STRATEGIC ASSET MANAGEMENT PLAN

icon WATER

Acknowledgement of Country

Icon Water acknowledges the traditional custodians of the Canberra region, the Ngunnawal people and pay our respect to their Elders – past, present and emerging. We recognise and value their continuing culture and the contribution they make to the life of the city and the region. We also acknowledge the First Peoples of the broader region in which we live and work.

CONTENTS

FOREWARD

Icon Water's core purpose is to sustain and enhance the quality of life. This purpose is the foundation of our organisational objectives and priorities. Within this context, our primary activity is providing high quality and efficient water and wastewater services to Canberra and the surrounding region.

Icon Water's previous approach to asset management was asset centric. We worked hard to understand the capability of each asset and improve its performance, so that together our assets would meet both regulatory requirements and service levels for customers.

As our asset management capability has matured, we have improved how we do business. We have engaged with our customers and our regulators and, together with our knowledge of our assets, we are now transitioning to a new service delivery model.

Our asset planning is becoming adaptive and flexible – at times we will re-purpose assets and partner with developers to consider alternative service options. We have open and upfront conversations with our regulators when the capability of our assets, the requirements of our customers and the resulting affordability, are better served by reconsidering the regulatory nexus.

Within the next three to four years we will be transitioning to a service delivery model for our water, wastewater, and recycled water portfolios, aligned with international standards for asset management.

We will leverage our recent and continued investment in technology, streamline our business processes, improve accessibility to asset and performance information and be making value-based decisions on evidence-based data.

Through open conversations with regulators and our customers, we will collaboratively set sustainable and meaningful service levels in line with customer expectations and values. Overall, this will empower the decision-making process of our staff to achieve better outcomes for the community we serve.

JOY YAU
Chief Financial Officer
Icon Water

INTRODUCTION

1.1 Overview

Icon Water is a service business with over $2.8 billion currently invested in assets. These assets contribute to the provision of cost-effective water and wastewater services to our community. However, with growing population, changes in climate, increasing developmental pressure, shifting customer expectations and an increasingly complex regulatory environment, is essential for us to continue moving towards a service centric approach to facilitate informed asset management decision making. The term 'asset management' in this context means the process by which Icon Water manages its physical asset base to achieve a balance between the community's service expectations and their willingness and capacity to pay for the infrastructure assets that underpin these services.

This Strategic Asset Management Plan (SAMP) formalises Icon Water's transition from an asset and budget driven approach to a service centric approach. The SAMP combines the top-down organisational objectives and policies to define the direction and long-term service outcomes. It is the basis for outlining and monitoring key performance indicators and provides us with the ability to measure and report on asset management objectives. It also provides clear courses of action for our asset management outcomes.

Icon Water is committed to providing affordable, resilient and reliable services to our community through putting safety first, delivering customer centred services, delivering sustainable value and focusing on performance. The SAMP will contribute significantly to the achievement of this commitment.

1.2 Development, timeframe and review of the SAMP

This version 4.0 represents the second major revision to the initial SAMP developed in 2015.

This SAMP covers to the end of the current regulatory period (30 June 2023), together with detailed projections for the next five-year regulatory period and further projections for an additional 15 years. The SAMP, together with the other Asset Management System (AMS) documents, is reviewed and updated on a biennial basis. The following change approval requirements apply for this SAMP:

- administrative amendments – approved by the Manager Strategic Planning
- minor amendments – approved by the Chief Financial Officer
- Communication and usage of the SAMP approved by General Manager Customer Engagement.

1.3 Communication and usage of the SAMP

A communication plan is developed for internal and external stakeholders to share the revision of the SAMP.

The SAMP is an enabler within our Integrated Management System (IMS) document library. It is linked to the Enterprise Asset Management (EAM) Strategy, Policy PO5 Asset management, various Asset Management Plans (AMPs) and other asset management system documents as outlined in Chapter 5.

The SAMP is aligned to and informs appropriate asset management components within our price proposal.

1.4 Structure of the document

The remainder of the document is structured as follows:

Part I: Icon Water's operating and business context

Chapter 2: Describes the current and predicted operating environment for Icon Water, providing context for the subsequent sections and creating a line of sight from the corporate strategies to the Asset Management Objectives (AMOs), fostering alignment with other organisational strategies.

Chapter 3: Describes our commitment to asset management, our key asset management principles and asset management responsibilities at executive level.

Part II: Icon Water's asset portfolio

Chapter 4: Highlights the areas of asset that are in scope for the current version of the SAMP and provides an overview of current performance, demand, and long-term strategic direction.

Chapter 5: Describes the plan for the asset portfolio, the high level AMOs and the process for developing lower-level objectives for all assets. This chapter also outlines the approaches for managing assets used at Icon Water.

Part III: Icon Water's asset management system

Chapter 6: Describes Icon Water's asset management system and decision-making processes, together with the supporting processes and tools that ensure performance objectives are achieved.

Chapter 7: Describes Icon Water's improvement plan for the asset management system.

Chapter 8: Appendices to the SAMP.

Part I

Icon Water's operating and business context

BUSINESS CONTEXT

2.1 Corporate context

Icon Water is the ACT's supplier of water and wastewater services, and supplier of bulk treated water to Queanbeyan. These essential services are provided with a clear vision and set of objectives, as outlined in Figure 1.

Our corporate vision reflects our ongoing commitment to customers and the community, and recognises the important role Icon Water plays in the ACT and surrounding regions. We support the community to grow and prosper by leveraging our secure water supply, providing high quality drinking water and environmentally sustainable wastewater services.

Our purpose

To sustain and enhance quality of life

Our vision

To be a valued partner in our community

Our strategic objectives and domains

Figure 1 Icon Water's objectives and domains

2.2 Regulatory

Icon Water has reporting and compliance obligations under Commonwealth, ACT and NSW legislation. A total of 91 acts, licences and regulations govern the operations of the water and wastewater business.

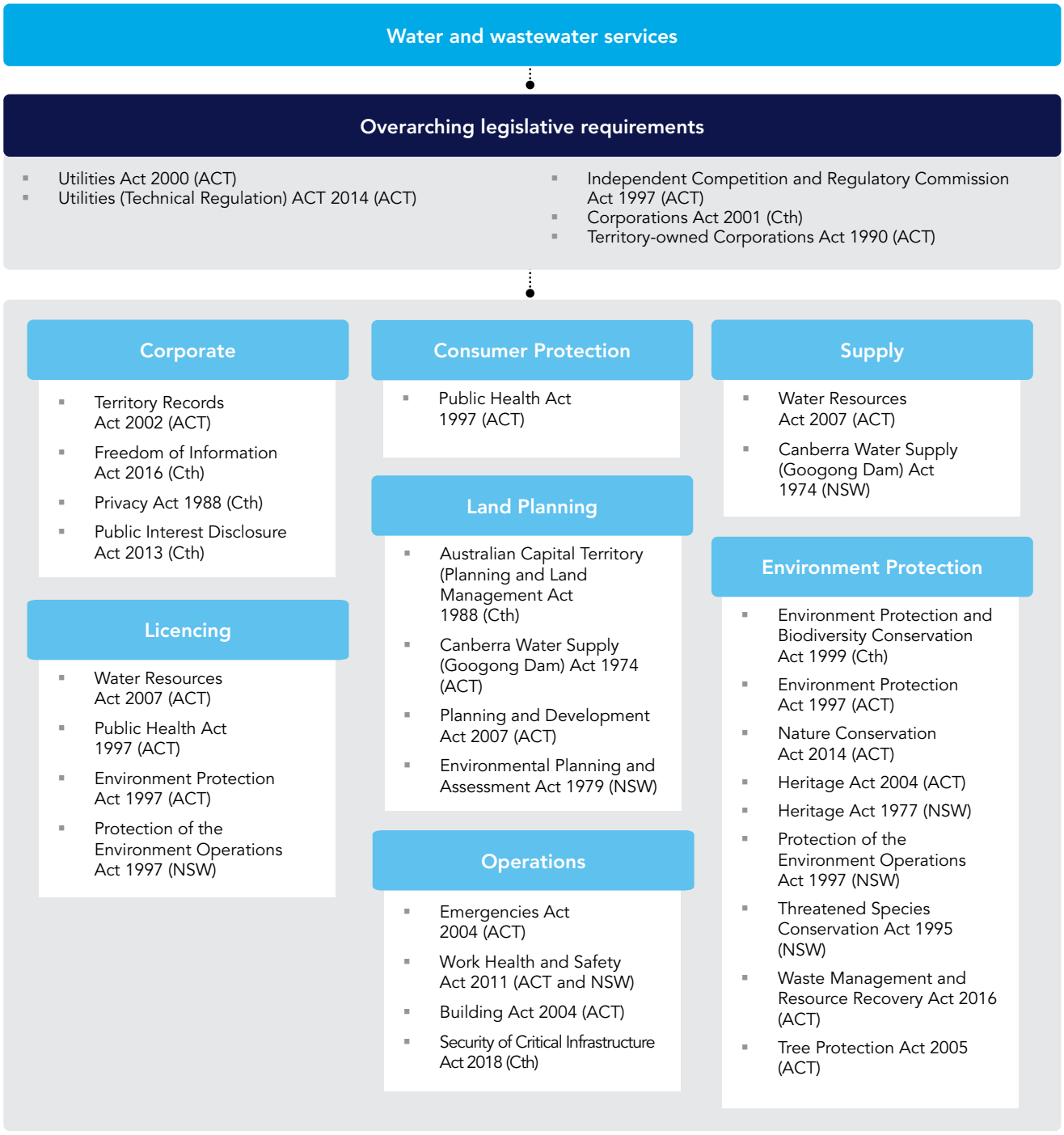


Figure 2 Key Acts governing Icon Water

Technical codes set out requirements for the design, operation and maintenance of water supply and wastewater assets, customer protection, dam safety and emergency management. The codes also establish the requirements for asset management. The Utilities Technical Regulator (UTR) is currently reviewing these technical codes.

2.3 Government

In addition to the legislative and regulatory requirements, local and regional government have policy and strategy expectations which link directly to Icon Water's long-term planning. Key strategy and policy matters are outlined below.

ACT Water Policy

The ACT Water Strategy 2014-44: Striking the Balance is the key document outlining the Government's 30-year strategy for managing the Territory's water resources and guides all areas of water management activities in the ACT. The government is conducting a review of water governance and management in the ACT. A review of the ACT Water strategy and the development of an integrated water plan are expected in the near future

The current strategy has several direct links to work being undertaken by, or directly impacting Icon Water. For example: preparing a holistic water cycle management plan for the ACT; establishing mechanisms for interstate trade; reviewing and strengthening actions to support our levels of service; and catchment management activities.

ACT Planning Strategy

The ACT Planning Strategy 2018 outlines the ACT Government's vision for the future of Canberra. The Strategy links to other planning reforms such as the Better Building Quality and Managing Buildings Better program. Major themes for the future city are defined around: diversity, sustainability and resilience, liveability, accessibility and a compact and efficient city. To achieve the goal of a compact and efficient city, the ACT Government moved to a policy that new developments will be 70% infill, 30% greenfield, compared to the previous 50:50 split.

The proposed infill development will place significant capacity pressure on existing assets, particularly for the wastewater network. Staged upgrades of both water and sewer assets will be required to accommodate these developments. Easements for assets and encroachment issues (eg increased urban tree canopy, odour and noise) will become more important as land becomes increasingly utilised.

ACT Climate Change Strategy

The ACT Climate Change Strategy 2019-25 sets an ACT Government target for net zero emissions by 2045 and commits to adopt a social cost of carbon price in all policies, budgets and capital decisions. The strategy also includes Action 6.5 to reduce greenhouse gas emissions from wastewater treatment.

Section 2.6 of this document outlines the specific context for climate change within Icon Water.

ACT Wellbeing Framework

The ACT Wellbeing Framework was launched in March 2020 and comprises 12 domains and 56 indicators. The indicators focus on social progress that can be considered alongside economic issues that are already measured. The intent is to support understanding of the effects of policy and non-policy factors on people, business, the environment and systems.

Icon Water recognises its unique role in supporting the wellbeing of the community and the liveability of the region. Although Icon Water can demonstrate contribution to all of the 12 domains, of the ACT's Wellbeing Framework three are deemed to be of higher relevance to our work: health; environment; and climate and economy. Against these three domains Icon Water has the greatest opportunity to have measurable impact and influence.

Regional Council Development

The ACT and NSW governments support continued population growth for the Canberra region and have updated the ACT and NSW Memorandum of Understanding (MoU) for Regional Collaboration (2020). Water supply in the immediate Canberra region is a potential constraint on growth and development.

2.4 Customer expectations

Customer engagement represents an integral component of our approach to service delivery and consequently shapes planning decisions. We engage with customers using a broad range of engagement techniques and willingness to pay surveys and through the Customer Advocacy Forum (CAF). Ongoing monitoring has shown that overall customer levels of satisfaction with Icon Water are high with over 90% satisfied (see Figure 3).

How satisfied are you with Icon Water's service?

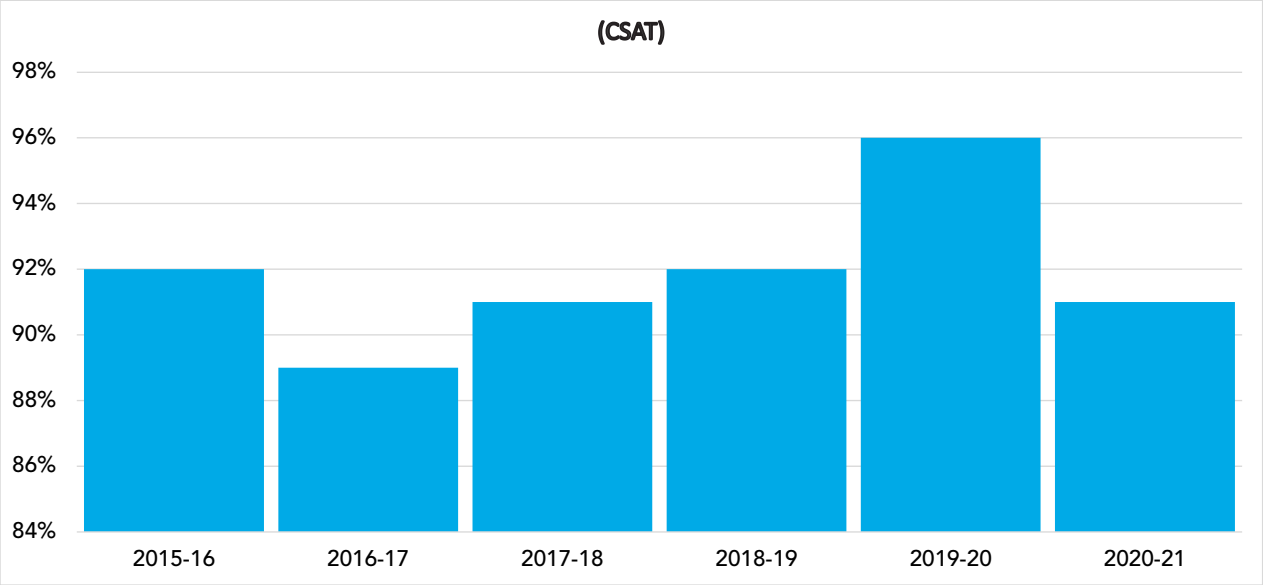


Figure 3 Customer satisfaction outcomes

In 2021, to deepen our understanding of what the community valued and their experience with Icon Water, we undertook our most comprehensive community engagement program to date through our new platform – Let's Talk Water and Wastewater.

We partnered with external providers to design and deliver the engagement program, and with additional specialist experts in the technique needed to design and deliver the willingness to pay components.

The results of these engagement activities were presented at the Icon Water Executive Working Group in February 2022.

Summary of key insights

Through our engagement, Canberrans told us that they value:

- reliable water and wastewater services
- quality drinking water
- affordable pricing
- responsive customer service.

We also learned the following key insights about what our customer expect when we consider strategic planning and investment decisions:

- The community agrees with the need to continue to plan for the future; this includes water security and exploring alternative water sources.
- There is community support for achieving greater environmental sustainability and accelerating our achievement of net zero emissions, while limiting impacts on customer prices.
- The community is committed to Icon Water maintaining quality and reliable core services and is willing to pay something towards reducing interruptions or issues for those who experience them more than usual.
- Affordability should underpin any investment decision. If Icon Water needs to invest to avoid causing issues in the future, it should consider support for vulnerable customers and other impacted customer segments.
- The community views Icon Water as an essential service provider. To be a valued partner in the community they want us to be more visible – this means being targeted in our partnering initiatives, educational and supporting activities, and proactively talking about it with the community.

2.5 Economic outlook

The 2021–2022 ACT Budget Outlook forecasts that the negative impacts of the COVID-19 pandemic are temporary in the ACT, with a rebound in economic activity expected as restrictions ease and national and international borders re-open.

