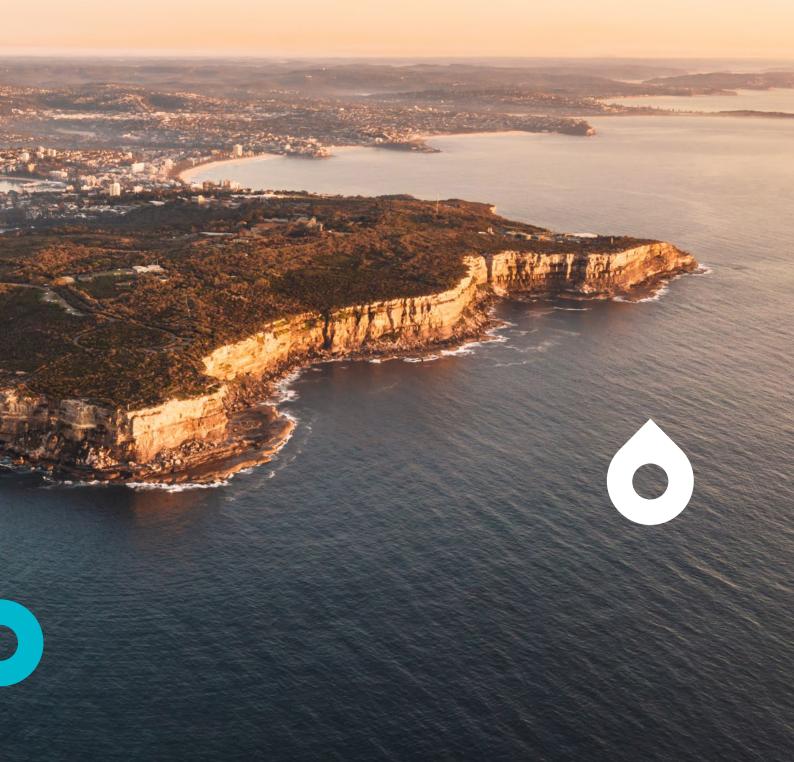




# Contents

01	Context and requirements	1
02	Delivery of our services today and through time	10
03	Trends and challenges shaping our future	18
04	Our approach to developing the Long Term Capital and Operational Plan	20
05	The adaptive plan	32
06	Delivering values for our customers	48

# Context and requirements



# Creating a better life with world-class water services

# Customers are at the heart of everything we do.

The Long Term Capital and Operational Plan is an adaptive plan that captures Sydney Water's key infrastructure and operational decisions to 2050.

Our plan is aligned with the NSW Government's vision for Greater Sydney and our customer values, both of which actively inform our investment choices. This plan provides the long-term context for future pricing submissions to IPART.

We balance cost and risk in an adaptive plan to ensure it always reflects what our customers expect of us and will support the growth and resilience of Greater Sydney for the next 25–30 years.

# The Greater Sydney Water Strategy underpins our long term planning



The LTCOP is aligned with and supports the NSW Government's vision, as outlined in the NSW State Infrastructure Strategy as well as the government's priority for Transport Oriented Development, diverse and well located homes and urban greening of the city



Support economic growth and community wellbeing by providing confidence in the security and sustainability of Greater Sydney's water supply to meet growth and adapt to a changing climate by 2040 and beyond



Identify the strategic pathways to ensure the right investment decisions are made at the right time in consultation with customers and the community



Set the pathway to **identify highest** economic value and most affordable investment portfolios for water infrastructure



### 49 GL/y water saving by 2040

Continue investment in comprehensive water conservation and efficiency program



### Additional 20 GL/y

Increase use of Sydney **Desalination Plant** 

# Continue planning for new rainfall-independent supply options



Purified recycled water



Desalination



Make much greater use of stormwater and recycled water



Invest in upgrades, new connections and leak management



Integrate our water and land use planning more effectively



Invest in wastewater and improve waterway health

# Our plans, forecasts and budgets

Our enterprise planning approach integrates our planning and budgeting processes to deliver value for our customers. Each stage of the process provides insight and is used to inform the next level of the plan.

### **LONG TERM**



# **Long Term Capital and Operational Plan**

Evidence based and adaptive plan for servicing Greater Sydney to 2050, incorporating how Sydney Water will deliver best value to customers and manage uncertainty.

Noted by Portfolio and Shareholder Ministers

### **MEDIUM TERM**



# Enterprise Business Plan (Statement of Corporate Intent)

An annual statement of Sydney Water's objectives, strategy, KPIs and financial policies, which includes a rolling 10-year outlook for revenue, operational and capital investments.

**Agreed** with the Shareholding Ministers

### **NEAR TERM**



# **Regulatory Price Submission**

A detailed 5-year proposal backed by customer engagement outlining the revenue, operating and capital investment needs which is used by IPART to set tariffs for customers.

**Endorsed** by the Independent Pricing and Regulatory Tribunal (IPART)

# **Objectives**

The objective of the LTCOP is to set the long-term servicing direction for Greater Sydney.



We have engaged our customers to align our investments to what our customers value.



We have made informed investment decisions that give regard to cost, risk, levels of service and future uncertainty.



We have engaged our stakeholders to align expectations on key investment decision triggers, future infrastructure investments and important policy areas that require further exploration.



We seek to maintain affordability for customers and intergenerational equity (social, economic and environmental).



