



OUR WATER OUR FUTURE 2050

Integrated Water Cycle Management Strategy





Our Ancestors built a sustainable relationship with our land and water. They managed their water and land in a culturally sustainable way that would ensure the replenishment of the natural resources. Our people camped along rivers and above water sources where they could hunt and gather all the different foods and resources that were available to them. Culturally sustainable practices supported the health of the river and groundwater systems to ensure the sustainability of all water dependent species, such as fish, plants and animal food sources. Water is spiritually significant to our people. It's the basis of our dreamtime and our song lines. Water is the lifeblood of our land and our people.

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Acknowledgement of Country

We acknowledge the traditional custodians of the land on which we work and live, the Gathang-speaking people and pay our respects to all Aboriginal and Torres Strait Islander people who now reside in the MidCoast Council area. We extend our respect to Elders past and present, and to all future cultural-knowledge holders.

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EXECUTIVE SUMMARY

Our Water Our Future is MidCoast's Integrated Water Cycle Management (IWCM) Strategy. It sets out a sustainable pathway for our water and sewer services over the next 30 years.

Why do we need an IWCM strategy?

Now more than ever, sound water management is needed to support better outcomes for our community and the environment. In recent times, the role of water authorities has expanded to include more than just the traditional provision and management of water and sewer services. Today, local water utilities have the potential to deliver a range of benefits by combining water cycle management solutions with liveability outcomes.

MidCoast is challenged by a growing population and the impacts of climate change, increasing our vulnerability to the impacts of drought. We plan to meet our future water needs by considering a broad range of options, ensuring solutions are sustainable and cost-effective. In doing this, we will be better prepared for what the future holds.

In the development of this strategy, we focused on the biggest water-related challenge we face over the next 30 years, which is water security. We also considered how we should approach the issues of managing our effluent sustainably, how we deal with the impacts of climate change, and whether we should provide water and sewer connections for our unserved villages. The strategy was developed following an analysis of all of these issues, considering their economic, environmental, governance, and social benefits and costs, in collaboration with the MidCoast community, our regulators and specialists.

Our Water Our Future will guide how we respond to these challenges over the next 30 years.

What is our plan?

Our blueprint for the future is underpinned by two plans that we will deliver in parallel. The first involves the continued delivery of our existing water and sewer services, with an increased focus on water conservation and demand management. The second is the building of resilience into our water sources. To achieve this

resilience, we are taking an adaptive planning approach that builds in flexibility and allows us to accommodate changes if needed. For example, off-stream storage is a key component of our plan for water security however, if the need arises, we can adapt our approach to include desalination, purified recycled water or regional water sharing solutions.

What will we deliver?

Our plan for the next 30 years involves:

- Constructing off-stream storage dams for the Manning, Bulahdelah, Gloucester, and Stroud water supply schemes
- Additional water recycling to provide cost-effective irrigation for public open spaces
- Projects that help us achieve our Net Zero greenhouse gas emissions targets by 2040
- Delivering sewer services to high-risk unsewered villages where funding allows
- Continuing to target leakages in our network and with our customers
- Continuing our water education and behavioural change programs
- Progressing cost-effective water conservation measures
- Integrating catchment management initiatives into our water management
- Inflow and infiltration reduction program for the sewer network
- Minimising the impacts of development on stormwater runoff, to protect the aesthetic, recreational and ecological value of our waterways.



OUR PLAN ON A PAGE

1 / KEY DRIVERS



Population growth



Climate uncertainty



Community feedback



Net zero emissions

2 / WATER CONSERVATION + DEMAND MANAGEMENT

Target leakages



Community awareness and education



Reduce water use



Catchment management



Improve inflow and infiltration



Reduce stormwater impact



Asset renewals and upgrades



Climate change resilience



3 / WATER SECURITY



Off-stream storage dams



Groundwater exploration



Purified recycled water



Recycled water for irrigation



Services for high risk unserved villages

INTRODUCTION

Water is essential for individuals, communities, and the environment to thrive. MidCoast Council currently provides around 9 billion litres of high-quality drinking water to residents and businesses each year.



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The economic health of our region is inherently linked to the security and quality of its water resources. Households need access to clean water for consumption, cleaning, and leisure. Businesses and farmers use water for agriculture, oyster farming, lifestyle, and tourism activities.

Our natural landscapes and ecosystems enhance the liveability of the region and are highly reliant on healthy waterways. Natural features such as wetlands play an important role in maintaining water quality, as well as preserving the environment and providing an amenity to the community. We are committed to conserving the natural heritage of the region and managing its water resources sustainably to support the health and resilience of its ecosystems.

Our growing region puts additional pressure on Council's water and sewer infrastructure and services. Our water supplies are a particular risk, with significant challenges being experienced in the most recent drought. This issue will likely be exacerbated by population growth and the unpredictability of climate change over the next 30 years and beyond.

WHO WE ARE

Located on the Mid North Coast of New South Wales, MidCoast Council's (Council's) geographical area covers more than 10,000 square kilometres and extends from the coastline, west to the escarpment of the Great Dividing Range. The region encompasses 195 towns, villages and localities. The Biripi and Worimi people are the traditional owners of the land.

We are home to a permanent population of 97,090 people with a population density of 9.65 persons per square kilometre. Around 90% of our permanent population is serviced by our water and sewer systems. Our population serviced by water and sewer is expected to grow by around 48% by 2051. Our coastal towns and villages experience tourism during the school holidays, particularly over the Christmas period.

Compared with the rest of regional NSW, the MidCoast has a lower proportion of children under 18 years and a higher proportion of people aged 60 or older.

In terms of employment, in 2021 36,351 people or 44% of people living in the MidCoast area over the age of 15 were employed, compared with 56% for regional NSW.

In 2021, 69% of households in the MidCoast area were purchasing or fully owned their home compared with 66% across regional NSW, and 18.7% were renting privately, while 2.6% were in social housing compared to 21.7% and 3.8% respectively in regional NSW.

Approximately 6.7% of our population identify as Aboriginal, compared to 6.1% as the average for regional NSW.



THE 'BIG PICTURE'

In the summer of 2019 and 2020 the MidCoast region experienced a drought like no other.

The combined impact of the worst drought on record and the 'Black Summer' bushfire crisis triggered the longest continuous period of water restrictions in the region, setting a new record with restrictions in place for five months and 20 days. Level 4 restrictions were also introduced for the first time. The response highlighted two key learnings: that the events were a reminder for Council to consider a wider range of water security measures, and that our community is willing to collaborate and adapt to change if the need arises.

Following the 2019–20 drought we conducted a comprehensive review of our Drought Response Strategy and implemented the following:

- Community education programs that highlight the value of water and promote more efficient water use to conserve water
- Increased use of recycled water for stock watering and construction during the drought
- The Napiac Borefield expansion project initiation, which is currently being delivered
- Formation of a water resilience team dedicated to improving water security across the MidCoast region
- Planning for the provision of emergency desalination, if needed in the short term
- A comprehensive review of the Integrated Water Cycle Management (IWCM) Strategy, the long-term strategic plan for the sustainable and affordable delivery of water services over the next 30 years.

The Our Water Our Future 2050 report represents the outcome of the IWCM strategy review. The journey of strategy development began in 2020. It involved many collaborative efforts between Council, the community and our regulators. The results are presented in this strategy.

STRATEGY DEVELOPMENT

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WHAT IS INTEGRATED WATER CYCLE MANAGEMENT?

Our Water Our Future 2050 sets out our 30-year plan for the sustainable and affordable delivery MidCoast's water services. It comprises management for all sources of water, including drinking water, sewage, and stormwater.

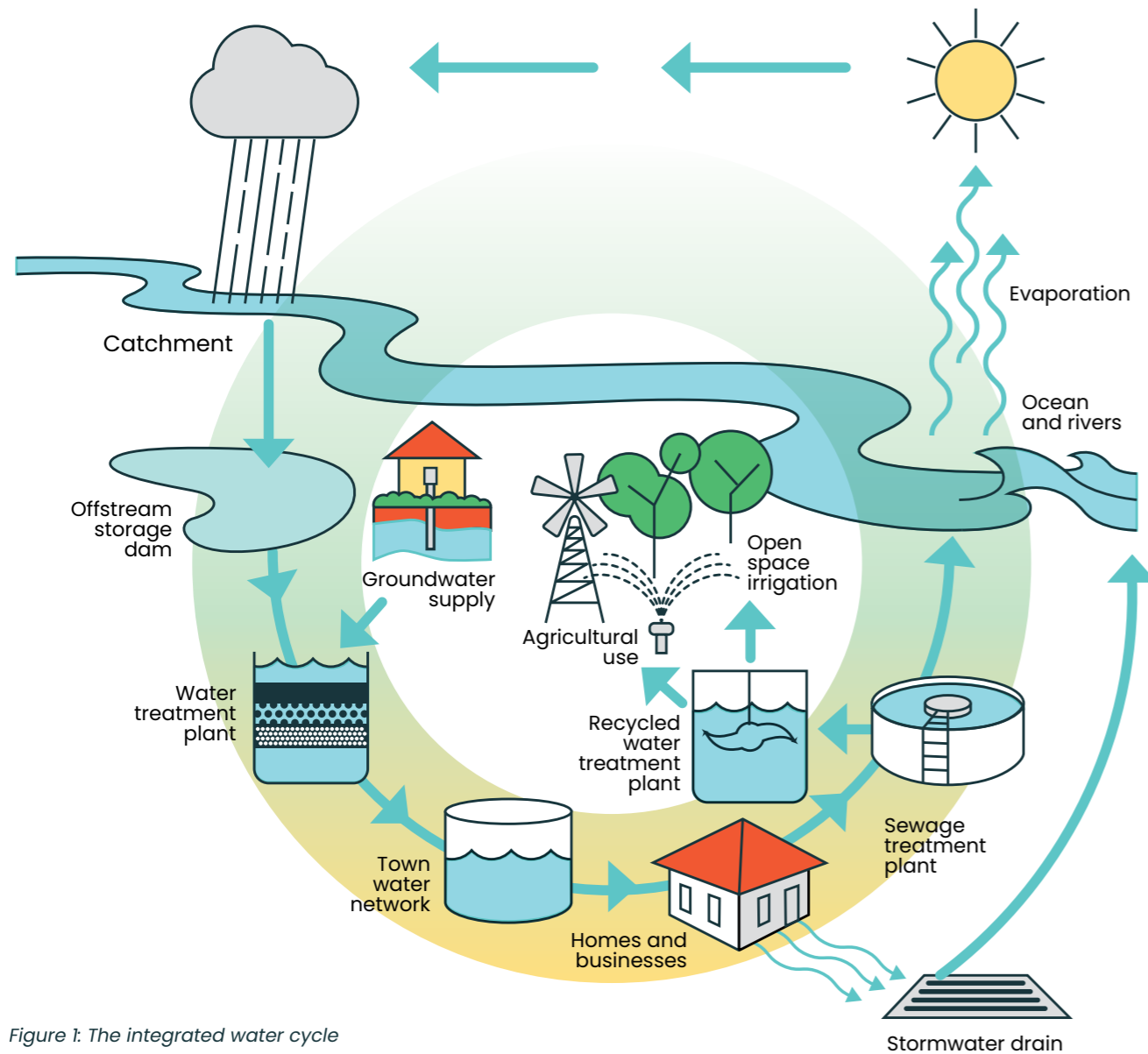


Figure 1: The integrated water cycle

During the preparation of the strategy, we have sought to:

- Identify the uses of water within the water cycle, from catchment to tap
- Understand our community's values in relation to water
- Make better decisions and arrive at lower cost solutions through our evaluation of options
- Integrate water planning with the management of other natural resources.