Demand

- Business confidence to improve from 2021/22 levels.
- Residential demand for housing to remain high with both an increase in the value of the housing stock and residential building approvals annually.
- Increased ACT Government investment in public infrastructure.

Cost predictions

- Consumer price index expected to stabilise to over 2% by 2024/25.
- Interest rates to increase from current low levels.

Affordability

- There is a significant variation in household disposable income across the ACT.
- COVID-19 has had negative financial impacts, with 24% of respondents somewhat worse-off and 4% significantly worse-off[1].
- The labour market is expected to recover and reduce overall financial stress.
- Wage growth and consumer price indices expected to move broadly in line with each other.

1 WSAA National Customer Perceptions Study 2021

2.6 Climate change

Resilience to climate change requires both mitigation to avoid the unmanageable and adaptation to manage the unavoidable.

Icon Water's Climate change adaption plan outlines the changing climate conditions and impacts we need to actively adapt for service continuity. Climate change is however occurring harder and faster than anticipated and revised climate models will inform future versions of the plan and business initiatives.

Temperature predictions*

- Maximum temperatures are expected to increase in the near future by 0.6 – 0.9°C and in the far future by 1.4 – 2.3°C.
- Minimum temperatures are expected to increase in the near future by 0.4 – 0.7C and in the far future by 1.4 – 2.3°C.
- The number of hot days will increase.
- The number of cold nights will increase.

Rainfall predictions*

- Rainfall is expected to decrease in spring.
- Rainfall is expected to increase in summer and autumn.

Forest fire danger index predictions*

- Average fire weather is predicted to increase in spring, summer and winter.
- The number of severe fire weather days are expected to increase in summer and spring.

*Adapted from NSW and ACT Regional Climate Modelling (NARCliM) data projections for the ACT.

Figure 4 Local climate change conditions

Area of predicted impact	Increasing temperature	Severe storms	Prolonged dry weather	Increasing bushfire severity
Water security	▪ Increased likelihood of algal blooms in catchments ▪ More chemical dosing ▪ Greater demand for potable supply by customers ▪ Increasing evaporation from dams	▪ Flash flooding causing turbidity and erosion in source waters	▪ Reduced inflows to catchments ▪ Water restrictions ▪ Calls to assist neighbouring drought-affected communities	▪ Raw water impurities from ash, debris and firefighting equipment ▪ Pressure on water treatment processes ▪ Reduced inflow during plant regrowth
Impact on customers	▪ More frequent water main leaks and bursts due to thermal expansion, pipe corrosion or subsidence ▪ Heat stress on electrical equipment ▪ Increased odours expected in sewer	▪ Difficulty providing standard service levels during emergencies ▪ Energy, communications and supply chain disruptions affecting services	▪ More frequent sewer blockages from tree root intrusions, reduced flushing and low flows ▪ Less water available to green parks and gardens	▪ Outages from infrastructure damage or failure
Financial pressures	▪ Increase in cooling need ▪ More reactive maintenance work	▪ Rising insurance premiums	▪ Increasing energy operating costs when pumping water during drought conditions	▪ Costs to repair and replace damaged assets
Environment	▪ Staff exposed to greater health risks (e.g. smoke inhalation, heat stress) ▪ Changes to flora and fauna (biodiversity decline, introduction of invasive species)	▪ More sewer overflows from storm event inflows	▪ Increase in environmental water needs ▪ Stress on catchment health	▪ Catchment biodiversity loss

Figure 5 Predicted impacts of climate change on our business

To maintain our services we need to incorporate climate change-resilient design elements in the standards, design and renewal or upgrade of assets.

Icon Water's eMission Possible Plan maps the climate change mitigation pathway to achieving our commitment to net zero greenhouse gas emissions by 2045, including interval targets. This plan provides a value-based pathway to net zero considering budget, technical feasibility and operational suitability of abatement options available. The plan will continue to be updated over time as new information and technologies become available.

2.7 Summary

The community is commited to Icon Water maintaining quality and reliable core services and is willing to pay something towards reducing interruptions or issues for those who experience them more than usual.

Some of the key areas that may shape the future of our asset base are:

- cross-border growth and the provision of services beyond Canberra and the ACT
- Icon Water's role in integrated water management (IWM) and potential responsibility for the management of stormwater and drainage infrastructure
- continual improvements in data and technology, being able to take advantage of advances in big data, the Internet of Things (IoT) and Augmented Reality (AR)
- Icon Water's role within urban growth planning in the ACT, based on greater collaboration with other government agencies to create the best value community outcomes.

Icon Water continues to monitor wider industry trends, including disruptive technologies that may impact on our future ability to collect revenue (for example decentralised sources or private investments). Icon Water will also look outside our industry to monitor the impacts of off-grid technologies within the energy sector and develop strategies to proactively meet changes from these sectors that may be adopted within the water industry. This includes decentralised re-use schemes, third party providers and various system innovations.

We will look to adopt data and technology where it improves asset management and customer service. We will also need to continue investment in the capability of our people to be ready for disruption.

LEADERSHIP AND COMMITMENT

3.1 Asset management vision and objectives

Icon Water's purpose, business context and policies have been distilled into a vision for Asset Management. That is 'Effective Asset Management to provide affordable, resilient and reliable services to the community'. This vision is underpinned by the following objectives:

- Objective 1: Service oriented - Collaboratively set service levels with the community.
- Objective 2: Data based decisions - Our decisions are based on data and evidence.
- Objective 3: Everybody knows their part - Everybody plays a part in undertaking asset management and continuous improvement.

Icon Water **vision**

A valued partner in our community.

Asset management **vision**

Effective Asset Management provide affordable, resilient and reliable services to the community.

OBJECTIVES & STRATEGIC STATEMENTS

Workplace

Objective 1
Everybody knows their part

Everybody knows their part - Everybody plays a part in undertaking asset management and continuous improvement.

Sustainable value

Objective 2
Data based decisions

Our decisions are based on data and evidence.

Customer

Objective 3
Service oriented

Service oriented: Collaboratively set service levels with the community.

PRINCIPLES

1. Putting safety first
2. Delivering customer-centred services
3. Delivering sustainable value
4. Focusing on performance

Figure 6 Describes asset management vision and objectives as it supports our business purpose

3.2 Asset management principles

We have four key principles which set the framework for asset management and help deliver and implement this SAMP. These principles have their origin in Icon Water's business objectives and have been refined to reflect the outcomes of internal assessments.

Figure 7 Asset management principles

1 PRINCIPLE

Putting safety first

Icon Water commits to ensure the safety of staff, customers and the environment is considered in every asset management decision.

We value accepting personal responsibility to ensure a safe workplace and contribute to a safe community. Our safety management and our sustainability and environment policies articulate the Board and Executive commitments. In asset management this means we:

- design, operate and maintain our assets without harm
- make transparent decisions based on data and evidence
- provide safe water and wastewater services to our customers and the community.

2 PRINCIPLE

Delivering customer-centred services

Icon Water will work with our customers and regulators to provide affordable and reliable services to the community, in line with their expectations and values.

We are focused on delivering a contemporary and responsive customer experience across all areas of our business. We recognise that community requirements are changing. In response, we need to increase our focus on delivering an experience that enhances the lives of our customers and promotes and engenders trust. To deliver an enhanced customer experience in a sustainable manner, Icon Water is committed to becoming a customer-centric organisation. We also need to maintain an ongoing focus on network protection and assurance to minimise impacts to customers. We seek to align these needs across the organisation ensuring our services continue to meet the expectations of our customers now and in the future.

Our focus on customer-centred services will permeate our entire business. We will develop tailored customer initiatives, strengthen our engagement with the community and integrate customer and stakeholder considerations into the design of our operations, maintenance and capital works programs.

3

PRINCIPLE

Delivering sustainable value

Icon Water commits to delivering sustainable value for the community and a sustainable financial return to shareholders through effective asset management.

Icon Water operates in a highly regulated and multi-jurisdictional environment. We must balance multiple compliance objectives to deliver cost-efficient services and meet the sustainable value expectations (from an economic, social, and environmental perspective) of our community and customers. As a Territory-owned corporation, Icon Water must also ensure that its investments in water, wastewater and energy provide sustainable returns. We will continue to deliver strong financial outcomes for our shareholders by optimising operating expenditure while balancing the key environmental and social outcomes as committed to our customers.

4

PRINCIPLE

Focusing on performance

Icon Water commits to fostering a culture of continuous improvement and innovation through, fit-for-purpose, and adaptive action.

Icon Water is committed to the ongoing development of its asset management system through a continuous improvement process. Ongoing improvements and encouraging innovations are essential to ensuring the system remains current and applicable to the activities of the business.

Improvements and innovations apply to the asset management system artefacts, including documents, systems and processes, skills and competencies of staff, type and quality of data collected and the performance targets used to track the outcomes of the asset management system.

3.3 Roles and responsibilities

The Icon Water Board takes on the role of 'top management[2]' by setting the asset management policy, approving the organisation's budget and summary investment plan, and receiving annual reports and overviews of asset management.

The roles and responsibilities for all asset management functions are shared across the organisation's main business areas. These are shown in Figure 8. Staff within each respective business group are responsible for the management of those assets and delivery of the function activities.

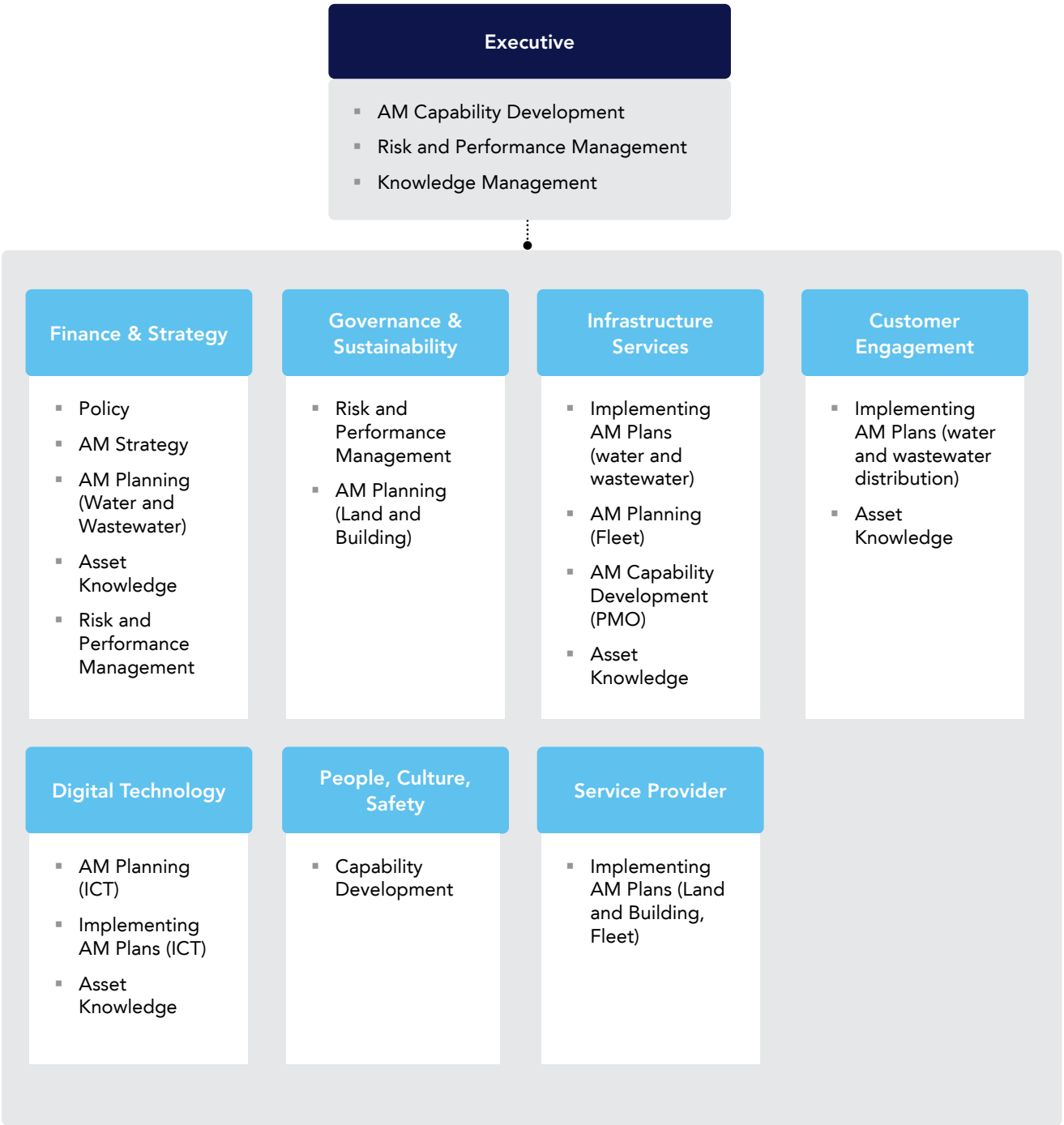


Figure 8 Roles and responsibilities across the Asset Management function

[2]AS ISO55001

The responsibilities across the asset portfolios are shared across the business units. This is shown the table below.

Table 1 Asset portfolio responsibilities

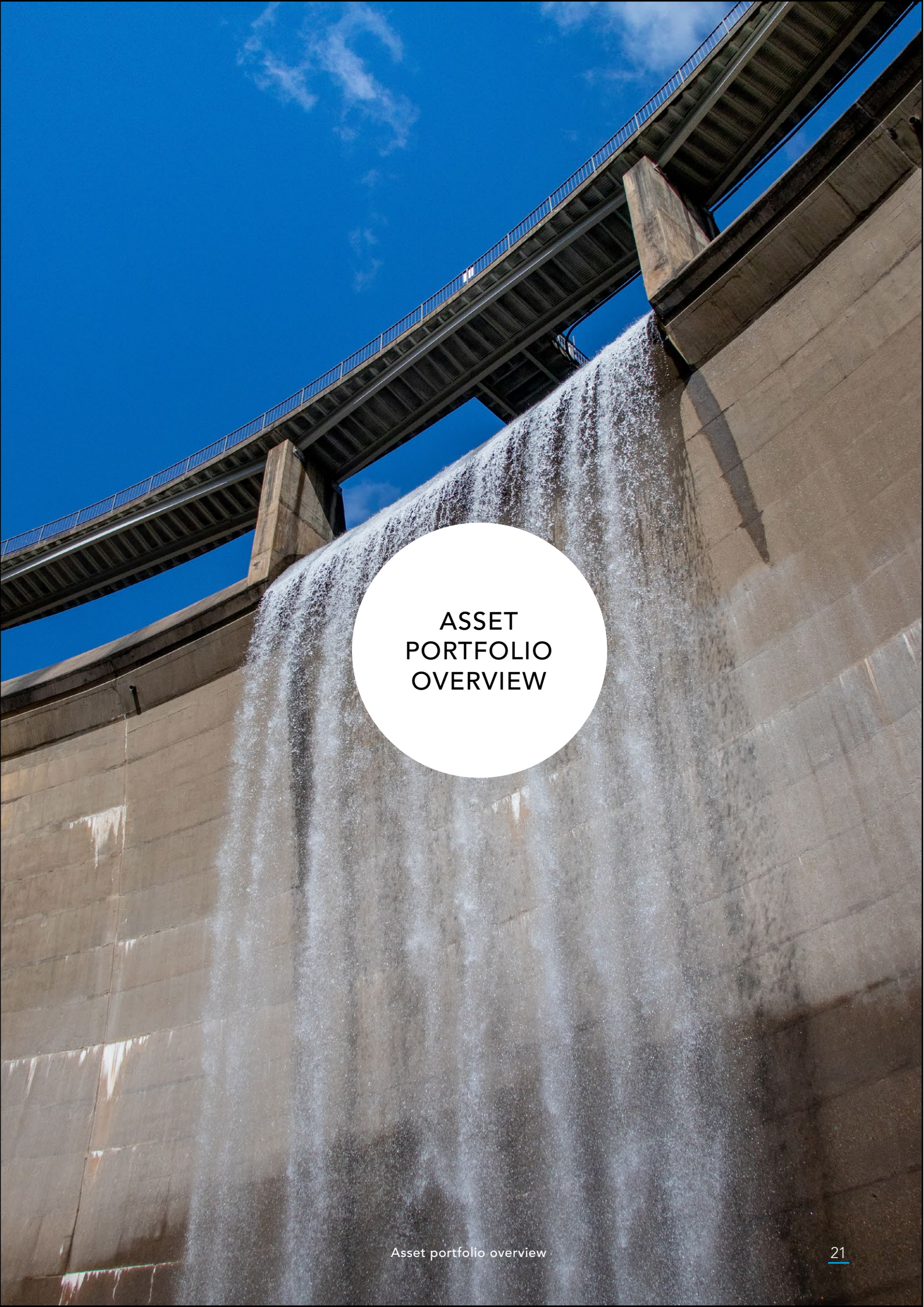
AM Function	Framework	 Water and Wastewater	 ICT	 Vehicles	 Land and Building
Strategy and Planning	Finance and Strategy	Finance and Strategy	Digital Technology Group	Infrastructure Services	Governance and Sustainability
Decision-making	Investment Review Committee	Decision-making on assets occurs as per delegation manual			
Information management	Digital Technology	Information management occurs in all parts of the business			
Lifecycle management	Infrastructure Services	Infrastructure Services	Digital Technology Group	Outsourced to ActewAGL, with sourcing to be reviewed under Program Nova	Outsourced to ActewAGL, with sourcing to be reviewed under Program Nova
Organisation and people	People, Culture and Safety	Management and determination of capability needs of each area is delegated to the respective Executive, Branch Manager and Team Leaders			
Risk and review	Governance and Sustainability	Implementation of monitoring and reporting, and management of risk occurs throughout the business			

Service provision and business support for the various assets are undertaken across multiple areas of the business using in-house professional and trade-based staff and are augmented via arrangements with external specialist contractors and other delivery partners.

