decisions on major maintenance initiatives, such as discussed in the following section.

To enable these works, which are conducted by specialist contractors, SA Water requires $0.46 million per annum of additional funding incremental to base year (a total of $1.84 million over the RD24 period). The breakdown of these incremental costs is provided in Table 9-14.

Table 9-14 Planned reliability-based maintenance costs

Incremental expenditure to base year ($m, real 2022-23)	2024-25	2025-26	2026-27	2027-28
High voltage switch board and transformer inspection services	-$0.0	$0.5	-$0.0	$0.5
High voltage motor inspections	-$0.1	$0.2	-$0.1	$0.0
Oil sampling	$0.0	$0.0	$0.0	$0.0
Air compressor maintenance	$0.3	$0.3	$0.3	$0.3
Emergency generator and pump maintenance	$0.1	$0.1	$0.1	$0.1
Less: 25% Efficiency applied	-$0.1	-$0.3	-$0.1	-$0.2
TOTAL	**$0.2**	**$0.8**	**$0.2**	**$0.7**

Figures may not total due to rounding.

Engagement has provided strong support for investments that reduce long-term costs and that enables SA Water to continue to deliver services for its customers.

9.6.1.4 Major maintenance

Major maintenance applies to SA Water's mechanical and electrical assets. It is undertaken to enable critical infrastructure to achieve its expected useful life with a focus on minimising failure frequency and duration of water and wastewater interruptions.

Since the implementation of the planned reliability-based maintenance program in 2020, major maintenance is scheduled where a need is identified using the RCM methodology. In general, determining the requirement for major maintenance of an asset involves a condition and risk-based approach. Implementing such works entails complex planning, involving multiple internal and external resources with longer lead times to procure materials and seasonal risks.

As a result of this new proactive maintenance program, SA Water has identified several additional maintenance activities that it seeks to progress in RD24 and for which it will require additional operating expenditure. These activities include:

- motor and pump overhauls
- wastewater inlet step-screens overhaul
- bio filter media service.

These works are required to improve operational performance, meet service standards, meet environmental legislative requirements, reduce maintenance costs and downtime, and maximise asset life.

SA Water requires $1.2 million per annum of additional funding incremental to base year (a total of $4.7 million over the RD24 period) to fund the comprehensive major maintenance program. The breakdown of these incremental costs is provided in Table 9-15.

Table 9-15 Major maintenance costs

Incremental expenditure to base year ($m, real 2022-23)	2024-25	2025-26	2026-27	2027-28
Bio filters	$0.0	$0.0	$0.0	$0.0
Overhaul inlet screens	$0.0	$0.0	$0.0	$0.0
Submersible wastewater pumps	$0.4	$0.4	$0.4	$0.4
Water bore pumps	$0.0	$0.0	$0.0	$0.0
Incremental expenditure to base year ($m, real 2022-23)	**2024-25**	**2025-26**	**2026-27**	**2027-28**
Water pump in major pipelines and high voltage pump stations	$0.1	$0.1	$0.1	$0.1
Water high voltage motor and heat exchanger	$1.0	$1.0	$1.0	$1.0
Less: 25% Efficiency applied	-$0.4	-$0.4	-$0.4	-$0.4
TOTAL	**$1.2**	**$1.2**	**$1.2**	**$1.2**

Figures may not total due to rounding.

As with planned reliability-based maintenance above, engagement activities have provided strong support for investments that reduce long-term costs, and which enables SA Water to continue to deliver services for its customers.

9.6.1.5 Technology increase

Underlying technology running costs, including licencing, support, telecommunications, and maintenance, have increased above inflation since RD20. Some costs are project related and so are captured under capital expenditure.

Some of SA Water's technology systems are key enablers for the business, ensuring reliability of operations for employees and services to customers. Key areas of technology where operating cost only increases have been experienced include for Microsoft licences, Maximo (SA Water's key asset and works management system) licences and data network traffic. Specifically:

- licence costs that are part of the Microsoft enterprise agreement are projected to increase by 21 per cent through to 2025-26
- Maximo licence agreements are forecast to increase by 10 per cent over 5 years, based on previous increases
- data traffic - as more SA Water systems are required to move to the cloud, this is projected to cause a 10 per cent per annum increase in data traffic, increasing internet bandwidth and usage costs.

Based on these projected increases, SA Water requires $0.24 million in 2024-25 increasing to $0.495 million per annum of additional funding incremental to base year for the rest of RD24 (a total of $1.7 million over the RD24 period) to fund these technology requirements.

Engagement with the CCG and PBEF on technology spend was initially not well received, with questions on how investments could be better and more specifically targeted to meet the needs of SA Water customers. Accordingly, work was undertaken to re-evaluate the requested increases, with engagement supporting these investments on the basis that there are few alternatives to incurring licence fees.

9.6.2 External obligations

Operating expenditure initiatives listed in Table 9-16 are driven by external obligations, which include legal, regulatory or owner requirements. Consistent with feedback through engagement, these initiatives have been given the highest priority in initiative prioritisation. They will require expenditure totalling $39.5 million (real 2022-23) over the RD24 period. All figures quoted are net of efficiencies applied. The following sections provide a summary of each initiative.

Table 9-16 External obligations operating expenditure (real 2022-23 $m)

Initiative	Regulated operating expenditure 4-year total	Water operating expenditure 4-year total	Wastewater operating expenditure 4-year total
Statutory superannuation increases	$17.4	$11.9	$5.5
Operating the Tea Tree Gully Community Waste Management Scheme	$11.1	-	$11.1
Recreational access to reservoirs	$6.9	$6.9	-
Statutory planned maintenance	$2.9	$1.9	$0.9
Treasurer's Instruction 18 reforms	$1.1	$0.8	$0.4
Total operating expenditure - external obligations	**$39.5**	**$21.6**	**$17.9**

Figures may not total due to rounding.

9.6.2.1 Statutory superannuation increases

The Superannuation Guarantee is a non-discretionary payment legislated under the Commonwealth *Superannuation Guarantee (Administration) Act 1992* (SGA Act). Under the superannuation guarantee, employers are required to pay superannuation contributions as a percentage of an employee's ordinary time earnings[129].The Superannuation Guarantee is a non-discretionary payment legislated under the SGA Act.

From 1 July 2014 until 30 June 2021, the superannuation guarantee rate legislated to be paid was 9.5 per cent. Under changes made to the SGA Act, the prescribed superannuation guarantee rate increases annually on 1 July each year by 0.5 per cent from 1 July 2021 to 1 July 2025. As shown in Table 9-17, it has already increased to 10.0 per cent in 2021-22 and will continue to increase up to 12.0 per cent by 1 July 2025, then continuing at 12 per cent for the rest of the regulatory period. The superannuation guarantee is the minimum amount an employer must pay.[130]

[129] Fair Work Ombudsman (n.d.) Tax & superannuation, Fair Work Ombudsman, accessed 10 May 2023.
[130] Australian Taxation Office (2023) Super guarantee percentage, Australian Taxation Office, accessed 10 May 2023.

Table 9-17 – Superannuation guarantee increases

Financial year	Percentage
1 July 2021 – 30 June 2022	10.0%
1 July 2022 – 30 June 2023	10.5%
1 July 2023 – 30 June 2024	11.0%
1 July 2024 – 30 June 2025	11.5%
1 July 2025 – 30 June 2026	12.0%
1 July 2026 onwards	12.0%

Failure to pay the superannuation guarantee can result in SA Water being liable for a superannuation guarantee charge. This charge is required where an employer fails to pay the correct amount of superannuation, pay on time, and pay into an employee's correct superannuation fund. This charge is more than the superannuation guarantee amount.

Additional expenditure is therefore required to meet this statutory obligation. Similar increases were included in other utilities' price submissions, including in the South East Water Price Submission 2023-28 and East Gippsland Water 2023-28 Price submission. [131]

SA Water calculated the superannuation impact based on the following 2 elements. The first related to the incremental rise of salary-related costs in 2021-22 (base year), where expenditure was$148.8 million (nominal). This amount has been adjusted to an opening base for the RD24 period of $150 million (nominal). The second element is the incremental rise of superannuation relating to annual salary increases. A general 3.5 per cent increase has been factored in year-on-year to meet the superannuation guarantee increases. This percentage has been determined based on general salary inflation information available, and historical experience when annual increases and out of cycle increases have been considered. Determination of the 3.5 per cent annual salary increase was supported by a confidential independent actuarial report prepared for SA Water relating to various employee benefit calculations.

The total impact of this change in requirements over the RD24 period will result in an increase of $17.4 million in superannuation costs (above the base year) as shown in Table 9-18.

[131] South East Water (2022)South East Water Price Submission 2023-28, South East Water accessed 13 July 2023; East Gippsland Water (2022) East Gippsland Water - 2023-28 Price Submission, East Gippsland Water accessed 10 May 2023.

Table 9-18 Superannuation guarantee uplift calculation

$millions Real 2022-23	Base year 2021-22	2024-25	2025-26	2026-27	2027-28
Base salary and allowances	$148.8	$150.9	$150.9	$150.9	$150.9
Incremental super increase on Base:					
Super guarantee % applicable	10.00%	11.50%	12.00%	12.00%	12.0%
Super guarantee % incremental to base		1.50%	2.00%	2.00%	2.00%
Super guarantee increase (nominal)		$2.3	$3.0	$3.0	$3.0
Incremental Super increase on salary increase:					
Base salary and allowance % increase		3.5%	3.5%	3.5%	3.5%
Base salary and allowance $ increase (cumulative)		$7.75	$13.30	$19.05	$24.99
Super guarantee increase – salary increase		$0.9	$1.6	$2.3	$3.0
Total incremental super guarantee required (nominal)		$3.2	$4.6	$5.3	$6.0
Total incremental super guarantee required		**$3.0**	**$4.3**	**$4.8**	**$5.3**

9.6.2.2 Operating the Tea Tree Gully community waste management scheme

In parts of the City of Tea Tree Gully (CTTG), around 4,700 properties have historically been connected to a CTTG-run community wastewater management system (CWMS). This CWMS has been disposing all household wastewater into septic tanks located on each property. The tank is designed to allow solids to settle to the bottom with liquid waste discharged into the CWMS network, with it eventually flowing into one of SA Water's sewer mains or an approved treatment facility.

In May 2020, the then Minister for Environment and Water directed SA Water to transition houses on the CWMS network to SA Water's sewerage (wastewater) network. [132] SA Water is required to operate the existing CWMS, while properties are gradually connected to its sewerage network.

New operating expenditure is required for the ongoing operation and maintenance of the CTTG CWMS until all properties are transferred to the SA Water network. This is an incremental cost to the base year 2021-22, as these were not SA Water wastewater customers before 1 July 2022. Expenditure relating to the transition of the CTTG CWMS to the SA Water wastewater network, under the Sustainable Sewers Program, is detailed in Section 8.2.2.

SA Water has integrated the operations of the CTTG CWMS into its field operations metropolitan contract with Service Stream, with handover of these services from the CTTG to Service Stream on 1 October 2022. The contract with Service Stream covers operations and civil maintenance services for the water, wastewater, and recycled water network.

The addition of CTTG CWMS operations and maintenance to the Field Operations Metropolitan contract is considered a scope change due to the material impact it has on the contract and outcomes to be delivered. The scope includes operating the existing

[132] South Australian Government (2020) The South Australian Government Gazette No.50 Adelaide, Thursday, 11 June 2020.

CWMS network, and providing breakdown, preventative, and major maintenance services. It requires Field Operations to expand its current workforce and invest in additional fleet and specialised equipment to meet the service standards for this scheme.

Costs for running the CTTG CWMS also include the costs associated with septic tank management, which is carried out by a specialist contractor, and additional SA Water resources related to customer and contract management.

The incremental costs relating to the operation of the existing CWMS will reduce over time as more customers are transitioned to normal wastewater services. This expenditure is therefore interrelated with the expenditure relating to the Sustainable Sewers Program detailed in Section 8.2.2. The uplift in expenditure is also partly offset by additional revenue from CTTG customers, which is factored in as part of price setting calculations after the revenue cap is set (as detailed in Section 12.2.4).

SA Water therefore requires approximately $2.8 million per annum of additional funding, incremental to base year, and a total of $11.1 million over the RD24 period, to support ongoing operations and maintenance of the CTTG CWMS.

9.6.2.3 Recreational access to reservoir reserves

SA Water is required to ensure the ongoing protection of water quality and security for its reservoirs that supply drinking water, in accordance SA Health requirements. As part of 2018 election commitments, the then State Government committed to opening reservoir reserves around South Australia to provide the community with access to a range of recreational activities.

Across the 10 SA Water managed reservoirs that have been opened, recreational activities allowed have included walking, cycling, kayaking, and fishing (shown in Table 9-19). Since the first reservoir reserve opened for recreational activities in April 2019, more than one million people have visited reservoirs up until 4 May 2023.

Table 9-19 Recreational activities at reservoirs open to the public

Reservoir	Bushwalking	Sightseeing	Picnicking	Cycling	Fishing	Kayaking	Fishing from a kayak
Myponga	Y	Y	Y	Y	Y	Y	Y
Happy Valley	Y		Y	Y	Y	Y	Y
Mount Bold	Y	Y					
Hope Valley	Y		Y	Y			
Barossa		Y	Y				
South Para	Y		Y	Y	Y	Y	Y
Warren	Y		Y	Y	Y	Y	Y
Little Para	Y		Y	Y			
Bundaleer	Y		Y	Y	Y	Y	Y
Tod River		Y	Y				

Balancing recreation with the ongoing provision of safe, clean, and reliable drinking water supplies required careful risk management. As a result, the opening of reservoirs for recreational access is underpinned by drinking water safety risk assessments. These assessments identified ongoing management controls required to be effectively implemented to ensure there are no unacceptable risks to drinking water from these activities. This has ensured compliance with Sections 12, 13 and 24 of the *Safe Drinking Water Act 2011* and the associated Australian Drinking Water Guidelines (ADWG) 2011.

A systematic water quality hazard and risk assessment process was applied to each reservoir to evaluate a range of water quality risk profiles (such as enteric protozoa, bacteriological, health chemicals, pesticides, and aesthetics). This was done to:

- inform what recreational activities could be safely undertaken for each reservoir, and for each location, and the controls required to ensure they could be undertaken without compromising drinking water safety
- drive reservoir specific operational strategies, research and innovation, and investment.

Activities and access conditions have been carefully designed to protect water quality, safety, and site security. These conditions cover permitted activities, accessible areas, opening hours and requirements for closure, and are enforceable through authorised officer provisions within the South Australian Water Corporation Act 1994.

Management controls vary from reservoir to reservoir, depending on the recreational activities available, the water safety risks and controls necessary, and specific local requirements.

Specific controls required by SA Health to maintain drinking water quality include:

- field staff to actively manage visitor behaviour and compliance
- increased levels of water quality monitoring
- routine infrastructure inspections and additional site surveillance
- breakdown and preventative maintenance
- a fishing in reservoirs permit system and its management.

The then State Government provided initial expenditure to facilitate these new activities up to June 2021. As such, it is not included in the regulated base year operating expenditure.

The ongoing operational management of recreational access requires funding in RD24 because SA Water has ongoing regulatory requirements under the *Safe Drinking Water Act 2011* to maintain drinking water quality for customers.

SA Water requires $1.7 million per annum of additional funding incremental to base year, a total of $6.9 million over the RD24 period, to fund the controls required to safely manage recreational access to reservoir reserves. These controls include:

- rangers to manage operations, undertake visitor management and patrols across the 10 reservoir reserves
- support for recreational access operational activities at reservoir reserves including vehicles, fuel, consumables, and materials
- facilities and equipment maintenance
- additional water quality monitoring (addition water samples are analysed for Escherichia coli and cyanobacteria) and surveillance
- communication and engagement to support safe public access to reservoirs.

9.6.2.4 Statutory planned maintenance

SA Water has critical infrastructure that requires statutory maintenance to ensure regulatory conformance. This critical infrastructure includes fire systems, cranes, lifting equipment, people lifts, extraction flowmeters, safety showers and eyewash stations. This maintenance is carried out to ensure asset integrity and reliability for the safe and sustainable operation of water and wastewater services, and compliance with relevant acts, regulations, standards, and codes.

Key regulatory instruments include:

- fire protection systems – *Work Health Safety Act 2012* and regulations, and Australian Standard (AS) 1851: Maintenance of Fire Protection Systems
- cranes and lifting equipment – *Work Health and Safety Act 2012* and regulations, and AS 2550 and AS1418 applying to cranes, hoists and winches
- people lifts - *Work Health Safety Act 2012* and regulations, and AS 1735: Lifts, escalators and moving walks
- extraction flow meters - *Landscape South Australia Act 2019* and *Landscape South Australia (Water Management) Regulations 2020*
- safety showers and eyewash stations - Plumbing Code of Australia, AS 4775: Emergency eyewash and shower equipment.

Adherence to the above regulations and standards ensures the ongoing safety of SA Water staff, the environment, and community.

Currently SA Water is managing these statutory preventative and corrective maintenance activities using multiple third-party maintenance contractors. However, review and continual improvement investigations of the current approach have identified the need for an improved approach including increased maintenance activities (due to more assets and more tasks at increased frequencies), better record keeping (in Maximo, rather than relying on contractor records), increased reporting to demonstrate compliance and improved cost allocation.

Implementing this in RD24s will see existing practices improved to deliver a comprehensive maintenance program. This will ensure assets comply with the relevant acts and the maintenance work programs to mitigate the safety and operational risks for the business, its workers and the community.

Activities funded will include inspection and maintenance of fire systems, cranes, lifting equipment, people lifts, extraction flow meters, safety showers and eyewash stations.

SA Water requires a total of $2.9 million to implement an improved, comprehensive, overarching statutory maintenance program. The current existing budget in the 2021-22 base year is $1.3 million, with an additional $0.7 million per annum required in the RD24 period.

9.6.2.5 Treasurer's Instruction 18 reforms

SA Water is bound by the *Public Finance and Audit Act 1987* which requires the Corporation to comply with Treasurer's instructions. The *State Procurement Act 2004* was repealed on 1 July 2021 which triggered the Treasurer's Instruction 18 Procurement (TI-18) to be amended, effective from 1 July 2022. [133] This amendment requires additions to SA Water's existing procurement framework and processes.

SA Water has attempted to seek variations to the additional requirements of TI-18 to mitigate additional future costs.

The additional requirements of TI-18 will therefore necessitate amendments to a range of procurement models and processes impacting staff, including approximately 600 accredited officers in the business. These amendments require training, change management and technology upgrades or reconfiguration to ensure compliance and to optimise the effectiveness of the change.