# Our key assumptions

### Warragamba Dam operating level

The Full Service Level of the dam will not be increased for water supply or decreased for flood mitigation

# Workplace exposure standards

Workplace exposure standards for airborne contaminants (e.g. hydrogen sulphide) will not change

# Major system decentralisation

System configuration remains broadly centralised – for example, impact of broad scale use of in-home water supply systems not considered

# Changes to the bulk water supply model

Ownership of assets remains consistent with current arrangements

### **Business Model**

Our model will remain consistent with potential to explore opportunities in tangential markets such as resource recovery and energy generation

### **Population**

Reflect Department of Planning, Housing and Infrastructure's Main Population Projection released in 2022

### **Climate change**

Representative Concentration Pathway (RCP) 4.5 scenario (NARCliM 1.5)

### **Model drought**

1:100,000 drought

# Water Quality Standards

Achieve Australian Drinking Water Guidelines – date of change assumed 2025 for disinfection by-products and PFAS and related forever chemicals

# Wastewater Quality Standards

Achieve new
Hawkesbury
Nepean
Framework
requirements from
2026 and existing
coastal plant
licence conditions
as minimum

# Dry weather network discharge

Zero dry weather discharge

# Wet weather overflows

Achieve current Environmental Protection Licences for wet weather as a minimum

### Recycled water

Service provision under existing cost recovery model

# **Property tax**

Required to pay tax on land (stormwater servicing in Mamre Road Precinct and Aerotropolis excepted)

# Land acquisition

We pay for land that supports our assets

### Pass through costs

Assume current cost structures apply for WaterNSW, Sydney Desalination Plant, Build-Own-Operate Plants. Full pass through for SDP, and pass through based on rate for WaterNSW and BOOs (Sydney Water takes demand risk)

Weighted Average Cost of Capital (WACC)

Current post-tax WACC of 3.6% for FY26-30, 4.4% for FY31-35, 4.6% onwards

# Developer charges

Levied from July 2024 with staged implementation. First year with 75% discount, second year 50% discount and third year zero discount Sydney Desalination Plant operation

Will run full-time under flexible operation rules

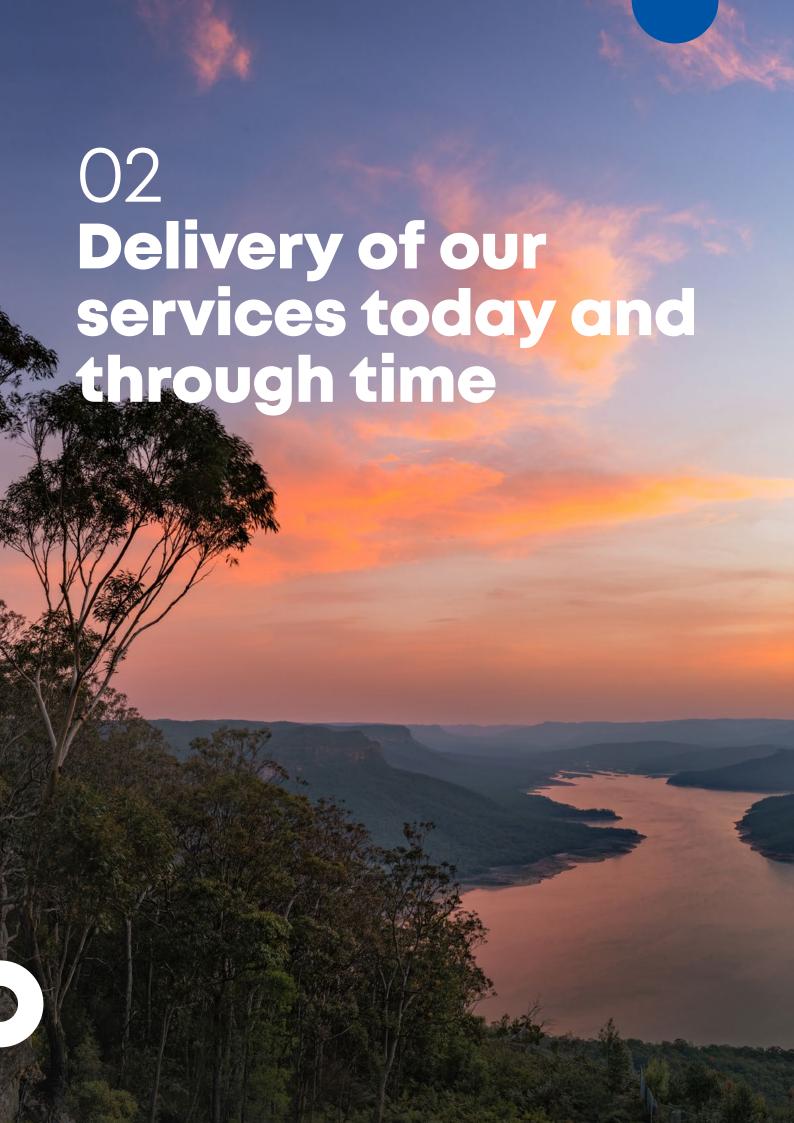
# Considerations in developing the LTCOP