PLANNING CONTEXT

This strategy has been prepared in the context of the following planning documents.

State and Regional Water Strategy

The NSW Water Strategy outlines an approach to improving the security, reliability, quality, and resilience of the state's water resources over the long term. It sets the overarching vision for the 12 regional and two metropolitan water strategies, with each tailored to the individual needs of the region.

The MidCoast region is included in the Greater Hunter Regional Water Strategy. The strategy outlines the major risks and drivers faced by the Greater Hunter region over the next 20 to 30 years and proposes mitigation actions for consideration. The IWCM strategy at the regional level works together with other water strategies and plans to form the water policy and planning context for NSW.

Regulatory and Assurance Framework for Local Water Utilities 2022

The new Regulatory and Assurance Framework for Local Water Utilities by the Department of Planning and Environment (DPE) outlines 12 strategic planning outcomes for local water utilities to achieve for effective, evidence-based strategic planning. The defined expectations of these outcomes need to be met by ensuring planning is sufficient, appropriate, and robust. The flexibility and outcomes-focused approach of this framework were adopted in the development of Our Water Our Future 2050.

Integrated Planning and Reporting (IP&R) framework

The Integrated Planning and Reporting framework refers to the strategic documents that outline how we deliver services to meet the aspirations of the community. This is shown in Figure 2.

Among these documents, the Water Strategic Business Plan outlines the pathway forward for Our Water Our Future 2050. This will include an action plan which will feed into the Resourcing Strategy, Delivery Program and Operational Plan.

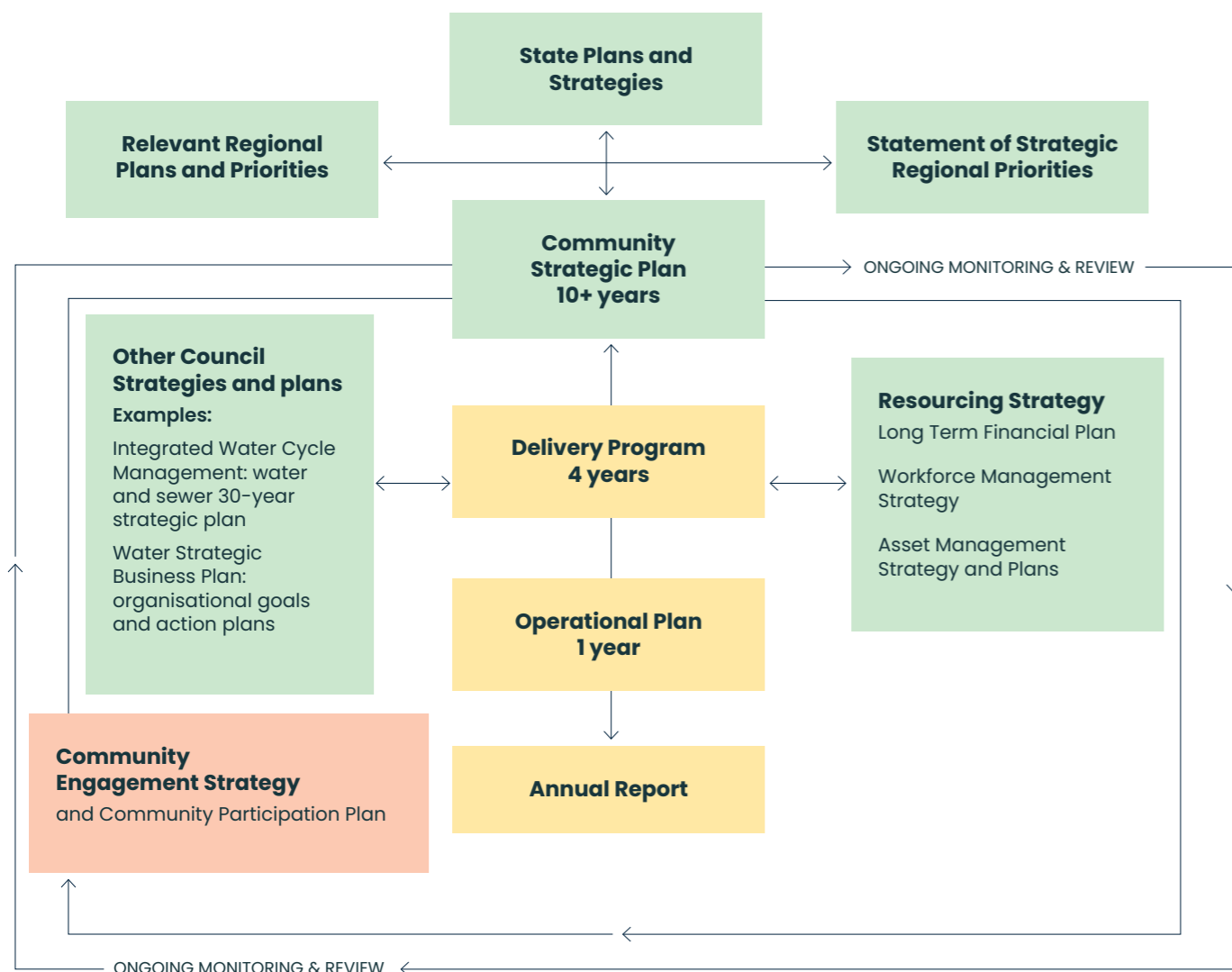


Figure 2: Integrated planning and reporting framework

Safe and Secure Water Program

Sources of funding are potentially available to NSW councils and water utilities for water and sewer infrastructure projects from DPE. Projects, such as a new dam to provide water security, are allocated and funded under the Safe and Secure Water Program (SSWP). This program gives co-funding to help regional towns remove risks to water security, water quality and the environment.

Funding is allocated by the SSWP based on the Safe and Secure Assurance Framework. This framework has 'gateways' which must be satisfied to be eligible for funding. To move through a 'gateway' and be allocated funding, DPE requires Council to demonstrate that:

- Effective strategic planning has been completed
- The project (such as a new dam) has been investigated to an adequate level as part of the suite of possible options
- The project is affordable and has community acceptance.

The IWCM process is in place to achieve this adequate level of strategic planning.

Once the IWCM strategy has been adopted and the preferred scenario is developed, Council can then apply for funding through the SSWP. The IWCM strategy ensures DPE's confidence that the right solution for the community and level of investment is proposed.

Apart from the SSWP, other potential funding sources will also be pursued, such as additional grants, subsidies and federal funding, as opportunities become available.



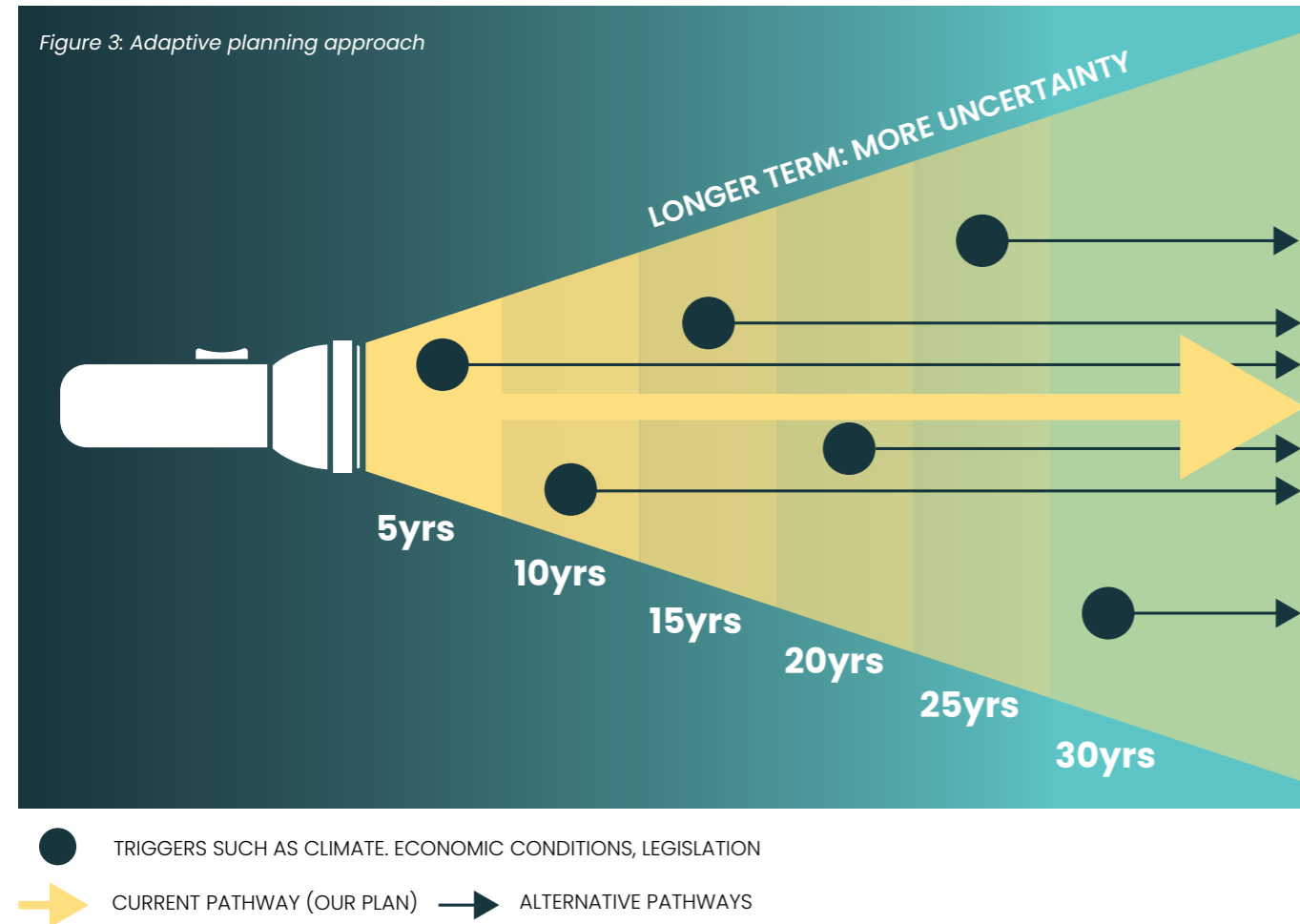
ADAPTIVE PLANNING

All planning decisions are based on forecasting the future, whether that is rate of population growth, climate change, socio-political environment, or technological advancements. The further ahead we look, the more unclear or uncertain these forecasts will be. Adaptive planning can be used to assist decision-making in the face of this uncertainty.