ActewAGL provides support services for some asset classes through two long-term agreements; the Corporate Service Agreement (CSA) and the Customer Service and Community Support Agreement (CSCSA). The agreements are framed as partnerships. Both contracts expire on 30 June 2023 and ahead of then Icon Water is working to ensure that its corporate services delivery model continues to provide value for money services to support our evolving business operations. A program to implement the Board-approved sourcing strategy commenced in January 2021. Regular program updates are provided on our website at www.iconwater.com.au

Part II

Icon Water's asset portfolio



ASSET PORTFOLIO OVERVIEW

4.1 Description of Icon Water's assets

Icon Water delivers safe drinking water and reliable wastewater services to the ACT community and is a supplier of bulk water to Queanbeyan. Icon Water owns and operates the ACT's network of dams, water treatment plants, sewage treatment plants, reservoirs, water and sewage pumping stations, mains and other related infrastructure as illustrated in Figure 9.

At the time of writing, our assets deliver safe drinking water and reliable wastewater services to a community of over 460,000* people. We also manage our asset base to ensure we meet current needs and can respond to future changes such as a variety of climate scenarios, changes in regulation and in the growth, type and distribution of residential and industrial customers. In planning for the future, we balance the cost, risk and performance of our asset base in line with customer and stakeholder requirements.

Our water network

- Total dam capacity 277.8GL
- Provides over 100ML of treated water daily
- There are 191,584 connections to water
- ~49GL of water treated per year
- 3372 km of water pipes
- 25 water pumping stations
- 2 water treatment plants
- 50 reservoirs

Our wastewater network

- There are over 191,037 connection to wastewater services
- 3416 km of wastewater pipes
- 27 sewage pumping stations
- 4 sewage treatment plants

Mount Stromlo Water Treatment Plant

- Built in 1967, upgraded in 2004
- Can treat up to 250ML per day
- Cotter Dam
- Built in 1915, raised in 1954, and new dam constructed in 2013
- Previously held 4GL, now 78GL capacity
- Bendora Dam
- Built in 1961
- 11.4GL capacity

Corin Dam

- Built in 1968
- 70.8GL capacity
- Googong Dam
- Built in 1978
- 119.4GL capacity

Lower Molonglo Water Quality Control Centre

- Built in 1978
- Treats between 29GL and 36GL of wastewater per year
- Produces approximately 380 tonnes of Agri-ash, an agricultural soil conditioner, per month

Googong Water Treatment Plant

- Built in 1979
- Can treat up to 270ML per day

*includes ACT population plus population supplied via bulk water

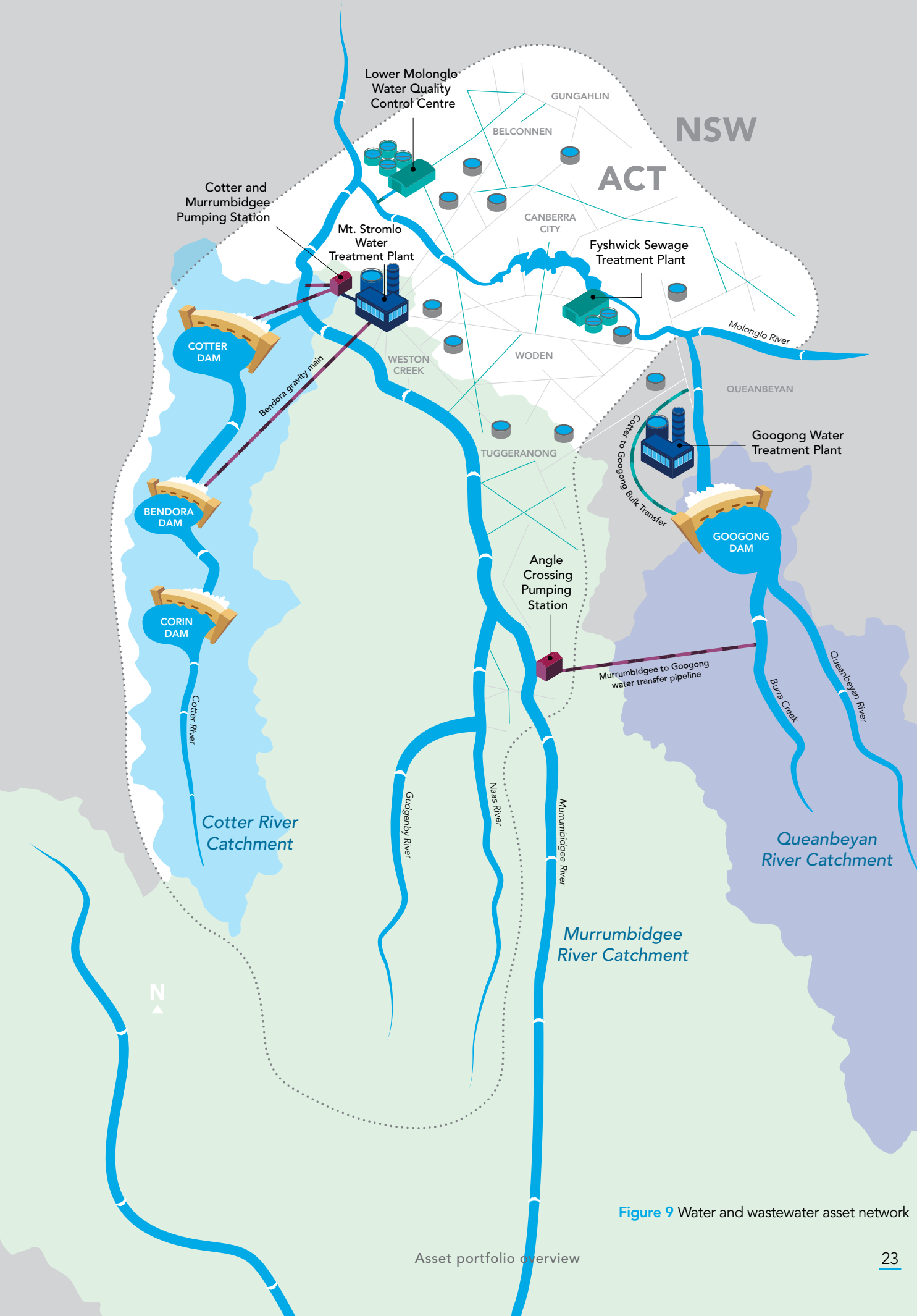


Figure 9 Water and wastewater asset network

Icon Water recognises nine separate asset classes as the assets within scope of our SAMP. Six are related to water and wastewater assets, with a further three relating to 'common assets.' These asset classes are detailed in Table 2.

Table 2 Asset classes displaying net book value (as at 30 June 2021)

Asset class	Net book value at 30 June 2021
Water sources	$739.6m
Water treatment	$191.0m
Water network	$710.2m
Sewer network	$655.9m
Sewer treatment	$362.2m
Non-potable water	$10.0m
Land and buildings	$58.0m
Mobile plant and vehicles	$6.4m
Information and communication technology	$44.8m
TOTAL	$2,778.1m

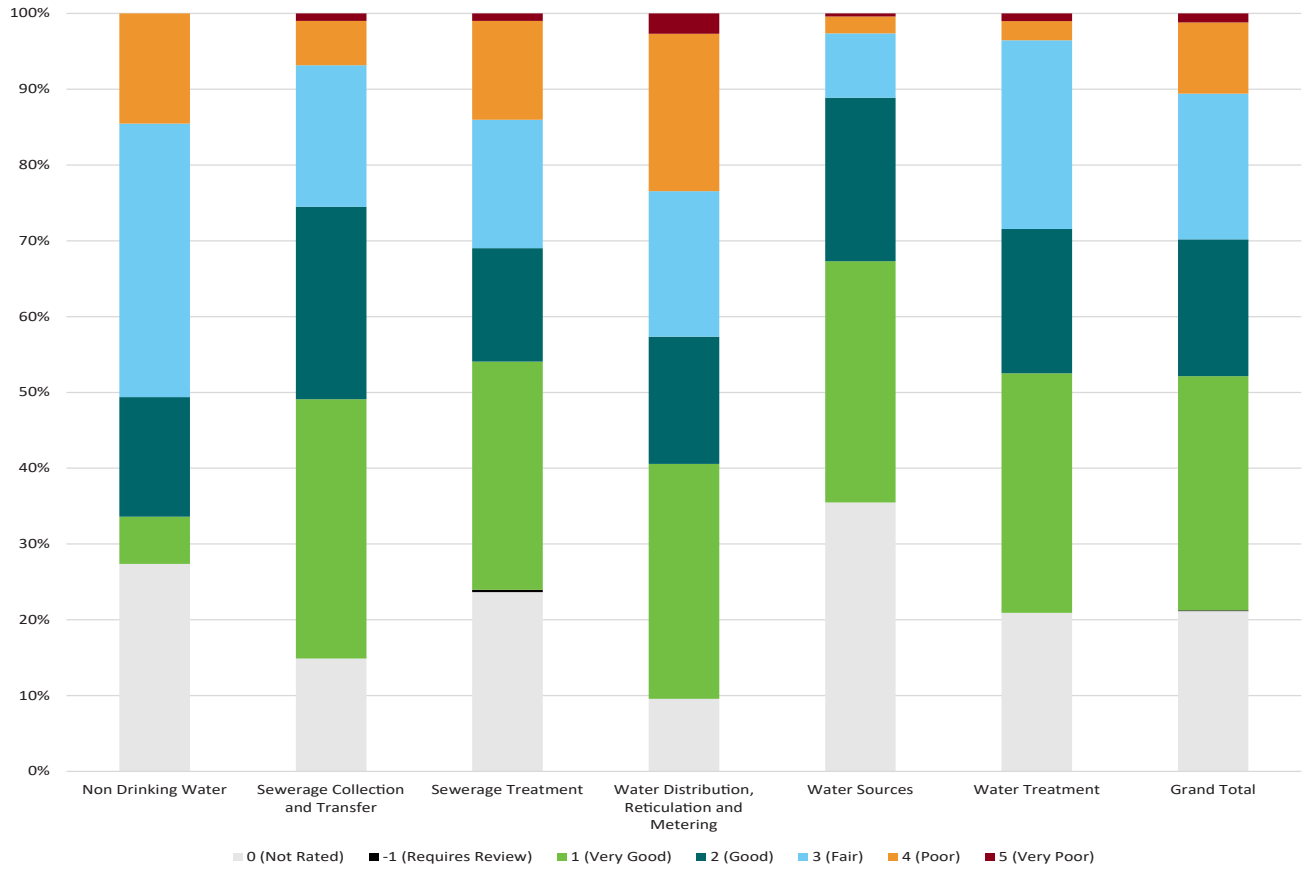
4.2 Current performance

Icon Water has developed a tiered set of asset objectives which cover all assets across the business. The asset objectives establish specific cost, risk and performance requirements for the assets at each tier. These objectives enable a consistent business approach to assessing asset performance derived directly from customer expectations and requirements to comply with all relevant codes, licences and legislation. Icon Water reports performance against these indicators in its Annual Report.

4.3 Asset condition

Knowledge of the current condition of our asset portfolio is an important consideration in determining whether our assets can meet, and will continue to maintain, our customer service levels. Icon Water undertakes comprehensive condition assessment and monitoring for selected asset classes that provide a detailed understanding of the condition of our asset base.

The methodology for inspections follows the Institute of Public Works Engineering Australasia guidelines. Asset monitoring and inspection methods vary with the type of assets involved, their criticality, accessibility and the inspection methodology available. Assets are given a condition score between 1 (good condition) to 5 (poor condition and unsupported). Figure 10 shows the condition of the overall water and wastewater asset systems.



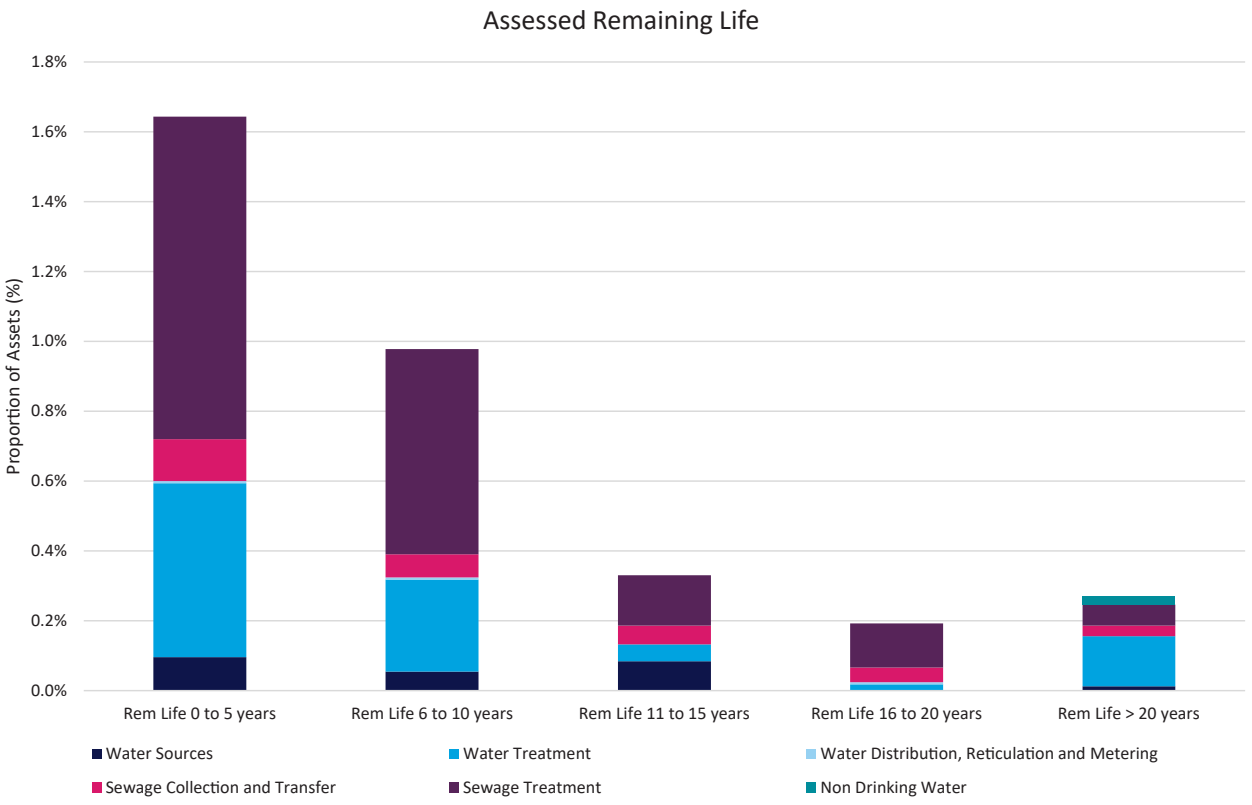


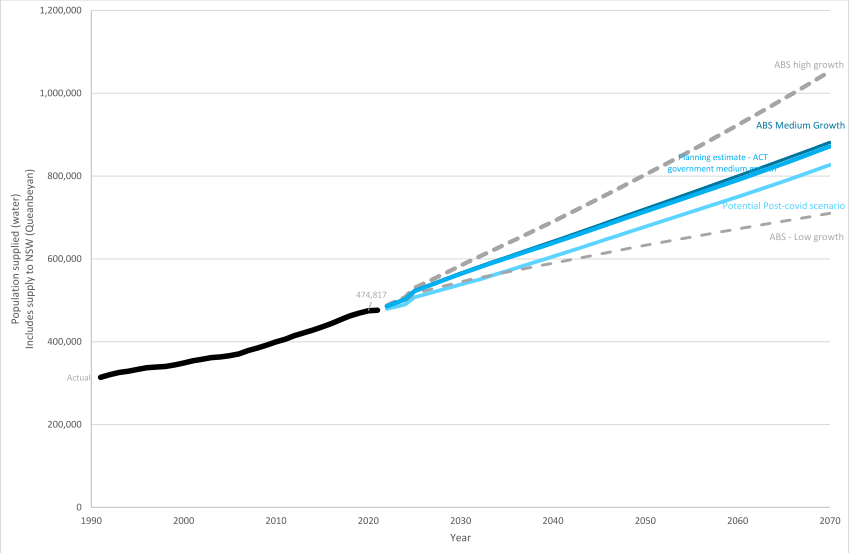
Figure 10 Condition of water and wastewater asset systems