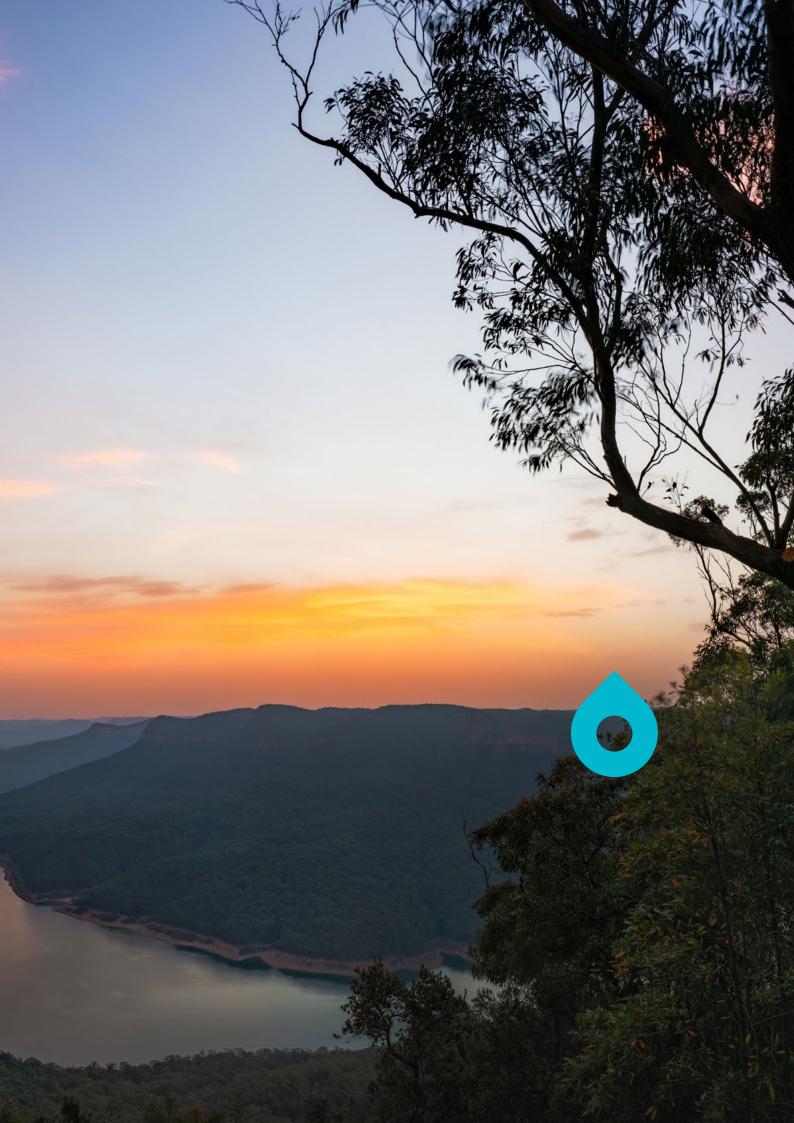
### The LTCOP:

- sets the long-term servicing direction for Greater Sydney
- is an optimised view of our investment plan to 2050
- provides a basis to meet regulatory requirements, critical stakeholder expectations, and reflect customer preferences and priorities, now and into the future
- · positions for foreseeable emerging directions
- is aligned with the NSW Government's housing supply policy, including the Transport Oriented Development (TOD) program, and will support implementing this

- reflects sensitivity to needs of First Nations people
- appropriately balances cost and service risks which reflect rising customer expectations and priorities, including acknowledging post-COVID affordability challenges
- ensures significant investments and decisions are scheduled to balance prudency, risk, and the ability to exploit new technologies or servicing strategies at any given time
- is informed by a confident understanding of when critical decisions will be required for future servicing directions
- identifies, manages and mitigates the key planning risks







# Timeline of Sydney Water investments

- 1788: Water was sourced from a creek called the Tank Stream after European settlement.
- 1827: Busby's Bore commissioned to serve water from Lachlan Swamps (modern day Centennial Park) replaces the Tank Stream as the city's main water supply.
- 1857: The Bennelong Point Sewerage System become Sydney's first planned system to dispose of the city's sewage.
- 1859: Sydney's sewerage system consisted of five outfall sewers which drained to Sydney Harbour.
- 1859: Botany Swamps Water Supply Scheme began, with the pumping station taking water from a convict built dam through Crown St Reservoir (today's oldest water supply reservoir still in service).

- 1888: Board of Water Supply and Sewerage (BWS&S) created.
- Scheme successfully linked the Nepean, Cataract, Cordeaux and Avon Rivers to deliver water to Sydney through the Upper and Lower Canals.
- to Metropolitan Board of Water Supply and Sewerage (MBSW&S).
- 1902: Sewerage network expanded to a network of 20 sewage pumping stations, ending discharges to Sydney Harbour.
- 1903: Wollongong water supply connected.

- 1915: Construction of Cataract Dam completed.
- 1916: Southern and Western Suburbs Ocean Outfall Sewer (SWSOOS)
  No. 1 completed.
- 1926: Construction of Cordeaux Dam completed.

  Construction of Avon Dam completed.
- 1930: Northern Suburbs Ocean Outfall Sewer (NSOOS) completed.

1788 -1888 1888 -1910 1910 -1940

**Our city's beginnings** 

Metropolitan Board of Water Supply & Sewerage

- 1941: SWSOOS No. 2 completed, increasing capacity in Sydney's biggest wastewater system to service Sydney's growing population.
- 1953: Bondi Wastewater Treatment Plant completed.
- 1960: Construction of Warragamba Dam completed.
- 1975: Construction was completed on Sydney's largest Wastewater Treatment Plant at Malabar.
- 1977: The Shoalhaven Scheme is constructed (Tallowa Dam, Fitzroy Falls Reservoir, Wingecarribee Dam).
- 1980: Blue Mountains water supply scheme was taken over by the Metropolitan Board of Water Supply & Sewerage.
- 1984: Construction of North Head Wastewater Treatment Plant was completed.
- 1990: Deep ocean outfalls at Bondi, North Head and Malabar were completed.

- 1996: Prospect Water Filtration Plant, which supplies up to 80% of Sydney Water's customers, is completed.
- 2000: Construction completed on the Northside Storage Tunnel, designed to protect Sydney Harbour from pollution from wet weather sewer overflows.
- **2002:** Recycled water for non-drinking uses supplied to residents for the first time via the Rouse Hill Recycled Water Scheme.
- 2008: Peak in water conservation spend with program delivering 86GL of savings in drinking water use.
- 2010: Introduction of rainfall independent water supply sources with the commissioning of Sydney Desalination Plant and St Marys Advanced Water Recycling Plant, reducing demand on Warragamba Dam.
- 2023: Purified Recycled Water Discovery Centre commissioned to support our customers' understanding of how purified recycled water is produced.

1940 -1994 1994

Today

# **Our services**

### We love water - it's in our name - but we do lots more.

Our systems have served us well for 136 years, but many assets are nearing capacity or approaching the end of their life.