The advantages of an adaptive planning approach include:

- Identifying when key decisions need to be made while allowing for uncertainty. This may mean some decisions need to be deferred until more information is available
- Identifying the key decision points or triggers that may lead to a change in strategy direction, future decisions and potential responses
- A combination of immediate actions, those that make important commitments to shape the future and those that preserve future flexibility.

We have applied an adaptive planning approach to the development of Our Water Our Future 2050. This is shown in Figure 3.



There is more uncertainty the further out we plan. An adaptive approach considers things that could happen in future that might require a change to our plan. These are "triggers" or decision points. We don't know if a trigger will happen, but if it does, we have identified an alternative pathway and can adapt our plan.

OUR STRATEGY JOURNEY TO DATE

The journey of Our Water Our Future is shown in Figure 4. The strategy was first implemented in 2008 and then further updated and reviewed in 2015. Legislative changes, local government reform and rising trends in climate change raised the need to revisit the strategy. With responsibility of the water cycle now entirely with Council, we have an opportunity to implement true integrated water cycle management solutions.

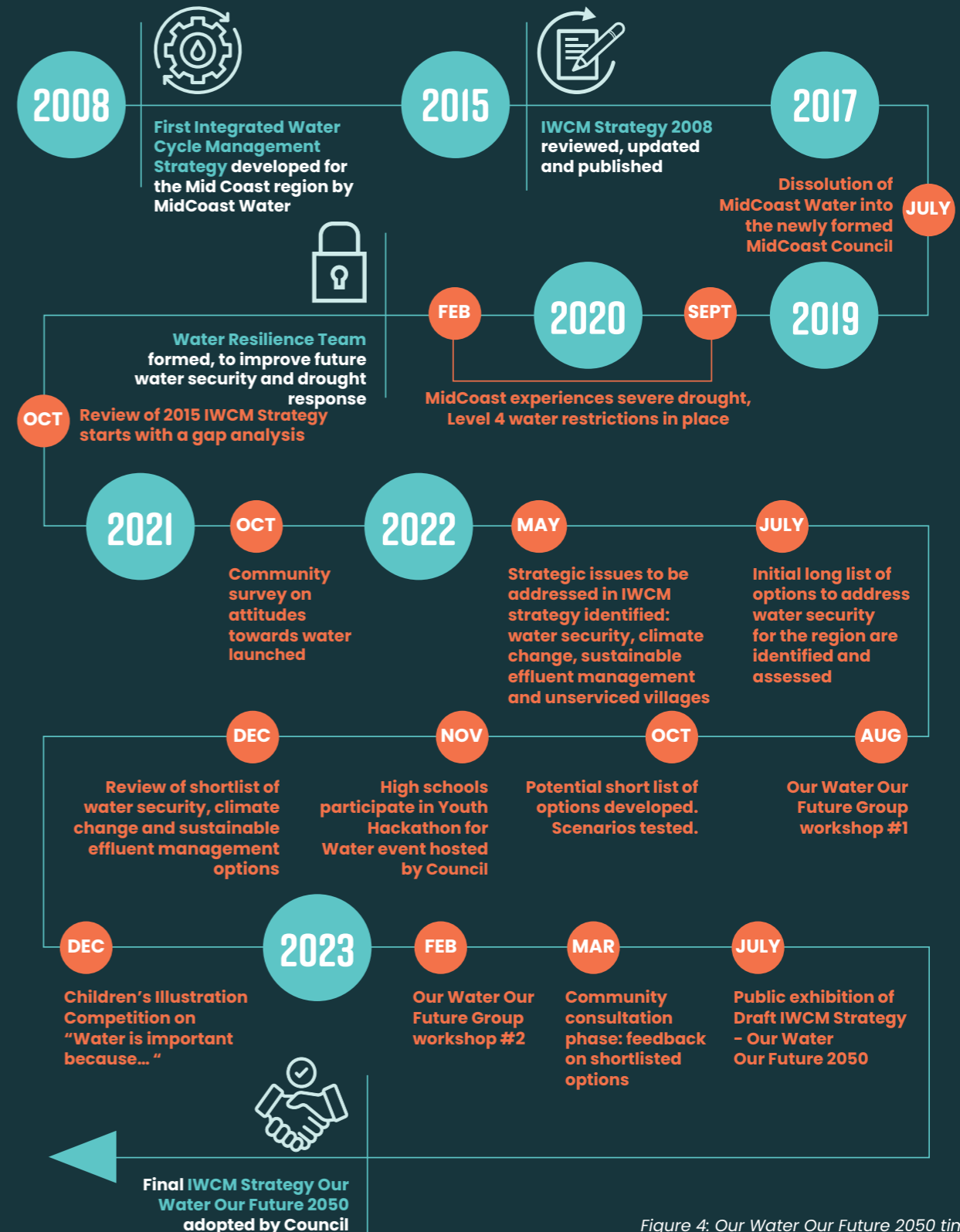


Figure 4: Our Water Our Future 2050 timeline

OUR WATER

Council is responsible for managing the urban water cycle within the MidCoast region, from supply of safe drinking water to the collection, treatment, and reuse or disposal of effluent, along with stormwater and catchment management to maintain our healthy waterways and environment.



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DRINKING WATER SUPPLY

Council supplies approximately 9 billion litres of drinking water to the MidCoast community each year.

We operate six water supply schemes servicing over 42,000 homes and businesses. Our water supply schemes are shown in Figure 5 and Figure 6. This includes around 1,200 km of pipeline, six water treatment plants, two borefields, 45 reservoirs and 25 water pump stations. Raw water for different supply catchments is conveyed to the local water treatment plant where it is then treated to meet the Australian Drinking Water Guidelines and distributed to customers.

Our largest water supply scheme is the Manning Scheme, which supplies drinking water to around 80% of the MidCoast population. Compared with other parts of NSW, the Manning Scheme has a very small storage for the population it serves.



Figure 6: Water supply schemes in the MidCoast region

STORMWATER MANAGEMENT

Council's stormwater system has over 200 catchments across the MidCoast region. We operate and maintain the stormwater infrastructure in these catchments including pipes, pits, basins and open channels.

Over the last 10 years, we have teamed up with experts from state government to investigate the health of our local waterways. We take frequent samples from six major catchments. We aim to improve the quality of our waterways with continued monitoring. Effective management of

stormwater quantity and quality is essential to protect the health and safety of our community and to support healthy waterways and thriving ecosystems.

There are currently no stormwater harvesting schemes operated by Council for either open space irrigation or drinking water supply purposes. We seek localised opportunities in areas identified for future development and with the existing stormwater network.

SEWAGE COLLECTION AND TREATMENT

Council collects and treats approximately 7 billion litres of sewage each year.

Sewage in serviced areas across the region is collected and treated at one of our 14 sewage treatment plants. Our sewerage schemes are shown in Figure 7. We have over 1,100 km of sewer pipelines conveying sewage to treatment plants via 204 pump stations. The exception to this is the North Karuah scheme where the

collected sewage is directed to the Hunter Water network. The level of treatment required is defined by the conditions of the operating licence for each treatment plant, as regulated by NSW Environmental Protection Authority. Council performs its duty of care to the environment by ensuring compliance is met before treated sewage is discharged.



Figure 7: Map of sewerage and recycled water schemes in the MidCoast region

WATER RECYCLING AND REUSE

Recycling and beneficial reuse of treated wastewater is an environmentally sustainable way to manage effluent, while also providing fit-for-purpose water for a range of uses. This allows us to save drinking water while also reducing the volume of treated effluent otherwise discharged to the environment.

We currently operate 10 recycled water schemes across the region. Our recycled water schemes are shown in Figure 7. Two of these schemes supply high quality recycled water that can be safely used for irrigation of public open spaces with unrestricted public access, such as playing fields, golf courses and cemeteries. The remaining schemes supply lower quality recycled water suitable for agricultural use or irrigation with restricted public access. Through these schemes, we utilise 10% to 25% recycled water in average and below average rainfall years.

OUR WATER CHALLENGES

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APPROACH

Understanding our existing assets and services was the first key step in the review of Our Water Our Future. We began by preparing an Issues Paper, looking at the services we currently deliver and identifying the issues that need to be addressed to maintain the delivery of these essential services.