The required operating expenditure is for a range of initiatives to be implemented for SA Water to meet the various new requirements, including:

[133] Treasury SA (2023) [Treasurer's Instructions 18](), webpage accessed 11 May 2023.

- introduction of a new procurement planning process for procurement activities with a value over $50,000.
- development and implementation of associated training and awareness of new processes, models and technologies for all impacted staff (approximately 600 accredited officers).
- additional resources to conduct new process requirements.
- introduction of new Internal audit review program for procurement framework.
- introduction of new departure register review program.
- enhancement and/or reconfiguration of associated technology to support the initiatives.

These actions are required to ensure SA Water complies with its responsibilities under the *Public Finance and Audit Act 1987*, and the associated TI-18. Failure to comply will be reported by the Auditor General to Parliament.

In June 2023 SA Water received exemption from the additional Internal Audit Review and Departure Register requirements and a temporary exemption from the other initiatives, however this is not ongoing. The Corporation will begin investigating the above actions in 2023-24, with $0.3 million per annum, a total of $1.1 million over RD24, required to complete these activities.

9.6.3 Growth and improve services

Managing customer affordability is a key consideration for SA Water. Given that many of the cost escalations observed during RD20 are projected to continue into RD24, and the large increases in operating expenditure required to maintain existing services (as detailed above), SA Water was required to make significant trade-offs with its proposed RD24 expenditure.

After significant deliberation, priority was given to initiatives that ensure the Corporation meets its external obligations and to sustain its current levels of service. As a result, no operating-only initiatives that improve or grow services are proposed for RD24.

While SA Water will maintain the continuous improvement focus for its existing operations during the next regulatory period, it will not be looking to introduce new service offerings in RD24.

This aligns with Customer Challenge Group feedback (as detailed in Section 9.5) that in an environment where not all initiatives can be progressed, priority should be given to meeting legal obligations, and maintaining existing services levels.

Additional expenditure required to enable future improvement or growth initiatives may be considered in future regulatory periods.

9.7 Total proposed operating expenditure

With a normalised base year expenditure of $555.6 million, SA Water requires an additional $162.4 million over 4 years (net of efficiencies) as summarised in Table 9-20.

Table 9-20 Total proposed operating expenditure per driver (real 2022-23 $million)

Key driver ($m, $2022-23)	2024-25	2025-26	2026-27	2027-28	Total regulated operating expenditure
Asset investment operating cost					
External responsibility	$6.5	$8.9	$15.2	$17.1	$47.7
Sustain services	$3.9	$12.4	$20.9	$21.5	$58.6
Enable growth	$2.8	$4.0	$0.7	$0. 7	$8.2
Improve services	$0.0	$0.0	$0.0	$0.0	$0.1
Other operating costs					
External responsibility	$9.5	$10.2	$10.0	$9.8	$39.5
Sustain services	$1.6	$2.5	$1.8	$2.4	$8.3
Total after efficiency	**$24.3**	**$38.0**	**$48.6**	**$51.5**	**$162.4**

Figures may not total due to rounding.

This includes $114.7 million of operating expenditure that relates to capital expenditure as detailed in Chapter 8, in addition to the $47.8 million of operating expenditure only requirements detailed in Section 9.3.

Figure 9-20 provides a comparison of operating expenditure between the previous submission (approved RD20) and this regulatory submission (proposed). In percentage terms, the most notable difference in RD24 is the reduction in improve-related expenditure, with an increase in sustain expenditure. Figure 9-20 also includes operating expenditure related to asset investment that is covered in Chapter 8.

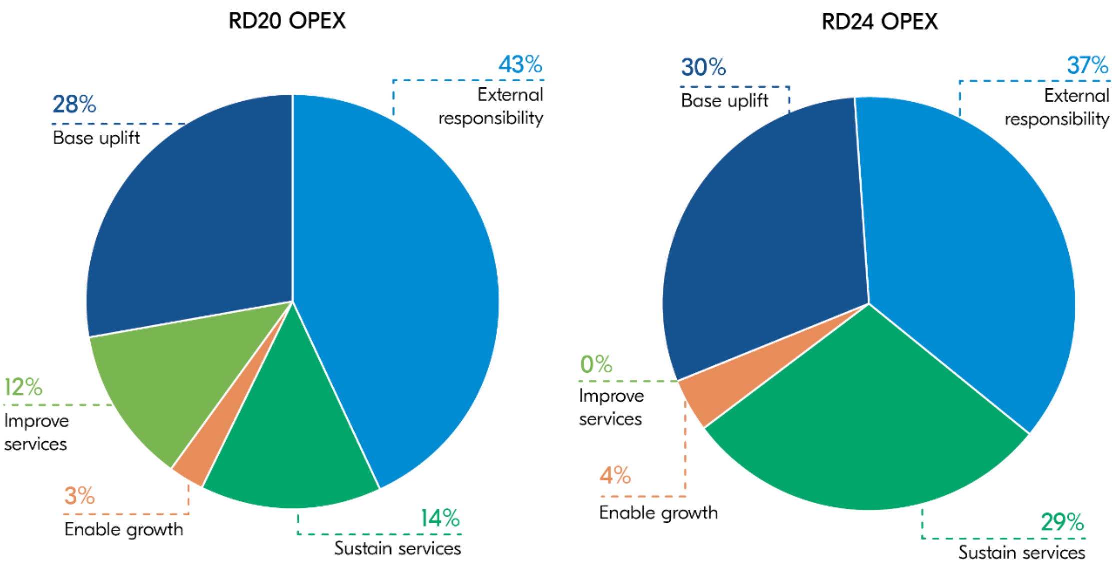

Figure 9-20 Operating expenditure percentage by driver, RD20 vs RD24

In expenditure terms, the biggest changes from RD20 are the increase in sustain services, which arise from the fact it is now more expensive to maintain existing services (as detailed in Chapter 3 and Section 9.3).

9.8 Risk position

As discussed previously, operating expenditure for the 2024-28 period has been determined during a time of global disruption.

While the forecast operating costs have been based on the best available evidence and informed by, market projections and detailed cost models, uncertainty in the local and global environment may result in variances from forecast costs.

In addition, to manage customer affordability, SA Water has had to prioritise expenditure to focus on sustaining services and addressing external responsibilities and are not able to address all current risks or all desired improve activities.

Similar to the capital expenditure risks detailed in Section 8.5, SA Water will be carrying a higher than desired level of risk during the period, due to constrained expenditure to manage affordability. This is not sustainable in the long-term. SA Water will continue to monitor impacts to service standards and customer satisfaction in RD24 and will review if required for RD28.

10 SA Water's regulated revenue requirement

SA Water collects revenue to cover the costs of providing water and wastewater services to its customers. ESCOSA sets the maximum amount of allowable revenue that can be collected from customers over each regulatory period. Separate maximum allowable revenue caps are set for water and wastewater services. These amounts are then used to determine the water and sewerage prices paid by customers.

This chapter explains how SA Water has calculated water and wastewater revenue requirements for the forward regulatory period to inform ESCOSA's determination on allowable revenue.

10.1 How revenue is calculated

SA Water has determined its water and wastewater revenue requirements for RD24 using a building block methodology, consistent with ESCOSA's RD20 Final Determination methodology.[134] This approach calculates allowed revenues as the sum of key cost components (building blocks) using planned capital and operating expenditure as well as other financial variables to inform the revenue building blocks. In particular, the building block approach sums together operating expenditure, return on assets, regulatory depreciation, return on working capital, tax expense and any revenue adjustments from previous periods and adjusts for non-tariff regulatory revenues (such as payments for Community Service Obligations - CSOs) shown in Figure 10-1.

The building block model used for this submission was updated in collaboration with ESCOSA to establish an agreed model well in advance of the process. This enables a streamlined and more efficient information exchange through the regulatory determination preparations. ESCOSA details the approach in Guidance Paper 3.[135]

The building block methodology is widely used by other utility regulators across Australia and complies with the National Water Initiative (NWI) Pricing Principles endorsed by the Council of Australian Governments (COAG). [136] The robustness of the current model was independently reviewed by KPMG in 2022 at the request of both ESCOSA and SA Water in a joint engagement. This review validated the decision for the model to remain largely unchanged across the previous 3 regulatory periods and for RD24.

The model was indexed to real December 2022 dollars using the Australian Bureau of Statistics' consumer price index (CPI) weighted average for eight capital cities for the year ending March 2022 as a proxy. This indexation approach is consistent with previous submissions and aligns to the CPI used to inflate water and sewerage prices and the CPI used by ESCOSA in RD20 to calculate the present value of the revenue adjustment mechanisms.

[134] ESCOSA (2020)'*SA Water Regulatory Determination 2020 – Statement of reasons',* ESCOSA, accessed 24 April 2023.
[135] ESCOSA (2022) '*Guidance Paper 3: Assessing the Regulatory Business Plan'*, ESCOSA, accessed 26 April 2023.
[136] Department of Climate Change, Energy, the Environment and Water (2004)'Intergovernmental Agreement on a National Water Initiative', Department of Climate Change, Energy, the Environment and Water, accessed 4 April 2023.

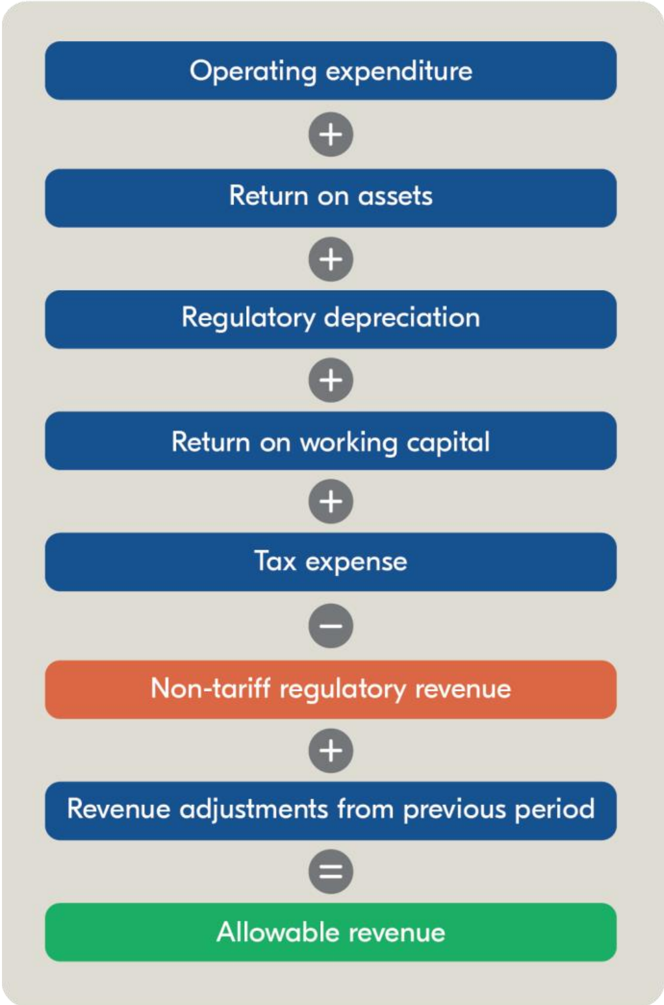

Figure 10-1 Revenue building block model

The following sections describe the various components of the building block model and how SA Water has calculated them.

10.1.1 Operating expenditure

The operating expenditure building block is designed to recover the ongoing, day-to-day expenses incurred from delivering SA Water's services. In doing this, operating expenses are recovered in the year they are spent, accounting for about 45 per cent of allowable revenue. This results in operating expenditure having a larger impact on current required revenue and prices than capital expenditure, with the latter recovered over the life of the asset.

The proposed operating expenditure input to the building block model shown in Table 10-1 is equal to the operational expenditure detailed in Chapter 9.

Table 10-1 Proposed operating expenditure allowance

Operating expenditure allowance ($'000, real 2022-23)	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Water	388,016	387,598	388,055	385,439	396,294	406,849	416,431	418,120
Wastewater	149,107	147,792	149,919	150,538	186,417	188,836	185,906	186,831

10.1.2 Return on assets

One of the largest building blocks is the return on assets, which represents the cost of funding (debt and equity) of SA Water's current and historical investment in regulated assets. It is calculated by multiplying the value of SA Water's regulated asset base by the regulated rate of return.

10.1.2.1 Regulated asset base

For the regulated asset base (RAB), the water and wastewater RAB reflect SA Water's investment in water and wastewater assets over time. The value of the RAB is used to calculate the return on assets and the subsequent regulatory depreciation building block.

ESCOSA's approved methodology to roll forward SA Water's RAB value has been used for RD24. In applying this method, each year the opening value of the RAB is adjusted for actual or forecast capital expenditure, asset disposals and depreciation to determine closing values. Table 10-2 summarises the regulatory asset base roll forward for water and wastewater assets over each year of the 2020-24 and 2024-28 regulatory periods, with Table 10-2 demonstrating the change in investment over the same periods.

Table 10-2 Regulated asset base roll forward to 2027-28

Water RAB ('$m)*	2020-21 (nominal)	2021-22 (nominal)	2022-23 (nominal)	2023-24 (real 2022-23$)	2024-25 (real 2022-23$)	2025-26 (real 2022-23$)	2026-27 (real 2022-23$)	2027-28 (real 2022-23$)
Opening value	8,196	8,361	8,516	9,090	9,326	9,559	9,795	10,034
Capital expenditure	166	256	339	453	471	479	467	448
Disposals	4	5	2	5	4	4	3	3
Depreciation	179	190	206	213	234	240	224	234
Indexation	182	93	443	-	0	0	0	0
Closing value	8,361	8,516	9,090	9,326	9,559	9,795	10,034	10,246

Wastewater RAB ($m)*	2020-21 (nominal)	2021-22 (nominal)	2022-23 (nominal)	2023-24 (real 2022-23$)	2024-25 (real 2022-23$)	2025-26 (real 2022-23$)	2026-27 (real 2022-23$)	2027-28 (real 2022-23$)
Opening value	4,229	4,309	4,359	4,596	4,688	4,774	4,867	4,969
Capital expenditure	105	127	147	234	238	239	240	242
Disposals	2	2	1	2	2	2	1	1
Depreciation	118	123	135	141	151	144	137	143
Indexation	94	48	226	-	-	-	-	-
Closing value	4,309	4,359	4,596	4,688	4,774	4,867	4,969	5,067

* RAB inflated to real December 2022-23 dollars using March to March 2022 CPI.

10.1.2.2 Regulated rate of return

The regulated rate of return has a significant impact on customer prices. To determine rate of return across the regulatory period, ESCOSA estimates the cost of equity and cost of debt and applies the benchmark weights for each capital source to determine the rate of return on a post-tax real (excluding inflation) basis.

To estimate both the cost of equity and cost of debt, assumptions for multiple inputs are required. Further, as the cost of debt and equity parameters in the rate of return are measured on a nominal (including inflation) basis, ESCOSA's methodology deflates the nominal rate of return by a forward-looking inflation estimate to arrive at the real rate of return. Hence the inflation estimate methodology is also a key driver of the final rate of return.

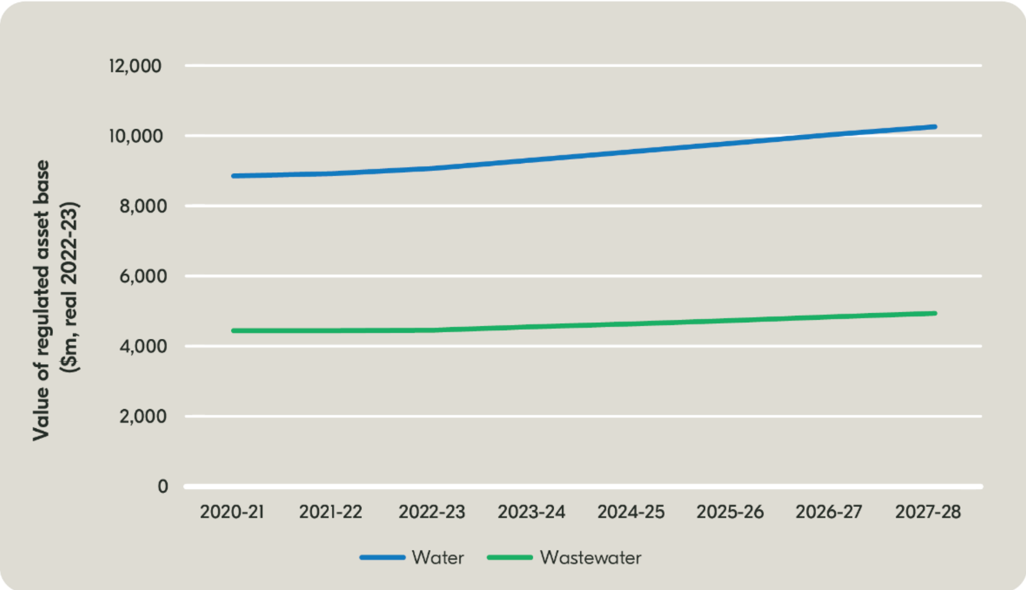

Figure 10-2 Increase in value of regulated asset base

Through previous regulatory processes, ESCOSA has reviewed the methodology used to determine the rate of return and has made incremental changes to the methodology:

- In RD16, the setting of the cost of debt allowance was adjusted to a 10-year trailing average which aligns with SA Water's debt management strategy.

- For RD20, minor changes were made to the averaging period of the risk-free rate, the equity beta and the adoption of a glide path to calculate the inflation estimate.

Table 10-3 provides the key parameters and assumptions used by ESCOSA in the 2020 regulatory determination[137] to calculate the regulated rate of return. SA Water has used these to set the regulated return for the 2024-28 regulatory period.

Table 10-3 Parameters and assumptions used to estimate the regulated rate of return

Parameter	RD20 Final Determination
Rate of return	Real, post-tax WACC
Cost Of debt estimate	
Debt risk premium	10-year BBB proxy bond (Reserve Bank of Australia [RBA] published data)
Averaging period	10-year trailing average
Debt raising cost	0.125%
Cost of equity estimate	
Risk-free rate (RFR)	10-year Commonwealth Government securities (nominal)
RFR averaging period	60 days
Market risk premium (MRP)	Historic MRP (6%)
Equity beta	0.67
Inflation estimate	
Method	10-year geometric average: using 2 years of RBA forecasts for trimmed mean inflation, a linear glide path to the midpoint of the RBA inflation target band of 2.5% in year 7 and 2.5% for remaining years
Other	
Credit rating	BBB
Gearing	60% debt, 40% equity
Gamma	0.50
Tax rate	30%

Based on market information as at 30 April 2023 and the May 2023 RBA Statement of Monetary Policy, the forecast regulatory rate of return for RD24 is provided in Table 10-4, along with RD20 actuals for comparison. Increases have been observed in all the market inputs to the regulated rate of return (debt, equity and inflation) compared to the RD20.