To ensure we can continue to provide safe, reliable and affordable services to customers, we need to invest now to configure our systems for the future. This will protect our city against the impacts of climate change, while ensuring the health and amenity of Greater Sydney's beautiful waterways.

# We supply:

water, wastewater and recycled water services





Sydney



Central Eastern Sydney Sydney





Our area of operations covers 12,870 sq km

**40 acoustic sensors** are deployed across 5 discrete pressure zones to monitor and detect leaks and breaks

**22,745 km** of water mains

# We test the drinking water at:

- inlet and outlet of water filtration plants
- ▶ homes
- **>** catchments
- ▶ reservoirs

# We test for:

colour





microorganisms chemical content

We have installed 10,000
IoT devices to detect
blockages in wastewater
pipes helping us avoid
15-20 overflows each month

# We **filter 100%** of your water



We analyse data from 2,000+ sewer blockages to create an AI model that predicts which tree species are most at risk of intruding into wastewater pipes

# We remove

698,215 million litres of wastewater from 2,055,860 properties





# Wastewater

through
26,693 km of
wastewater
pipes and
30 water
resource
recovery
facilities

We recycle **37,693**million litres of
wastewater through
793km of recycled
water mains

every year



We recycle
129 megalitres
a day



# Your water comes from:

- **21** dams
- ▶ 1 desalination plant
- ▶ 251 reservoirs
- ▶ **153** water pumping stations



We produce 508, 478 million litres every 12 months





We supply water to 2,105,709 properties



# Your drinking water

comes from lakes, rivers and bushland including World Heritage national parks and is used not only for drinking, but also other indoor andoutdoor uses such as showering, toilet flushing and irrigation.

# 80%

of your drinking water

comes from

Warragamba Dam/ Lake Burragorang

# Water recycling



Recycled water pumping stations

454 km

of stormwater channels and pipes, draining 640,168 properties





Recycled water Recycling reservoirs



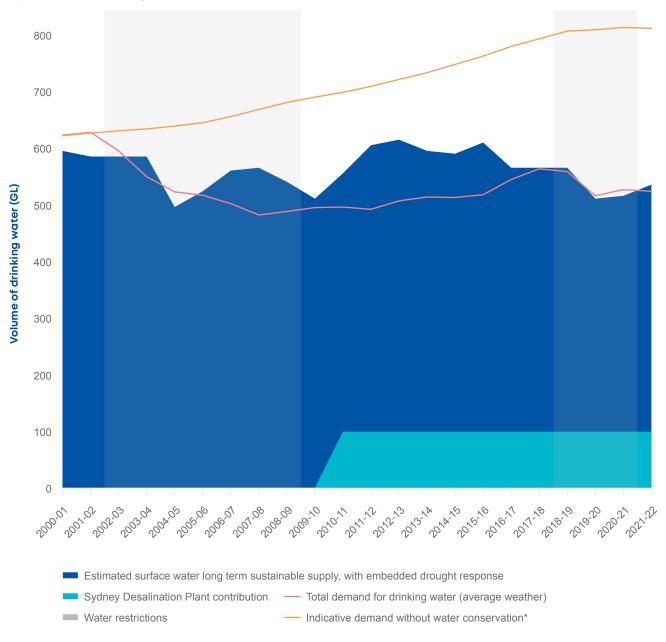




# Water conservation has avoided the need for significant investment

Our investment in water conservation means that we have avoided the need to build new drinking water supplies since the end of the Millennium Drought. The city uses around 12% less drinking water than it did 20 years ago despite almost 1 million more people. On a per person basis, drinking water demand is around 36% less than it was in the early 2000s. Water conservation has also avoided investments in wastewater asset augmentation through reduced dry weather flows.

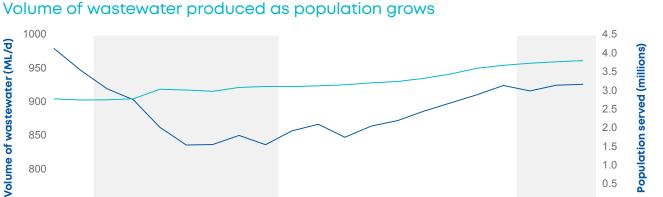
# Sydney's Drinking Water Demand over time



<sup>\*</sup> Based on per person water use in 1999 before major water conservation efforts.

0.5

0.0



Water restrictions Wastewater - average dry weather flow^

750

Estimated population served ^ Graph showing trend in coastal systems only

# **Customer bills over time**

In real terms, customer bills have decreased over time and have been amongst the lowest in Australia for more than a decade. This is due to our ongoing water conservation efforts; our older asset base, an increasing percentage of which is nearly or fully depreciated; as well as our low level of water system resilience; and current customer and regulatory acceptance of lower levels of coastal wastewater treatment.

# Water and Wastewater real price changes



\* Index normalised to June 1998.





# Challenges facing our changing city

In 2050, Greater Sydney will be a very different place to what it is today. We have identified five key trends and challenges which will affect our future operations and impact service delivery.

# 01

# **Growing cities**

Urban expansion and increasing population density will require increased drinking water supply, new wastewater treatment facilities, and augmentation and expansion of existing water and wastewater systems for 2 million+ people by 2050. The staging and location of this growth will impact on the cost to deliver services.



### Climate change

Our climate is changing, with prolonged periods of heat and rain expected, and extreme weather events continuing to increase in frequency and severity. Variations in climate have a direct impact on our customers, our network and our services. These extremes also impact and challenge our existing assets and require a change of approach for the design of new assets.



### **Customer expectations**

Customers are at the heart of everything we do and their expectations around the services we provide have evolved beyond traditional water and wastewater servicing. Our customers expect Sydney Water to improve the health of our waterways, support their water conservation efforts, and contribute to cool green spaces.