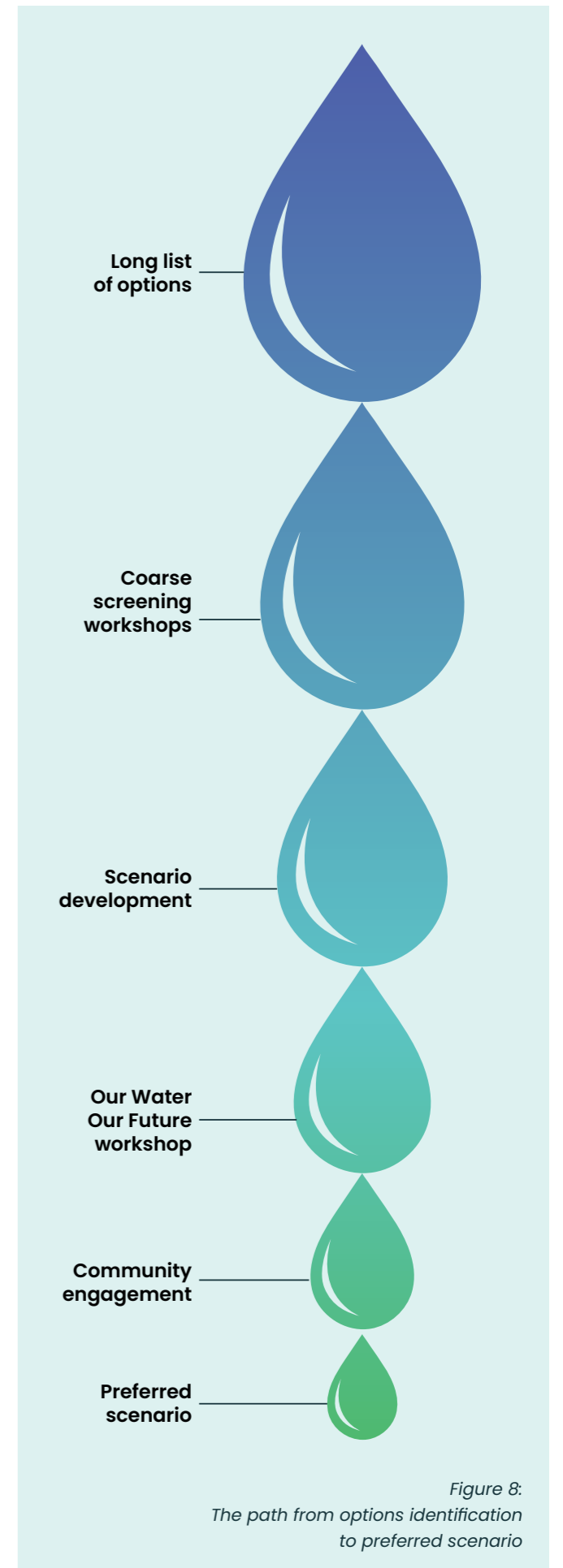
The majority of the issues were classified as operational, meaning they will be actioned under our business-as-usual operations. The remaining four issues were considered strategic issues to be addressed as part of Our Water Our Future. These are:

- Water security for the Manning, Bulahdelah, Gloucester and Stroud supply systems
- Sustainable effluent management across 13 sewer systems
- Unserviced villages for sewage
- Climate change

We adopted an 'all options on the table' approach and identified a long-list of all options that can address these strategic issues. At a high level, we assessed these options for major risks, issues, and opportunities. The development of the long-list of options included:

- Over twelve options for water security for each of the four water supply schemes, with additional sub-options for localised opportunities
- Ten options for climate change, each assessed against six climate hazards
- 11 options for sustainable effluent management for each of our 13 sewerage schemes
- Four options for unserviced villages with 30 villages being assessed.

We then developed assessment criteria in alignment with Council's Values and Risk Framework. We presented the options to our Council experts and DPE stakeholders and together we evaluated and short-listed options for further progression.

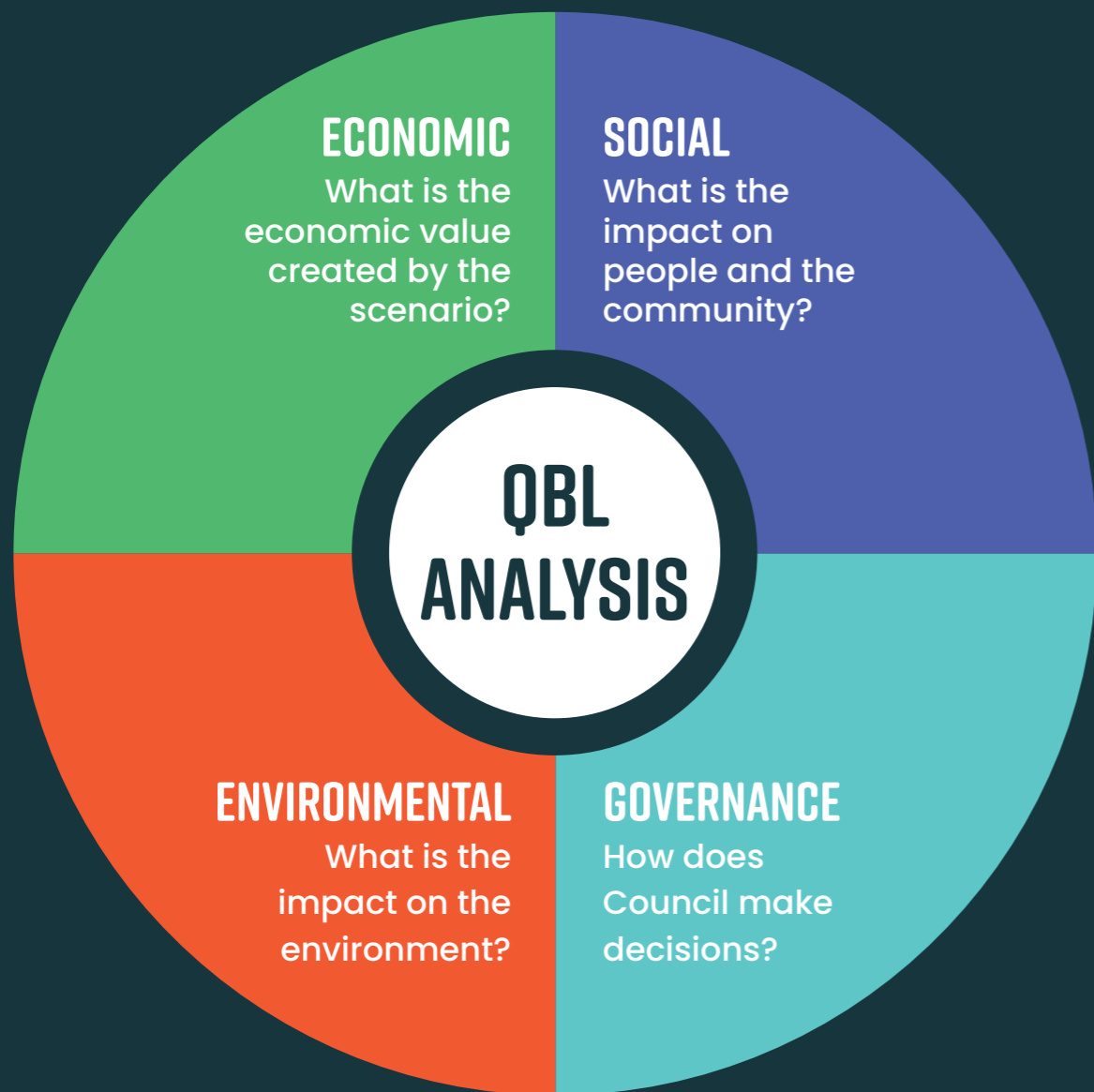


The short-listed options were then packaged into scenarios. These scenarios captured delivery of all our issues, including operational and strategic. A quadruple bottom line (QBL) analysis was then completed for each scenario. The key themes considered in this analysis were: economic, environmental, social and governance considerations. This is shown in Figure 9.

To ensure we listened to the voices of our community, we presented our scenarios to the community working group, the Our Water Our Future Group, across two workshops. With the feedback given, we then reached out to the wider community for their views.

Combined with the feedback from our community and technical assessments, we landed on a preferred scenario that met the needs and preferences of our stakeholders.

Figure 9: Basis of QBL analysis



DRINKING WATER SECURITY

As our population grows, our water demand and supply profiles will change over time. Put simply, more people means we will need more water. The recent drought also highlighted the impact climate change can have on water security. We need to ensure our communities can adapt to these changes with water solutions that are resilient to shocks and emergency events.

Our water supply systems are predominantly reliant on climate-dependent water sources with off-stream storage. We source water from rivers and aquifers and store it in dams to buffer the variability in rainfall over time.

During the 2019-20 drought, extraction from the Manning River ceased and the level in Bootawa Dam fell to an alarming 30% capacity. In the same drought, the town of Gloucester required water carting from Tea Gardens to service the population with water. We also had to consider options for new sources of water, including increasing extraction from Nabiac borefield and emergency desalination.

With both growth and climate change impacting water security, Our Water Our Future needs to consider both capacity and diversity in the water supply portfolio for the future.

In order to define a secure water supply, Council has adopted the '5/10/10' level of service (LOS) rule from the Assuring Future Urban Water Security - Assessment and Adaption Guidelines for NSW Local Water Utilities, published by the NSW Office of Water. The guidelines require water security planning on the basis of the following whilst incorporating an increase of 1° in temperature across the planning horizon:

- Total time spent in drought restrictions should be no more than 5 percent of the time
- Restrictions should not need to be applied in more than 10 percent of years, and
- An average reduction of 10 percent in water usage during restrictions.

SUSTAINABLE EFFLUENT MANAGEMENT

To reduce the demand on the Manning water supply scheme in the 2019–20 drought, recycled water from the Tuncurry recycled water plant was trucked to rural properties for livestock. We also increased our recycled water uptake in Council for utilisation in routine activities requiring water, such as roads maintenance and sewer mains flushing.

These are some examples of sustainable effluent management in action. With 14 sewage treatment plants in the region, there are opportunities available to further explore options for water recovery over discharging effluent into the rivers and ocean.

CLIMATE CHANGE

In 2019, Council declared a climate emergency. Australia’s climate continues to trend hotter and drier. Not only does this increase demand for water, but it also reduces the potential supply from rainfall dependent sources while potentially impacting operation and management of water and sewer assets.

Based on climate projections for the future, there are several climate hazards that pose a threat to MidCoast’s assets and operations. These include temperature change, extreme heat, extreme storm events, flooding, sea level rise, bushfires, and drought.

Building resilience to climate change is crucial in ensuring we have a sustainable water supply as our communities grow. We are committed to achieving Net Zero greenhouse gas emissions and 100% renewable energy for our operations by 2040.

UNSERVICED VILLAGES

As our local government boundary covers a vast region, there are many smaller villages that are not serviced by Council’s reticulated water supply and sewerage networks. These villages rely on on-site water supply and sewage management systems. On-site water and sewage management systems vary in type, age, capacity and condition.