4.4 Future demand (growth)

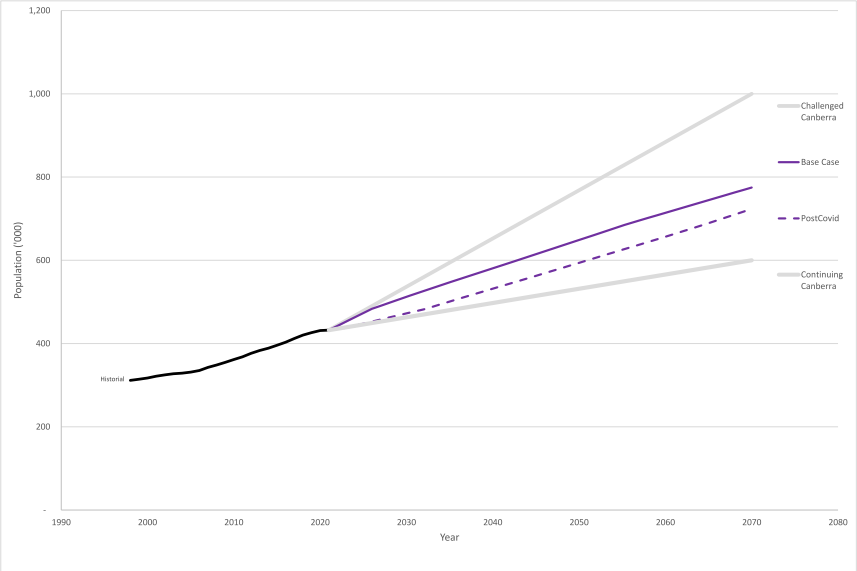
The major drivers for water demand are population growth, climate/ environment change and customer behaviour. Annual consumption will depend on weather patterns, especially during the peak summer periods. Over the past 20 years, there has been a reduction in water usage within the Canberra and Queanbeyan systems. This has been attributed to the following factors:

- Millennium Drought – 2001 to 2010 and the implementation of temporary water restrictions
- introduction of volumetric water pricing
- changes to land-use planning with smaller residential blocks and increased density
- introduction of the ACT Government's "Think Water, Act Water' policy and water efficiency appliance programs
- introduction of Permanent Water Conservation Measures
- increased behaviour change and general water conservation knowledge.

By 2042 it is expected that the ACT's population could grow to over 600,000 people (ABS medium, forecast), which represents a 33.3% increase from 2022. Population growth of this magnitude is likely to have a significant impact on demand for ACT water and wastewater services, particularly given that reductions in per capita water use has shown the early indications of having reached a plateau in the past five years (see Figure 11).



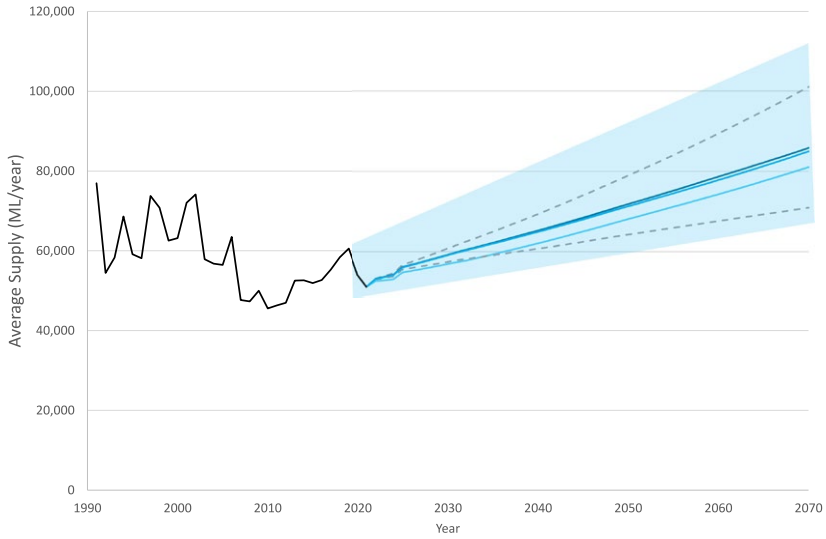
(a) Expected water supply total customer numbers showing upper and lower estimates (ABS high growth and low growth) in grey with the base estimate in blue.



(b) Expected waste supply total customer numbers showing upper and lower estimates (ABS high growth and low growth) in grey with the base estimate in purple.

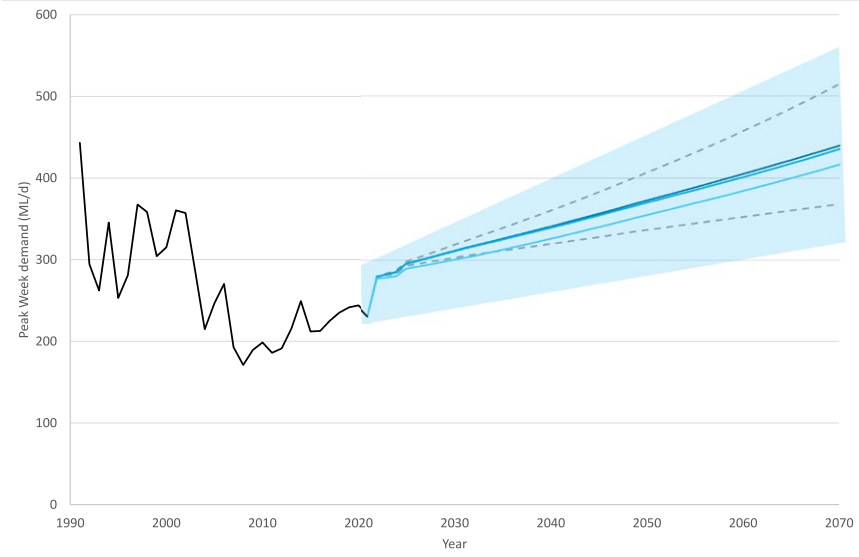
In 2019–20 the ACT region experienced the worst drought on record, during which Icon Water's dam storage dropped to 44.4%. The drought triggered a review of our water resource model, as well as the development of our Drought Management Plan. The Drought Management Plan (Version 2) has identified portfolios of drought response options, as well as preferred pathways and no-regret actions to progress.

Icon Water conducts system requirements modelling based on ACT population growth with additional inputs based on projected population growth for Queanbeyan. Further modelling scenarios are run to encompass potential expansions of our activities and more rapid climate change impacts.
Our studies indicate that our water system is currently performing within capacity. However, appropriate planning, investment and interventions may be required if our water system experiences stress in the next 10-20 years.



(c) Annual demand on the water system. Annual water demand is expected to trend slightly more slowly than population growth. However, seasonal variations due to extended wet or dry conditions may also affect the expected annual water use. This range is shaded in light blue.

This projected demand is most useful for assessing overall source water requirements.



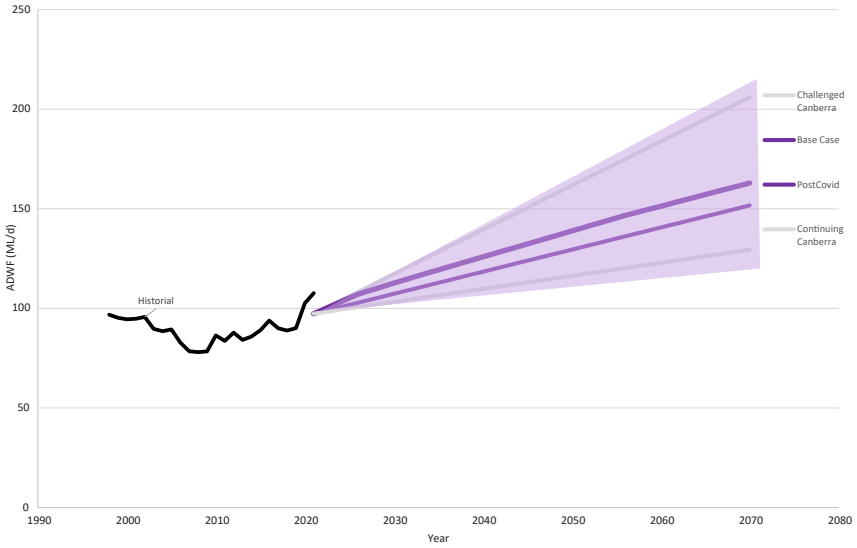
(d) Demand on the water system during a peak week. Peak water demand is expected to trend slightly more slowly than population growth. However, seasonal variations due to extended wet or dry conditions may also affect the expected annual water use. This range is shaded in light blue.

This projected demand is most useful for assessing overall capacity and sizing of bulk transfer infrastructure.

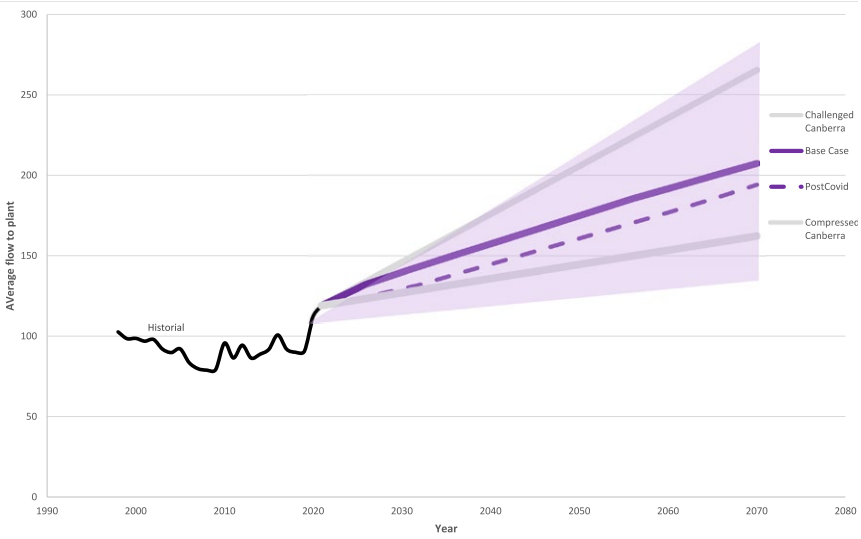
Figure 11 Demand with timeline to show predicted peak daily water treatment demand growth aligned with existing capacity to service.

Average sewage inflow to Canberra's centralised sewage treatment plant (Lower Molonglo Water Quality Control Centre (LMWQCC)) has remained relatively constant over the last 10 years despite growth in the population served by the plant. This is attributed to the increased use of water efficient appliances and consumer behaviour which has driven a reduction in indoor water use and a consequent large reduction in the per capita sewage flow.

As a result, and despite the projected population growth of the ACT, flow projections suggest that the average dry weather volume of liquids entering the sewage treatment plant will increase by approximately 32% over the timeframe to 2040.



(e) Average dry weather flow to wastewater plants. Flow is expected to trend slightly more slowly than population growth. Seasonal variations due to exended wet or dry conditions may impact yearly variation. This range is shaded in light purple.



(f) Average flow into the wastewater plants on average over the year. Extended periods of wet weather increase annual flow above the average dry weather flow. However, seasonal variations due to extended wet or dry conditions may also affect the expected annual water use. This range is shaded in light purple.

Figure 12 Load with timeline to show predicted wastewater growth aligned with existing capacity to service

In addition, solids movement through the system is slowed, potentially impacting on the asset condition, this potentially results in impacts on the asset condition and performance through increased septicity and associated corrosion and odour.

Wet weather inflows are also a major driver of capacity constraints within the wastewater system. Several of the current system augmentations at LMWQCC and within the wastewater network are the result of wet weather inflow issues.

The projected pattern of population growth in the ACT also drives asset planning decisions at Icon Water. We must be able to respond to the needs of both 'out of precinct' development, which will see the expansion of new suburbs and the extension of the existing network, and 'infill' development occurring within inner city suburbs (see Figure 13). Greater levels of infill development will generate capacity issues within the existing network.

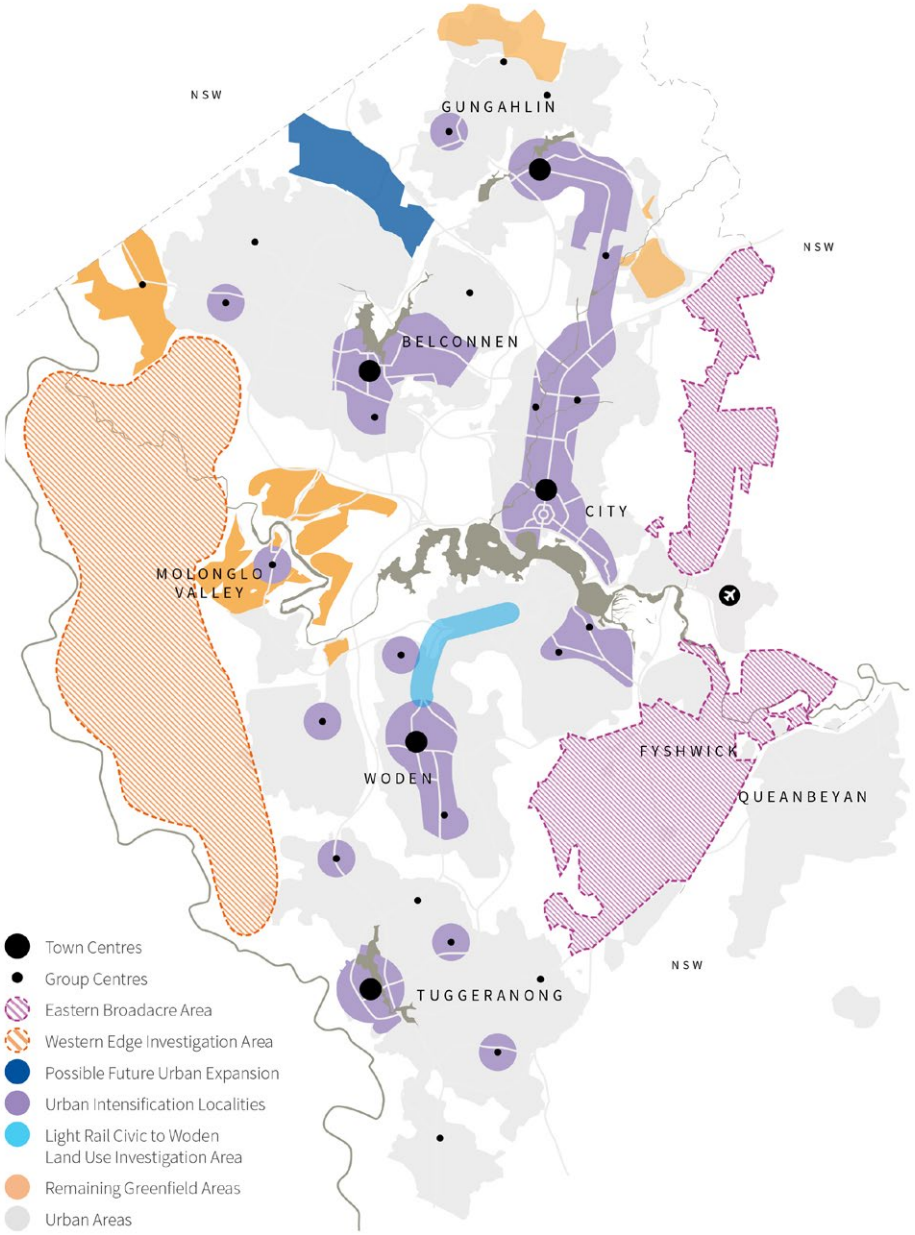


Figure 13 ACT Growth Map (source ACT Planning Strategy 2018)

ASSET OBJECTIVES AND ASSET MANAGEMENT APPROACHES

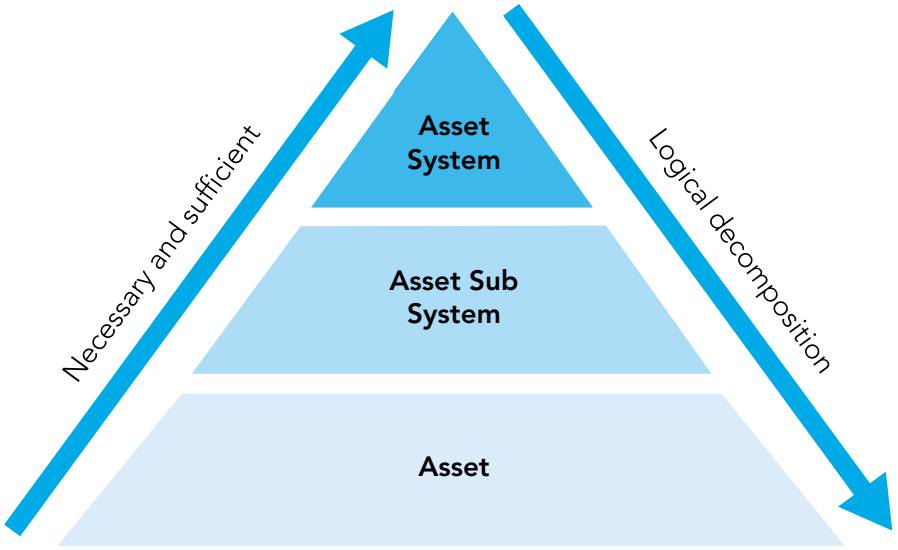
For each of the asset groups we have set objectives and performance goals, high level intervention approaches, and long-term strategies to maintain service levels. This results in an overall financial and resourcing requirement.