### **Emerging technology**

There will be advancements in the size, speed, intelligence, capabilities, and applications of digital technologies which provide new opportunities to plan, design, build, operate and maintain our assets and systems, but also increases our vulnerability to cyber risks. Advancements can also change the way we interact with customers and how they interact with us.



### **Unpredictable events**

Evolving geopolitical volatility increases the risk of sophisticated, high impact cyber – and potentially, physical – attacks on critical infrastructure entities such as Sydney Water. There is also uncertainty as to the timing of other unpredictable events including pandemics, supply chain interruptions and drought.

# Our city is rapidly growing

DPHI predicts Sydney's population will increase by 1.8 million people by 2050 (a 35% increase), which is 50% more growth than in the previous equivalent period.

The high level of investment in growth in the next 10 years is a result of the number and geographic spread of growth fronts being initiated across the city, particularly in greenfield areas including:

- Western Sydney Aerotropolis Growth Area and South West Growth Area
- · Central and Eastern City
- · Greater Macarthur
- North West Growth Area

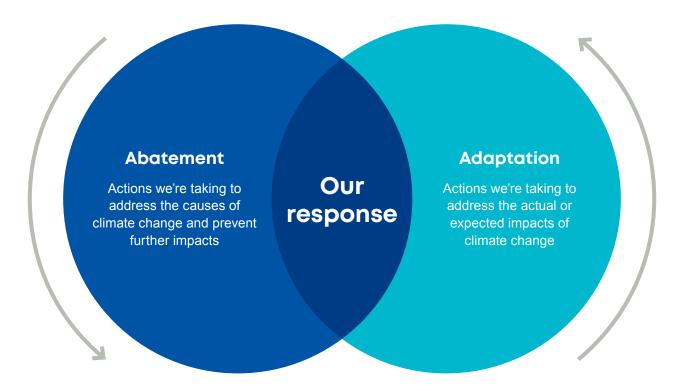
- Greater Penrith and Western Sydney Employment Area
- Illawarra
- Transport Oriented Development precincts





# Our climate is changing

It is anticipated that climate change will increase the frequency and severity of natural hazards – bushfires, storms, floods, heatwaves, and rising sea levels – across our region, and we recognise we need to both address the causes and adapt. We are investing now in line with our customers values.



We are keeping our resources (water, materials and energy) in use at their highest value and implementing more efficient and renewable ways to power our services.

We will accelerate our Net-Zero commitments ahead of the NSW Government's target, in line with our customers' expectations.

We are ensuring our existing infrastructure can withstand more extreme weather and restoring damaged ecosystems and revitalising public spaces for communities.

Climate change adaptation practices are embedded in our core business practices.

### Some examples of the impacts of climate change on our services

Up to \$3B in restoration cost for assets exposed to climate hazards

30GL reduction in surface water yield in short term increasing to 80GL by 2050

Reduced inflows into dams in drought by up to 10% (inour1:100,000 design drought)

Increase in average annual demand by up to 3% 16% increase in monthly demand variability

# Our customer priorities

Through the Our Water, Our Voice community engagement program, our customers have identified priority outcomes and their relative importance.

1

Maintaining safe and clean drinking water

2

Ensuring water/wastewater bills remain affordable

3

Ensuring waterways/water recreation areas remain clean and safe to use

4

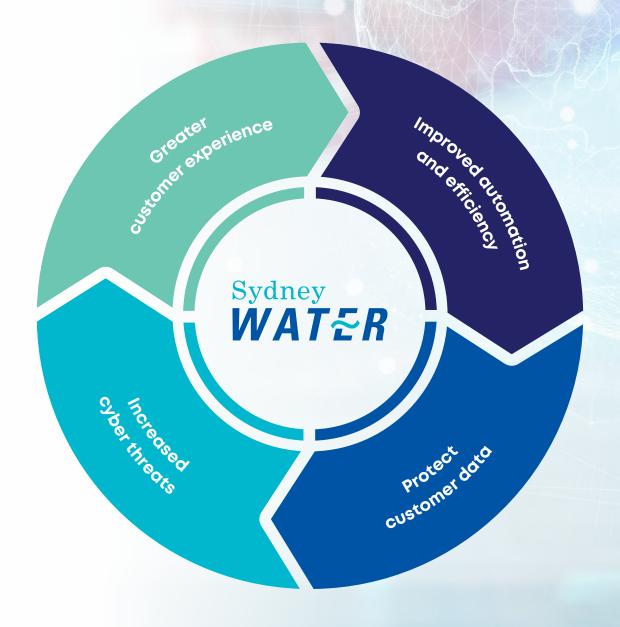
Enhancing the water network's resilience to drought through water recycling and/or desalination

5

Reducing water loss by minimising leaks and breaks in Greater Sydney's pipe networks

# Emerging digital capability and geopolitical threats

- Enhancing the digitisation of our infrastructure provides multiple benefits for the delivery of our services, however it also brings additional risks due to how our digital and physical infrastructure operates and the ongoing geopolitical environment
- Our world has become more complex, with a greater deal of uncertainty around the rise of geopolitical forces across the Asia-Pacific region
- Evolving geopolitical volatility increases the risk of sophisticated, high impact cyber and potentially physical attacks on critical infrastructure entities such as Sydney Water
- Like all utilities, we will need to enhance our technology and implement redundancy measures to protect the integrity of the network and customer data.