Water supply in these villages can be from various sources such as private bores, rainwater tanks, local rivers, or water carting from neighbouring localities. Associated costs therefore vary depending on the source of water supply.

On-site sewage management systems require periodic condition inspections and servicing to maintain the system performance. Failure of these systems can lead to public health and environmental harm. Figure 10 shows the top 14 unserviced villages in the region that were assessed as part of this strategy, along with ranking based on their associated risk.



Rank	1	2	9	10	11	13	14
Village	Coomba Park	North Pindimar South Pindimar North Arm Cove Bundabah Nerong Seal Rocks Carrington & Tahlee	Bungwahl	Croki	Allworth Copeland	Tea Gardens Industrial Estate	Coolongolook

Figure 10: Unserviced villages in the MidCoast region

OUR COMMUNITY

We have used input from the community to develop *Our Water Our Future 2050*



HOW WE ENGAGED WITH THE COMMUNITY

From July 2022 to April 2023, we asked our community to consider the solutions we came up with to secure the future of our precious water resource. We heard from a wide variety of people across the MidCoast, including residents, visitors, students, business representatives and more.

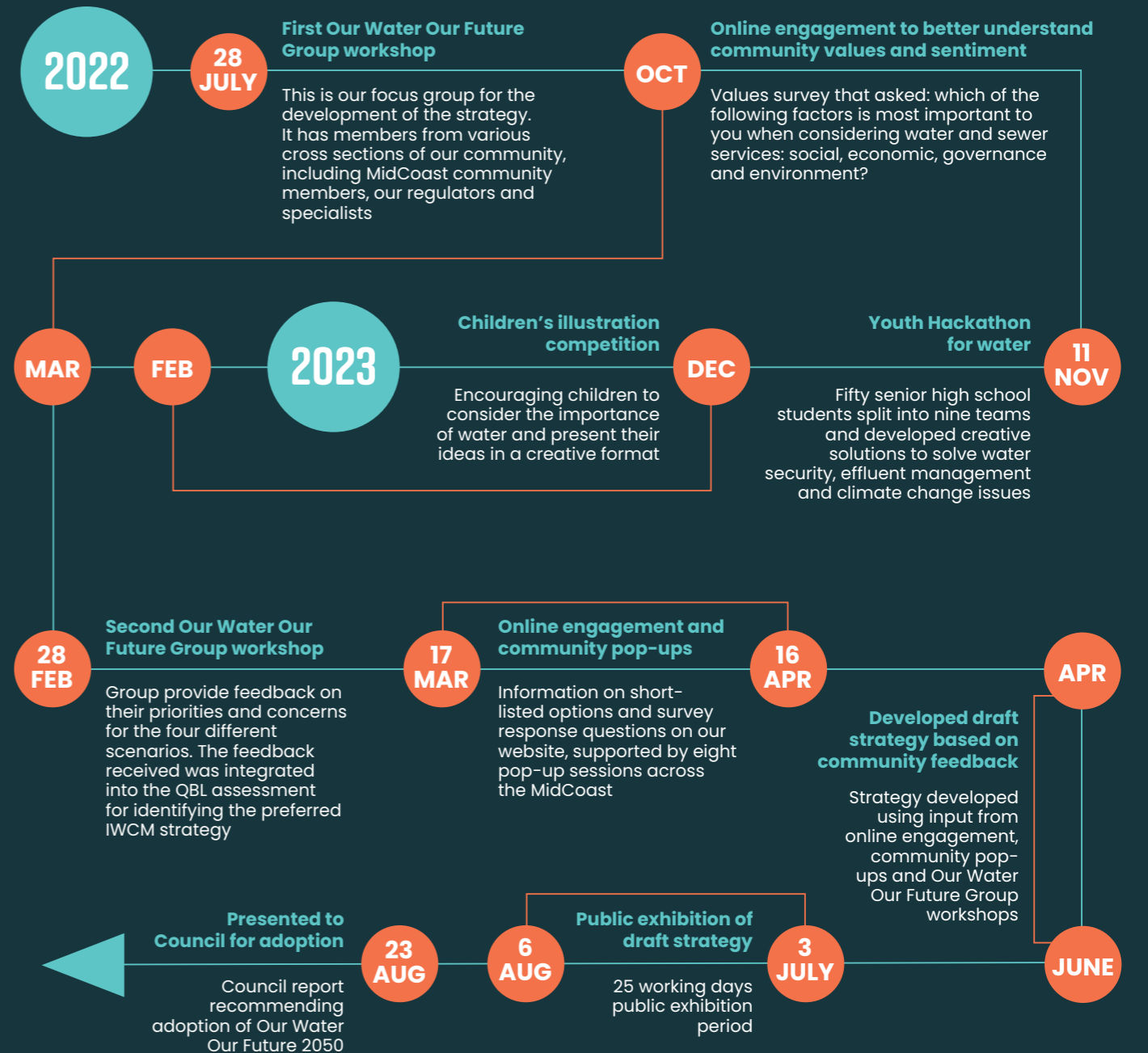


Figure 11: Our community engagement

WHAT OUR COMMUNITY TOLD US

Input from our community has helped us develop our long-term water plan. A summary of the results from the online community engagement is presented below.



DAM OR DESALINATION

70% of you said you would prefer a dam for the Manning



GLOUCESTER & BULAHDELAH

75% of you said you would prefer dams for these locations



RECYCLED WATER

50% of you said environmental impacts mattered most



PURIFIED RECYCLED WATER

60% of you said you would consider drinking PRW



WILLINGNESS TO PAY

60% of you said you would be willing to pay more



DECISION MAKING

50% of you said environmental impacts mattered most



Water is important because it hydrates, washes and is used by people and animals every day.

Bella, children's illustration competition winner

Water is a resource we have very little of and we need to look after it.

Andrew, Our Water Our Future Community Group

OUR PLAN FOR THE FUTURE

Our plan for the future of water in the MidCoast is presented in Figure 12 and outlined in this section.

06

ADAPTIVE PLAN

The adaptive plan presented in Figure 13 outlines the preferred strategy along with the possible connections between the alternative scenarios. The plan also highlights the key triggers or decision points and provides a response pathway that can accommodate change.

The main triggers that may affect the preferred pathway are:

- Environmental approval for Peg Leg Creek off-stream storage
- Environmental approval for off-stream storages at Bulahdelah, Gloucester, and Stroud
- Introduction of regulatory framework for Purified Recycled Water
- Changes in growth compared with current forecast
- Climate change impacts more extreme than current forecast.

Continued stakeholder collaboration and monitoring of variables including growth, climate, environmental responses to development, technological advancements and community values and attitudes to water recycling will be necessary to inform decisions.

The components of the preferred pathway are described in detail below. Reducing water use, ensuring water quality, minimising inflow and infiltration, and providing asset renewals and upgrades are our business-as-usual activities. These are covered in 'Our Everyday Scenario'.

REDUCING WATER USE

One of the clear messages we heard in the community feedback, particularly from the youth engagement, was the need for increased personal responsibility for water efficiency, such as using less water at home.

Assessment of current consumption behaviours already indicate that we have a water conscious community. Our consumption rates are lower than the state average. To further help the community reduce water consumption, a 'permanent water conservation program' will be established as part of Council's water efficiency strategy. Key messages include using water outdoors early and late in the day to reduce evaporation, using a trigger nozzle and washing on lawns where possible. Over the longer term, this will help us improve our water security position by reducing our overall water demand.

We will invest in reducing water losses in our network. We are participating in DPE's Regional Network Leakage Reduction Program, aiming to achieve DPE's target of reducing average leakage across NSW water utilities to ten percent. We are involved in the active leakage detection program and we are also

implementing three pilot projects: pressure reduction, active leakage control, and metering and non-revenue water management. The active leakage detection program has already seen more than 2,700 kilometres of water mains surveyed across the state and more than 930 leaks found, saving Councils and utilities billions of litres of lost water this year.

Council is also committed to working with the MidCoast community to reduce water use via an ongoing water education and behaviour change program. This program is targeting fostering a sense of pride and ownership of our area's natural water sources to reduce water use and to increase understanding of our water and sewer services.



ENSURING WATER QUALITY

A key component of our water supply is healthy catchments. Catchment management is important for the environment, flora, fauna and our waterways.

In our drinking water catchments, ongoing water quality programs include targeting the riverbank upstream of drinking water offtakes to maintain healthy waterways and reduce the amount of treatment needed to meet drinking water quality targets. We work with farmers and property owners who live along our rivers. Regular water quality testing is completed as part of preparing annual report cards on waterway health. Going forward, we will continue to investigate opportunities to further improve catchment management, including regenerative farming practices, riparian planting and landscape rehydration.

MINIMISING INFLOW AND INFILTRATION

Inflow and infiltration is when stormwater and groundwater enter the sewerage network.

Stormwater can enter the sewerage system a number of ways. This most commonly is through cracks in sewer mains, illegal plumbing connections and landscaping that diverts stormwater into manholes or overflow relief gullies in people's backyards. These volumes end up at our sewage treatment plants and gets treated with the sewage from homes and businesses. We have high volumes of inflow and infiltration in some of parts of our sewerage network. Council is targeting a 35% overall reduction over the next 5 years, leading to decreased flows for treatment at our sewage treatment plants and reducing risk of overflows in wet weather.

ASSET RENEWALS AND UPGRADES

We will continue with our responsibilities for assessing condition, renewing and upgrading our existing assets.

This includes a focus on and increased spending on renewals for all our assets, including water mains, sewer gravity and rising mains, water and sewer pumps, our electrical assets, and treatment plant assets.

We have also identified treatment plants that need upgrades to be able to meet the needs of our growing community. We are upgrading the Nabiac borefield and water treatment plant

as a short-term increase in water supply until the Manning scheme Peg Leg Creek off-stream storage is constructed. The Gloucester water treatment plant will also be upgraded with newer technology. Across our sewage treatment plants, we plan to upgrade Hawks Nest, Gloucester, Dawson (Taree), Harrington and Old Bar sewage treatment plants.

SECURING WATER SUPPLIES

Through extensive stakeholder consultation and supported by our engineering assessments, we adopted increased storage as the primary water security solution for securing our water supplies. This has the added benefit for Council to utilise the existing treatment and network infrastructure to supply more water to our customers.

Previously, raising the Bootawa Dam wall was being considered to achieve water security. However, subsequent investigations showed that the required capacity could not be achieved by raising Bootawa Dam alone and that the risk of running out of water during construction was too high.