5.1 Asset objectives and performance goals

Icon Water has developed Asset Objectives (AOs) derived from:

1. The strategic goal and strategic objectives set out in the SCI (as shown in Chapter 2.1)
2. Adherence to relevant legislation, codes, licences and technical standards (as described in Chapter 2.2);
3. Customer expectations (described in Chapter 2.4)
4. Principles set out within this SAMP, including:
   - demand requirement forecasts
   - application of Icon Water's risk policy
   - analysis of the various elements defined within the business drivers (see Chapter 2.2 and 2.3).

AOs for water and wastewater assets are described in terms of a tiered hierarchy that is based on a logical decomposition of the assets (see Figure 14). The hierarchical approach establishes specific cost, risk and performance requirements at each level which are directly used as the foundation for asset capital, maintenance and operating plans.



Tier 1 - Asset System Level Translates stakeholder requirement to specific objectives and performance indications within a performance, cost, risk framework for each major asset system - water and sewerage.	Relevant acts, codes and licence agreements.
Tier 2 - Asset Sub System Level Disaggregates tier 1 objectives into 3 key "value chain" elements within each of the water and sewerage systems. Performance indicators at this level replicate the performance, cost and risk components of tier 1, but can also be included in specific indications, for assets contributing to sub system criticality.	Relevant acts, codes and licence agreements and customer contract
Tier 3 - 5 Assets Establishes a logical decomposition of assets within sub systems, with objectives and performance indicators set for each element within each tier.	Licence agreements

Figure 14 The Asset Objectives – Asset Hierarchy

5.1.1 Tier 1 objectives (stakeholder requirements)

The performance indicators and targets outlined in the Statement of Corporate Intent (SCI) form the Tier 1 asset objectives. Table 3 below outlines the performance indicators from the SCI. These targets have been reviewed as part of the 2023 - 2028 price proposal and we anticipate revision of these indicators accordingly from June 2023.

Table 3 Tier 1 Asset objectives

Strategic objective	Performance indicators	Targets (30 June 2023)
Build a culture that values safety, innovation and inclusiveness	**High Severity Incident (HSI)**	Zero incidents
	Total Recordable Injury Frequency Rate (TRIFR)	≤10
	Safety culture	Maintain the high levels of employee perceptions of organisational and manager commitment to health and safety
	Gender diversity	Improved proportion of females in non-traditional roles
		Maintenance and or improvement of proportion of females in the leadership group
	Engagement / Culture index or value	Decreased rate of unplanned absenteeism Re-baseline of organisational measurement of engagement
	Psychological wellbeing / Mental health	Improved average number of annual leave days taken each year per employee

Table 3 Tier 1 Asset objectives

Strategic objective	Performance indicators	Targets (30 June 2023)
Deliver sustainable value for our community and shareholders	**Water quality**	Nil non-compliance with the Public Health (Drinking Water) Code of Practice 2007 (ACT)
	Reliability – completion of planned maintenance works in the water network	>90% planned work completed on water network (includes dams, treatment plants and reticulation).
	Reliability – completion of planned maintenance works in the sewer network	>90% planned work completed on sewer network (includes treatment plants and collection system)
	Environmental compliance	100% compliance with effluent discharge requirements, environmental authorisations and agreements
	Greenhouse gas emissions	Reduction in net CO2-e greenhouse gas emissions from activities consistent with interval targets in the ACT Climate Strategy
	% total waste recycled or reused	Increase the % of total waste recycled or reused
	Shareholder return	$15.6m (profits available for dividends)
	Earnings Before Interest and Tax (Water and Energy)	$117.9m
	Capital expenditure	+/-10% of $88.1m[1]
	Gearing	Less than or equal to 60%
Enhance customer and community experience	**Customer satisfaction**	90% of annual survey participants are satisfied with our overall service
	Easy to deal with (Customer Effort Score)	5% improvement on 2021–22 result
	Community perception of Icon Water	Maintain result above 65
	Water supply experience	No. of unplanned water interruptions greater than 12 hours
		Average duration of an unplanned interruption – water (minutes): 111–150
	Wastewater service experience	No. of sewer overflows inside customer properties less than or equal to 15
		More than 95% of sewerage chokes responded to within 6 hours

1 excluding capitalised interest and developer funded component of capital contribution scheme projects

5.1.2 Tier 2 objectives (system level)

The Tier 2 AOs are an extension of the Tier 1 requirements relevant to the Tier 2 asset systems of Icon Water.

Tier 2 assets provide a functional model of how assets work together to achieve the Tier 1 outcomes. The Tier 2 objectives and targets for water and wastewater assets have been identified as shown in Table 4. Tier 2 objectives will be further reviewed in the next update to this SAMP.

Table 4 Tier 2 Asset objectives

Tier 2 Asset objectives			
Icon Water Business Objectives	Customer	Sustainable Value	Workplace
Customer values	Reliable, quality, responsive and available	Affordable	Safe and healthy drinking water
Organisational	Engage with customers and regulators to deliver agreed customer-centred services	Deliver a sustainable financial return to shareholders	Enhancing community wellbeing by safely designing, building, operating and maintaining all assets
Targets	90% of customer survey respondents satisfied or very satisfied with Icon Water	Deliver a sustainable financial return to stakeholders	0 High Severity Incidents Total Recordable Injury Frequency ≤ 7.1 Employee perceptions of organisational and manager level commitment to health and safety >90% respectively
Water services	Engage with customers and regulators to deliver agreed customer-centred services	Deliver a sustainable financial return to shareholders	Enhancing community wellbeing by safely designing, building, operating and maintaining all assets
Targets	Total water and wastewater complaints <5 for each service per 1000 customers Customer satisfaction with water service >85% Meet pressure and flow requirements per WS&SS code 100%	Deliver a sustainable financial return to stakeholders	100% compliance with Australian Drinking Water Guidelines Employee perceptions of organisational and manager level commitment to health and safety >90% respectively All environmental compliance targets met

Table 4 Tier 2 Asset objectives

Tier 2 Asset objectives			
Icon Water Business Objectives	Customer	Sustainable Value	Workplace
Wastewater services	Engage with customers and regulators to deliver agreed customer-centred services	Deliver a sustainable financial return to shareholders	Enhancing community wellbeing by safely designing, building, operating and maintaining all assets Maintain risk as low as reasonably practicable in accordance with the Board's risk appetite
Targets	Meet average dry weather flow requirements of 105Ml/day 100% of the time Total water and wastewater complaints <5 for each service per 1000 customers	Deliver a sustainable financial return to shareholders	% licence and environmental discharge achievement 100%
Alternative water services	Engage with customers and regulators to deliver agreed customer- centred services	Deliver a sustainable financial return to shareholders	Enhancing community wellbeing by safely designing, building, operating and maintaining all assets Maintain risk as low as reasonably practicable in accordance with the Board's risk appetite
Targets	Under development	Deliver a sustainable financial return to shareholders	100% compliance with Non-Drinking Water supply code All environmental compliance targets met
Corporate services	Support responsive, available and contemporary customer services	Deliver a sustainable financial return to shareholders	Enhancing community wellbeing by safely designing, building, operating and maintaining all assets
Targets	Satisfaction with billing services	Deliver a sustainable financial return to shareholders	Under development

5.1.3 Tiers 3-5 objectives (subsystem to asset level)

The Tier 3 asset decomposition aligns with the AMPs. Water supply is split into its three constituent 'value chain' elements, namely sources, treatment and distribution (see Figure 15). The wastewater system is similarly broken down into collection, treatment and non-potable water. AMPs have also been developed for the three common asset classes: mobile plant and vehicles, land and buildings and ICT.

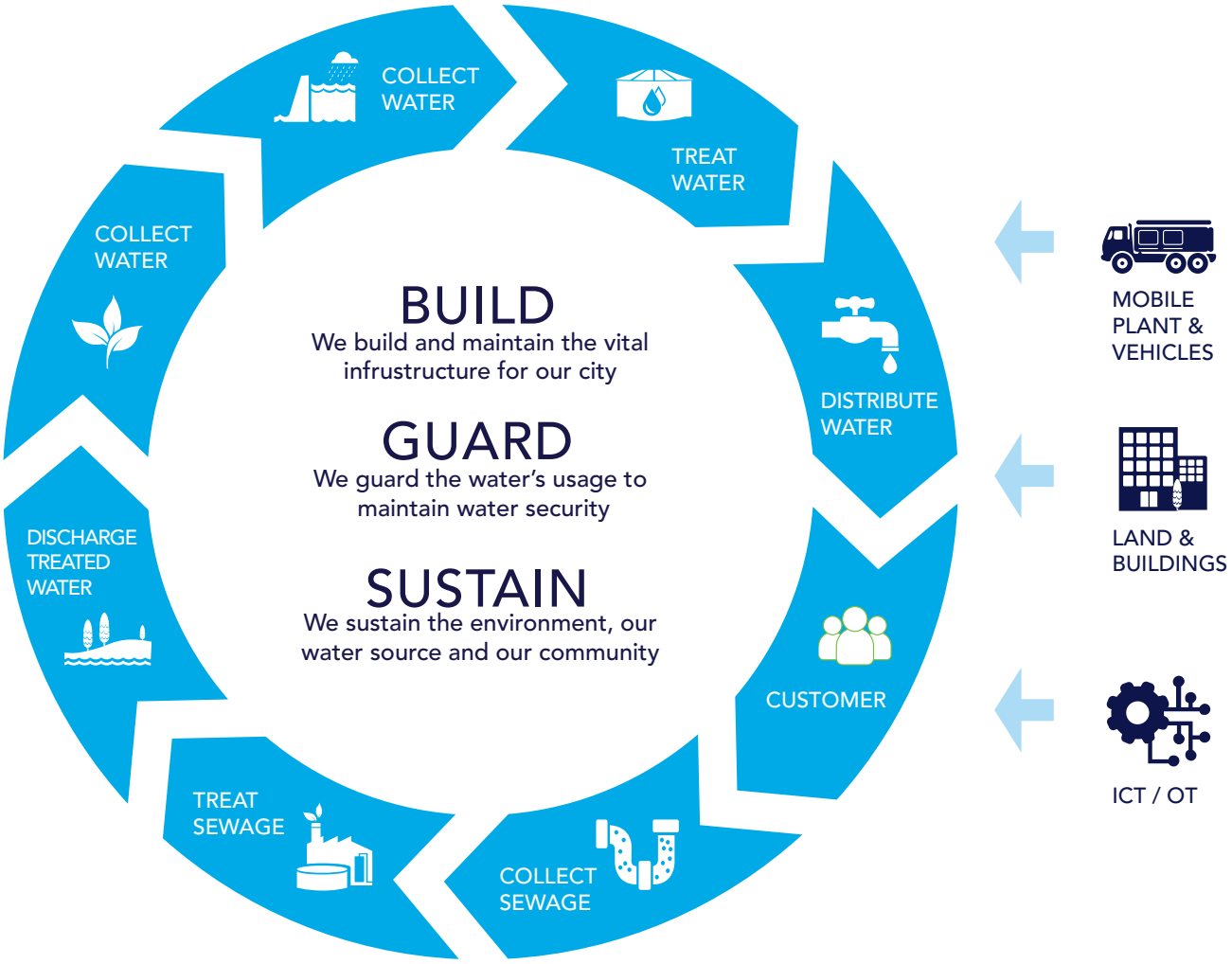


Figure 15 Asset management value chain decomposition

Tier 3–5 objectives have been developed based on an analysis of asset criticality and have been expressed in terms of required asset availability and reliability which will deliver the overarching Tier 1 and 2 objectives. The AOs at Tiers 3–5 also define specific requirements for the assets which are then translated into operating, maintenance and capital plans through the AMPs, the reliability-centred maintenance process and the Process Operating Plans (POPs).

Further detail of the development of the lower tier objectives is contained within the various system AMPs.

5.2 Lifecycle management approaches

Icon Water has a risk-based approach to asset management. Proactive maintenance, operations replacement and augmentation strategies are in place for critical assets, while non-critical assets have a more reactive approach. As assets age, the approach may change to reflect increasing probability of failures, or changes in consequences. The approach is selected to achieve a target risk of medium or lower where practical.

Approach	Maintenance, operations, augmentation and replacement strategies	Applies to the following
Reactive	Operate to failure Some testing to identify failure Included as budget contingency only	Impact of asset failure is negligible to minor, and unlikely/rare
Reactive	Operate to failure Include history-based forecasts for budgeting and resourcing Some testing to identify failures	Impact of asset failure or undersize is negligible to minor albeit likely to almost certain
Combination	Modelling and monitoring to determine targeted areas or cohorts for proactive intervention	Non-critical assets where consequence of failure or over-utilisation is moderate
Proactive	Proactive maintenance and monitoring Proactive and predictive replacement and augmentation	Critical assets Consequence of asset failure or over-utilisation is major to severe

5.3 Financial projections

Based on projected growth and demand (see Chapter 4.4), asset condition (see Chapter 4.3), customer expectations and current and future asset performance requirements, expected asset expenditure is likely to focus more heavily on asset renewal and maintenance, and augmentation of existing assets. However, as the asset base ages, the need to monitor asset condition will become increasingly important to review the spend mix.

Capital expenditure (Capex) projections identify renewal activity as the most significant component in most years during the next 20 year period. Other drivers of capital expenditure are growth (expansion of the network), efficiency (based on achieving performance improvements) and regulation changes (from external stakeholders).

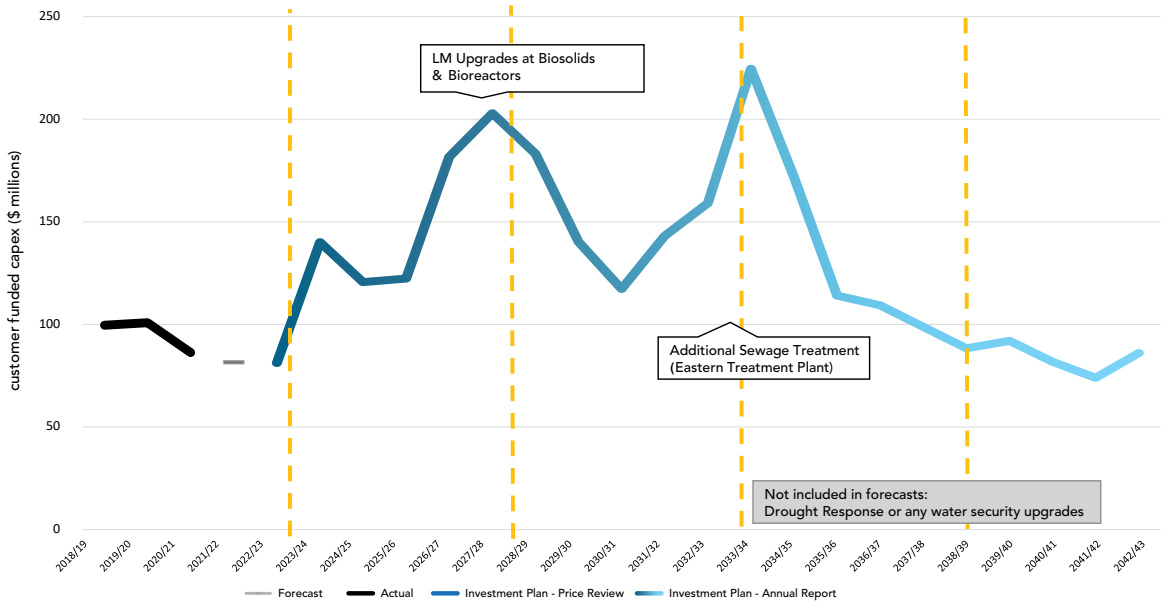


Figure 16 Long-term capital expenditure

One of the measures of adequate renewal is the asset sustainability index. This is a ratio of expenditure on renewal divided by depreciation. This approximates the extent to which the infrastructure assets are being replaced as they reach the end of useful life. We aim to keep this ratio above 0.9. There are occasionally periods where there are additional ratio of expenditure on renewal. This is generally associated with renewal of major plants and headworks infrastructure where investment causes large step changes in expenditure.