[137] ESCOSA (2020) '[SA Water Regulatory Determination, Final Determination : Statement of Reasons](#)', ESCOSA, accessed 4 April 2023.

Table 10-4 RD24 forecast rate of return

Parameter	RD20 final determination (4-year average)	RD24 forecast (4-year average)
10-year BBB yield	4.60%	4.95%
Debt raising cost	0.125%	0.125%
Cost of debt	**4.725%**	**5.07%**
Risk-free rate	0.91%	3.41%
Market risk premium	6.00%	6.00%
Equity beta	0.67	0.67
Cost of equity	**4.93%**	**7.43%**
Post-tax nominal rate of return	4.81%	6.02%
Inflation estimate	**2.07%**	**2.70%**
Post-tax real rate of return	**2.68%**	**3.23%**
Assumptions	RD20 final determination	RD24 forecast
Credit rating	BBB	BBB
Gearing	60% debt, 40% equity	60% debt, 40% equity
Gamma	0.50	0.50
Tax rate	30%	30%

10.1.2.3 Proposed return on assets

Using the above RAB and regulated return on asset, the proposed building block revenue allowance for the return on assets is shown in Table 10- 5 below. The revenue required for the return on asset has increased from the previous regulatory period due to the increase in the rate of return detailed in Table 10-4.

Table 10-5 Return on assets

($'000, real 2022-23)	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Water	265,488	250,330	237,968	224,561	293,700	305,753	321,666	339,982
Wastewater	135,322	125,713	119,661	112,882	$147,665	$152,688	$159,971	$168,704

10.1.3 Regulatory depreciation

The regulatory depreciation building block is calculated to recover the value of assets used to deliver water and wastewater services over their useful life. Regulatory depreciation constitutes about one quarter of total allowable revenue.

ESCOSA states in the RD20 final determination that:

> *"the Commission allows for the wear and tear of assets (regulatory depreciation) over their economic lives to be recovered from customers. The regulatory*

> *depreciation allowance considers the standard useful lives of assets and provides a cash flow for the return on money spent on assets.*"[138]

Straight-line depreciation is used to calculate allowable revenue. Under this method the same dollar value amount of depreciation is deducted from the value of the asset for every year of an asset's weighted average asset life. This method results in a consistent depreciation throughout an asset's life.

Assumed asset lives are treated differently for RD20 and new RD24 assets when compared to assets constructed prior to the 2020 regulatory period. The new RD24 asset lives are aligned to the asset life assumptions used in RD20 as shown in Table 10-6, where the weighted average lives reflect the average assumed life of capital investments for this period.

Pre-RD20 assets, including those constructed pre-regulation, are treated as a separate group for depreciation purposes. Different classes of assets are assumed to have different average remaining asset lives as detailed in Table 10-6, where water pipe and non-pipe assets for example have assumed remaining lives of 53.4 years and 40.1 years respectively. Each class of pre-RD20 asset will continue to be depreciated in this manner until the remaining life reaches zero.

Where an aged asset is replaced, or a new asset constructed, depreciation will be calculated for this infrastructure using the assumed life of the asset as shown for RD20 and RD24 in Table 10-6, which varies by the asset class.

This discrepancy in treatment between RD20 and prior periods has arisen through adjustments made to the model by ESCOSA in reaching the final 2020 determination.

Table 10-6 Asset lives

Water asset class	Remaining lives of pre-RD20 assets*	New asset lives RD20 and RD24
Pipes	53.3	100.9
Non-pipes	38.0	101.0
Adelaide Desalination Plant (ADP)	44.6	57.0
ADP short lived	0	7.0
Corporate depreciable**	1.9	8.2
Wastewater asset class	**Remaining lives of pre-RD20 assets***	**New asset lives RD20 and RD24**
Pipes	56.6	113.0
Non-pipes	26.6	50.0
Corporate depreciable**	1.6	8.2

* Remaining useful life of assets installed pre-RD20 as at the beginning of RD24.
** Includes cloud IT assets.

Technology cloud computing expenditure (also referred to as 'software as a service') is being classified as capital expenditure and therefore depreciable, which maintains the RD20 treatment of this expenditure.

During the RD20 period the International Accounting Standards Board implemented changes to the treatment of cloud computing expenses that became operational in 2021-

[138] ESCOSA (2020)'*SA Water Regulatory Determination 2020 – Statement of reasons',* ESCOSA, accessed 24 April 2023.

22.[139] Under this standard it was deemed that these cloud-related technology expenses should be treated as operating expenditure, recognising that the technology asset produced through cloud investment was not in the control of the purchasing entity.[140] As such, SA Water's statutory accounts have been adjusted for this requirement.

If this treatment is applied to SA Water's regulatory revenue it is projected to result in a required revenue uplift where instead of the expense being depreciated over an 8-year estimated asset life it is expensed immediately. In SA Water's view this creates an unreasonable impost on regulated customers, who would experience bill increases due to the accounting treatment, without any change in level or nature of service. Furthermore, adopting the accounting standard for regulatory revenue could create incentives to use less than optimal software or hardware solutions to reduce the impact of cloud expenses on regulated customers.

For the purposes of this submission SA Water has maintained the cloud treatment as in RD20. This is a similar outcome to that adopted with respect to the leasing standard that was adopted by ESCOSA and SA Water during RD20.

Table 10-7 shows the regulatory depreciation expense for RD24 will be $120 million (15 per cent) higher for water and $42 million (8 per cent) higher for wastewater than allowed depreciation for the 2020-24 regulatory determination. This is due to increases in capital expenditure driven by investments in infrastructure which are required to maintain services (see Section 8.2 for capital expenditure).

Table 10-7 Regulatory depreciation

Water asset class ('$000, Real 2022-23$)	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Pipes	78,165	79,137	80,251	81,301	81,788	83,656	85,495	87,185
Non-pipes	51,874	53,810	55,186	56,754	58,992	61,307	63,597	65,865
ADP	32,615	32,668	32,714	32,759	33,932	33,923	33,909	33,891
ADP short lived	2,673	731	1,212	1,687	707	1,885	3,062	4,238
Corporate depreciable	26,999	30,343	33,987	37,702	54,654	55,483	34,589	38,730
Total water depreciation	**186,979**	**196,689**	**203,350**	**210,204**	**230,073**	**236,255**	**220,651**	**229,908**
Wastewater asset class ('$000, Real 2022-23$)	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Pipes	42,071	42,360	42,797	43,166	43,910	44,872	45,824	46,770
Non-pipes	56,832	58,320	60,447	62,734	63,486	65,572	67,644	69,707

[139] International Financial Reporting Standards (2019) IFRS - IFRIC Update March 2019 agenda paper 7 , International Financial Reporting Standards website, accessed 9 April 2023.
[140] Australian Government Department of Finance (2022) Cloud Computing Arrangements, Department of Finance website, accessed 23 May 2023.

Wastewater asset class ('$000, Real 2022-23$)	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Corporate depreciable	24,820	27,220	30,094	33,103	41,014	31,687	21,143	23,862
Total wastewater depreciation	**123,723**	**127,900**	**133,338**	**139,004**	**148,411**	**142,131**	**134,611**	**140,340**

10.1.4 Return on working capital

The return on working capital building block is calculated to recover the return on short-term capital SA Water needs to raise to facilitate day-to-day expenses. This is the smallest building block as it accounts for less than one per cent of allowable revenue.

As shown in Table 10-8, return on working capital is higher than in the 2020 regulatory determination because of the higher operating expenditure detailed in Chapter 9.

Table 10-8 Return on working capital

($'000, Real 2022-23)	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Water	1,236	1,153	1,087	1,012	$1,334	$1,392	$1,464	$1,515
Wastewater	474	441	417	393	$628	$646	$654	$677

10.1.5 Tax expense

SA Water makes tax equivalent payments in the interest of competitive neutrality. To achieve this, the tax building block has been designed to recover the assumed company tax expense based on the expenditure assumptions of the other building blocks and the tax treatments that would apply to an equivalent private enterprise.

Unlike the rest of the revenue model, this tax calculation includes capital contributions from property owners and developers.

Simply put, tax payable is calculated as follows:

Tax payable = (assessable income – deductions) x (effective tax rate)

Where:

- assessable income includes required revenue plus cash contributions (that is contributed assets)
- deductions include operating expenditure, tax depreciation, interest payments
- the effective tax rate is the average tax rate for a corporate taxpayer. It is the percentage of taxes owed from the taxpayer's annual income, which in the regulatory model equates to approximately 18 per cent. This is calculated using the corporate tax rate of 30 per cent reduced by the estimated value ascribed to

imputation credits using a value of 0.50 gamma (as a proxy for what a private corporation would incur).

The projected regulatory tax expense is shown in Table 10-9. To inform final water and wastewater revenue calculations by ESCOSA, projected tax expense is separated for the water and wastewater parts of the business.

Table 10-9 Regulatory tax expense

Tax expense ($'000, Real 2022-23)	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Water	5,248	2,048	2,192	2,653	9,295	7,368	304	504
Wastewater	2,927	1,154	1,985	788	1,120	-	-	-

Water has projected that the regulatory tax expense for water will increase markedly in the first 2 years of RD24 (2024-25 and 2025-26) compared to RD20 (Table 10-9). The primary driver for this increase is a higher taxable income arising from a greater return on the regulatory asset base compared to the deductible interest expense.

For wastewater, in the later years of the regulatory period, the tax expense is projected to decrease due to increased tax deductions resulting from higher tax depreciation (wastewater tax assets depreciate at a faster rate than water tax assets). The total wastewater deductions surpass the taxable income (Table 10-10), leading to a reduction in the overall tax expenditure.

The regulatory tax expense for water is lower in the last 2 years of the period. This is enabled by using the tax losses generated in wastewater operations to offset the overall tax liability for water. This approach can be used as the overall tax assessment considers a consolidated tax allowance encompassing both water and wastewater. By leveraging tax losses in wastewater, the overall tax expenditure for water has been effectively lowered, due to the projected tax refunds resulting from wastewater losses.

The tax expense for water is further reduced by corporate depreciable assets reaching the end of their useful life. This decrease in the value of the asset base exerts downward pressure on taxable income resulting in a further reduction in the required tax expense. The breakdown of the tax calculation is shown in Table 10-10.

Table 10-10 Regulatory tax expense calculation (nominal)

Tax calculation ($'000, Nominal)	2024-25	2025-26	2026-27	2027-28
Water				
Total income for tax calculation	$947,389	$993,571	$1,023,119	$1,076,397
Operating expenditure	$406,261	$424,172	$442,410	$453,534
Tax depreciation	$202,409	$215,544	$228,861	$242,117
Interest deductible	$284,721	$302,328	$325,926	$352,273
Total taxable income	$53,997	$51,526	$25,922	$28,473
Wastewater				
Total income for tax calculation	$496,592	$506,265	$512,527	$540,005
Operating expenditure	$191,105	$196,876	$197,504	$202,655
Tax depreciation	$156,416	$166,836	$177,504	$188,461
Interest deductible	$142,562	$150,553	$161,613	$174,263
Total taxable income	$6,508	-$8,000	-$24,094	-$25,374

10.1.6 Non-tariff regulatory revenue

As detailed in the building block methodology, any non-tariff related regulatory revenue is subtracted from the building block revenue allowance. This includes items such as Community Service Obligations and revenues from the sale of recycled water, detailed below.

10.1.6.1 Community Service Obligations

Community Service Obligations (CSOs) are payments

> "*where a government specifically requires a public enterprise to carry out activities relating to outputs or inputs which it would not elect to do on a commercial basis, and which the government does not require other businesses in the public or private sectors to generally undertake or which it would only do commercially at higher prices*".[141]

CSOs are funded annually by appropriation from the South Australian Government and recorded as revenue by SA Water.

SA Water is anticipating regulated CSO funding in the 2024-28 regulatory period to be on average $112-million per year (for water and wastewater combined), decreasing in real terms, shown in Table 10-11.

[141] Department of the Premier and Cabinet South Australia (2004) '*Public Non-Financial Corporations Ownership Framework Policy Guidelines*', Department of the Premier and Cabinet South Australia, accessed 5 April 2023.

Table 10-11 Non-tariff regulatory revenue

($'000, real $2022-23)	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Water								
Total regulated CSOs	78,830	81,380	69,767	68,212	67,192	66,094	64,895	63,588
Wastewater								
Total regulated CSOs	43,348	42,851	41,171	40,392	39,849	39,199	38,477	37,701
Recycled water revenue	9,143	7,506	7,797	9,012	7,963	8,045	8,199	8,143

The regulated CSO activities are anticipated to include:

- Statewide pricing facility – the shortfall between the revenue from customers and the economic cost of the service required to charge most customers under the same pricing structure. This is approximately $65 million per annum for drinking water and $39 million per annum for wastewater.
- Leigh Creek services – approximately $1.8 million per annum to fund the provision of water and wastewater services to Leigh Creek following the closure of Alinta Energy's mine activities.

These CSOs are part of the 'CSO revenue' adjustment in the building block model.

CSOs that are factored in after the revenue cap determined by ESCOSA and are part of price setting consideration include:

- *exemptions and concessions* – to account for approximately $23 million per annum for revenue foregone through concessions provided to certain classes of customers (including charities, places of public worship and similar customers).
- *administration of pensioner concessions* – approximately $400,000 per annum to fund the administration and distribution of water and sewerage bill concessions from the Department of Human Services for pensioners who are SA Water customers.

SA Water also receives CSOs for a variety of other activities including the operation and maintenance of water and wastewater systems servicing remote communities, operation of emergency communication infrastructure and water concessions for emergency services entities. CSO revenue received to cover these costs are non-regulated and do not affect regulated revenue.

10.1.6.2 Recycled water revenue

Recycled water revenue considered in this building block includes revenue from recycled water customers. Like CSOs, this amount is taken off the total required revenue to be recovered from wastewater customers.

10.1.7 Revenue adjustments from the previous period

Revenue adjustments from the previous period are adjustments made to the current period revenue allowance. These adjustments are made to account for the difference between approved revenue and actual revenue in the prior regulatory period. They are either added to or subtracted from the total required revenue detailed in the RBP, depending on the variance from total required revenue. This approach is aligned with the requirements detailed in ESCOSA's RD20 price determination.[142]

The actual adjustments being applied in RD24 are shown in Table 10-12 below. Chapter 11 provides further information on revenue adjustment mechanisms and their operation.

Table 10-12 Revenue adjustments from previous period

Regulatory adjustments ($m, real $2022-23)	RD20	RD24
Water		
Demand adjustment (relating to prior period demand)	21.5	36.7**
Sale of water licences (relating to prior period revenue)	19.8	1.7
Shared infrastructure adjustment (relating to prior period revenue)*	NA	0.1
Wastewater		
Growth adjustments	0.0	0.0

* This was a new adjustment mechanism for RD24.

** This is an estimate as of March 2023

For the water segment, this includes any adjustments due to variances in demand from RD20 revenue allowance, revenue generated from the sale of water licences in RD20 and variances in revenue from shared infrastructure in RD20.

For wastewater, this adjustment relates to any variances in customer growth from RD20.

10.2 Allowable revenue

SA Water has used building block methodology outlined in Section 10.1 to determine that from 2024-28 it requires $3.29 billion from water customers and $1.64 billion from sewerage customers (in 2022-23 dollars, net present value terms) to provide the services outlined in this submission. Table 10-13 provides the building block model calculations for the current regulatory period and projections for the 2024-28 regulatory period.

This reflects a proposed increase of allowable revenue in this submission of 19.0 per cent higher on average for water and 23.8 per cent higher for wastewater (in real $2022-23 terms) when compared to the 2020-24 regulatory determination.

The water revenue increase is inclusive of a 16 per cent increase in operating expenditure, 50 per cent increase in return on assets driven by movements in the WACC, 21 per cent increase in depreciation, and the remaining 13per cent represents working capital, tax expense and other revenue.

The drivers for the wastewater revenue increases are similar to water with 40 per cent increase in return on assets, 12 per cent increase in depreciation, 45 per cent increase in operating expenditure, and the remaining 3 per cent representing working capital, tax expense and other revenue.

SA Water uses the allowable revenue determined in Table 10-12 to inform water and wastewater pricing. How SA Water will set prices in RD24 to recover revenue within the revenue limit, and the effect on an average customer bill, is discussed later in Chapter 12.

[142] ESCOSA (2020) '*SA Water's water and sewerage retail services: 1 July 202 - 30 June 2024 Price Determination*', ESCOSA, accessed 14 April 2023.

Table 10-13 Actual allowable revenue for RD20 and proposed allowable revenue for RD24

Water building block ('$000, real 2022-23$)	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Operating expenditure	388,016	387,598	388,055	385,439	396,294	406,849	416,431	418,120
Return on assets	265,488	250,330	237,968	224,561	293,700	305,753	321,666	339,982
Regulatory depreciation	186,979	196,689	203,350	210,204	230,073	236,255	220,651	229,908
Return on working capital	1,236	1,153	1,087	1,012	1,334	1,392	1,464	1,515
Tax allowance	5,248	2,048	2,192	2,653	9,295	7,368	304	504
Water: revenue requirement pre-adjustments	846,968	837,818	832,653	823,870	930,696	957,617	960,516	990,029
Revenue adjustments[143]	-125,007	-82,244	-81,288	-80,149	-106,185	-66,094	-64,895	-63,588
Water: revenue requirement to be collected from customers	**721,960**	**755,574**	**751,365**	**743,720**	824,432	891,522	895,620	926,442
Total water revenue requirement to be collected from customers, over regulatory period			**2,972,619**			**3,538,016**		
Water: NPV of revenue requirement to be collected from customers, over regulatory period			**2,795,499**			**3,288,310**		

[143] Includes CSOs, sale of water licences and shared revenue adjustment, as detailed in 10.1.6.