Peg Leg Creek off-stream storage will provide a safe and secure off-stream water storage for servicing the Manning scheme. Water from the Manning River will be pumped to the Peg Leg Creek off-stream storage for storage and back to Bootawa water treatment plant for treatment. The extra storage will sufficiently sustain the demands of the region under the 5/10/10 LOS rule.

For Bulahdelah, Gloucester and Stroud, water supply will be secured with local off-stream storages. Ideally, the off-stream storages would be constructed near their respective water treatment plants. We will also investigate potential for groundwater in these localities to provide additional source of water for future generations.

We will include a longer-term consideration of purified recycled water to supplement the Manning scheme with a climate-independent water source. This could be delivered through a managed aquifer recharge scheme. Essentially, purified recycled water would replenish the groundwater in the aquifer at Nabiac borefield, enabling greater extraction in the future. The development of a legislative and regulatory framework for purified recycled water is still in its infancy in Australia, and this will need time to mature before implementation. It will also need to be supported by continued community education and engagement.

Given our small storage capacity currently, additional storage is the preferred option. As part of our adaptive planning, we have the flexibility to consider desalination or regional water sharing as well if future uncertainties or triggers deem the adopted pathway infeasible.

RECYCLING AND MANAGING EFFLUENT

There is a strong desire in the community to see an increase in the use of recycled water. We are committing to exploring opportunities to increase the level of water recycling within the region to 40% of all effluent recycled.

This will be achieved through a balanced mix of:

- Increase in low-cost agricultural reuse, and
- New local recycled water schemes that provide higher quality recycled water suitable for public space irrigation for community amenity and liveability.

Higher quality recycled water requires a higher level of treatment, which is consequently attached with a greater regime of operation and maintenance costs. We will therefore reassess

the community's views on willingness to pay and seek availability of grants to fund delivery of these schemes.

Currently, all our biosolids go to agricultural reuse. Biosolids are solid organic matter that are produced from the sewage treatment process. The NSW Environmental Protection Authority are currently revising the biosolids framework. The way we manage biosolids across our treatment plants will be reviewed following release of the new framework.

SERVICING SMALL VILLAGES

Council will continue to monitor and review the currently unserviced villages within the MidCoast region.

There are currently no plans to provide water and sewer services to these villages within the 30-year planning horizon. However, Council will prioritise sewer servicing should ongoing

monitoring indicate a risk to public health and/or the environment due to poor performance of on-site sewerage management.

CLIMATE CHANGE AND SUSTAINABILITY

Council is committed to progressing towards Net Zero and renewable energy by 2040.

In our day-to-day activities, to combat the impacts on our assets and services, we will:

- Raise critical infrastructure at pumping stations out of flood zones to maintain operation through extreme events
- Review our land planning and development servicing plans for consideration of impact of sea level rise on new assets
- Investigate alternative power supply options to mitigate interruption to services from power failure, such as a regional generator fleet

- Improve our business protocols and procedures to include a robust approach to emergency response planning, allowing for knowledge sharing and decision making, particularly during emergencies.

We will also be considering opportunities for solar panels on critical infrastructure and pumped hydropower from Peg Leg Creek off-stream storage, given the hilly terrain between the storage and the Bootawa Water Treatment Plant.

PREFERRED IWCM SCENARIO

Increased capacity to store water from catchments by building off-stream storages. Exploration of groundwater and purified recycled water to provide additional water security for the MidCoast region.



Water Security Solutions



Peg Leg Creek Off-Stream Storage

Second storage for the Manning Scheme. A dam wall would be built on the Peg Leg Creek tributary and water would be pumped from the Manning River.



Off-Stream Storages

Concrete storage located on a parcel of land at Bulahdelah, Gloucester and Stroud.



Purified Recycled Water

Purifying wastewater using advanced water treatment technologies for drinking water use.



Exploration of Groundwater

Groundwater can be found in an aquifer (a body of porous rock and sediment containing water that has seeped through the ground). Groundwater is pumped out of an aquifer using wells then treated and distributed for use. Council would explore groundwater supply for Gloucester, Bulahdelah and Stroud schemes.

Considerations and opportunities



Recycled Water

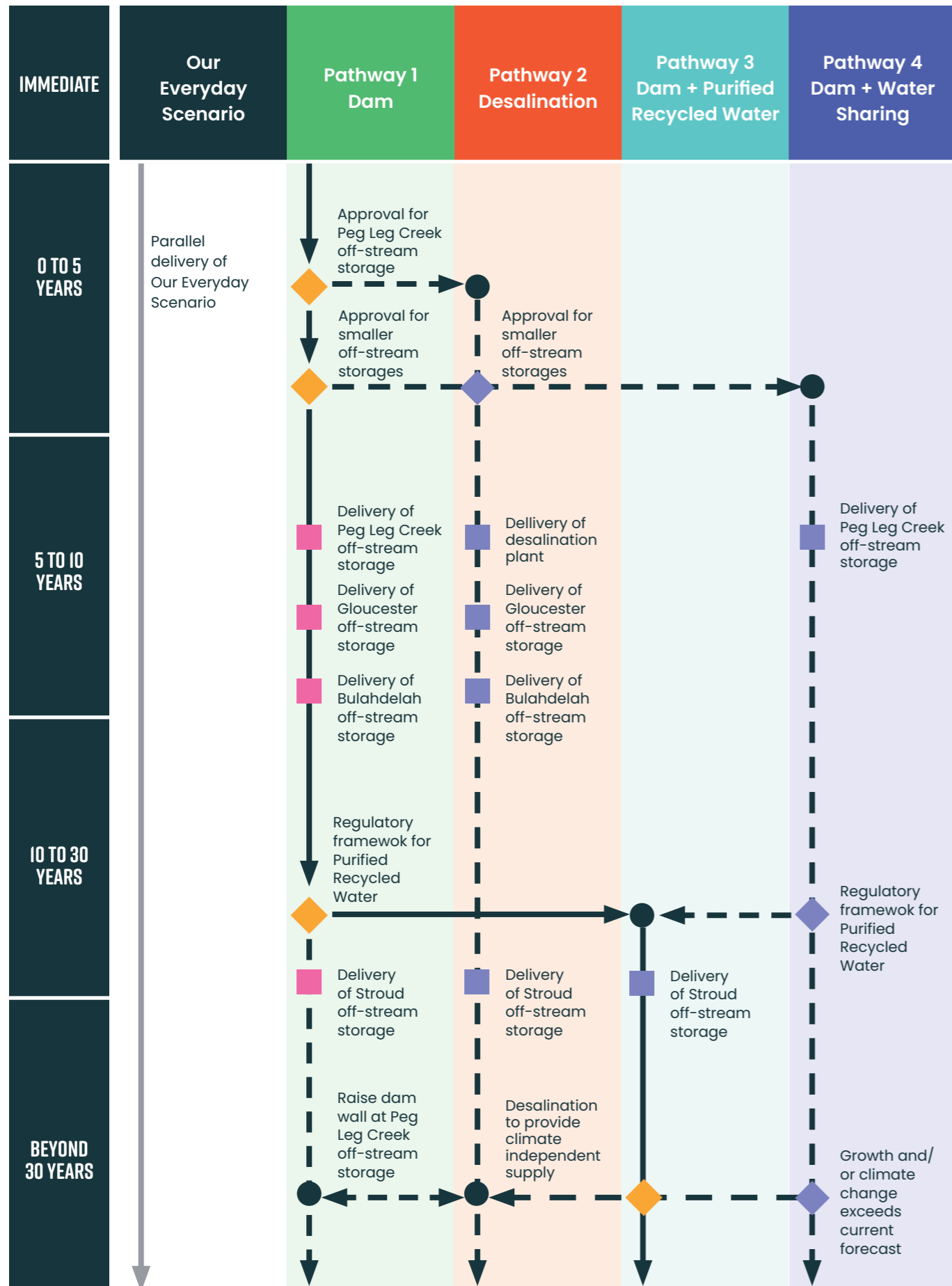
Increased use of recycled water for public space irrigation and agricultural use.



Opportunities

Green energy generation at key sites, including hydropower and solar.

Figure 12. The preferred scenario



Our plan includes us continuing to deliver our business as usual (Our Everyday Scenario), along with an adaptive approach where the pathway we take is determined by what happens at key trigger points. Our preferred scenario is to build Peg Leg Creek off-stream storage for the Manning scheme. This is Pathway 1.

If we receive approval for Peg Leg, we will continue with our plan to increase storage capacity. If approval is not received, we will move down into Pathway 2, to deliver a desalination plant instead.



Figure 13: Adaptive plan for Our Water Our Future 2050

OUR FINANCIAL FUTURE

07

The long-term financial planning for Council’s water and sewer business was completed using cost estimates for capital works projects, operating costs and renewals spending to match level of depreciation of our assets.

This included all our expenses for the assets we currently manage, as part of our business as usual, as well as the new projects identified in this strategy and the associated operating costs. Our project prioritisation ranking was applied to allocate where in the 30-year period we would complete these projects.

Our long-term financial planning assumed that water developer charges would need to increase. Of course, the developer charges will not be increased until new developer servicing plans are completed and adopted. Our sewer developer charges have been kept the same as they currently are.

We have also assumed that no dividends will be paid from the water and sewer funds within the life of the strategy.

The quadruple bottom line assessment balanced the financial impact with non-cost factors.

The assumptions for setting our financial future were based on significant government funding for water security projects, particularly for the Manning water supply scheme, to make these solutions affordable for our community.

Water and sewer financial paths were completed separately, then combined to form the preferred financial pathway for Our Water Our Future 2050. These are shown in Figure 14.