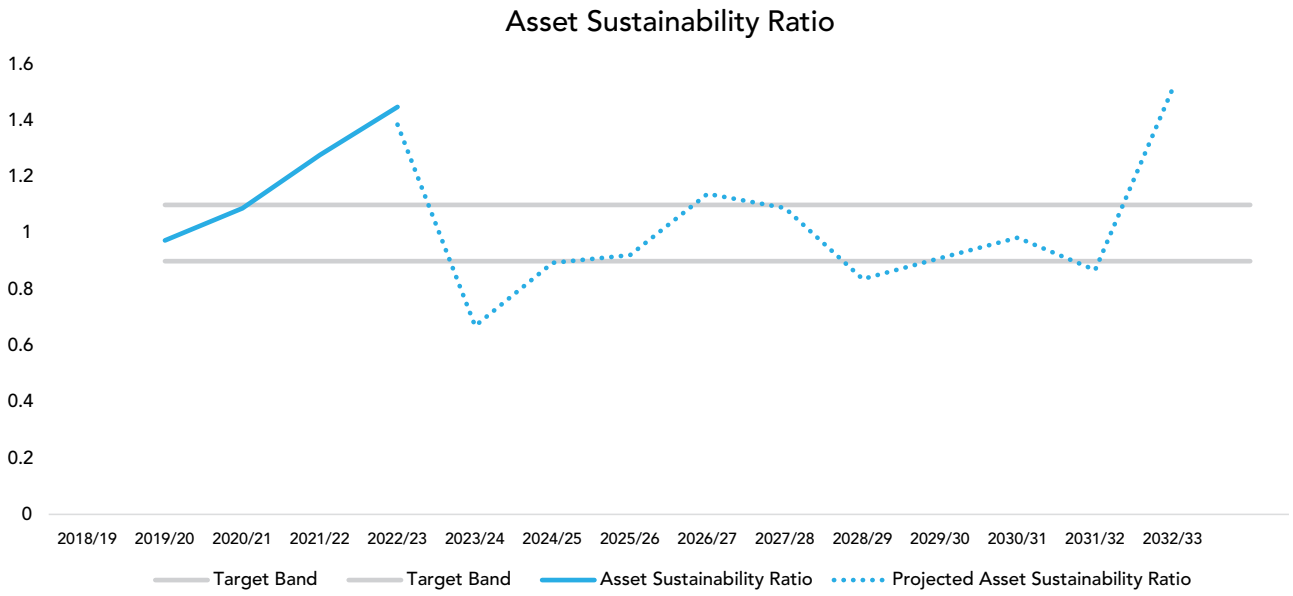


Figure 17 Asset sustainability ratio

Operational expenditure (Opex) projections are developed for the five year period to 2027-28. They are further split into water and wastewater, and within these two areas are identified by controllable and non-controllable elements.

The financial projections are updated annually and presented to the Board as part of the budget papers in the *Summary Investment Plan.*

5.4 Asset level strategies and plans

Our specific plans for each service type are contained in the service strategies and asset class management plans. The development of these follows the approach outlined in Section 6.3. The trends and drivers outlined in Chapter 2 will be considered as the relevant impact of each may differ across service types and asset strategies.

Key elements of the strategies and plans are outlined on the next two pages.

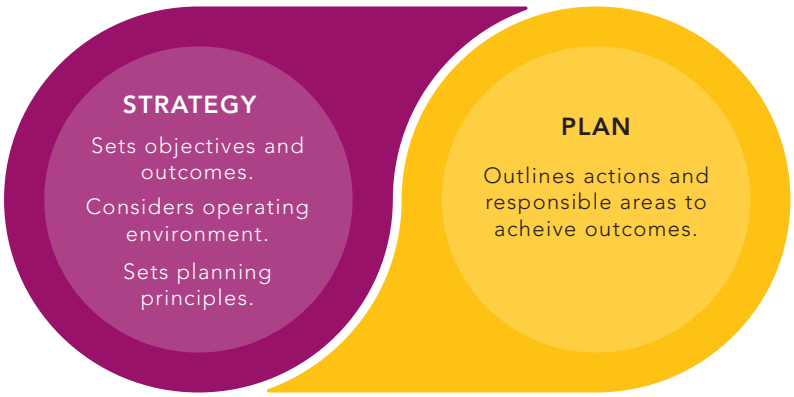


Figure 18 Asset strategies and plans

Currently our three core customer services are outlined in three separate asset strategies:

1. Water
2. Wastewater
3. Non-drinking water

We have recognised that there are system level interactions between them, and have consolidated the actions to progress the next stage of investigations into an I*ntegrated Implementation plan*. We anticipate that this work will support the ACT Government's development of an *Integrated Water Strategy.*

1. Water system

Water sources

Water treatment

Water distribution, reticulation and metering

We have set objectives for our water system to be safe, secure and smart in supplying water to support the sustainability and liveability of our community.

- The water system is safe for the environment, customers, our people and the community.
- Our water system ensures long-term water supply and security to support our growing population.
- The system is supported by appropriate information, technology, knowledge and understanding.

The main drivers of volatility and uncertainty impacting on the water system are the extent of climate change impacts and the nature of demand growth. We are actively planning for a future where climate change has impacted our system. We routinely reassess and include larger scale impacts as part of our sensitivity testing.

Our main areas of focus for the water system are to ensure we have sufficient resilience to extended droughts and capacity to treat water of variable source quality to high quality safe drinking water. This involves updating and reviewing the Drought Management Plan and evaluating the feasibility of drought response actions. We will also be taking opportunities to improve and consolidate our existing system as key parts of the network become eligible for renewal.

2. Wastewater system

Sewage collection and transfer

The purpose of the wastewater system is to enhance the liveability and sustainability of the community by:

- continuing to protect public health and ensure the safety of the community
- developing a climate resilient system which minimises environmental impact
- supporting the implementation of ACT Government planning strategies and growth targets.
- enhancing resource recovery
- developing a cost-effective, innovative and optimised wastewater system
- Working actively with our community to build infrastructure that meets their needs.

We are planning for climate change and population increases, and preparing to adapt to higher population density and greater climate change impacts.

These two issues, combined with the timing of major renewal in our treatment plant, mean that the system is approaching capacity limits in several key areas, with augmentations required at both the treatment plants and within the trunk network in the next five to 10 years. There is significant funding required to support this over the next 10 years.

Sewage treatment

Our areas of focus for the wastewater system are to review the feasibility of system-level decisions required to maintain service levels into the future. This will include progressing:

- development of a new eastern treatment plant option at Fyshwick or an alternative eastern site, including regulator and community engagement
- development and understanding of modernisation and treatment densification options at LMWQCC
- development and understanding of catchment configurations and approaches required to support treatment options and address capacity constraints.

3. Non-Drinking Water

Raw and Recycled water services to customers and the community

The purpose of the non-drinking water system is to enhance liveability and sustainability through the economic provision of fit-for-purpose non-drinking water

Icon Water will conduct asset management of non-drinking water systems in alignment with strategic objectives, and explore future opportunities and costs of providing non-drinking water as a service. Key future activities for this service are integrated with, and will be delivered through, key activities in the water and wastewater strategies and the actions from the Drought Management Plan.

With the corporate services agreement with ActewAGL expiring on 30 June 2023, there has been an opportunity to reassess the objectives of the corporate assets, and the approaches to managing these.

Land and Buildings

The Land and Buildings Strategy and plans sets out the framework for Icon Water to meet current and future land and buildings requirements for:

- buildings for accommodating office personnel, basing depots and providing store logistics
- land held for supplementary purposes including to meet biodiversity and carbon offset obligations.

Key drivers include the business operating model, workforce flexibility, external property markets including for biodiversity and carbon offsets, geographic spread and sustainable utilisation. Our main focus is retaining property and optimising use of existing sites.

Key aspects underlying this approach include more clearly defined roles and responsibilities, the centralisation of asset information, compliance awareness and a risk-based approach to management.

ICT and Digital

The Digital Strategy and ICT AMP set out the framework for Icon Water to meet current and future communications, information technology and operational technology.

The main objective of this is to support Icon Water becoming a contemporary and digitally driven utility. This has been grouped across six main outcomes.

1. **Customers** We will focus on the customer experience.
2. **Operations** We will become a smart utility
3. **People** We will embed digital ways of working
4. **Data** We will use our data as a strategic asset
5. **Partnerships** We will invest in strategic partnerships
6. **Technology** We will establish an adaptive technology ecosystem

The drivers of change include workplace mobility, shifting customer expectations, the transition to cloud and service based software, and increasing cyber security.

The initial focus is on uplift and transfer of our systems from the current provider, with a focus on optimisation and modernisation to follow.

Mobile Plant and Vehicles

The Mobile Plant and Vehicles Strategy and management plans sets out the vision, objectives, drivers, principles, and activities that will inform management of mobile plant and vehicles assets.

The main objectives of this include:

- improved alignment with strategic goals
- reduced lifecycle costs
- improved safety, maintenance, and risk management practices
- less environmental nuisance to the community (eg. noise and odour pollution)
- a contribution to meeting our net zero greenhouse gas emissions target.

Key drivers include the business operating model, workforce flexibility, changing technology availability (electrification), net-zero targets and regulation (particularly taxation).

Our main focus is optimising the number and type of vehicles in the fleet to ensure that we can provide customers with efficient water and wastewater services. Key aspects underlying this approach include more clearly defined roles and responsibilities, the centralisation of asset information, compliance awareness, review of existing contractual arrangements and a risk-based approach to management.

All Asset Classes

Across all nine asset classes, there are common areas of improvement in lifecycle activities.

Asset data capture on historic assets

Undertake asset data capture and audits on existing infrastructure to verify assets and attributes in the register, updating and increasing the precision of spatial information, incorporating equipment previously unrecorded or captured in other systems.

Increase the currency and coverage of condition assessment programs

Increasing the currency and coverage of condition assessment programs to reduce the number of assets with limited up to date condition and performance information.

Systematic design review of existing infrastructure

Systematically undertake significant sub system reviews to proactivelyidentify improvements to optimise the configuration of the assets and validate performance requirements.

Review of asset data model in readiness for Building Information Management

In preparation of industry adoption of Building Information Management and the expected adoption of digital engineering we will review and standardise the asset hierarchy and include corporate assets in the digital engineering hierarchy.

Part III

Overview and plan for the Asset Management System

ASSET MANAGEMENT SYSTEM OVERVIEW

6.1 System definition and framework

The Asset Management System (AMS) 'directs, coordinates and controls asset management activities' (ISO 55000 cl 2.4.3). This section of the SAMP describes the AMS structure and artefacts and sets out the journey plan to move to a fully developed system which aligns with the requirements of ISO 55001.

The AMS is incorporated into the existing Integrated Management System (IMS), components of which are certified to *ISO 9001, ISO 14001, AS 4801* and the *Codex Alimentarius (HACCP)*.

The IMS includes several levels of documentation as described in EN11.03.01 IMS conceptual overview:

- IMS requirements - documents which describe the requirements for conduct and management of key business functions. IMS requirements are documented in policies, procedures, work instructions and forms.
- IMS enablers - documents which enable or support conformance with IMS requirements.
- IMS records - records of results achieved or evidence of activities performed.

The AMS uses the same documentation structure to establish appropriate asset management artefacts. The governance mechanisms of the AMS are the same as the IMS, in that it utilises the existing approval, document control and records management framework.

Our AMS is monitored against the subject areas described in the Institute of Asset Management 'anatomy' with external review and benchmarking as part of the WSAA's four-yearly Asset Management benchmarking (Asset Management Customer Value Survey – AMCV).

Median Industry scores reflect the scores of the self-selected participants and are influenced by the scope of the assets considered under the asset management system. There has also been industry focus in key areas associated with obligations to achieve certification with either ISO55001, or demonstrate compliance to the Asset Management Accountability Framework. Icon Water's intended maturity target is normally at least "competent", and will learn from the experience of other utilities.

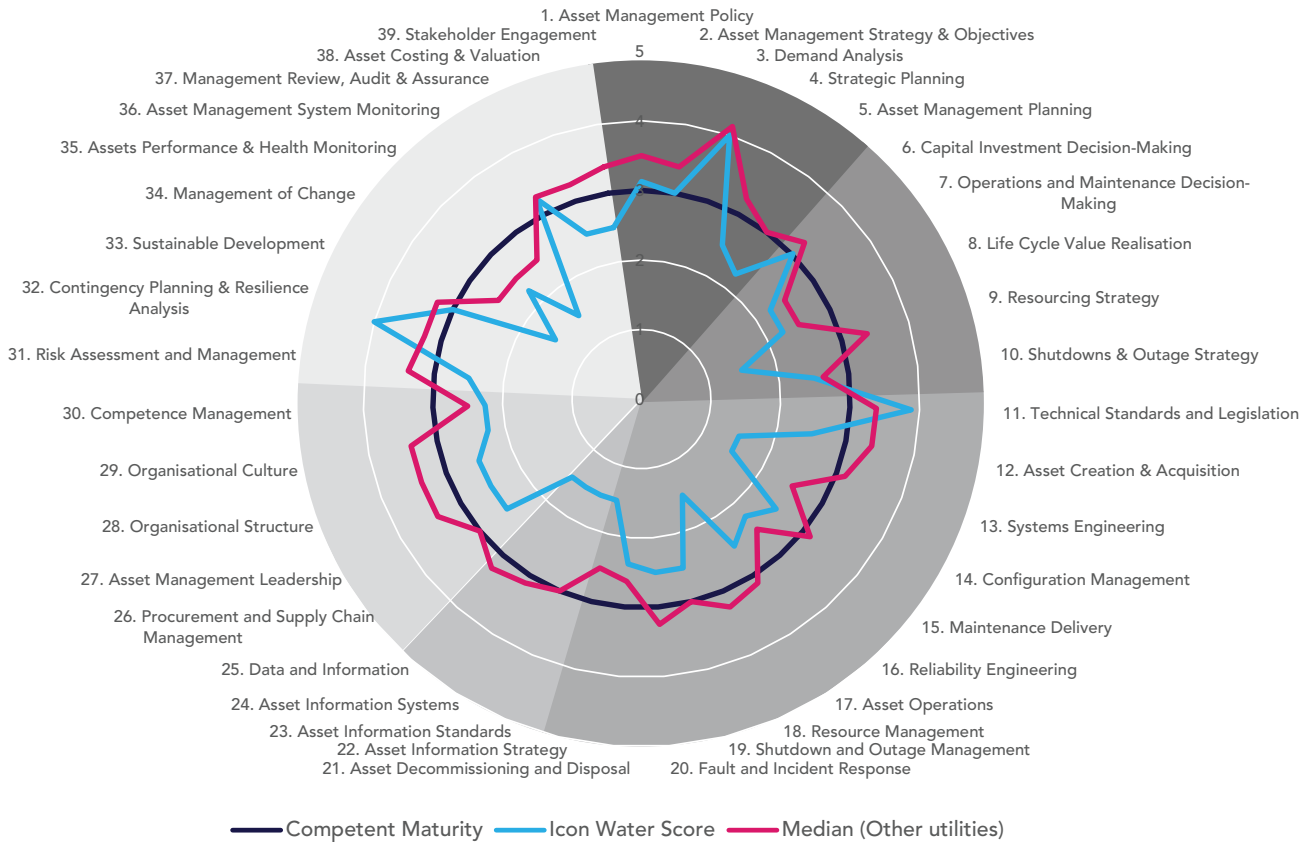


Figure 19 Asset management system

Note: "competent" in this framing reflects "would be able to be certified if necessary"; not necessarily "competent to manage the assets"

Icon Water is tracking its progress towards asset management maturity, as well as its achievement in optimising asset performance, risk and cost decision-making, through a 'strategy map' approach which integrates process and capability drivers together with the delivered asset outcomes (see Figure 20).

Figure 20 Asset management strategy map

The 'How we achieve it' elements (objectives) provide a basis for monthly and quarterly performance reporting. The strategy map enables tracking of the maturity and effectiveness of the asset management system, and aligns with the key performance indicators and targets defined in the SCI. A review of the supporting KPIs has been identified for the future (post 2023) AMS improvement plan.