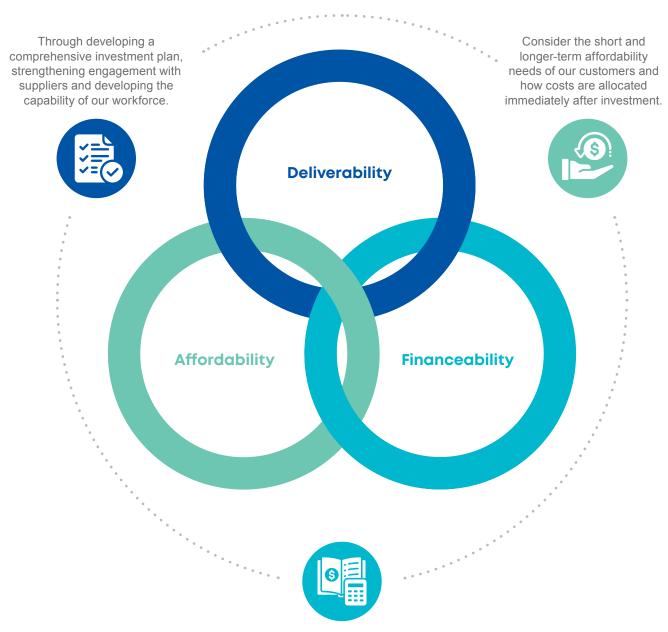
# Our approach to developing the Long Term Capital and Operational Plan



# **Success criteria**

We have established the LTCOP under an adaptive approach so we can make decisions in response to investment triggers through time for the most optimal, cost effective and sustainable outcome.

The Plan's success will be determined by the following criteria:



Our predictable income stream, introduction of infrastructure contributions and significant growth in our regulatory asset base provides strong cash flows for funding the capital investment. However, the financing approach needs to also consider affordability.

# 05 The adaptive plan



# Our approach to the future

What our long-term planning is telling us about our approach to servicing Greater Sydney into the future.

# 0

# **Current context**

Our existing systems have served us well, but they are aging and were built based on technology and requirements of their time.

Continuing to transfer water from dams in Western Sydney to coastal wastewater outfalls in the east will put increasing pressure on our systems, with this arrangement becoming less resilient to shocks and stresses over time.



Customers in Sydney benefit from significant economies of scale, but this comes with an over reliance on Warragamba Dam and Prospect WFP, with both assets servicing 80% of Greater Sydney. Sydney currently has the lowest rainfall independent water sources of any major city in Australia at up to 15%.

Over 60% of Sydney's wastewater is high-rate primary treated before being discharged to the ocean, relying on dispersion to minimise environmental impacts.

# Ó

# **Future direction**

In the context of current issues and technology, we have two strategic planning opportunities around system configuration and service reliability.

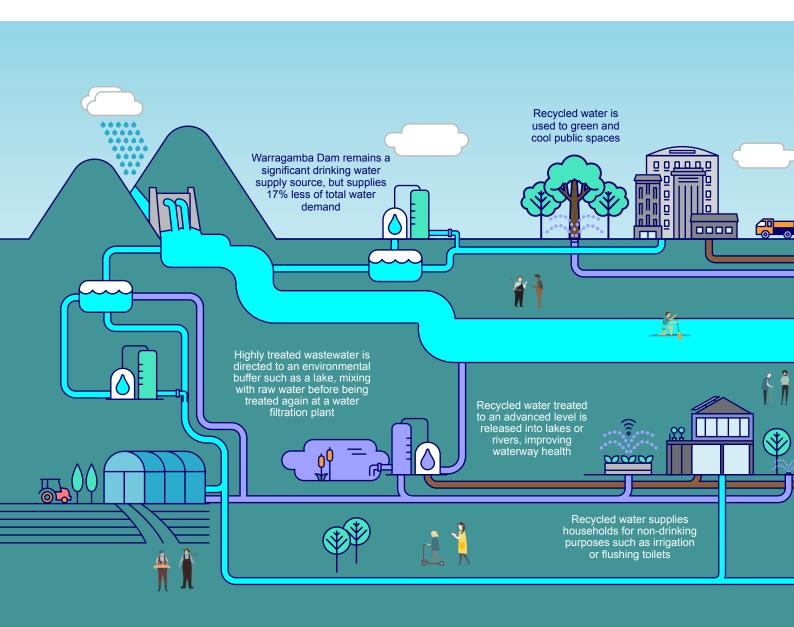
Our servicing direction for Greater Sydney is to manage risk by disrupting the west to east flow through further decentralisation from our largest water and wastewater systems.



We will do this by building new rainfall independent sources of water and using our resources more than once, particularly through purified recycled water (PRW), which will avoid very costly wastewater augmentations and reduce dependence on single assets.

This will not only improve resilience and our ability to adapt to change, but will also better enable waterway health outcomes and reduce the cost of renewing aging assets.

# How the LTCOP will help us build thriving, liveable sustainable cities

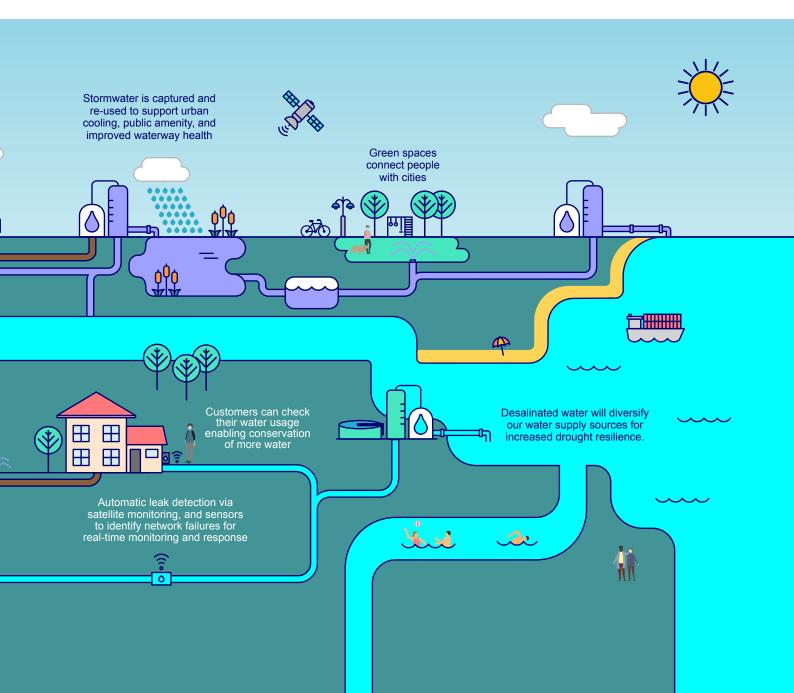


Ensuring we have resilient and reliable services

Integrated servicing of infrastructure to deliver long term value for customers

Maximising community value through protecting the health of our waterways and parks