Wastewater ('$000, real 2022-23$)	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Operating expenditure	149,107	147,792	149,919	150,538	186,417	188,836	185,906	186,831
Return on assets	135,322	125,713	119,661	112,882	147,665	152,688	159,971	168,704
Regulatory depreciation	123,723	127,900	133,338	139,004	148,411	142,131	134,611	140,340
Return on working capital	474	441	417	393	628	646	654	677
Tax allowance	2,927	1,154	1,985	788	1,120	-	-	-
Wastewater: revenue requirement pre-adjustments	411,553	403,000	405,320	403,605	484,240	484,301	481,141	496,551
Revenue adjustments[144]	-52,418	-50,247	-49,906	-50,397	-47,812	-47,244	-46,675	-45,844
Wastewater: revenue requirement to be collected from customers	**359,135**	**352,754**	**355,414**	**353,208**	436,428	437,057	434,466	450,707
Total wastewater revenue requirement to be collected from customers, over regulatory period			**1,420,510**			**1,758,658**		
Wastewater: NPV of revenue requirement to be collected from customers, over regulatory period			**1,336,520**			**1,636,486**		

[144] Includes CSOs and recycled water sales, as detailed in Section 10.1.6.

11 Managing uncertainties

SA Water aims to prudently manage expenditure within the approved revenue cap. Even so there is the potential for factors outside of SA Water's control to impact delivery during a regulatory period. This section explains how SA Water manages uncertainties from extreme events, and the mechanisms in place to address unanticipated expenditure impacts.

11.1 Extreme events

SA Water is a climate-dependent essential service provider. Due to this, climate change management and adaptation are important considerations for the organisation. As discussed in Chapter 2, this is driven by the SA Water Strategy, and integrated throughout the whole business.

SA Water has operations across South Australia, and so managing for the direct and indirect impacts of natural hazards, such as bushfires and floods, and how they evolve in response to climate change are important considerations in planning. SA Water plans for and manages these types of events, taking into account climatic drivers, future projections, and customer and stakeholder expectations.

11.1.1 Recent events, drivers, and future expectations

SA Water's operations are regularly subject to natural hazard events, with recent projections demonstrating a strong link between climate change and more extreme and frequent natural hazard events including bushfires, sea level rise, floods, and droughts.[145]

Some recent extreme events and how they have affected SA Water operations are provided in Table 11-1.

Table 11-1 Recent extreme events impacting SA Water operations

Date	Event	Impact to SA Water operations
September 2016	1-in-50-year storm with more than 80,000 lightning strikes and tornadoes, which caused significant damage to electricity transmission infrastructure and a statewide electricity outage.	• Water supply to Port Lincoln was disrupted • Challenges with powering water and wastewater treatment plants and pump stations • Localised flooding • Sewerage overflows • Offices, depots, and workshops without power As a result, SA Water had to implement widespread use of mobile generators and some customers across South Australia were significantly affected for several days.
December 2019	Black Summer – when nearly all of South Australia recorded its highest ever accumulated forest fire danger index for December.[146] On 20 December	• Damage to the water distribution network in places including in the Adelaide Hills • Woodside Depot threatened

[145] Nature Communications (2021) '*Multi-decadal increase of forest burned area in Australia is linked to climate change*', Nature Communication, accessed 6 April 2023; The Bureau of Meteorology (BOM) (2022)'State of The Climate 2022', BOM, accessed 7 April 2023; Nature Communications (2021) '*Emergence of changing Central-Pacific and Eastern-Pacific El Niño-Southern Oscillation in a warming climate*', Nature Communication, accessed 6 April 2023.
[146] Australian Institute for Disaster Resilience (n.d.) *Black Summer bushfires, SA, 2019-20*, Australia Institute for Disaster resilience website, accessed 06 April 2023.

Date	Event	Impact to SA Water operations
	2019, more than 200 bushfires burned across the state at once, including Cudlee Creek (40,000 hectares burnt) and Kangaroo Island (211,500 hectares burnt). This event resulted in 4 fatalities, 140 homes burnt down, and approximately $186 million in insurance claims.[147]	• Middle River Water Treatment Plant significantly damaged • Reservoir water quality compromised • $2.9 million in insured damages • Many employees evacuated and involved in firefighting This caused significant challenges to providing drinking water post-incident. Water supply to customers in fire-impacted areas was interrupted for days as firefighting was prioritised and infrastructure was damaged.
January 2021	2,000 hectares burnt by the Cherry Gardens bushfire.	The fire burned a large area of the Mount Bold Reservoir Reserve, damaging fencing and reservoir infrastructure and compromising the water quality of the local catchment (due to ash and fire retardants entering the water).
January 2022	Major flooding in outback South Australia caused by ex-Tropical Cyclone Tiffany severed road and rail links between Perth and Adelaide for up to 24 days.	Some key water treatment coagulants are currently sourced from Western Australia and supplied by rail. Given the temporary transport disruption, contingencies had to be implemented to ensure drinking water quality was maintained.
November 2022-February 2023	Extreme rainfall events in the eastern states caused major flooding in the Murray-Darling Basin, with the highest recorded river flows since 1956. A major emergency was declared in South Australia.	Protection of SA Water and other infrastructure along the River Murray, involved: • contractor spend to protect critical assets ($10.0 million) • increased cost of water treatment ($10.1 million in additional chemical usage) • more than 10% of staff redeployed from normal activities to focus on flood response activities ($4.3 million). Around $27 million of expenses were incurred relating to the flood (as at June 2023).

To plan for such events in the future, SA Water undertakes research and analysis of extreme event risks. The Corporation keeps up-to-date information and data projections for changes to key variables such as rainfall, temperature, and sea levels. This information is used to inform planning for new capital projects and, where necessary, the need for changes to existing water and wastewater operations.

Through its relationship with the Department for Environment and Water (DEW), SA Water has access to and engages with the current climate policy and science to inform climate impact management. The research interrogated includes climate projections specifically for South Australia, and national and international research including research from the Bureau

[147] Australian Institute of Disaster Resilience(n.d.) '2019-20 Major Incidents Report', Australia Institute for Disaster Resilience, accessed 06 April 2023.

of Meteorology and CSIRO, NSW Government's climate data portal and Intergovernmental Panel on Climate Change.[148]

Key future climate variables from the current report by DEW on climate projections for South Australia dated 2022[149], are discussed in the following sections following. Included are examples of how they might impact SA Water operations and how the organisation is approaching planning for and managing for them.

11.1.1.1 Temperature

Historic trends (as shown in Figure 11-111-1) demonstrate that annual mean temperature in South Australia has been exceeding the long-term annual average since 1993.

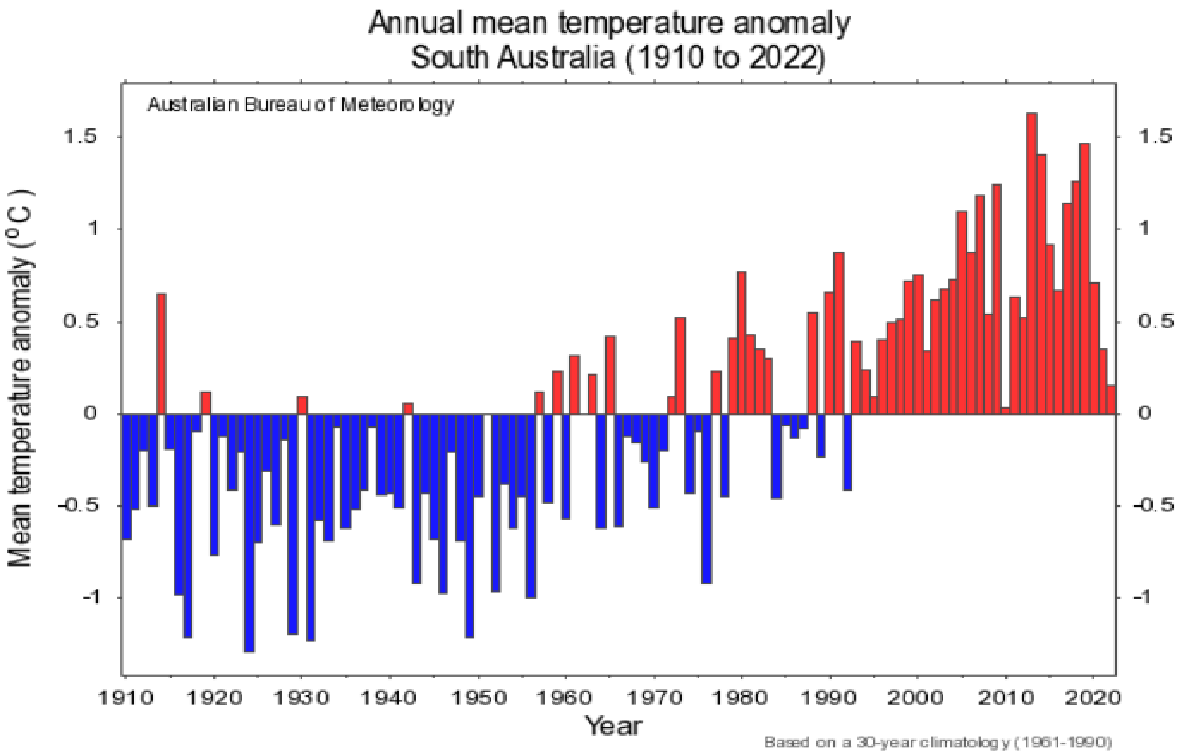

Figure 11-1 Annual temperature anomaly of South Australian mean temperature between 1910-2022[150]

Average as well as maximum and minimum temperatures are projected to increase into the future in South Australia.[151] Projections are showing the average mean daily temperature increasing up to 1.3 degrees Celsius by 2030. The north of the state is projected to experience the greatest mean increases and heat-waves are expected to be longer and become more intense across South Australia.

Increased seasonal temperatures can lead to an increased potential for algal blooms in water sources, leading to poorer water quality. This can have a consequential impact on chemical use. As detailed in Section 3.1.3.1 of this report, climate change is contributing to

[148] The Bureau of Meteorology (BOM) (2022) '[State of The Climate 2022'](), BOM, accessed 12 May 2023; NSW Government (n.d.) *NSW Climate Data Portal [website]*, accessed 11 May 2023; The Intergovernmental Panel on Climate Change (IPCC) (n.d.) *IPCC — Intergovernmental Panel on Climate Change*, IPCC website, accessed 11 May 2023.

[149] Department for Environment and Water (2022) '*Guide to climate projections for risk assessment and planning in South Australia 2022'*, Department for Environment and Water South Australia, accessed 12 May 2023.

[150] The Bureau of Meteorology (BOM) (n.d.) *Climate Change – trends and extremes*, BOM, accessed 12 May 2023.

[151] Department for Environment and Water South Australia (DEW) (2022) 'Guide to climate projections for risk assessment and planning in South Australia 2022', DEW, accessed 12 May 2023.

declining levels of water quality, as measured by increasing dissolved organic carbon levels, which is driving increasing chemical dosing requirements. Due to increases in the frequency and duration of hot weather, SA Water may also see an increase in water demand, a higher number of leaks and breaks in infrastructure, such as pipes, over time, and electrical equipment operating under greater stress for longer periods. This may drive increased maintenance and earlier renewals.

As detailed in Section 5.1.2, forecast water demand is directly correlated with the number of days when the temperature is high. System augmentation may be required to support this increase in demand.

11.1.1.2 Rainfall

Declines in annual average rainfall by between 1.7 and 6.8 per cent are projected across the state by 2030 from the baseline period 1986-2005 period used[152], as are longer periods of drought. The associated declines in run-off are generally greater in magnitude due to additional evaporative and recharge processes. Therefore, a reduction in inflows to reservoirs of between 9 and 20 per cent by 2030 is projected based on current modelling. This presents risks for the organisation in the short and longer term, from projected impacts to water sources and operations.

There is expected to be pressure placed on the water resources SA Water currently relies on to meet customer demand. Reduced availability from traditional water resources will also see an increased use of current more expensive water resources such as the desalination plants. If population growth and climate change eventuate as projected, SA Water will therefore need to identify new and alternative water sources to address lower average inflows in the future. This may require significant capital investment to meet customer demand. For example, simulations with the Headworks Optimisation Model for Adelaide (HOMA) using medium demand projections and a high climate change impact on customer demand and reservoir inflows, suggests shortfalls by 2032 are possible in a climate sequence similar to the Millennium Drought. DEW has supported this finding in a recent letter to SA Water which outlines that:

> *"the impact of declining rainfall has been quantified by SA Water using its Headworks Optimisation Model for Adelaide to simulate drought sequences in line with climate change projections and that by 2032 it will be necessary to be able to move additional water from the Adelaide Desalination Plant to the northern parts of Adelaide to maintain existing levels of reliability".*

These shortfalls are resolved through planned investments in RD24 and future periods that are currently in SA Water's capital plan.

Reduced rainfall will also likely impact customers' water-use behaviour. This can have an impact on SA Water's wastewater infrastructure. The resultant operational adjustments required in its wastewater treatment plants may lead to changes in how the Corporation operates these assets. Based on anecdotal evidence from SA Water's experience, reduced rainfall, along with a dry soil profile after long periods of hot weather, can increase sewer pipe breaks and tree root intrusion complaints.[152]

Consistent with future climate projections, the risk of damage to sewer networks from prolonged periods of reduced rainfall, increasing drought periods and changes in behaviour is expected to increase:

- odour complaints due to under-used sewers and production of hydrogen sulphide in the air gap
- corrosion due to production of hydrogen sulphide in sewer pipes

[152] Department of Energy, Environment and Climate Action (2022) '[Guidelines for the Adaptive Management of Wastewater Systems Under Climate Change in Victoria]', Department of Energy, Environment and Climate Action Victoria, accessed 12 May 2023.

- the number of breaks in infrastructure.

This will lead to an increase in maintenance costs and has the potential to bring forward asset renewals.

In addition, the risk of breaks in above ground water transfer pipes is expected to rise due to increased soil movement. This may also require increases in or earlier investment to maintain current infrastructure or bring forward end of life replacement.

While rainfall will reduce on average, extreme rainfall events are projected to intensify resulting in more weather volatility and more flooding. The projected changes in rainfall patterns and more severe weather means SA Water must consider:

- works to mitigate the risk of flood damage to infrastructure where extreme flooding events may occur
- flood event response and recovery planning to ensure continuity of service to customers and staff safety
- infrastructure investment to mitigate the increased risk of infiltration in wastewater networks and wastewater overflows during floods, which can result in increased odour complaints
- power supply disruptions during extreme weather events requiring deployment of temporary generators.

As these events are projected to continue to increase, this may require greater system augmentation to create more water and wastewater storage to reduce disruption during high rainfall events and more electricity back-up options.

11.1.1.3 Fire weather

According to the *State of the Climate 2022* report, "climate change is contributing to changes in fire weather through its impacts on temperature and relative humidity, and the associated changes to fuel moisture content".[153]

Harsher fire weather is expected across the state with drier and more ready-to-burn fuels increasing fire risk and the expansion of bushfire-prone areas. By 2030, the number of days with a severe fire danger rating is projected to increase between 12 and 35 per cent across South Australia, depending on location.[154] This may increase the bushfire risk to SA Water staff, properties and infrastructure and service interruptions.

Increase fire risk and occurrence poses several additional operational consequences, such as:

- additional water quality risks, where ash and firefighting retardants enter source water, requiring additional water treatment
- service outages for customers where infrastructure is damaged in fires
- more frequent infrastructure replacement where assets are damaged in fires
- sufficient water availability and pressure for firefighting purposes.

SA Water has fire management plans in place for all major landholdings, including reservoir reserves. These plans set out ongoing vegetation management works including asset protection, track, and firebreak maintenance and prescribed burning as prevention measures.

To further address the risks associated with bushfires and their impact on water catchments, SA Water is developing an innovative rapid deployment post-bushfire water quality toolkit.

[153] The Bureau of Meteorology (BOM) (2022)'State of The Climate 2022', BOM, accessed 12 May 2023.
[154] Department of Environment and Water South Australia (DEW) (2022) '*Guide to climate projections for risk assessment and planning in South Australia 2022*', DEW, accessed 12 May 2023.

This aims to provide continuity and a long-term approach to post-bushfire monitoring. These low-cost and easily deployed water quality sensors are an accessible tool for addressing data scarcity and enable collection of rapid response data that can be used to inform bushfire recovery plans and manage water quality mitigation strategies.

11.1.1.4 Sea level

As oceans warm, sea levels rise through ocean expansion. While sea level rise varies from year to year due to different factors including changing climatic conditions, sea level is projected to continue rising. A projected increase of 22-25 centimetres in 2050 above the 1986-2005 average level, is of some concern for SA Water and its established infrastructure located near coasts, such as, desalination plants, wastewater treatment plants and associated pipework.[155]

A high-level screening of infrastructure located near coasts has been undertaken using the South Australian government's coastal flooding map viewers. This work indicates that while a majority of this infrastructure is relatively safe at current climate projections, there are assets which may fall under risk by 2050:

- The Whyalla Wastewater Treatment Plant (WWTP) is shown to be affected by 1-in 100-year storm surges in these map viewers.
- Access paths to the Port Lincoln WWTP are shown to be at risk of inundation and 1-in-100-year storm surges will have an impact on Lagoons 1 and 4.

At all coastal wastewater treatment facilities:

- The treated wastewater outfalls would be affected by rising sea levels.
- Saline inundation and seepage will have an impact on water table levels and on coastal infrastructure not treated with anti-corrosion coating.

The need to manage risks associated with these issues is also currently being driven by Environment Protection Authority (EPA) licence requirements. For example, for the Whyalla WWTP:

- SA Water is licenced under the *Environment Protection Act 1993* to operate the Whyalla WWTP. The condition of the licence requires SA Water to develop an Environment Improvement Program (EIP) to the satisfaction of the EPA and to comply with this program.
- The EPA has recognised that the impacts of climate change, in particular sea level rise and storms surge could detrimentally affect the operation of the Whyalla WWTP. To this end, and for the first time, the EPA is requiring SA Water to consider climate change in the EIP development.
- In parallel, the EPA has invited SA Water to participate in a climate change adaptation pilot project. In this project the EPA nominated Whyalla WWTP to represent a high priority licenced site that EPA has determined is vulnerable to the impacts of climate change and extreme weather events.
- Information gained through the pilot project will inform SA Waters development of the Whyalla WWTP EIP and will also be used by EPA to inform future climate change regulation under the *Environment Protection Act 1993*.
- Consideration of climate change is expected to form part of future EIPs at other WWTPs. This will be an additional regulatory driver to investigate and develop works to adapt to sea level rise and other climate change impacts.

[155] Department of Environment and Water South Australia(2022) '*Guide to climate projections for risk assessment and planning in South Australia 2022*', Department for Environment and Water South Australia, accessed 12 May 2023.