6.2 AMS functions

Icon Water's AMS maintains a line of sight between our customer requirements, business objectives and asset lifecycle management. Figure 21 below shows the six functions of our AMS.

Figure 21 AMS functions (Source:Institute for Asset Management)

Our long-term Asset Management maturity ambition is assessed against the Institute for Asset Management maturity model. Our target maturity, and purpose for each function, is shown in table 6 below.

Function		Ambition	Purpose
Strategy and planning		Optimising	We have plans to support the resilience, prosperity and sustainability of the community
Decision-making		Optimising	We make data-based decisions that consider the long-term service impacts on agreed customer-centred services
Information management		Optimising	We have a single view of the assets, with all relevant information for the asset and customer service levels available to those who need it across the business.
Lifecycle Management	**Acquire**	Optimising	We acquire assets to support long term sustainable value and safe operation
	Operate	Optimising	We operate our assets safely and efficiently to meet agreed customer service standards
	Maintain and Protect	Optimising	We maintain our assets to support efficient and sustainable operation. We ensure external activities on or near our infrastructure do not cause long term sustainability, service or safety risks.
	Disposal	Competent	We appropriately dispose of assets in a sustainable way
Organisation and people		Competent	Our people all know their part in supporting customer service levels and look for opportunities to do better
Risk, review and monitoring		Competent	We understand the risk we carry through our decisions, and track how well we manage risk as an organisation

6.3 Strategy and planning

Icon Water undertakes planning to recommend strategic pathways that meet customer expectations so we can promote wellbeing and liveability within the community, serving our customers reliably and affordably into the future.

The service strategies seek to respond to the following questions:

- what is the purpose of our water and wastewater service?
- what type of future(s) should we plan for?
- how do we prepare for and protect ourselves from the impacts of climate change?
- how do we continue to align with the ACT Government's focus on water management?
- how do we provide for future growth and respond to how Canberra is changing?

Icon Water's service strategies are developed with a holistic system view. We recognise while each service plays a distinctive role with individual purposes, they do not function in isolation. The systems must perform as a whole to meet the expectations of our customers and the community, now and in the future.

Icon Water's service strategies are developed with an adaptive planning approach. Traditional planning for utilities has been asset-centric, predictive and limited in community collaboration. Such approaches are no longer sufficient where the rate of change is leading to futures which are highly uncertain and holistic assessment across multiple areas is required. Our adaptive planning approach includes:

- being service-centric rather than asset-centric and planning collaboratively with our stakeholders, customers and community. This focusses our approaches on the service required from the asset and is reflected in the vision, objectives and strategic statements of the service strategies.
- making decisions and intervening on assets when triggered rather than on a timeline. This positions Icon Water to adapt to future conditions as they emerge rather than being over or under-prepared. The planning scenarios and business postures identified in the service strategies are used to identify triggers for change of directions in future decision-making processes.
- planning for multiple potential futures rather than a single, 'most likely' future. This makes asset interventions more resilient to changes in the future, particularly over the long-term where uncertainty is high. This is reflected in the development of multiple planning scenarios and business postures, providing uniform guidance for future planning activities, ensuring we consider and incorporate 'resilience in design' where appropriate.

6.4 Asset decision-making

Icon Water manages a portfolio of asset interventions and as a result makes many and varied asset-related decisions to enable service provision and meet customer expectations. These decisions are made within frameworks that enable assessment of safety, reliability, affordability and sustainability.

Our asset management decision making involves defining the optimal balance of cost, risk and performance to maximise customer value of our assets. Icon Water's AMPs provide an overview of the lifecycle asset activities required to maintain asset management objectives.

We use several advanced data analytics to aid in the understanding of complex relationships between asset information and asset planning decisions. We have adopted a condition-based risk assessment approach and are transitioning to asset data analysis decision-making for those assets where a proactive lifecycle approach is warranted. Our approach to Investment Planning and Delivery is outlined in our Investment Planning and Delivery Manual.

Key elements within our asset decision-making are:

1. The use of a common prioritisation framework. All major interventions are assessed against six benefit areas (shown in table 6). These benefit areas are weighted annually by our Investment Review Committee (IRC).

Table 6 Benefit areas

Renewal	Continues to meet existing minimum customer service levels
Regulation	Maintains compliance to legislative, contractual and regulatory obligations.
Growth	Ensures community growth is supported by fit-for-purpose assets and service levels
Customer Experience	Delivers additional value to the customer, over and above minimum service levels
Sustainable Value	Delivers additional financially sustainable value to the business
Workplace	Delivers improvements to workplace efficiency, safety (above level of regulatory compliance), culture, innovation, diversity and engagement (over a yearly timeframe considering frequency)

2. A gated approach for projects and program review

The lifecycle consists of three main phases: initiate, implement and integrate. Each of the eight stages of the project lifecycle: identify, envisage, evaluate, plan, develop, execute, accept and monitor, corresponds to a stage gate for assessing the prudency and efficiency of investment decisions. These stages are shown below.

Icon Water's risk management framework is utilised throughout the project lifecycle in order to transparently assess the cost versus risk balance. This allows for tailoring of the process to ensure efficient delivery of asset intervention and alignment with the Board-endorsed risk appetite.

Figure 21 Project lifecycle

3. Delegated approval for all expenditure

Every five years, we develop our proposed prioritised intervention of total portfolio capital and operational works, and overall budget, which is then determined by the Independent Competition and Regulatory Commission (ICRC) as part of the five-yearly price proposal. Capital projects are routinely approved through the Investment Review Committee (IRC). Maintenance projects and routine maintenance are approved according to Icon Water delegated authorities. Major maintenance projects and programs are subject to IRC approval.

6.5 Lifecycle delivery activities

The following describes Icon Water's main functions across the asset lifecycle: asset creation and acquisition, asset operations, asset maintenance, asset protection, and asset disposal or renewal. The Asset Management Plans outline the activities for each asset class.

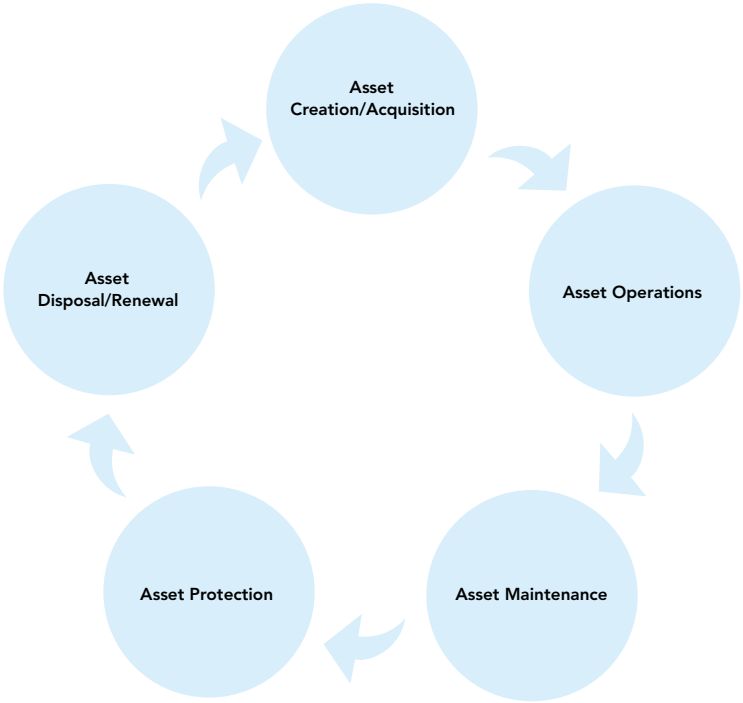


Figure 22 Asset lifecycle

Creation and acquisition of assets

Our growth servicing plans identify the need to augment or acquire new assets to meet agreed levels of service within the network. Facility master plans outline the similar work required at Icon Water sites.

The Water and Sewer Capital Contributions Code identifies those assets Icon Water is responsible for funding and providing in conjunction with developers, based on their impact on Icon Water's assets and networks.

Infrastructure may also be gifted to Icon Water after construction by developers or third parties.

All assets created by or gifted to Icon Water must meet our design and construction standards to be accepted.

In addition, Icon Water uses PMBOK and project management principles to create assets to ensure consistent internal infrastructure delivery.

Maintenance

Icon Water identifies its planned maintenance works through a proactive inspection schedule. This involves assessing the condition of the asset against documented levels of service criteria and then prioritising, scheduling and actioning work within documented timeframes.

Asset reliability strategies, maintenance standards and procedures have been developed for defect elimination, analysis of failures, condition monitoring, and improvement to maintenance strategies. These are updated to continuously improve cost efficiency, plant reliability and performance.

Icon Water undertakes condition assessment and monitoring for selected asset classes in the risk priority order to provide a detailed understanding of the condition and performance of our assets. Asset monitoring and inspection methods reflect functional criticality of assets and asset age. This approach promotes proactive maintenance rather than relying on manufacturer specifications for maintenance.

Operating and maintenance requirements are determined to reduce the severity of the effect of specific failure modes, which involves:

- identifying potential failure modes for a product or process
- assessing the risk associated with those failure modes

- determining and carrying out corrective actions to address the most serious concerns.

This method identifies weak areas in asset design, the safety-critical components, or critical maintenance and test procedures. This process allows us to determine the best maintenance to achieve design reliability at minimum cost.

Maintenance plans are further informed through Maintenance Requirements Analysis using Failure Mode Effect and Criticality Analysis, Reliability-Centred Maintenance and Level of Repairs Analysis techniques. The objective is to optimise the design or the operating, inspection and maintenance strategies to enable efficient asset management (cost, risk, performance). The optimisation analysis assess the failure modes and identify weak areas in the design, the safety-critical components, or critical maintenance and test procedures.

Operations

The efficient and effective operation of water and wastewater assets is a core function for Icon Water. To enable this throughout the asset lifecycle, a process operating plan (POP) is developed for asset systems.

The POP is developed by defining the asset objectives including function, performance requirements, functional significance, consequences of asset failure, maximum outage times for asset per functional area, operating parameters and limitations. The POP also considers interactions with capital project delivery work that may have an impact on the process performance and could require temporary flows or parameter changes.

The POP provides direction to treatment and network operations personnel, defining the operational parameters, required operational activities and guidance for planned responses to abnormal events (ie. wet weather events). Operators use the POP in planning the delivery of their daily operating activities.Lessons learned from process trend analysis and asset performance during abnormal events are captured as feedback to continuously improve the POP and optimise the performance of the assets.

Specific plans for the water and wastewater assets are developed periodically, based on the needs identified in the AMPs.

The maintenance planning team are responsible for the development of maintenance plans and process the compliance team are responsible for the development of POPs.

Asset protection

A significant proportion of Icon Water assets are accessible and situated on or under privately owned or leased land. In order to effectively manage, operate, access and protect our assets, we:

- maintain easement and access rights
- make data on network asset locations freely available on public databases such as Dial Before You Dig
- review development applications within the ACT to ensure proposed infrastructure (such as retaining walls, garages, carports or fences) does not damage or limit access to Icon Water infrastructure
- implement safe network protection standards and guidelines.

Icon Water also works with government agencies such as Major Projects Canberra, the Capital Renewal Authority, Transport Canberra and City Services, the National Capital Authority and other utilities where our assets are located on public land to ensure Icon Water assets are protected and operated safely in public spaces and roads.

Asset disposal or renewal

Assets are identified as requiring renewal by engineering, strategy or maintenance and operations planning when they cannot reliably meet design service levels. Asset renewal is typically managed as a project (similar to asset creation). Any disposal is in accordance with our environmental policy.

Assets may also be removed, replaced or renewed by other parties (eg. developers and government agencies) in conjunction with externally managed projects. In these instances Icon Water works with the other party to determine and oversee the works.

6.6 Competency management and development (people and organisation)

Icon Water aspires to foster a culture that recognises and values the significant contribution of its people. To achieve this goal, one of our three strategic objectives is to build a culture that values safety, innovation and inclusiveness.

Our approaches for achieving this are targeting leadership, culture, performance and wellbeing.

Table 7 People health and safety strategy

To build a culture that values safety, innovation and inclusiveness	
Leadership	Leaders are capable, flexible and effective
Culture	Employees are proud, empowered, collaborative and adaptive
Performance	Key people and safety processes and tools promote improved performance
Wellbeing	Working at Icon Water has a positive impact on our people

We will continue to develop our people to meet our target state of competence in asset management. Initiatives identified in the improvement plan (Chapter 7) will inform how we assess our people against key competencies relevant to their roles. This will ensure that we have the right skills in the right areas and provide opportunities for training and development to meet these requirements.

In recognising the competencies for successful asset management, we will enable a culture that appreciates the value of 'good data' and pursues data-driven decisions.

6.7 Asset information systems

To support our asset management processes, we maintain several systems which support a holistic view of our assets.

These systems include geospatial information, drawing management, works management, asset registers (engineering and finance), risk information systems, SharePoint libraries, etc.

These systems have a defined application owner who approves changes, along with the digital design authority. Each system has defined information requirements, naming conventions, data models and review and approval workflows.

Asset information may also be provided to third parties, such as developers and designers and is provided via verified systems.

We will improve alignment between data models and strengthen data governance. This will result in better integration between systems and enable greater insight from our data analytics.

6.8 Financial accounting for assets

Financial management of Icon Water assets is in accordance with Icon Water's Financial Management Policy. Financial information on Icon Water's assets is included in several databases.

- Assets are recorded in our financial accounting system (Oracle) to comply with practices prescribed by the Australian Accounting Standards Board and the International Accounting Standards Board and in accordance with Icon Water accounting policies (fair value).
- Assets are recorded in the Fixed Asset Register (FAR) and net book values are displayed in the Statement of Assets and Liabilities (Balance Sheet).
- Water and wastewater assets are recorded in the Works and Asset Management system. The database contains an Engineering Asset Register (EAR), with information on the replacement value of a proportion of assets listed alongside technical information. The EAR does not currently cover the entire asset base.
- Information on corporate assets is managed through specialised information systems specific to each asset type.

Assets are initially captured in the FAR at historical cost. Occassionally, assets or asset classes may be subject to revaluations and the original cost will then be replaced with the derived revaluation.

If assets are improved the value of improvements will be included in the FAR.

All assets are depreciated in the financial system over their expected life or the expected period of future benefit anticipated to be derived from the asset (whichever is shorter). The difference between the historical cost/revaluation of the asset and the accumulated depreciation is displayed in the financial statements as the Net Book Value (NBV).

The details captured against assets in the FAR allow for analysis to be performed and asset groups to be isolated. Table 9 identifies the main groupings available.

Table 9 Fixed asset register groupings of assets

Water	Wastewater	Common and corporate
Dam structure	Sewer reticulation	Remote monitoring and control
Transfer mains	LMWQCC – Treatment	SCADA
Raw water pumping	LMWQCC – Site services	Asset management information systems
Water treatment plants	LMWQCC – Electrical supply	Corporate and office IT
Water service reservoirs	Fyshwick STP	Corporate buildings
Treated water pumping	Remote STP	Water allocation licences
District and retic water mains	Sewerage pump stations	Vehicles
Connectors and meters	Non-potable water reuse	Land
Other assets	Odour control and network structures	Other assets

6.9 Risk and review

Risk and review of Icon Water's assets, and asset management systems is done in accordance with the Governance, Risk and Compliance policy and procedures. (P07 Governance, risk and compliance).

The risk and review process includes:

- Development, testing and review of business continuity and emergency planning
- Use of a common cross business risk appetite statement, and risk assessment framework
- Risk assessment and reporting through the corporate risk information system
- Independent internal audit functions
- Ongoing management reporting through to the executive and the board.

6.10 Key artefacts of the AMS

The processes described above generate asset management artefacts. These support and document asset management objectives and decision-making (see Figure 23). Our SCI sets the overarching corporate goals for the organisation. Further strategy documents in customer management, economic regulation, finance, ICT, people and workforce health and safety, also inform the highest level of objective setting for asset management.