Embedding circular economy principles across our planning, delivery and operations



# The adaptive pathway

This plan outlines the key decision points that could significantly alter our levels of investment or change our direction of servicing. The total range of investment to 2050 is \$80 – \$92 billion, depending on the pathway taken.

Our plan is optimised for both capital and operating costs to ensure we can provide services to customers in line with their expectations, meet our obligations to regulators and stakeholders, while also managing future risks at the lowest total cost.

To secure this pathway, it is essential that we commence disconnection of inland wastewater systems from the coast in a timely manner and that PRW supports customers' future water needs.

# **Outcome**

Environmental
Protection
(Protect our
waterways and
environment for
both new and
existing customers)

# 0 - 10 years

Deliver integrated stormwater servicing at Mamre Rd and Aerotropolis precincts



On-lot stormwater treatment in Western Sydney – Sydney Water is not the stormwater manager

Water Quality and Reliability (Deliver reliable drinking water for new and existing customers)

Warragamba Deep
Water Pumping

Drought

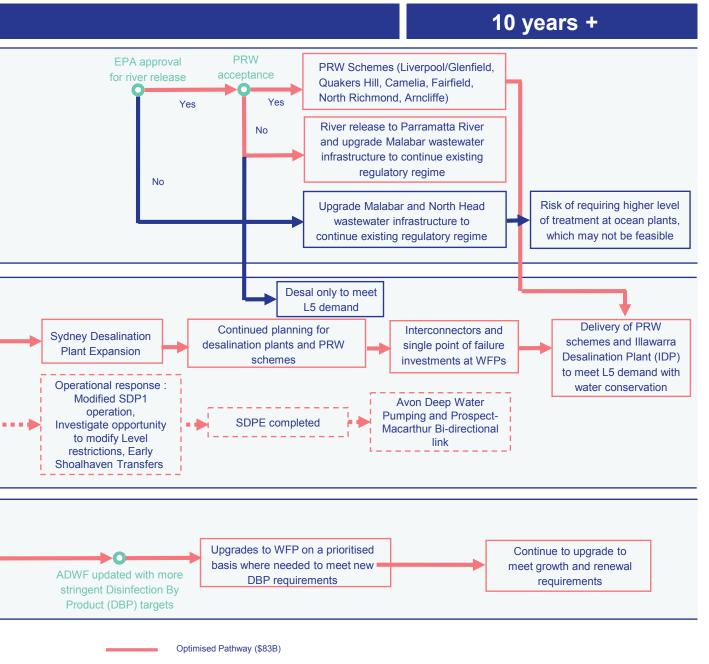
Water Quality and Reliability (Deliver safe water for new and existing customers

Upgrades to manage poor raw water quality

### Optimised Pathway (\$83B)

### **Alternative Pathway**

(\$80B if Mamre Rd and Aerotropolis stormwater servicing reverts to on-lot servicing with Councils; \$92B if coastal wastewater discharge performance requirements increase and PRW is no longer supported by government)



Alternative Pathway (\$80B if Mamre Rd & Aerotropolis stormwater servicing reverts to on-lot servicing with Councils; \$92B if coastal wastewater discharge performance requirements increase and PRW is no longer supported by Government)

# Our key drivers for expenditure

To 2050, Sydney Water will invest in the order of \$83 billion to service our future city, with \$32 billion of that investment needed in the next 10 years.

### **Key driver**

- Enable the government's growth ambitions through expanding infrastructure capacity to support the delivery of Sydney's regional growth plan.
   Renew our assets to meet customer service expectations today and in response to the external trends shaping our future.
- Build a resilient and reliable water supply through investing in rainfall independent sources, eliminating single points of failure across our assets, interconnecting our systems, and managing cyber security threats.
- 4 Expand our stormwater services to contribute to improved waterway health through more integrated servicing of recycled water across Western Sydney.
- 5 Digital enhancements to our physical assets to lay the foundations of our asset management system and support data driven decision making for improved customer outcomes.
- 6 Protect public health to ensure the wellbeing of our customers and community through the products and services we offer.
- Protect and enhance the environment by improving the way we manage our wastewater and stormwater systems to prevent pollution and protect against failure.
- 8 Enhance our climate change response through delivering against our environmental and social obligations and identifying new sources of value that deliver a positive benefit to the economy

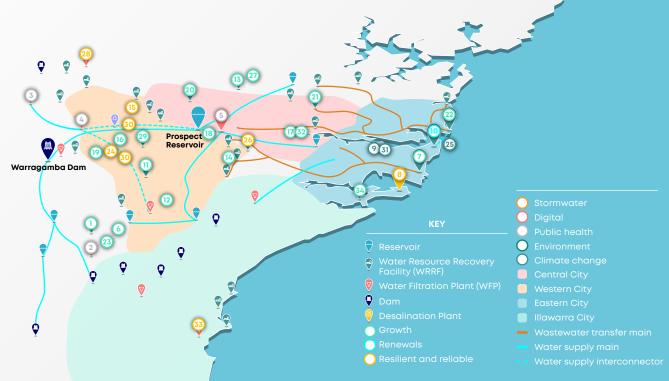
# Major investments over the next 10 years

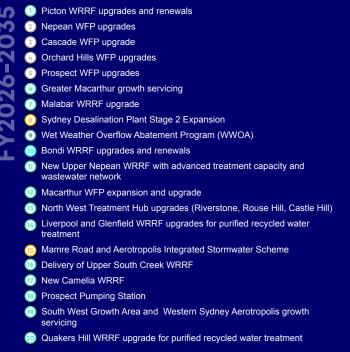
We need to invest \$32B in capital between FY2026 and FY2035. This is an average annual capital spend of around \$3.2B over the next 10 years, while the annual average over the past 10 years was \$1.1B.