Projections will continue to be monitored and updated as new information on the climate science and data emerges. This information will be used where relevant to revisit and update risk analysis and inform future investment planning consistent with current practice.

11.1.2 Expectations from customer research and engagement

SA Water's customers and stakeholders have expressed an expectation that the Corporation continue to understand and manage the ongoing climate change risks by proactively investing in infrastructure, processes, and systems to build a climate resilient organisation which delivers for the South Australian community with ongoing improvements in levels of service.

Engagement with stakeholder groups informing RD24 demonstrated support for SA Water's approach to proactively managing the impacts of climate change including the projected increase in extreme events. This included support for building understanding and preparedness towards managing future climate related challenges that are expected to occur more frequently and with more intensity.

Specifically, when discussing managing climate change events with the Customer Challenge Group (CCG), several members acknowledged that they liked that SA Water was being proactive rather than reactive in response to changes in climate. However, cost and impact to customer bills must always be considered, and to work with government where possible.

In talking to the Peak Bodies Engagement Forum (PBEF), members highlighted that climate change might impact customers differently and emphasised the need to communicate impacts to customers effectively. PBEF members also highlighted that partnerships may be an approach to manage climate change in future, as other parties may be better placed to tackle some actions. For example, it was identified that there is a lot of work related to disaster response that will require work with other support agencies/utilities.

In addition, customers and other stakeholders were found to be generally supportive of SA Water investment in water security initiatives such as new desalination plants, augmentation of existing water sources, new bore fields, water efficiency projects and recycled water.

11.1.3 Risk monitoring and management

Building this knowledge and understanding of extreme event risks and how they might change over time ensures that SA Water has appropriate risk mitigation strategies and that they are based on the best available evidence. Tracking customer and stakeholder perceptions of them enables these views to inform SA Water's plans. This ongoing work ensures that impacts arising from extreme event risks are considered when the Corporation's risk management framework is applied.

11.1.3.1 Strategic level risk

The risks from climate change, extreme weather, and water security that could cause a change in strategic direction for SA Water are identified, captured, and managed as strategic risks within SA Water's risk profile (Section 2.6.1). The operational risks that effect the whole organisation and could affect delivery of SA Water's strategy are identified and controlled as subsidiary risks to the overarching strategic risks. This includes the level of preparedness for impacts of climate change, staying abreast of up-to-date climate models, and the ability to maintain reliable water sources in regional and metropolitan areas.

The organisational approach to determine risk and resiliency related to climate change and extreme weather events, is driven from the Corporate strategy level where relevant goals and associated road maps are developed. These are then actioned through strategic action plans.

11.1.3.2 Project, program and operational risks

Climate resilience and preparedness is an on-going consideration for existing assets and operations, and the Corporation's insurer, the South Australian Government Finance Authority (SAFA), requires a risk mitigation program for all assets.

For existing assets and operations, climate-related risk assessment, including determining treatments, is integrated into risk assessments, or informed by issue-specific assessments. For example, assets are assessed for bushfire vulnerability with treatments identified for critical assets. These assessments inform immediate and longer-term planning processes.

To mitigate these risks for new assets, detailed climate change risk assessments are undertaken for high value and critical asset investments and the necessary controls applied. For example, the increased risk of bushfire is a key threat to many of SA Water's assets, so management of this risk is factored into technical standards for the design and construction of new assets. This ensures bushfire resilience for the life of the asset and reduces the risk of interruption and damage from fires.

11.1.4 Managing critical incidents and ensuring business continuity

SA Water applies a consistent approach for all types of critical incidents, including storms, fires, cyber-attacks, outages. SA Water takes a proactive approach to business continuity and incident management based on the industry-standard model 'Plan, Prepare, Respond, Recover', aligned with ISO 22301, the international standard for business continuity management.

Business continuity planning is a critical business process implemented to ensure the robustness of the Corporation's assets and its resilience when affected during critical incidents. It is undertaken to ensure SA Water can provide essential services to its customers during incidents with minimal interruptions.

Business continuity planning enables identification and mitigation of risks to the business by preparing SA Water for future incidents, cushioning impacts, and accelerating recovery.

The business continuity and incident management planning process involves:

- risk identification and analysis
- business impact analysis to identify maximum tolerable periods of disruption (MTPD) and maximum allowable outages (MAO)
- development of business continuity or other contingency plans to maintain and restore services within MTPD and MAO
- efficient and effective incident management
- implementation of resilience improvement programs to improve resilience in the medium- to long-term by building capacity and capability to respond, learn and adapt
- rapid recovery plans
- lessons learned and continuous improvement.

SA Water builds redundancy into its critical infrastructure wherever it is both possible and prudent to do so, such as backup power, additional pumps, and more intensive maintenance programs.

SA Water has a major incident management system (MIMS) to manage major incidents and events that require cross-functional coordination, senior management involvement and additional resourcing to resolve. Major incidents include imminent or actual system failures, major business disruptions or other significant incidents, including from natural hazard events such as the 2022-23 River Murray flood. For incidents that do not meet these criteria, (operational) contingency plans, emergency response plans, and function-specific procedures will be applicable.

MIMS is a tailored implementation of the widely accepted Australasian Inter-Service Incident Management System. Its main components are shown in Figure 11-2.

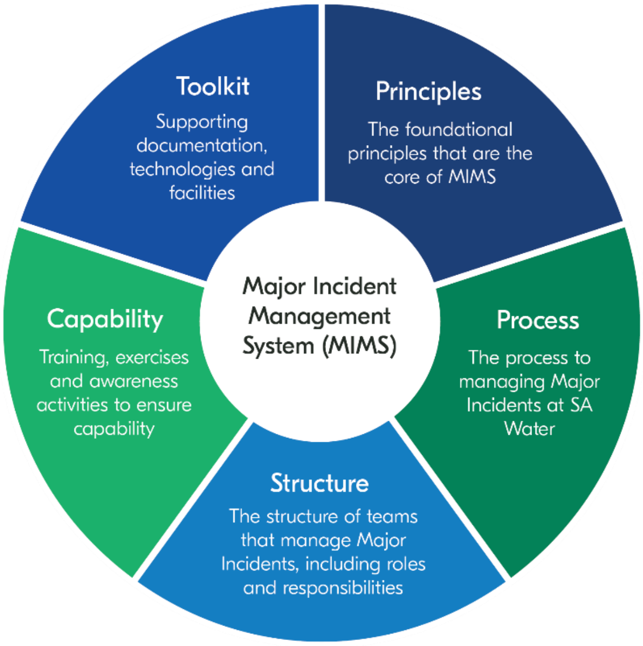

Figure 11-2 Major incident management system (MIMS) components

To prepare and build capability across the business for such events, staff are trained as incident controllers. SA Water also works with government agencies to prepare and run exercises that train and test its preparedness, both internally and in conjunction with the South Australia Police-led Exercise Coordination Group, under the Capability and Capacity Sub-Committee of the State Emergency Management Committee. SA Water facilitates lessons-learned processes after major events exercises to capture lessons and implement business improvements.

11.2 Revenue adjustment mechanisms

When SA Water incurs unintended expenditure for reasons such as the factors detailed above, revenue adjustment mechanisms are available to retrospectively adjust future revenue allowances for certain variances in actual expenditure and revenue. There use will depend on the nature of the variance.

11.2.1 Demand variation adjustment mechanism

As discussed in Chapter 5, demand for water and wastewater services for the forward regulatory period informs SA Water's revenue allowance. While demand calculations are informed by climate modelling and growth projections, actual demand can vary from projections due to various external factors.

It is a requirement of the Pricing Order (set by the Treasurer of South Australia) that every determination has a mechanism to adjust total revenue where there is a material variation between forecast and actual water consumption or sewerage connections.[156] ESCOSA has therefore included a demand adjustment mechanism in each regulatory determination.

The mechanism for the current period is detailed in sections 2.4 (water) and 2.8 (wastewater) of ESCOSA's RD20 price determination.[157] In principle, the demand adjustment mechanism in place ensures SA Water and its customers are not adversely impacted by changes in demand, either under or over, that SA Water cannot control.

SA Water has worked with ESCOSA during RD20 on an external review of the demand adjustment mechanism included in the RD20 Price Determination. At the time of writing, ESCOSA has confirmed the final mechanism that will apply for RD20 will instead be aligned the mechanism that existed in the previous RD16 final determination by including an adjustment in RD24 to account for the methodological differences.

At the time of writing this submission, the revenue adjustment relating to 2020-24 revenue is forecast to be a reduction of $36.7 million (reducing the RD24 revenue allowance and RD24 customer bills). This variance is factored into the revenue proposal for the subsequent determination as detailed in Section 10.1.7. Noting that there are still more than 12 months of the regulatory period to go, and so forecasts will be updated and monitored regularly. Any variations between now and the final determination will be submitted to ESCOSA and incorporated into the final determination revenue allowance.

11.2.2 Cost pass through revenue variation adjustment mechanism

All information proposed in RD24 is based on the best available information at the time of writing. However, as detailed above, unforeseen events can cause unplanned expenditure.

It is a requirement of the Pricing Order (set by the Treasurer of South Australia) that the determination have a cost pass-through mechanism. This allows for the adjustment of total revenue due to the occurrence of any event beyond the control of SA Water during the regulatory period.

Section 2.10 of ESCOSA's RD20 Price Determination details a cost pass-through mechanism whereby SA Water can submit a pass-through event revenue adjustment statement to the Commission for approval, setting out any revenue amounts which SA Water claims are attributable to the occurrence of a purported pass-through event(s). This enables SA Water to address material changes in costs incurred during the regulatory period for a pass-through event. If approved, costs are passed through to the forward regulatory period.

A pass-through is considered material by ESCOSA when the total cost of the event:

- meets or exceeds $10 million
- is less than $10 million, but the Commission considers that it is material taking into account the impact of the event on SA Water and its customers and the practical consequences of the event not being classified as a pass-through event.

During RD20 three potential pass through events were assessed and considered by SA Water:

- COVID-19-related expenditure. This resulted in additional operating expenditure of $5.5 million (from March 2020 to end of June 2022) to cover costs including personal protective equipment (including masks and sanitiser), additional cleaning, and the purchase of additional equipment to enable working from home (as discussed in Section 3.1.1). In the interest of customer affordability outcomes, SA Water is not requesting a pass through for these additional costs in the current regulatory period.

[156] Department of Treasury and Finance (2018) 'Pricing Order', Department of Treasury and Finance South Australia, accessed 13 April 2023.
[157] ESCOSA (2020) '*SA Water's water and sewerage retail services: 1 July 2020 - 30 June 2024 Price Determination*', ESCOSA, page 9.

Rather, the costs associated with responding to the COVID-19 pandemic have been met by the state government in RD20 through accepting a lower rate of return.

- Supply chain impacts of COVID-19, the Ukraine war and flooding events. As discussed in Section 3.1.3, these events functioned to reduce the supply of certain goods and services. For SA Water this caused increases in costs for chemicals, transport and construction activities. These cost pressures resulted in the deferral of several capital projects from the current regulatory period to future periods, and also led to higher base year operating costs. To manage bill impacts for customers, SA Water is not requesting a pass through for these additional costs in in the current regulatory period. As with the COVID-19 costs, these impacts have been met by the state government in RD20 through accepting a lower rate of return, reducing future impacts on SA Water's customers. However, these costs have been considered as part of the higher base year for RD24 and are reflected in capital estimates.
- 2022-23 River Murray floods. This extraordinary emergency event caused significant costs to be incurred in 2022-23 totalling $27 million as at June 2023 (increasing from $19 million as at March 2023). These included additional chemical usage ($10.1 million), the redeployment of teams from normal operating activities ($4.3 million) and external contractor expenditure ($10.0 million) associated with protecting critical assets (as detailed in Section 3.1.5). SA Water is not requesting a pass through for these additional costs in in the current regulatory period. In the interests of reducing future bill impacts for customers these extraordinary costs have been met by the state government through accepting a lower rate of return.

Based on this assessment, SA Water has determined that no RD20 pass-through events will be submitted for RD24 consideration. While no cost pass through is being requested for the current period, SA Water supports maintaining the cost pass through mechanism for RD24 to deal with any unforeseen unmanageable cost events occurring.

11.2.3 River Murray water licence adjustment mechanism

SA Water holds River Murray water licences for both urban use and general use that it uses to supply water to its customers. At times, SA Water is able to sell unused entitlements as a temporary entitlement to generate additional income due to the different conditions of these holdings due to supply or demand variations.

Section 2.11.1 of ESCOSA's RD20 Price Determination requires SA Water to submit a River Murray water licence revenue adjustment statement for the 2020-24 period. This adjustment must state all revenue earned from the temporary leasing of River Murray water licences during the regulatory period. [158] This revenue is offset against future regulatory revenue requirements in a subsequent price determination.

At the time of submission, sales of water licence entitlements by SA Water had generated revenue of $1.68 million. This has been factored into the revenue proposal as a revenue adjustment, detailed in Section 10.1.7. Any additional sales of water licence entitlements between now and the final determination will be submitted to ESCOSA and incorporated into the final determination revenue allowance.

11.2.4 Shared infrastructure revenue adjustment mechanism

SA Water has various shared assets where regulated infrastructure is also used to provide a non-regulated service. For example, providing third parties with access to SA Water pipe infrastructure to transport their water through the SA Water network, called third party access. While regulated assets are funded through drinking water and sewerage revenues,

[158] Murraylands and Riverland Landscape Board (2023) Water Allocation Plan for the River Murray Prescribed Watercourse, Murraylands and Riverland Landscape Board accessed 17 May 2023.

SA Water is able to earn additional revenue where those assets can be used for other, unregulated, purposes. The mechanism enables SA Water's drinking water and sewerage customers to share the benefits of those commercial opportunities with SA Water.

In accordance with clause 2.12 of ESCOSA's Price Determination, SA Water must submit a shared infrastructure revenue adjustment statement to the Commission. [159] This sets out revenue earned during the regulatory period through the use of regulated infrastructure that is not attributable to water or sewerage retail services regulated by ESCOSA. Ten per cent of any revenue received though this mechanism is incorporated into a subsequent price determination where it offsets future regulated revenue requirements.

At the time of writing this submission, revenue relating to shared infrastructure for the 2020-24 period is forecast to be $4.2 million, consisting of $2.2 million of known revenue and $1.9 million forecast revenue based on estimated volumes of transported water. This is an increase of $0.14 million compared to original estimates forecast at the time of the RD20 determination. This variance is factored into the revenue proposal for the subsequent determination as detailed in Section 10.1.7. Any additional revenue related to shared assets generated between now and the Final Determination will be submitted to ESCOSA and incorporated into the Final Determination revenue allowance.

11.2.5 Intra-period review mechanism

Section 2.13 of ESCOSA's Price Determination[160] sets out an intra-period review mechanism for major, non-discretionary capital expenditure arising during a regulatory period because of a contingency or adverse event. Any submission through this mechanism was required to be submitted by 31 December 2020, needed to be genuinely contingent, and needed to demonstrate considerable customer and stakeholder support to progress.

ESCOSA applied a two-stage process for an intra-period review. Firstly, based on SA Water's submission, the Commission published a list of pre-approved projects. Projects that passed the stage would then be subject to the second stage of the process, requiring provision of further information, public consultation and final assessment for being prudent and efficient.

SA Water submitted 5 intra-period initiatives (as per Table 11-2) for Stage 1 assessment by ESCOSA.

Table 11-1 Intra-period initiatives submitted to ESCOSA

Project	Stage 1 (pre-approved)
State infrastructure program: multiple individual projects, including the South Road Torrens to Darlington and Gawler Railway electrification	Yes (some)
Upper Spencer Gulf: supply augmentations	Yes
Elliston: pipeline to address water security	No
Eyre Peninsula: new bores to address salinity	No
Willowie: pipeline to address water security	No

While SA Water decided not to progress the 2 pre-approved projects to Stage 2 during the current regulatory period, it supports the continued inclusion of this type of review mechanism for the forward regulatory period, with the following amendments to make its use more accessible:

[159] ESCOSA (2020) '*SA Water's water and sewerage retail services: 1 July 2020 - 30 June 2024 Price Determination*', ESCOSA, accessed 13 April 2023.
[160] ESCOSA (2020) '*SA Water's water and sewerage retail services: 1 July 2020 - 30 June 2024 Price Determination*', ESCOSA, accessed 13 April 2023.

- Remove the deadline for using this mechanism. For RD20 the deadline was 5pm on 31 December 2020 which was only 6 months after the regulatory period began. This approach is not considered practical as not all new non-discretionary initiatives are known by this date, or, where driven by a contingent action, that action may not have eventuated.
- Consolidation into a one-stage process rather than a lengthy two-stage process. Implementing a one-stage process would make the process more efficient when SA Water is reacting to unexpected events.

12 Prices and bill impact

Since economic regulation commenced, ESCOSA has been required to determine the final revenue that SA Water can recover from customers for providing its regulated water and sewerage (or wastewater) retail services. This direction is consistent with previous and current Pricing Orders issued by the Treasurer.[161]

Prices are set by SA Water together with the South Australian Government to enable recovery of revenue within approved revenue caps. This section provides information on:

- what SA Water considers when setting prices within a regulatory period
- how SA Water is proposing to charge for its regulated water and sewerage services, including how customers' bills may be affected
- how the Corporation supports customers experiencing financial hardship
- pricing for excluded services, such as connection services and trade waste services.

12.1 General considerations in setting prices

SA Water considers many factors when setting prices including current policies, customer affordability, how short-term decisions affect the business in the longer-term, and ensuring cost-reflective pricing. Some of the key considerations are discussed in the following sections.

12.1.1 Long-term view

SA Water manages bill impacts across the longer-term with a view to smoothing the impact of bill increases over time. This is informed by the Corporation's long-term asset management planning and renewal approaches. This approach aligns with ESCOSA's primary objective, specified in section 6 of the *Essential Services Commission Act 2002*, which is "protection of the long-term interests of South Australian consumers with respect to price, quality and reliability of essential services."

As the RD24 submission is being developed, SA Water also has regard to how the revenue required to deliver the package of works will impact customer bills. Final decisions, therefore, reflect the outcomes of this process of balancing long-term planning and intergenerational considerations with current customer affordability.

As discussed in detail in Chapter 8, SA Water has received strong support to make investments in RD24 that seek to reduce long-term risks and costs for customers.

The expenditure proposed for RD24 balances immediate risks to infrastructure and maintaining current service standards, with the costs paid by customers. Lower allowed investment in the current regulatory period is creating increased pressure for future investment. This has been exacerbated by deferral in the current period due to external factors. Left unaddressed, these deficits will grow, leading to higher amounts of required future investment in coming regulatory periods while also increasing operating expenditure until that time to manage these ageing assets.