Preferred financial pathway (per household)

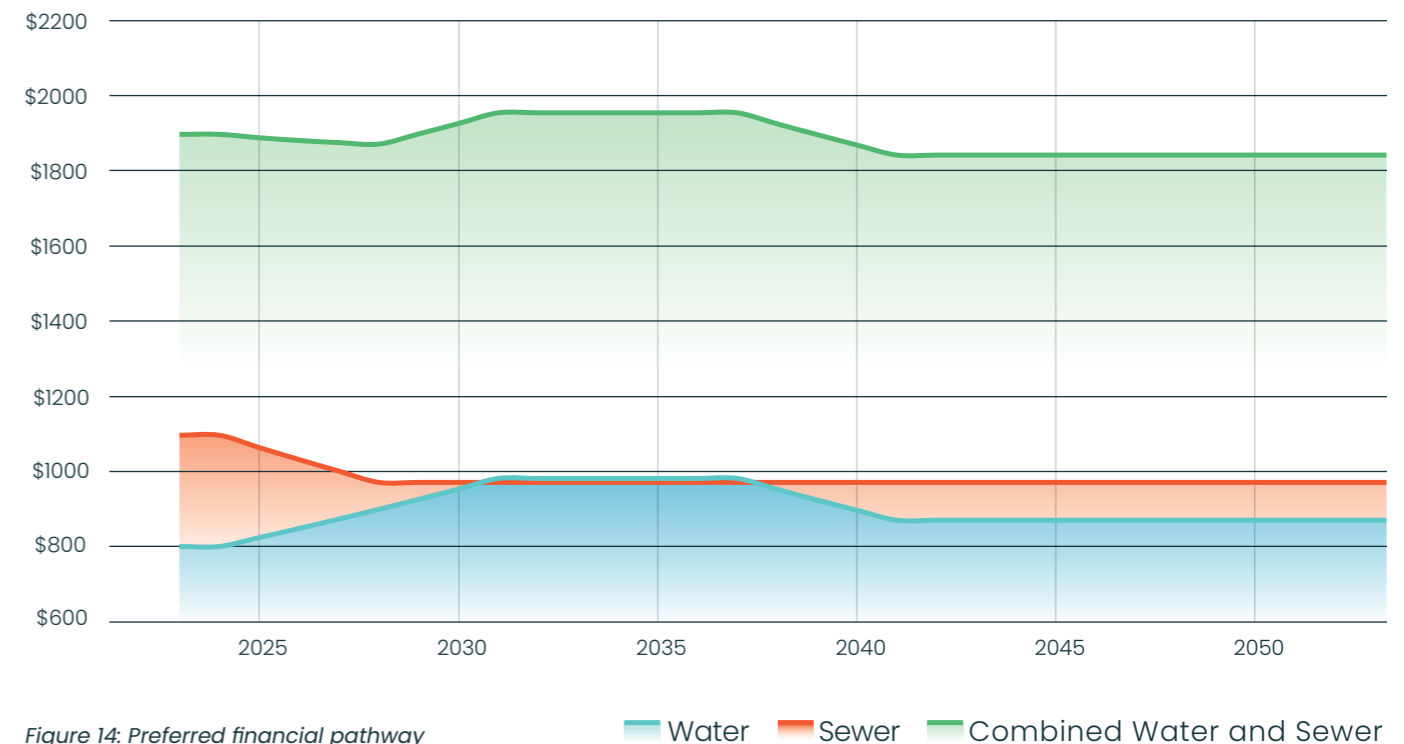


Figure 14: Preferred financial pathway

NEXT STEPS

We will engage with our community as we implement Our Water Our Future 2050.



08

As per our adaptive planning approach, we will ensure we are continually monitoring the progress of our strategy. We will respond to changes in our assumptions and objectives as necessary while keeping our community informed. As per DPE's Regulatory and Assurance Framework for Local Water Utilities, we will strive to move towards an active approach where strategic planning is embedded in our daily operations.

COMMUNITY INPUT DURING IMPLEMENTATION

Council will engage with the community throughout the life of the strategy.

We will:

- Continue to update the Our Water Our Future Group and Have Your Say page subscribers periodically with progress on implementation of the strategy.
- Keep the community informed on major projects as they are initiated and progress through design into construction. This will be achieved by updates on our website and in Council newsletters. For the water security projects, this will include public exhibition periods of environmental reviews.
- Regularly engage with our community as part of our water education and behaviour program, to continue to build water literacy and improved water conscious behaviour in how our community uses water.
- Update the community on progress on the implementation of water efficiency programs to reduce water losses and leakage in our networks.
- Provide regular and up to date information about water restrictions during future droughts.

OUR WATER OUR FUTURE 2050 IMPLEMENTATION PLAN

The implementation plan will involve delivery of Our Everyday Scenario as part of our business-as-usual program of work. This includes progress towards achieving Net Zero at 2040.

We will proceed in FY 2023-24 with concept phase and design of off-stream storage dams for the Manning, Gloucester and Bulahdelah schemes. This will include initiating the environmental assessment and approvals process for all proposed off-stream storages.

Since Peg Leg is our preferred option, we will commence koala studies through an ecological consultant. Based on available knowledge, koalas will be a priority within the assessment of the proposal. This will include:

- Describe and map the plant community types, including identifying the percentage of

primary and secondary koala food trees and prepare a koala habitat suitability map,

- Undertake a koala detection dog survey
- Undertake a thermal drone koala survey
- Deploy a song meter grid
- Provide preliminary calculations on environmental offsets required in relation to a preliminary conceptual plan.

In addition to completing the above, the consultant will compile lists of other fauna species detected, as well as data on habitat features and quality, including the locations of trees with hollows. Council will also start the process of investigating and securing offsets very early in the process and incorporate it into the assessment. Peg Leg Creek off-

stream storage will be constructed with first priority, proposed for completion by FY 2031-32. Gloucester off-stream storage will be constructed with second priority, proposed for completion by FY 2032-33. Bulahdelah will be constructed with third priority, proposed for completion by FY 2033-34. Stroud planning and delivery is scheduled for completion in FY 2047-48, as Stroud has a 50 ML off-stream storage already.

In parallel, we will initiate investigation into potential groundwater sources in our western areas. Based on investigations commenced during the 2019-20 drought, planning for a temporary desalination plant will be progressed further as an emergency response, if required between now and when Peg Leg Creek off-stream storage can be constructed and filled. Opportunities for connectivity to a permanent desalination plant in the future will be considered. We will also identify and prioritise specific recycled water opportunities, to increase the level of water recycling for public open space irrigation and agricultural reuse.

We will regularly review progress against our targets including for:

- Inflow and infiltration
- Leakage reduction
- A reduction in mains breaks, asset failure and time spent on reactive work
- A reduction in average water consumption per household through water efficiency and demand management measures.

We will periodically review our unserved villages to identify potential risk to public health and the environment from poorly performing on-site sewerage systems. We will also seek and review funding mechanisms to support delivery of sewerage services to high-risk villages throughout the 30 years.

We will track and report on progress of the delivery of the strategy through Council's Delivery Program and Operational Plan and monthly Capital Works progress reporting.



APPENDIX A

09

Project	Capital Projects	Renewals Programs	Planned Years		Comments
	Estimated Total Cost (\$'000)	Average Annual Cost (\$'000)	Start	End	
Total - Building Capital					
Building Renewals Program - Water		50	All - renewals program		
Building Renewals Program - Sewer		250	All - renewals program		
Total - Sewer Reticulation					
GE-SRT-00 Renewals Program (MHs and both GM and RM)		2,160	All - renewals program		Renewals program for all years starting 26/27
GE-SRT-00 Unplanned Renewals		300	All - renewals program		
GE-VAC-00 Sewer Vacuum Systems Renewals Program		680	All - renewals program		
GE-SRT-00 New Sewer Mains	1,465		23/24	52/53	
GE-SRT-00 Renewals Program (MHs and both GM and RM)	1,115		27/28	28/29	
GE-SRT-00 Unplanned Renewals	5,000		22/23	25/56	
GE-VAC-00 Sewer Vacuum Systems Renewals Program	21,000		22/23	25/57	
HP-SRT-00 Hallidays Point New RM from SPS HP07 to SPS HP10	500		22/23	24/25	
Total - SCADA / Electrical Capital					
SCADA/Electrical Water (Renewals Program)		200	All - renewals program		
SCADA/Electrical Sewer (Renewals Program)		400	All - renewals program		
Citect SCADA Renewals - Sewer		50	27/28, 32/33, 37/38, 42/43, 47/48		Occurs once every five years
Citect SCADA Renewals - Water		50	27/28, 32/33, 37/38, 42/43, 47/49		Occurs once every five year
SCADA Cyber Security Works	1,720		22/23	52/53	
CM-COT-01 Comboyne Communication Tower New	280		22/23	24/25	
CM-COT-01 Comboyne Communication Tower New	250		22/23	24/25	
NA-WTP 5MW Solar PV System	5,870		36/37	38/39	
GE Solar System Projects	1,500		24/25	28/29	
Two Way Radios Communication Network (Water and sewer funds)	600		24/25	25/26	
Viper Radio Replacements	300		23/24	24/25	
PLC Replacements (Water 30 % and sewer 70% funds)	200		30/31	30/31	
Total - Sewer Treatment Plant Capital					
GE-RTP-00 Membrane Renewals		1,900	33/34, 43/44		Occurs once every ten years
GE-RTP-00 Renewals - general		440	All - renewals program		
GE-STP-00 Renewals Program (500066 PL401447) - STP Renewals Program)		3,655	All - renewals program		
CO-STP-01 Coopernook STP - Stage 2 Upgrade	1,000		32/33	32/33	
DR-STP-01 - Effluent Discharge Pipe Renewal	250		22/23	24/25	