This is nearly three times as much capital expenditure compared to recent past.

Almost half of this investment is required to deliver new services to growth areas across Greater Sydney.

The remainder is mainly driven by the need to renew our assets to ensure we can continue to provide great services to existing customers; building a new water supply source to close the growing gap between water supply and water demand; and stormwater services in Western Sydney to protect waterway health and provide for a cooler, greener Western Sydney.





South West Growth Area and Western Sydney Aerotropolis growth servicing Quakers Hill WRRF upgrade for purified recycled water treatment West Hornsby WRRF upgrades North Head WRRF upgrade Nepean WFP expansion Prospect to Orchard Hills and Prospect to Macarthur Interconnectors Bondi to Malabar Transfer Main Fairfield WRRF upgrades for purified recycled water North West Treatment Hub upgrades (Riverstone, Rouse Hill, Castle Hill) North Richmond WFP upgrade Upper South Creek WRRF upgrades Prospect to Orchard Hills and Orchard Hills to Macarthur Interconnectors 3) Wet Weather Overflow Abatement Program (WWOA) Camellia WRRF upgrades for purified recycled water treatment Illawarra Desalination Plant New Arncliffe WRRF with purified recycled water treatment capacity

# What our investment will deliver by 2050









of our drinking water supply will be rainfall independent













Up to

# 163 GL

# recycled water each year

across 6 purified recycled water schemes to replace up to 23% of Greater Sydney's water use



**New rainfall** 

independent water supplies

**New water** resource recovery facilities



# **Upgrade all** major WFPs

in protection of public health, improving our drinking water quality and upgrading capacity to treat poorer water quality following extreme weather



new major interconnecting water supply pipes to build system resilience



### Upgrade the capacity of our WRRFs

to ensure we meet our future licence requirements in protection of environmental health



new integrated stormwater harvesting scheme

# 13,000 k

of water supply pipes and wastewater transfer pipes to service new suburbs

......

of new recycled water pipes to service new suburbs













Avoid 49 GL of drinking water use by 2040





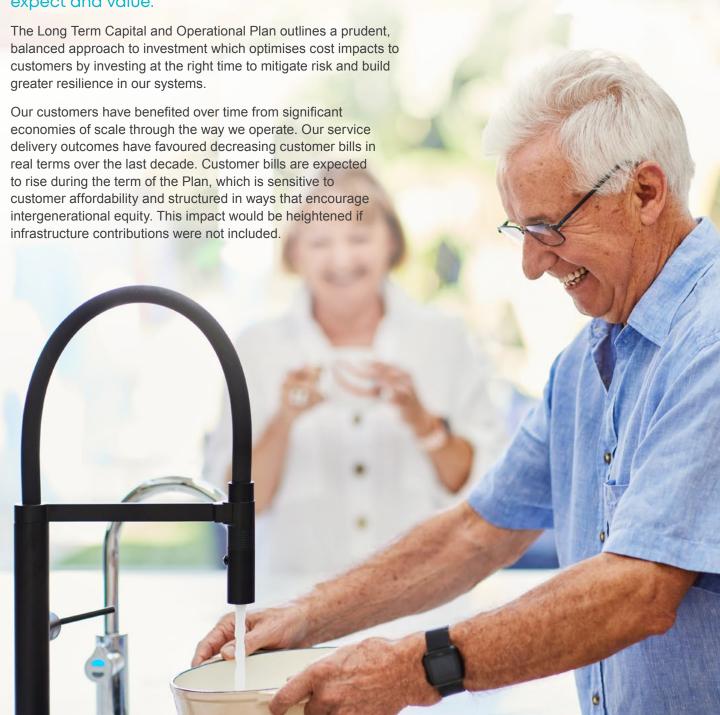






# Generational change is required to meet current and future challenges

Our assets have served us well, but many are reaching the end – or have exceeded – their lifecycle. This, as well as future challenges, poses an increased risk to our ability to maintain the standards of service that our customers expect and value.





# Delivering through our Enterprise Plan

To secure the future outlined in this Plan, there are several enterprise planning actions that Sydney Water will progress as a priority, as reflected in our price proposal.

1	Scale-up the business to deliver the increased investment program through three key strategic interventions relating to industry intelligence, optimising delivery and supplier management	0
2	Continue our engagement with customers ensuring that our enterprise strategy and plans align with the latest customer preferences, values, expectations and willingness to pay	
3	Increase community water literacy and work with stakeholders to maintain support for new water supply options, including PRW, as well as water conservation initiatives	0
4	Embed our 'Future Ready' organisational realignment to ensure ways of working are effective and that we are set up to deliver our customer priorities	Ö
5	Enhanced monitoring and control of infrastructure through the Internet of Things (IoT) program, uplifting existing automation capability and implementation of a digital twin	0
6	Reduce service and asset performance risk and sustain good asset management practices to support long-term planning and asset creation and improve service outcomes for our customers	•
7	Deliver Net-Zero Carbon Program ahead of government targets, accelerating investment based on customers demonstrated willingness to pay	O
8	Implement Protective Security and Emergency Management uplift including the delivery of physical security services to ensure continued protection of critical assets in line with the Security of Critical Infrastructure Act	0