In the short term, a decision has been made to prioritise affordability for customers without substantially addressing these long-term capital pressures.

[161] Department of Treasury and Finance (n.d.) Economic Regulation, DTF website, accessed 19 May 2023.

12.1.2 Government policies and pricing principles

The South Australian Government is committed to state-wide pricing. This means that, regardless of where a customer lives or the cost for SA Water to provide services to their location, most customers pay the same price for water. As noted in Section 10.1.6.1, this is subsidised by a community service obligation payment from the State Government.

SA Water's pricing approach is also informed by the National Water Initiative Pricing Principles which have been developed to facilitate best practice pricing for urban water charges. [162] This includes recovery of efficient costs and the use of two-part water tariff structures comprising an availability charge and a water usage charge.

12.1.3 Customer and stakeholder expectations

As covered in Chapter 4, the submission was developed having regard to ongoing and RD24-focused customer research and engagement. Both customers and stakeholders emphasised the importance of balancing affordable services now and for the future.

Affordability has been recognised as a customer concern since SA Water's first submission under economic regulation in 2013[163]. The impact of living expenses on customers and the need for SA Water to balance service delivery with affordability has been a consistent theme since. To this end, SA Water has successfully managed to reduce its bills in real terms through successive regulatory periods.

Even though SA Water has achieved the greatest reduction of water bills of any major utility in the last decade, the cost of water and wastewater services remains of key interest to customers. Most recently in research informing SA Water's current strategy and in RD24 research and engagement outcomes "community affordability when making decisions, to keep costs low for customers" featured (Appendix 4.4, Table 4.4-1).

RD24-specific engagement has also considered affordability, noting the cumulative impact of SA Water bills together with other bills on households, particularly for vulnerable customers. This highlighted that SA Water should carefully consider the cost impacts of its RD24 investments, even where the comparative cost of water is lower and more affordable than that of other household expenses (Appendix 4.3).

In keeping with this feedback, affordability has featured in long-term planning and in determining revenue requirements for the RD24 period. This has included ways to minimise costs and keep price increases as low and steady as possible over time.

While the Corporation is dedicated to affordable bills, SA Water is an asset intensive business whose level of service to customers is determined by the reliability of its assets. The careful management of assets for the longer-term is key in managing the bills that customers pay into the future. Customers have shown support for investment in assets now where it will reduce the total lifetime costs rather than push costs onto future generations. Intergenerational equity has been an important consideration for SA Water and its customers (Appendix 4.3).

As such, the approach to RD24 has sought to balance affordability with risk, and the short- and long-term requirements to manage assets at the lowest long-term cost to customers. However, greater weight has been given to immediate affordability, creating a need for greater capital investment in future periods.

[162] Department of Climate Change, Energy, the Environment and Water (n.d.) '[National Water Initiative Pricing Principles'](), DCEEW website, Australia, accessed 19 May 2023.
[163] SA Water (2013) Regulatory Business Proposal 2013, SA Water, accessed 25 May 2023.

12.1.4 Prices and bill trends

SA Water looks at its own price and bill trends over time, and how it performs compared to other equivalent utilities to assess its price setting.

12.1.4.1 Performance over time

Since the beginning of economic regulation in 2013-14, water and sewerage prices have increased by less than inflation. As a result, current prices are lower than if CPI increases had applied over that time (Figure 12.1). This has been achieved partly by SA Water focusing on achieving efficiencies and through government pricing decisions.

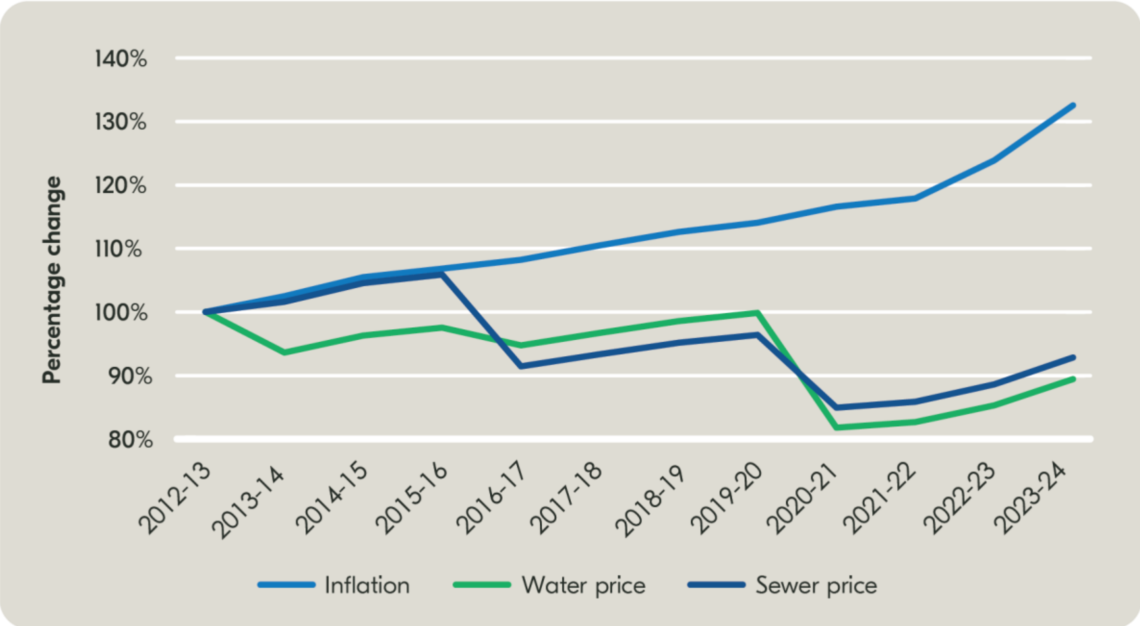

Figure 12-1 Percentage price changes over time since 2013-14

The price reduction, resulted in a reduction in the average customer bill over time as well. As shown by Figure 12-2, data from the Bureau of Meteorology's annual National Performance Report (NPR) shows that the average SA Water bill was 28 per cent lower in 2021-22 compared to 2013-14 (in real terms).

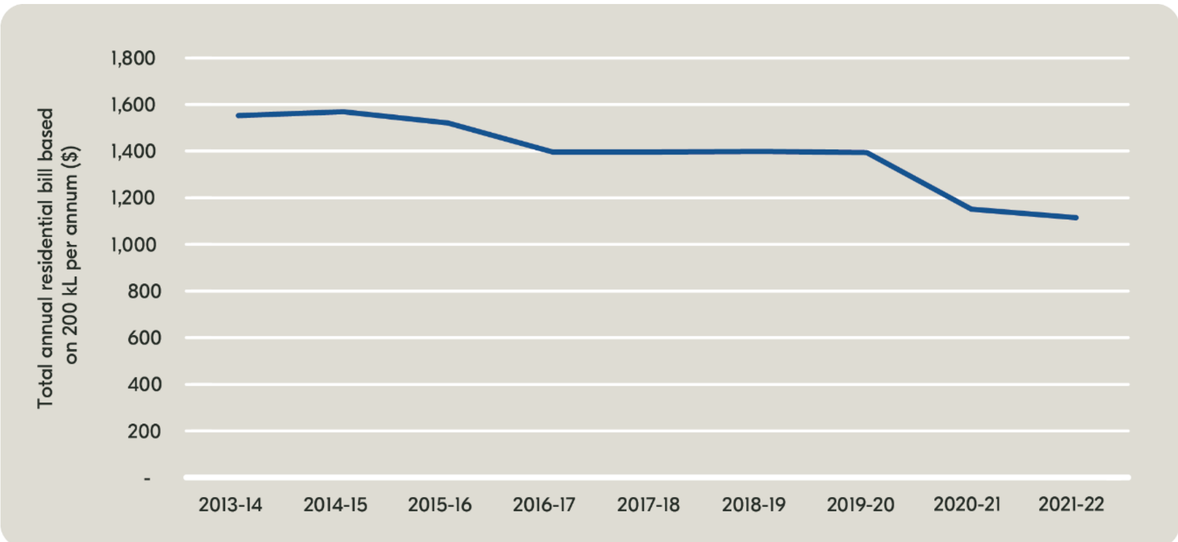

Figure 12-2 Average residential bill since 2013-14 based on 200kL per annum (real terms)[164]

[164] The Bureau of Meteorology (BOM)(2023) *National Performance Report 2021-22 Urban water utilities [data set]*, BOM, accessed 25 April 2023.

12.1.4.2 Performance compared to other water utilities

As discussed in Section 3.5, SA Water uses independent and internal benchmarking research to test how it is performing compared to other equivalent water utilities. The Corporation continues to monitor how it is performing as new data is released and aims to maintain competitiveness.

In terms of bill impact, the latest NPR results show that SA Water has one of the lowest annual bills when compared to its peers across the country[165]. SA Water was the fourth lowest for combined bill (based on a metropolitan customer using 200 kL of water) when compared to 14 peer utilities (Figure 12-3).

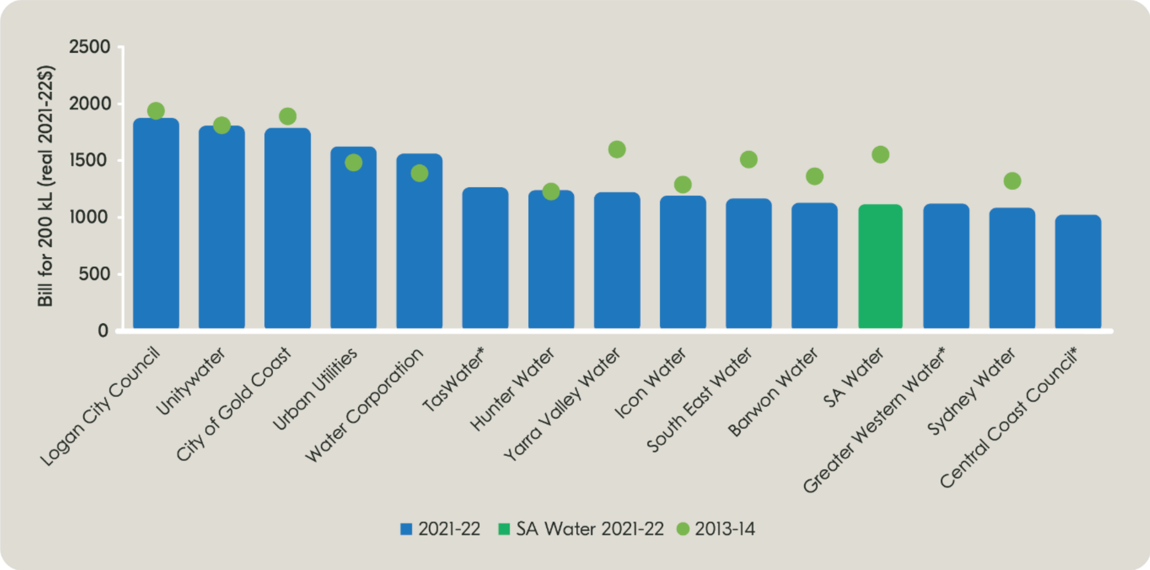

Figure 12-3 Interstate total water and wastewater bill comparison of utilities with 100,000+ connections, for water consumption of 200 kL[166]
*Did not report measure for 2013-14

Figure 12-4 also shows that SA Water's combined water and sewerage bills for residential customers are relatively low and have decreased considerably since economic regulation of the Corporation began.

[165] The Bureau of Meteorology (BOM) (2023) *National Performance Report 2021-22 Urban water utilities*, BOM, Australian Government, accessed 25 April 2023.
[166] The Bureau of Meteorology (BOM)(2023) *National Performance Report 2021-22 Urban water utilities [data set]*, BOM, accessed 25 April 2023.

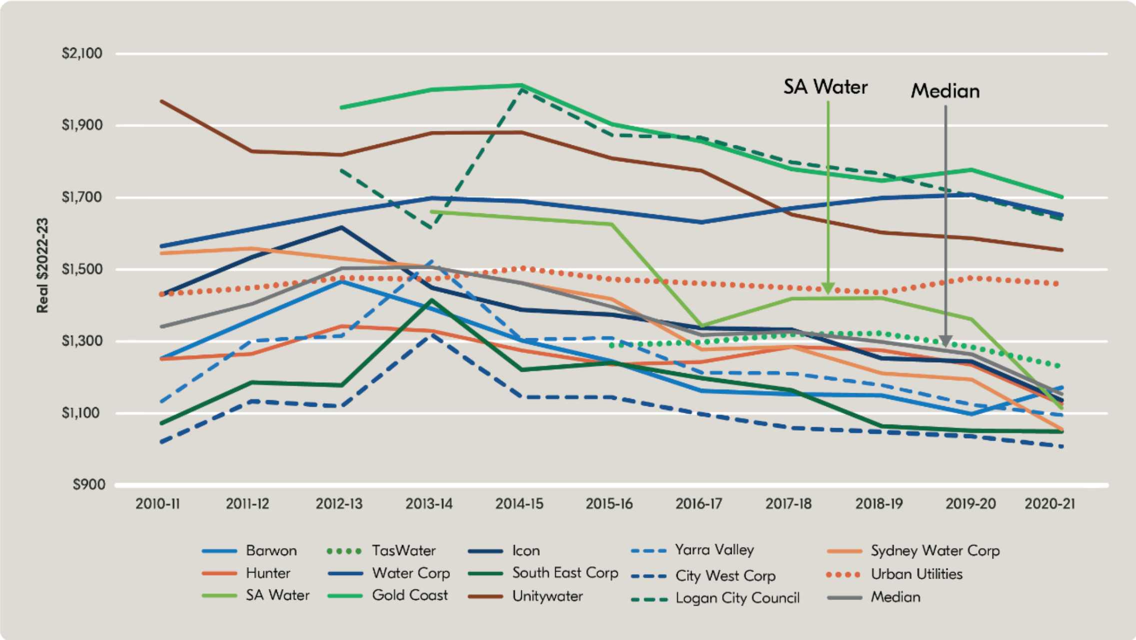

Figure 12-4 Total typical annual water and wastewater bill for major urban utilities 2010-11 to 2020-21 (real $2022-23)[167]

SA Water has been able to achieve competitive pricing to date due to various factors including market conditions, efficiencies and various operating and capital initiatives. This performance to date demonstrates SA Water's commitment to maintaining low and stable prices over time.

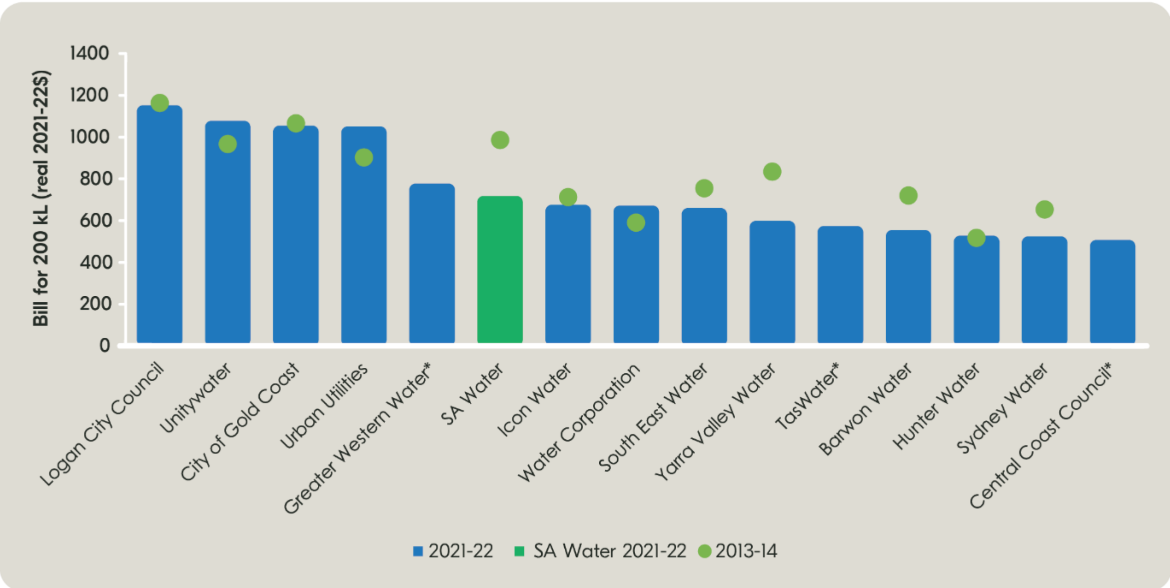

Figure 12-5 Interstate water bill comparison of utilities with 100,000+ connections, for water consumption of 200 kL[168]

*Did not measure in 2013-14

[167] The Bureau of Meteorology (BOM) (2022) *National Performance Report 2020-21 Urban water utilities*, BOM, Australian Government, accessed 1 March 2023.

[168] The Bureau of Meteorology (BOM)(2023) *National Performance Report 2021-22 Urban water utilities [data set]*, BOM, accessed 25 April 2023.

SA Water residential water bills have moved downwards from third highest in 2013-14 to sixth highest in 2021-22 (Figure 12-3). After several years of relative stability, customers' water bills were reduced significantly from 2020-21 and in 2022-23 and 2023-24 prices increased by less than the national rate of inflation.

This is considered an achievement, as utilities with more connections per kilometre of water main tend to have lower prices and therefore lower bills as they can recover costs from a wider customer base. As can be seen from Figure 12-6, SA Water serves the lowest number of properties per kilometre of water main compared to its peers, due to the geographical spread of its customers. This means the cost of supply is spread across a smaller number of customers. Despite this, SA Water has performed better than utilities with much higher density of customers per kilometre of water main.