Project	Capital Projects	Renewals Programs	Planned Years		Comments
	Estimated Total Cost (\$'000)	Average Annual Cost (\$'000)	Start	End	
DR-STP-01 Aeration System Renewal	300		24/25	24/25	
DR-STP-01 Dawson STP - Growth Upgrade	6,000		29/30	31/32	
DR-STP-01 Dawson STP Switchboards	1,500		24/25	25/26	
DR-STP-01 Sludge Dewatering Solution	800		22/23	24/25	
DR-STP-01 Sludge Lagoon Upgrade	1,000		25/26	25/26	
DR-STP-01 Taree Effluent Scheme - Wet Weather Release	4,300		33/34	33/34	
FO-STP-01 Admin Bld Refurb & ramp to lagoon	850		22/23	24/25	
FO-STP-01 Blowers 12,13,14 VSD renewal	115		23/24	23/24	
FO-STP-01 Blowers 3,4,5,6,9,10 VSD renewal	280		23/24	24/25	
FO-STP-01 Forster Decant Upgrade	950		22/23	23/24	
FO-STP-01 Forster STP Switchboards incl Effluent SB	1,500		24/25	25/26	
FO-STP-01 Reuse System upgrade	150		24/25	24/25	
GL-STP-01 Replacement	25,000		22/23	26/27	
HN STP Effluent Management Upgrade	2,000		29/30	29/30	
HN-STP-01 Dewatering Replacement (Centrifuge)	750		24/25	24/25	
HN-STP-01 Upgrade Project - Stage 2 and 3, incl Biosolids area improvement	27,400		22/23	25/26	
HP-STP-01 Dewatering Solution (centrifuge replacement)	750		22/23	23/24	
HP-STP-01 Sludge Dewatering Area Improvements	300		22/23	23/24	
HP-STP-01 Effluent Management	2,000		45/46	45/46	
HP-STP-01 Reuse System upgrade	100		24/25	24/25	
HR-STP-01 Harrington Effluent Management	2,500		38/39	38/39	
HR-STP-01 Harrington STP - Stage 2 Upgrade	3,000		27/28	28/29	
HR-STP-01 Upgrade Project - Stage 1B	2,000		22/23	25/26	
OB-STP-01 Old Bar STP Growth Upgrade	10,000		29/30	30/31	
PP-STP-01 Pacific Palms STP - Stage 2 - STP Construction	20,000		46/47	48/49	
ST-STP-01 UV System Replacement	150		22/23	23/24	
TA-DPT-01 Vac Truck Spoil Works	100		24/25	24/25	
Provide Coomba Park with Sewerage	40,000		49/50	51/52	
Taree Rec grounds recycled water scheme	6,000		33/34	35/36	
WG-STP-01 Wingham STP - Storage/Capacity Upgrade & Address Flood Issues	6,000		40/41	41/42	
Total - Sewer Pump Station Capital					
GE-SPS-00 Pump Renewals Program (mechanical)		450	All - renewals program		
GE-SPS-00 Switchboard Renewals - Ongoing		975	All - renewals program		Renewals program for all years starting 27/28
GE-SPS-00 RTU Renewals Program		150	All - renewals program		
GE-SPS-00 Civil Renewals Program		2,640	All - renewals program		Renewals program for all years starting 28/29

Project	Capital Projects	Renewals Programs	Planned Years		Comments
	Estimated Total Cost (\$'000)	Average Annual Cost (\$'000)	Start	End	
GE-SPS-00 Switchboard Renewals SB03		975	24/25	25/26	
GE-SPS-00 Switchboard Renewals SB04		1,105	23/24	26/27	
GE-SPS-00 - Raise Switchboard TS-03, WG-04, TA-05, CO-05	348		24/25	25/26	
GE Replace Assets at Risk of Sea Level Rise	1,325		37/38	41/42	
GE-SPS-00 SPS Upgrade for Storage / Emergency	1,400		23/24	52/53	
BU-SPS-01 - Flood Related Works, relocation or raising	1,450		36/37	37/38	
FO-SPS-18 VSD	90		26/27	26/27	
GL-SPS-05 Upgrade and RM	200		24/25	24/25	
GP-SPS-05 New pump station and rising main	480		24/25	24/25	
HR-SPS-09 Vacuum Station Odour Upgrade	490		22/23	23/24	
NK-SPS-01 & RM Upgrade	750		29/30	29/30	
OB-SPS-03 Mech/Elect Upgrade (required for pumping to OB08)	550		23/24	23/24	
OB-SPS-08 & 2 x RMs	4,000		21/22	23/24	
OB-SPS-07 Upgrade - Pumps Only	80		39/40	39/40	
TA SPS 01 Switchboard	720		21/22	23/24	
TA-SPS-01 & TA-SPS-06 and RM renewal	10,050		22/23	26/27	
TA-SPS-10 Renewal	400		25/26	26/26	
TU-SPS-23 VSD	150		26/27	26/27	
WG-SPS-08 (Wingham Brush PS WG08 Relocation)	1,820		21/22	24/25	
Total - Dams, Weirs & Aquifer Capital					
GE Dams, Weirs & Aquifer Renewals Program		50	All - renewals program		
Peg Leg Creek Off-Stream Storage Dam	192,000		23/24	31/32	
Purified Recycled Water Scheme- Manning	40,000		50/51	51/52	
Gloucester Off River Storage	19,498		23/24	32/33	
Bulahdelah Off River Storage	17,651		23/24	33/34	
Stroud Off River Storage	9,300		47/48	48/49	
Tea Gardens Borefield Upgrade	4,150		33/34	34/35	
Total - Water Mains Capital					
GE-WRT-00 Renewals Program (400134 - Water Mains - Renewals)		2,474	All - renewals program		
GE-WRT-00 Unplanned Renewals		200	All - renewals program		
GE-WRT-00 New Mains (400133 - Water Mains - New or Extensions)	8,700		22/23	52/53	
GE-WRT-00 Bulk Water Meters	750		22/23	23/24	

Project	Capital Projects	Renewals Programs	Planned Years		Comments
	Estimated Total Cost (\$'000)	Average Annual Cost (\$'000)	Start	End	
GE-WRT-00 Water charging stations for water carters	450		22/23	24/25	
GE Smart Meter Installation Program	35,600		21/22	52/53	
GE Standard Meter Installation Program	2,350		21/22	29/30	
BU Bulahdelah: Complete Realignment of Raw Water Main	80		25/26	25/26	
FO-WRT-00 High Level Improvements	65		24/25	24/25	
FO-WRT-00 Little St Forster	875		25/26	25/26	
HR-WRT Replacement	3,275		22/23	26/27	
HR-WRT-00 Harrington Rd to Cooperook Res.	1,250		22/23	24/25	
TA WRT-00 Taree Water Reticulation - Trunk Mains For Growth	2,600		32/33	33/34	
TA-WRT-00 Cundletown access bridges to water mains	600		22/23	24/25	
TA-WRT-00 Figtree on Manning New Main & Pioneer St/Bligh	520		22/23	24/25	
TA-WRT-00 Muldoon St 300 Main Upgrade	520		24/25	24/25	
TG-WRT-00 Singing Bridge Main Renewal	325		24/25	24/25	
WG-WRT-00 Wingham Res to Bungay Res	1,150		24/25	24/25	
Trunkmain (600mm x 2.2km) from Kolodong WPS to Irkanda	2,200		48/49	48/49	
Trunkmain (600mm X 32km) from Lantana WPS to Forster Res (Duplicate 600mm)	32,000		45/46	46/47	
Total - Water Treatment Plant Capital					
GE-WTP-00 Renewals Program		2,132	All - renewals program		
BO-WTP-01 Membrane Renewals		500	22/23-24/25, 32/33-34/35, 42/43-44/45		Occurs once every ten years; with three consecutive years of spending
TG-WTP-01 Membrane Renewals		100	23/24, 33/34, 43/44		Occurs once every ten years
BO-WTP-01 Emergency Generator	100		25/26	25/26	
BU-WTP-01 Potassium Dosing Upgrade	570		22/23	24/25	
BU-WTP-01 Upgrade to Meet New HBTs	1,000		28/29	29/30	
BU-WTP-01 Bulahdelah: Stage 2 Upgrade	5,600		37/38	39/40	
GL-WTP-01 - Upgrade/ Replacement	14,300		26/27	28/29	
Complete planning of Emergency Desalination Plant	250		23/24	23/24	
NA-WTP-01 Stage 2A	13,250		21/22	24/25	
TG-WTP-01 Tea Gardens WTP - Stage 2 Upgrade	260		27/28	27/28	
ST-WTP-01 Upgrade to Meet New HBTs & for Growth	1,000		32/33	33/34	
Total - Water Pump Station Capital					
GE-WPS-00 Renewals Program (500074-PL401455 - WPS Renewals Program)		275	All - renewals program		

Project	Capital Projects	Renewals Programs	Planned Years		Comments
	Estimated Total Cost (\$'000)	Average Annual Cost (\$'000)	Start	End	
GE-WPS-00 RTU Replacement Program		150	All - renewals program		
BO Bootawa to Brimbin Pump Station (PS2B Upgrade)	9,000		47/48	52/53	
BO WPS PS2B to Lantana Reservoir	200		30/31	31/32	
BO-WPS-1A electrical Renewals - 11kV switch gear	300		22/23	23/24	
BO-WPS-1A Pump Renewals	350		23/24	23/24	
DA-WPS-01 Valve Automation	200		24/25	24/25	
GL-WPS Raw Water Offtake Refurbishment	300		23/24	23/24	
GL-WPS-05 Jacks Road PS relocation & upgrade	750		22/23	25/26	
KO-WPS-01 Kolodong Pump & Electrical Upgrade & Renewals	600		21/22	24/25	
KO-WPS - WPS Dual Purpose: Kolodong to Irkanda & Kolodong to Brimbin (2036)	600		35/36	36/37	
LC-WPS-01 Lantana Crossing to future Four Mile Reservoir	1,141		26/27	26/27	
NA-WPS-00 Nabic Borefield Stage 2B	7,800		22/23	23/24	
NA-WPS - New augmented pumps (2036)- to service Krumbach	100		35/36	35/36	
Total - Water Reservoir Capital					
GE-RES-00 Renewals Program		905	All - renewals program		
GE RES-00 Reservoir Demolition Program	445		25/26	25/26	
GL-RES & WRT Upgrade	26,150		21/22	23/24	
CO-RES-01 Decommission Cooperook Reservoir 2024 (take offline only)	150		24/25	24/25	
KO-RES-01 and KO-RES-02 - decommission - driven by Brimbin dev	350		30/31	30/31	
KO-RES-03 - duplicate reservoir 9 ML	5,000		28/29	29/30	
LC-RES-01 - duplicate Lantana reservoir 15 ML	7,500		30/31	31/32	
KR-RES-01 - Duplicate reservoir required 0.5ML (Krumbach)	1,500		25/26	26/27	
WG-RES - Wingham Reservoirs Combined - additional 14 ML required	7,500		30/31	31/32	
WG-RES-03 - Wingham Reservoir No. 3 - Decommission	350		31/32	31/32	
Four Mile Reservoir - new reservoir (~10 ML)	7,500		25/26	26/27	
Irkanda Reservoir No. 02 - duplicate (7 ML or 14ML for Brimbin)	7,500		28/29	29/30	
Total - Fleet, Plant & Equipment Management (Water Services)					
100140 Plant and Equipment Renewals Water		50	All - renewals program		
100141 Plant and Equipment Renewals Sewer		50	All - renewals program		
100914 Bootawa Lab Testing Equipment Water		50	All		
100915 Bootawa Lab Testing Equipment Sewer		50	All		
Fleet Water		750	All		
Fleet Sewer		750	All		