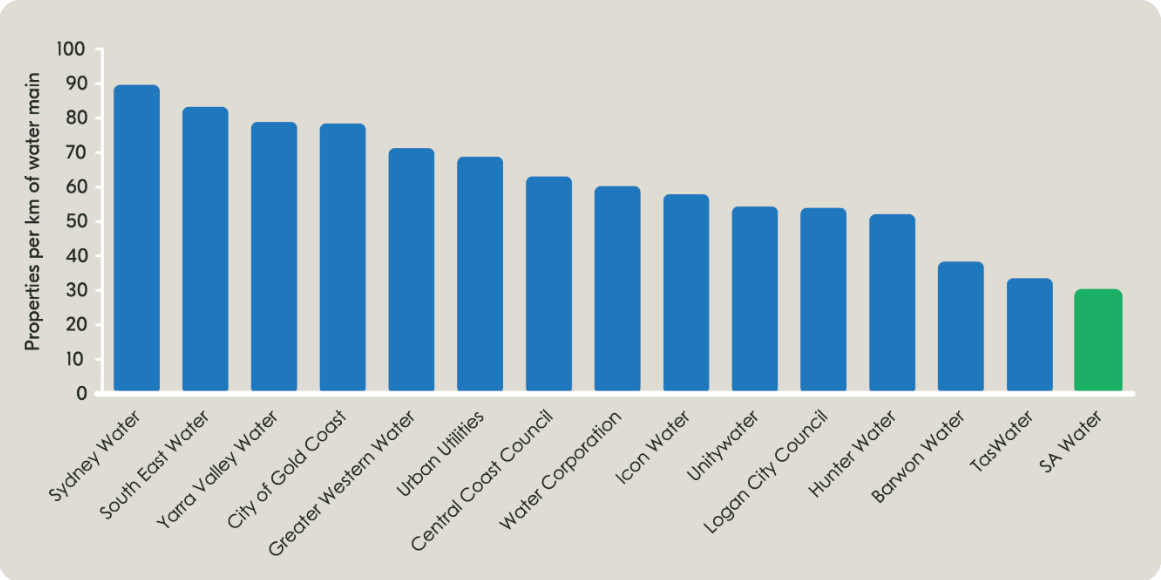

Figure 12-6 Properties served per kilometre of water main, 2021-22[169]

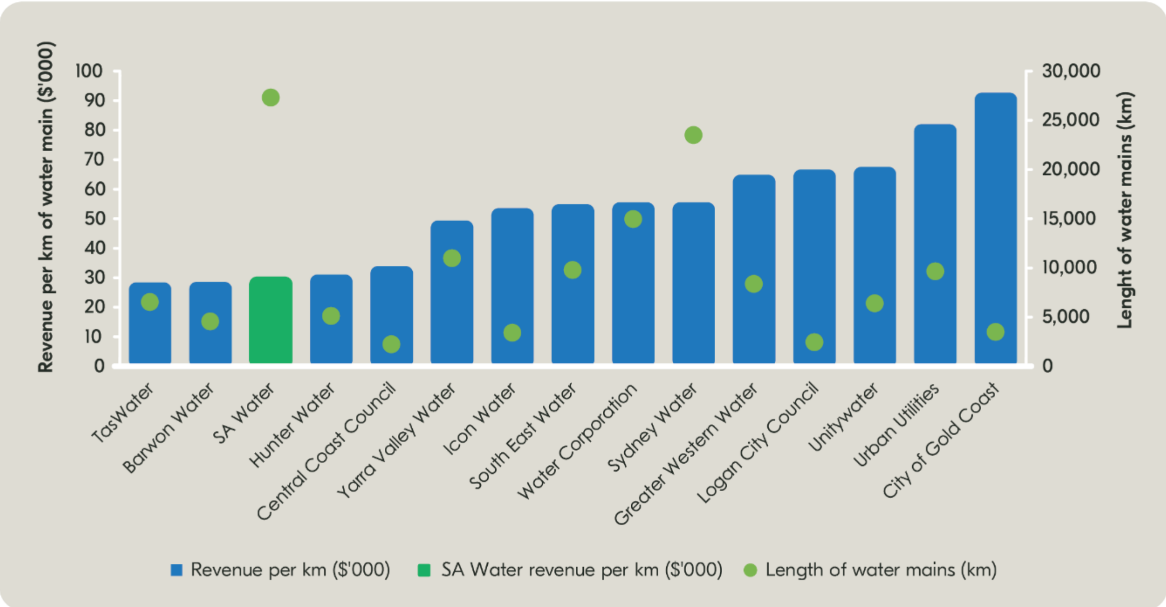

Figure 12-7 Revenue per kilometre of water main, 2021-22[170]

[169] The Bureau of Meteorology (BOM)(2023) *National Performance Report 2021-22 Urban water utilities [data set]*, BOM, accessed 25 April 2023.

[170] The Bureau of Meteorology (BOM)(2023) *National Performance Report 2021-22 Urban water utilities [data set]*, BOM, accessed 25 April 2023.

SA Water has the longest network compared to equivalent utilities and so the investment to provide water services across the state and the low density of customers served are significant factors contributing to water bills. Figure 12-7 shows the revenue earnt by SA Water per kilometre of water main is at the low end of comparable utilities. Considering this evidence, SA Water operates more infrastructure with fewer resources when compared to equivalent utilities.

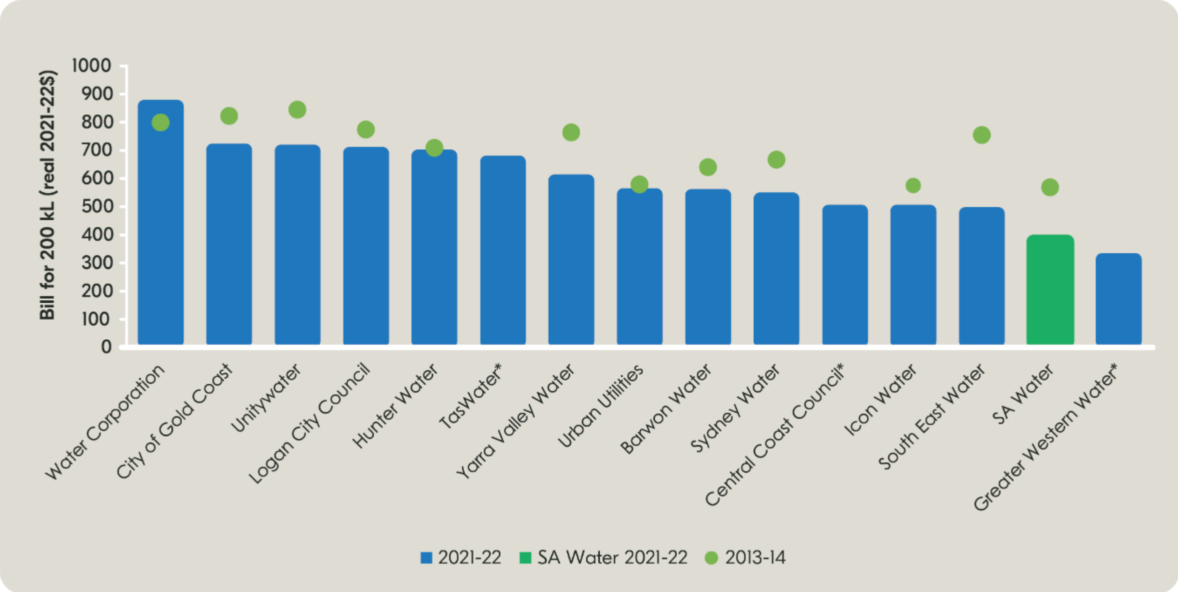

Figure 12-8 Interstate wastewater bill comparison of utilities with 100,000+ connections[171]

*Did not report measure for 2013-14

SA Water's residential wastewater bills continue to be among the lowest compared to interstate utilities (Figure 12-8). This reflects the Corporation's strong drive for efficiency. Performance is based on the typical wastewater bill for each utility. Among equivalent utilities, SA Water has one of the largest reductions in wastewater bills since 2013-14. This demonstrates that since economic regulation began, the Corporation has been competitive compared to other utilities.

As discussed in Chapter 6, these efficiencies have been delivered while maintaining service standards expected from customers. Service standards and the standards customers expect will continue to be a key consideration in determining the price point for services.

12.1.5 Affordability

SA Water is conscious that as an essential service provider its bills need to remain affordable now and into the future. To inform water utility considerations of affordability, the Water Services Association of Australia (WSAA) provide guidance on affordability in its customer support best practice framework.[172] WSAA defines water affordability as where "a household is said to be experiencing 'water affordability stress' when affordability is greater than a determined threshold." However, it found that while there "is no agreed upon value for this threshold", "guidelines for developed countries around the world put this threshold for water at around 3 per cent to 5 per cent of annual income." It recommends this

[171] The Bureau of Meteorology (BOM)(2023) *National Performance Report 2021-22 Urban water utilities [data set]*, BOM, accessed 25 April 2023.
[172] Water Services Association of Australia (WSAA)(2021) 'Customer Support Better Practice Framework', Water Services Association of Australia, accessed 22 May 2023

"threshold is used for macro analysis of the customer base and is relevant for price setting", not "to determine the affordability for an individual household." [173]

SA Water has considered affordability in the South Australian context and evaluates combined water and wastewater bill impact as a component of gross household income. This is done by looking at an annual residential bill based on 200 kL (water and sewerage combined), as a percentage of the mean annual gross household income (Figure 12-9). The actual household income (blue line) below uses the mean gross household income from the Australian Bureau of Statistics (to the latest data point available, 2019-20)[174], the forecast household income (green line) uses the Reserve Bank of Australia (RBA) wage price index forecast to project gross household income to 2023-24[175].

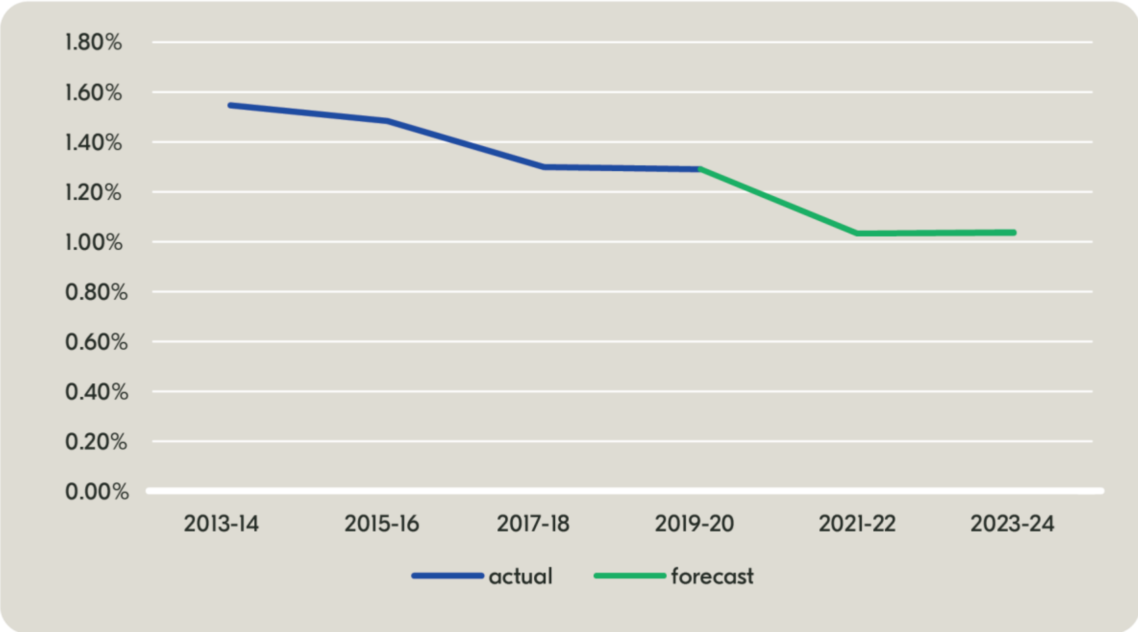

Figure 12-9 Combined bill as a percentage of mean annual gross household income (nominal)

In 2013-14, SA Water's bill was about 1.5 per cent of the gross annual mean household income, reducing to around 1.3 per cent in 2019-20 (based on the latest available ABS data for household income) (Figure 12-9). With further bill reductions observed in RD20, SA Water estimates (using RBA forecast data) that the average combined bill reduces to just over 1.0 per cent of the gross annual mean household income in both 2021-22 and 2023-24.

[173] Water Services Association of Australia (WSAA)(2021) '[Customer Support Better Practice Framework]', Water Services Association of Australia, Appendix 1, accessed 22 May 2023.
[174] Australian Bureau of Statistics (2022) *Table 14.4 - Household income and income distribution, states and territories*, accessed 22 May 2022.
[175] Reserve Bank of Australia (RBA) (2023) May Statement of Monetary Policy, RBA, accessed 25 July 2023.

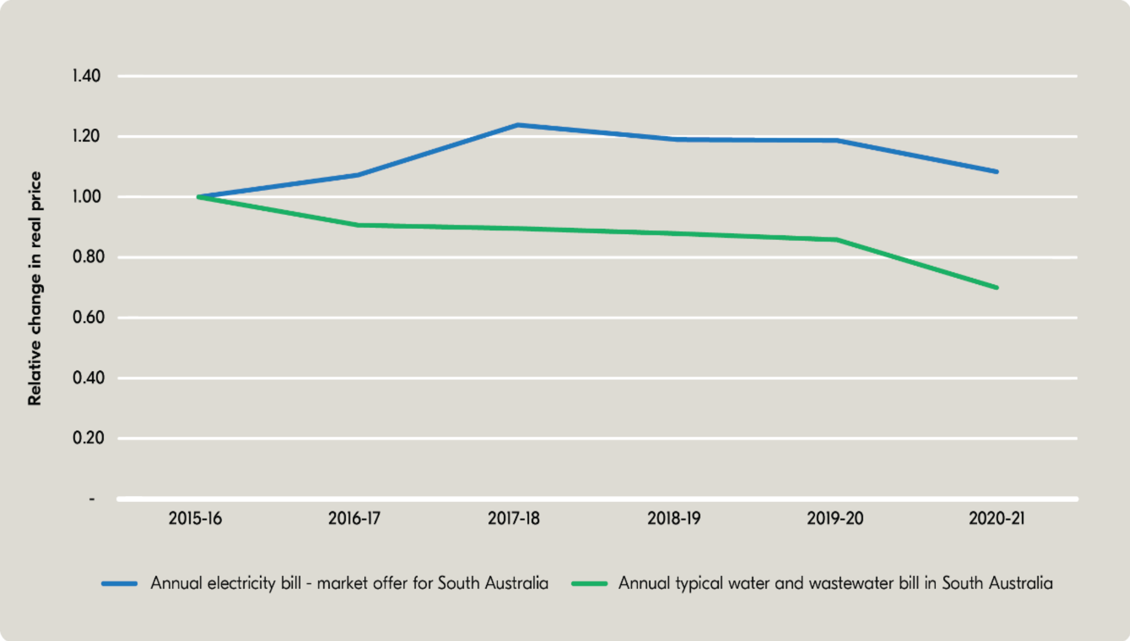

Figure 12-10 Change in price of market offer electricity bill in South Australia with water and sewerage bills in South Australia 2015-16 to 2020-21[176]

The Corporation also looks to how its pricing and bill impact compares to other goods and services. Annual electricity bills (determined using the market offer) provide a comparative price to SA Water bills (which do not offer market competition) (Figure 12-10). SA Water can use this to test its market competitiveness. It shows SA Water bills have been able to make consistent and sustained reductions in comparison.

In relation to the price of food and non-alcoholic beverages and housing in Adelaide, SA Water can demonstrate (Figure 12-11) it has been able to reduce costs in relation to these other necessary household expenses.

[176] Stantec (2023) Scope of future efficiencies Report, Stantec, Appendix 3.1.

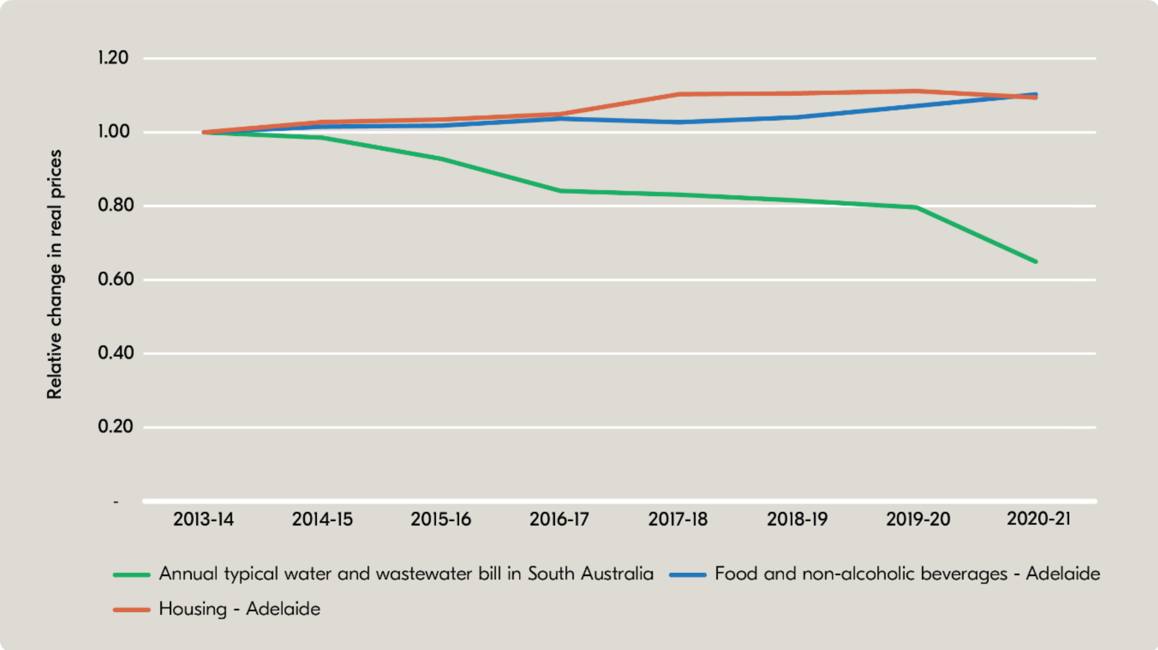

Figure 12-11 Change in price of food and non-alcoholic beverages and housing for Adelaide compared with water and sewerage bills in South Australia 2013-14 to 2020-21[177]

This type of information helps to understand the broader effects of the Corporation's pricing decisions on consumers.

While SA Water has increased RD24 expenditure, due to cost escalations and to manage intergenerational equity, bills are expected to remain comparatively low compared to electricity bills and other household items.

12.2 Regulated prices

This section explains SA Water's price structure and provides an indication of how this proposal will alter prices for regulated services during RD24. It includes information on how the Corporation categorises its customers for billing purposes, the current price structure, proposed price changes and how that might affect customer bills, and how SA Water assists customers who may need support.

In reading this, it should be noted that price changes are based on SA Water's proposal and associated revenue requirements, as detailed in this submission. Actual prices and bill impact may change following release of ESCOSA's final determination.

12.2.1 Price classification

Prices for most SA Water customers are classified into three categories based on the property type. The property classification used is consistent with the land use classification of the Office of the Valuer General[178]. The categories SA Water uses and how they are defined are as follows:

- Residential

Residential properties include single dwellings such as houses, townhouses and maisonettes. It also includes large blocks of flats and retirement villages that contain multiple dwellings.

[177] Stantec (2023) Scope of future efficiencies Report, Stantec, Appendix 3.1.

[178] Office of Valuer General (n.d.) *Land Use Codes, Office of Valuer General South Australia website, accessed 18 May 2023.*

Vacant land is also classed as residential. More than 90 per cent of SA Water customers are residential.

- Commercial

Commercial properties include retail trade and wholesale trade, finance and real estate, construction and repair services, and a range of personal and business services.

- Non-residential

Non-residential properties are the remaining properties and include public utilities, sporting and recreational grounds, mining and primary production. It also includes institutions providing services in government, education, health and welfare.

12.2.2 Current price structure

SA Water customers are billed quarterly for one or more of the following:

- fixed water supply charge
- variable charge for water use per kilolitre
- fixed sewerage supply charge.

How these charges are applied varies according to the type of property [179]. Current charges are detailed below.

12.2.2.1 Water charges

There are two types of charges for water services: a fixed water supply charge and the variable water use charge.

12.2.2.1.1 Water supply charge

The water supply charge is an availability charge required to cover fixed costs of providing a water service. It is paid quarterly and does not vary with the amount of water used.

- Residential, non-residential customers and commercial customers with a property value less than $10 million pay the same water supply charge.
- Commercial customers with a property value of more than $10 million pay an additional property-based charge (impacting approximately 600 large commercial customers). The property values on which the charges are based are set annually by the Office of the Valuer General.

For reference, the 2023-24 supply charges are detailed in Table 12-1.

Table 12-1 2023-24 water supply charges

	Quarterly water supply charges	Annual water supply charges
Residential	$74.20	$296.80
Commercial – less than $10 million property value	$74.20	$296.80
Commercial – greater than $10 million property value	$74.20 + $0.138 per $1,000 of property value greater than $10 million	$296.80 + $0.552 per $1,000 of property value greater than $10 million
Non-residential	$74.20	$296.80

[179] SA Water (n.d.) *Residential Water Prices*, SA Water website, accessed 25 April 2023.

12.2.2.1.2 Water use charge

The variable water use charge is based on the amount of water a customer uses. For most residential customers, the water use charge is based on a three-tier price structure:

- first tier is set to provide water at a discounted price to meet critical human needs
- second tier is set to ensure appropriate price signals for use
- third tier is priced to promote efficient and environmentally sustainable water use.

Daily volume thresholds for each tier limit are used as the number of days between meter readings can vary and lead to slightly different billing period durations. The first 383.6 litres of water used per day is covered by the first tier, the next 1041.1 litres per day is covered by the second tier, and any water use greater than 1424.7 litres per day is covered by the third tier.

Non-residential and commercial customers are charged the same single variable price for water use equivalent to the residential tier 2 price of $3.035 a kilolitre.

The 2023-24 water use prices for reference are detailed in Table 12-2.

Table 12-2 2023-24 water use charges

	Tier limit	Water use charges (per kL)
Residential – tier 1	0 to 383.6 litres per day	$2.126
Residential – tier 2	Between 383.6 and 1424.7 litres per day	$3.035
Residential – tier 3	More than 1424.7 litres per day	$3.288
Commercial tier	All use	$3.035
Non-residential tier	All use	$3.035

12.2.2.2 Sewerage charges

Sewerage charges are a fixed amount per quarter based on a customer's property value and are subject to a minimum charge.

A property rate (dollar per $1,000 property value) is applied to the value of a customer's property. The rate varies according to the property type and location, with 4 sewerage property rates set for:

1. residential metropolitan
2. residential regional
3. non-residential and commercial metropolitan
4. non-residential and commercial regional.

Rates are adjusted for movements in property value when determining the property rate applied. This is done to ensure SA Water does not receive any windfall gain (or loss) from movements in property values as sewerage charges are set to achieve SA Water's approved revenue set by ESCOSA.

Metropolitan customers have higher average property values than regional customers and, due to this, get a lower property rate per $1,000 of property value. Historically this approach has helped to prevent a widening disparity between metropolitan and regional sewerage bills.

SA Water's method of charging has been in place for many years and was implemented to equitably recover the cost of delivering sewerage services across customers according to their ability to pay. About one-third of metropolitan customers and half of regional customers are on the minimum charge. The 2023-24 sewerage charges are detailed in Table 12-3.

Table 12-3 2023-24 sewerage charges

	Quarterly sewerage supply charges	Annual sewerage supply charges
Minimum sewerage charge (applicable to all customers)	$79.50	$318.00
Residential – metropolitan	$0.1535 per $1,000 of property value	$0.614 per $1,000 of property value
Residential – country	$0.2325 per $1,000 of property value	$0.930 per $1,000 of property value
Commercial – metropolitan	$0.22825 per $1,000 of property value	$0.913 per $1,000 of property value
Commercial – country	$0.3505 per $1,000 of property value	$1.402 per $1,000 of property value
Non-residential – metropolitan	$0.22825 per $1,000 of property value	$0.913 per $1,000 of property value
Non-residential – country	$0.3505 per $1,000 of property value	$1.402 per $1,000 of property value

12.2.2.3 SA Water community concessions

SA Water administers some customer concessions funded through a community service payment on behalf of the State Government. About 29,000 customers (4 per cent) are eligible under legislation[180] for community concessions on their water or sewerage bills. Concessions also apply to land that has been acquired or is used for charitable purposes, public worship, or children's services.

The concessions may include:

- reduced water use prices
- exemption from property-based water supply charges for properties classed as commercial
- sewerage charges based on the number of toilets.

12.2.2.4 State Government concessions

The State Government also provides water and sewer concessions to eligible customers on low incomes. These are set by the state government and administered by the Department of Human Services. Around 124,000 customers (15 per cent) have access due to their pensioner or veteran status, receipt of Centrelink payments or their income.

These concessions are applied after SA Water has set prices and may reduce bills further for eligible customers. More information on eligibility for these concessions is available through the Government of South Australia information portal[181].

[180] South Australia Legislation (2012) Education and Children's Services Act 2019, South Australia Legislation, accessed 19 May 2023; South Australia Legislation (2012) Water Industry Act 2012, South Australia Legislation, accessed 19 May 2023.
[181] South Australian Government (n.d.) Water and sewerage rate concession, South Australia Government website, accessed 10 May 2023.

12.2.3 Converting projected revenue into prices

Consistent with the above price structures, the 2 variables that are used to convert the proposed revenue (detailed in Chapter 10) into prices are demand and customer growth.

In simplistic terms, the proposed required revenue is divided by the volume of water and number of customers to determine the forecast price, as follows:

- water services – the volume of water projected to be consumed by customers and the anticipated number of water customers (detailed in Chapter 5) is used to calculate the forecast water prices
- wastewater services – the projected number of wastewater customers (detailed in Chapter 5) is used to calculate the forecast wastewater prices.

Any changes to these inputs will have an impact on prices.

12.2.4 Additional price adjustments

SA Water, together with the State Government, determine prices to achieve the required revenue as per ESCOSA's building block model detailed in Chapter 10. In determining prices for RD24 SA Water has included additional revenue adjustments of $505 million over 4 years (in real 2022-23 dollars). These revenue adjustments mean that SA Water is proposing to under recover on the revenue cap for RD24. The value of this adjustment may vary at the Final Determination.

12.2.5 Proposed RD24 price change

The proposal for RD24 will result in price increases for water and wastewater customers from 2024-25. Table 12-4 shows that bills will increase on average by 3.5% (excluding inflation) in 2024-25. This is made up of a 2.2 per cent increase to water prices and a 5.8 per cent price increase for sewerage (excluding inflation).

Considering the previous years' price decreases, by 2024-25 water prices will decrease by 31.1 per cent and sewerage prices will decrease by 25.9 per cent (when removing the impacts of inflation) compared to what they were prior to economic regulation starting in 2013-14.

Table 12-4 Proposed change in prices RD24 in real terms (excluding inflation)

	RD24 period				Change since the start of economic regulation to 2024-25*
Real terms (excluding inflation)	**2024-25**	**2025-26**	**2026-27**	**2027-28**	
Combined bill average increase (for metropolitan residential customers)	3.5%	3.5%	3.5%	3.5%	-
Water price	2.2%	2.2%	2.2%	2.2%	-31.1%
Sewerage price	5.8%	5.8%	5.8%	5.8%	-25.9%

*Based on actual inflation for 2013-14 to 2023-24 (March to March, ABS, CPI: All groups - weighted average eight capital cities, 6401.0).

Similar increases will be applied in each year of the regulatory period (rather than applying the price change in year one followed by CPI increases, as has occurred in previous regulatory periods). This is to smooth the impact of price changes over the regulatory period and manage impacts for customers.

Table 12-5 shows that nominal bills, including inflation of 2.5 per cent, will increase on average by 6.1 per cent in 2024-25. This is made up of a 4.7 per cent increase to water prices and 8.4 per cent increase for sewerage, including inflation.

These increases are required to maintain the service standards and expenditure requirements detailed in previous chapters.

Table 12-5 Proposed change in prices in RD24 in nominal terms (including inflation)

	RD24 period				Change since the start of economic regulation to 2024-25*
Nominal terms (including inflation)	**2024-25**	**2025-26**	**2026-27**	**2027-28**	
Inflation assumption	2.5%	2.5%	2.5%	2.5%	35.9%
Combined bill average increase (for metropolitan residential customers)	6.1%	6.1%	6.1%	6.1%	
Water price**	4.7%	4.7%	4.7%	4.7%	-6.4%
Sewerage price**	8.4%	8.4%	8.4%	8.4%	0.7%

*Based on actual inflation for 2013-14 to 2023-24 (March to March, ABS, CPI: All groups - weighted average eight capital cities, 6401.0).

** Based on forecast CPI assumption of 2.5%. Actual impacts may vary with actual CPI.

Considering the previous years' price decreases, by 2024-25 water prices will decrease by 6.4 per cent and sewerage prices will increase by 0.7 per cent (nominal) compared to what they were prior to economic regulation starting in 2013-14.

12.2.6 Impact to the customer bill

The RD24 price structures are yet to be finalised. To demonstrate bill changes for customers in the forward regulatory period, it has been assumed that:

- price structures are consistent with RD20 (as detailed in 12.2.2)
- revenue increases are applied consistently to all water and wastewater tariffs
- the price changes will be passed on in a gradual way, in smaller annual increases over the regulatory period (rather than applying the price change in the first year of the regulatory period with CPI increases in the remaining 3 years).

To understand the impacts to customer bills, price changes are applied to a typical residential customer bill. In the metropolitan area, this is what a customer who uses 189 kL per year and has an average property value (around $626,000 in 2022-23) would pay.

The typical metropolitan residential customer bill would therefore receive a combined water and sewerage increase of $10.20 excluding inflation per quarter, or $17.80 including inflation, in 2024-25. This is equivalent to an annual bill increase of $41 excluding inflation, or $71 including inflation, in 2024-25. This would be followed by similar increases in the remaining 3 years of the regulatory period.

While non-residential and commercial customer's characteristics can vary significantly depending on the type of business, an average non-residential metropolitan customer bill reflects a property that uses 983 kL of water per year and has an average property value of $1,516,000 in 2022-23.

The average non-residential or commercial metropolitan customer bill would therefore receive a combined water and sewerage increase of $40.80 per quarter excluding inflation, or $72.40 per quarter including inflation, in 2024-25. This equates to an annual increase of $163 excluding inflation, or $289 per annum including inflation, in 2024-25. This would be followed by similar increases in the remaining 3 years.

The average combined bill impacts for residential and non-residential/commercial customers and bill changes from 2023-24 to 2024-25, the first year of RD24, are shown in Table 12-6.

Table 12-6 Proposed combined (water and sewerage) typical bill impact in nominal dollars (including inflation)

Customer characteristics			Combined water and sewerage bill		
Region	**Water use (kL)**	**Property value**	**2023-24***	**2024-25****	**Change*****
Average residential******					
Metropolitan	189	$626,000	$1,177	$1,248	$71
Country	189	$323,000	$1,095	$1,159	$65
Average non-residential or commercial					
Metropolitan	983	$1,516,000	$4,884	$5,174	$289
Country	983	$690,000	$4,415	$4,665	$250

* Based on 2022-23 property values from the Valuer General.

**Based on forecast CPI assumption of 2.5%. Impacts may vary with actual CPI.

***Similar increases to occur in 2025-26, 2026-27 and 2027-28.

**** Residential single dwellings.

Actual bill impacts will vary from customer to customer, depending on their water use and property value. Indicative bill variations for a range of water use and property values are shown in tables 12-7 to 12-9.

Table 12-7 Indicative water bill impacts, nominal dollars (including inflation)

	2023-24	**2024-25***	**Variance****
Residential			
Low water use—140 kL per year	$594	$622	$28
Average water use —189 kL per year	$743	$778	$35
High water use—436 kL per year	$1,493	$1,563	$70
Very high water use—681 kL per year	$2,242	$2,347	$106
Non-residential/commercial			
Low water use—26 kL per year	$376	$393	$18
Average water use —983 kL per year	$3,280	$3,435	$155
High water use—2,864 kL per year	$8,989	$9,413	$424
Very high water use—11,533 kL per year	$35,299	$36,963	$1,663

*Based on forecast CPI assumption of 2.5%. Impacts may vary with actual CPI.

**Similar increases to occur in 2025-26, 2026-27 and 2027-28.

Table 12-8 Indicative metropolitan sewerage bill impacts, nominal dollars (including inflation)

	2023-24	2024-25*	Variance**
Residential			
Minimum charge	$318	$345	$27
Average property value ($626,000)	$434	$470	$36
High property value ($1,300,000)	$901	$976	$75
Very high property value ($2,100,000)	$1,455	$1,577	$122
Non-residential/commercial			
Minimum charge	$318	$345	$27
Average property value ($1,516,000)	$1,604	$1,739	$135
High property value ($4,525,000)	$4,787	$5,190	$403
Very high property value ($8,950,000)	$9,469	$10,266	$797

*Based on forecast CPI assumption of 2.5%. Impacts may vary with actual CPI.

**Similar increases to occur in 2025-26, 2026-27 and 2027-28.

Table 12-9 Indicative country sewerage bills, nominal dollars (including inflation)

	2023-24	2024-25*	Variance**
Residential			
Minimum charge	$318	$345	$27
Average property value ($323,000)	$351	$381	$30
High property value ($760,000)	$827	$897	$70
Very high property value ($1,225,000)	$1,333	$1,446	$113
Non-residential/commercial			
Minimum charge	$318	$345	$27
Average property value ($690,000)	$1,135	$1,230	$95
High property value ($2,100,000)	$3,455	$3,744	$290
Very high property value ($5,700,000)	$9,377	$10,163	$787

*Based on forecast CPI assumption of 2.5%. Impacts may vary with actual CPI.

**Similar increases to occur in 2025-26, 2026-27 and 2027-28.

12.2.7 What customer bills pay for

SA Water's proposed expenditure represents value for money for customers as most of the revenue received from customers through their bills is invested directly into providing water and wastewater services. Revenue from bills is mainly used to invest in:

- network maintenance, that allows for better infrastructure performance and ensures service levels for customers are maintained
- infrastructure, that is required to balance acceptable risk with service outcomes for customers.

- operating the network, that is essential to deliver day-to-day services to customers.

Less than 3 per cent of revenue is returned to SA Water's owner, the South Australian government, which the government can then reinvest. Tax is also paid to the South Australian government as a tax equivalent in the interests of competitive neutrality.

12.2.8 Financial hardship

SA Water aims to set the price for its water and wastewater services to be as affordable as possible. To help customers who experience financial hardship, SA Water operates a Customer Assist Program, in accordance with the Corporation's hardship policy for residential customers[182]. This program supports residential customers who are experiencing short or long-term financial hardship.

Through this program, SA Water helps customers manage their payments in a way that best suits them, while ensuring they remain connected to a retail service. A flexible payment plan approach is agreed with the customer so they can better manage payment of their bills. Once a payment plan is established and adhered to, if applicable, any debt recovery action stops.

In addition, SA Water provides information to customers about confidential independent counselling services, support and assistance, and information on how to manage water use more efficiently in the home and garden. More information on SA Water's hardship program is available on the Corporation's website[183].

These services are additional to the concessions available to eligible customers as described in Section 12.2.2.4.

12.3 Excluded services

As defined by ESCOSA in the RD20 Final Statement of reasons, "excluded services are provided to specific customers who request those services. The costs of those services can be more easily attributed to the customers who benefit from them compared to drinking water and sewerage services, which are provided to customers at large."[184]

Excluded services are provided to individuals or small classes of customers, and include:

- standard and non-standard connection services (including developer services)
- trade waste services
- non-domestic hauled waste services
- easement extinguishment and encumbrance services
- meter services
- network analysis and audit services
- hydrant and fire plug services
- recycled water services (to an extent).

These services are paid for by the customers who benefit from them, not by the wider customer base, and for this reason the costs and revenues from these services are not included in the RBP.

[182] SA Water (2018) 'Hardship Policy', SA Water, accessed 20 April 2023.

[183] SA Water (n.d.) *Help paying my bill',* SA Water, accessed 23 May 2023

[184] ESCOSA (2020) 'SA Water Regulatory Determination 2020 – Statement of reasons', ESCOSA, accessed 24 March 2023.

12.3.1 Determining prices for excluded services

As required by ESCOSA in its RD20 price determination, excluded services are priced in line with specified pricing principles taken from the National Water initiative (NWI) Pricing Principles as well as additional principles developed by ESCOSA.[185] They are also subject to ESCOSA's price monitoring and dispute resolution processes.

Each year SA Water sets fees and charges for excluded services. To ensure transparency, an Excluded Services Pricing Policy statement is published on the SA Water website to provide information on the process. [186]

A key NWI Pricing Principle is that fees and charges reflect the efficient cost of providing the relevant service. SA Water will review the cost to provide excluded services to inform the price path for these services for 2024-28. Where necessary, SA Water will communicate and engage with relevant customer groups about the proposed price path.

[185] Department of Climate Change, Energy, the Environment and Water (n.d.) National Water Initiative pricing principles, DECEEW website, accessed 30 June 2023; ESCOSA (2020) 'SA Water's water and sewerage retail services: 1 July 2020 - 30 June 2024 Price Determination', ESCOSA, accessed 10 May 2023.
[186] SA Water (n.d.) *Water Prices, SA Water website, accessed 10 May 2023*.