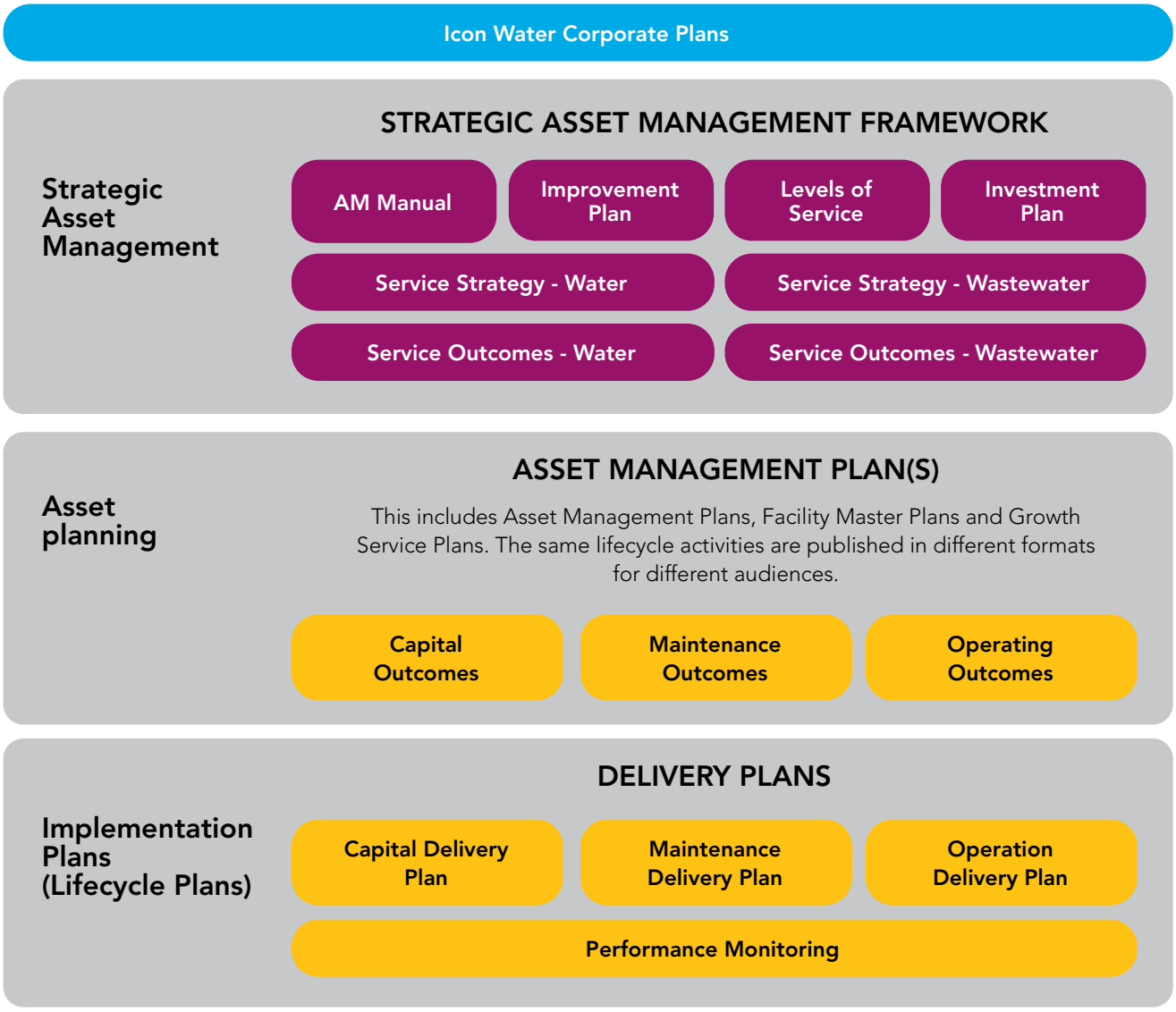


Figure 23 Key AMS artefacts

Development of the future state AMS will involve enhancement and additions to these existing processes and artefacts, coupled with enhanced integration throughout the end-to-end asset management cycle.

An overview of existing critical artefacts supporting the current process is included below.

Policy P05 Asset management documents the purpose of asset management at Icon Water and our beliefs, commitments and expectations of the organisational approach to asset management, in alignment with ISO 55001.

Policy P07 Governance, risk and compliance documents Icon Water's beliefs, commitments and expectations around governance, risk and compliance. It is supported by the risk management procedure documented in procedure PR07.01 and risk assessment tables documented in work instruction W107.01.01. The risk management procedure articulates the Board risk appetite and responsibilities and processes for risk management. The risk assessment tables set out how risk likelihood and consequence are assessed to determine a risk rating and identifies associated risk responses.

Both P05 and P07 also guide the preparation of the SAMP and in the related AMPs.

The strategic asset management framework as described in this SAMP is further informed by the various acts, licences and codes (see Section 2.2). The SAMP develops an overarching strategy for asset management which includes objectives and Tier 1 and 2 performance criteria for our asset base. This asset strategy development process seeks to achieve an appropriate balance between customer expectations (performance), corporate risk exposure (risk) and effective use of financial resources (cost).

This SAMP subsequently provides the guiding input document for the development of more granular asset and implementation planning documents including individual AMPs and delivery plans.

Icon Water develops AMPs that relate to the delivery of a service at the Tier 2 – 4 hierarchy level. Each AMP covers a grouping of assets that contribute to achieving the asset objectives through delivery of the service. AMPs describe a 20 year investment, intervention and improvement plan for each asset grouping. A template contents page for the AMPs is included at Appendix 8.3.

Lifecycle delivery plans incorporate detailed planning for acquisition, maintenance, operation and disposal activities to ensure our assets meet the asset objectives as outlined in this SAMP and the corresponding AMPs. This includes detailed Process Operating Plans and Maintenance Plans for each asset group.

ASSET MANAGEMENT SYSTEM IMPROVEMENT PLAN

7.1 Improvement journey to date

Icon Water has been progressively improving our operating model throughout 2013-2022 reflecting several significant business transformations and improvements focussed on a shift to a service-centric approach. These transformations are improving our asset management capability and better aligning our asset management approach to both the ISO 55000 series of standards and the Institute of Asset Management Maturity Framework.

Icon Water's Enterprise Asset Management Strategy 2016-17 to 2021-22 identified the general approach to improving asset management capability – through processes, people and technology.

This SAMP replaces the EAMS and enable us to clearly set out our strategic approach to customer-centric asset management.

7.2 Service model

What we used to do

Icon Water's approach to asset management was an asset-centric approach. An internal assessment of our current state highlighted the impacts of this approach on a set of key service areas, as outlined in Figure 24.

What we want to do

The improvement process which has been occurring throughout Icon Water, as outlined above, has led to a fundamental shift in our approach to asset management and a shift in expectations on what our future state should be. An internal assessment to define a future state for Icon Water identified the expectations presented in Figure 24 in relation to the same key service areas.

Service-centric approach

Implementing the desired change from current to future state requires a small adjustment to the current approach to asset management, reflecting the wider coverage of asset management within the business' operations, the inclusion of this SAMP and the clear articulation of levels of service.

Table 10 Current and future approaches to asset management

Engaging with customers	Monitoring and maintaining assets	Managing and delivering customer expectations	Use of technology and innovations for AM	Competence and culture
Current state view				
▪ Common engagement approach ▪ No customer definitions ▪ Similar approach to peers	▪ Regulatory driven approach ▪ More reactive than predictive ▪ Reliance on others	▪ We comply with our regulations ▪ Use traditional approach ▪ We meet expectations	▪ Current technology is hard to use and access ▪ Cautious adopters using pilot studies	▪ Knowledgeable workforce but not documented ▪ Hard to retain knowledge ▪ People stuck in the same role
Future state view				
▪ Match services to customers ▪ Streamline engagement with centralised message ▪ Supported by digital resources	▪ Our own data driving decisions ▪ Simplified processes ▪ Digital focus	▪ Work with Regulators to go beyond compliance ▪ Simplified processes ▪ Individualised support to customers	▪ Tools that work better for us ▪ Move to digital, real-time, shared, owned data ▪ Hub of innovation working with industry	▪ Good knowledge retention / transfer ▪ More development opportunities ▪ Understand and capture our future

7.3 Performance monitoring and continuous improvement of the Asset Management System

Icon Water generates and leverages performance information to inform business decisions. A wide variety of metrics are in place to enable measurement of the performance of Icon Water's assets. Many are based on regulatory requirements, and they are documented in reports to the ICRC, UTR, the Department of Health, the Environment Protection Authority and other regulators or external benchmarking

Performance reporting will support 'evidence based' decision making through a process of 'double loop' learning:

- learning loop 1 – short term amendments to process operating plans, maintenance plans and budgets, and process performance improvements
- learning loop 2 – medium to long-term updates to AMPs, the SAMP and wider asset management and business strategy planning.

We seek to improve our underlying asset management capability through continuous improvement to our processes and systems. These improvements will be informed by assessing the applicability of external best practice developments, as well as through feedback on existing processes and systems enabled through the performance monitoring described previously in this section. Major changes to these processes and systems will be documented in periodic updates to the SAMP as described in Section 1.2.

Table 11 Identified improvement areas of the AMS

Improvement area	Responsibility	Rationale	Timeframe
Align AM information requirements with Digital Strategy	Chief Technology Officer	Understanding the information requirements across all information types (asset, financial, customer, safety) which support improved decision-making will allow for: ▪ optimisation of asset operations and maintenance ▪ improved efficiency of asset and project delivery. This reduces total expenditure costs and improves the customer experience.	2022–2023
Data governance and quality frameworks	Chief Financial Officer	Improved access to and governance of data will enable faster and more robust decision-making, improve customer insights and complaint management, and improved efficiency in work management.	2022–2024
Improved risk capture and alignment with corporate frameworks	General Manager, People and Safety	Improved capture of risk changes with time will improve decision-making, and support sustainable, long-term decision-making.	2022–2023
		Improved linkage of risks and investment priorities will improve price review planning.	2022–2023
		A significant review of the corporate frameworks would not be required before any uplift in data management. Preliminary work with business stakeholders in operational areas is intended to be undertaken shortly. This could validate or otherwise, any need for further work in this area.	2022–2023
Competence mapping and succession planning	General Counsel	A broader competence framework will equip, enable and support workers. This will improve productivity and engagement, as well as worker effectiveness.	2022–2024
Develop strategic resourcing management approach	General Manager, People and Safety	A strategic resource management approach will improve planning, and allow for greater efficiencies in procurement, and business resource allocation. This work is dependent on the previous competency mapping and a foundational uplift in data governance in resource loading projections.	2022–2025

These initiatives have been mapped to the business strategy initiatives and included in the SCI. A high level timeline is shown on te next page

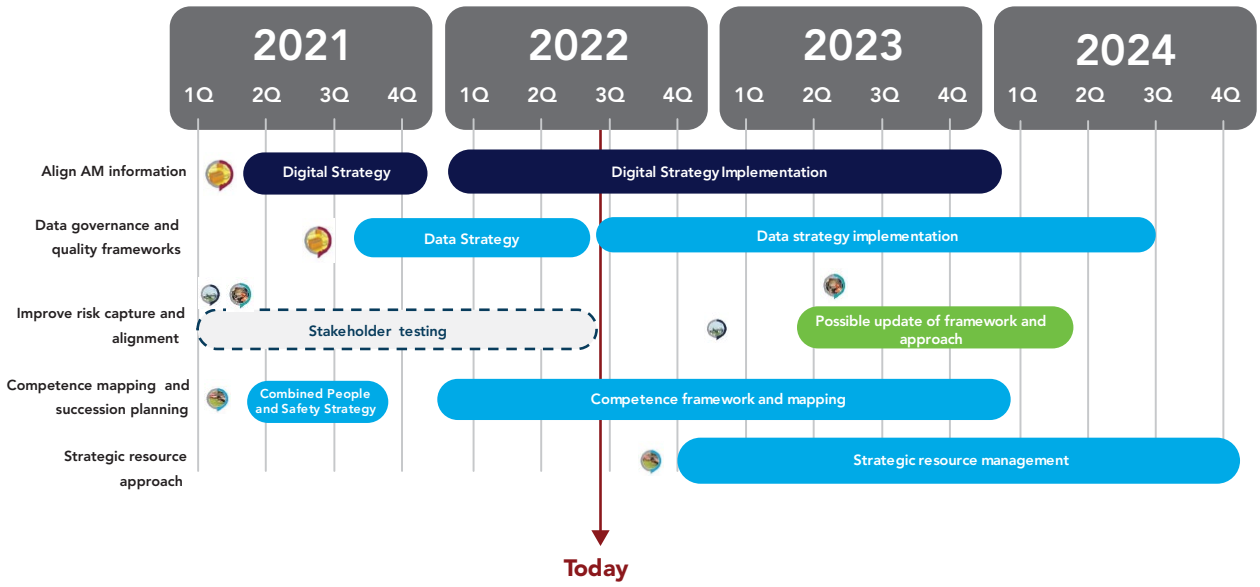


Figure 24 Improvements mapped to Business Strategy

APPENDICES

8.1 Acronyms/initialisms

AM	Asset management
AMO	Asset management objectives
AMP	Asset management plan
AMS	Asset management system
CAF	Customer Advocacy Forum
EAM	Enterprise Asset Management
EAMS	Enterprise Asset Management Strategy
EAR	Engineering Asset Register
EPA	Environmental Protection Authority
FAR	Fixed Asset Register
GIS	Geographical Information System
GL	Gigalitre
ICRC	Independent Competition and Regulatory Commission
ICT	Information and Communication Technology
IMS	Integrated Management System
IoT	Internet of Things
IRC	Investment Review Committee
ISO	International Standards Organisation
IWM	Integrated Water Management
KPI	Key Performance Indicator
LMWQCC	Lower Molonglo Water Quality Control Centre
ML	Megalitre
NBV	Net Book Value
POP	Process Operating Plans
SAMP	Strategic Asset Management Plan
SCADA	Supervisory Control and Data Acquisition
SCI	Statement of Corporate Intent
SIFR	Serious Injury Frequency Rate
STP	Sewage Treatment Plant
UTR	Utilities Technical Regulator

8.2 ISO 55001 'shall' statements map

ISO 55001 contains 71 'shall' statements (mandatory requirements). Icon Water has determined that 28 of the 'shall' statements must be undertaken by the Executive Committee (asset owner) and cannot be undertaken by a contractor.

The 28 asset owner 'shall' statements which are addressed in this SAMP are detailed below. There are several statements which are not or partially addressed in this SAMP. These statements are addressed by other elements of the AMS and may be under development.

Table 12 ISO 55001 'shall' statement map

Clause	'Shall' statement	SAMP Reference
4.1	The organisation shall determine external and internal issues that are relevant to its purpose and that affect its ability to achieve the intended outcome(s) of its asset management system.	Section 2
4.2	The organisation shall determine: ▪ the stakeholders that are relevant to the asset management system ▪ the requirements and expectations of these stakeholders with respect to asset management ▪ the criteria for asset management decision-making ▪ the stakeholder requirements for recording financial and non-financial information relevant to asset management, and for reporting on it both internally and externally	2.1, 2.2, 2.3, 2.4, 6.4, 6.8
4.3	The organisation shall determine the boundaries and applicability of the asset management system to establish its scope.	1.1, 2.2, 4.2
4.3	The organisation shall define the asset portfolio covered by the scope of the asset management system.	4.2
4.4	The organisation shall develop a SAMP which includes documentation of the role of the asset management system in supporting achievement of the asset management objectives.	6.1, 6.10
5.1	Top management shall demonstrate leadership and commitment with respect to the asset management system by: ▪ ensuring that the asset management policy, the SAMP and asset management objectives are established and are compatible with the organisational objectives ▪ ensuring the integration of the asset management system requirements into the organisation's business processes ▪ ensuring that the resources for the asset management system are available ▪ communicating the importance of effective asset management and of conforming to the asset management system requirements ▪ ensuring that the asset management system achieves its intended outcome(s) ▪ directing and supporting persons to contribute to the effectiveness of the asset management system ▪ promoting cross-functional collaboration within the organisation ▪ promoting continual improvement ▪ supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility ▪ ensuring that the approach used for managing risk in asset management is aligned with the organisation's approach for managing risk.	2.1, Section 3 5.1, 5.1.1, 5.2, 6.6

Table 12 ISO 55001 'shall' statement map

Clause	'Shall' statement	SAMP Reference
5.2	Top management shall establish an asset management policy that: • is appropriate to the purpose of the organisation • provides a framework for setting asset management objectives • includes a commitment to satisfy applicable requirements • includes a commitment to continual improvement of the asset management system.	3.1, 3.2, 3.3
5.2	The asset management policy shall: ▪ be consistent with the organisational plan ▪ be consistent with other relevant organisational policies ▪ be appropriate to the nature and scale of the organisation's assets and operations ▪ be available as documented information ▪ be communicated within the organisation ▪ be available to stakeholders, as appropriate ▪ be implemented and be periodically reviewed and, if required, updated.	1.1, 1.3, 3.1, 5.4
5.3	Top management shall ensure that the responsibilities and authorities for relevant roles are assigned and communicated within the organisation.	3.3
5.3	Top management shall assign the responsibility and authority for: ▪ establishing and updating the SAMP, including asset management objectives ▪ ensuring that the asset management system supports delivery of the SAMP ▪ ensuring that the asset management system conforms to the requirements of this International Standard ▪ ensuring the suitability, adequacy and effectiveness of the asset management system ▪ establishing and updating asset management plans ▪ reporting on the performance of the asset management system to top management.	1.2, Section 3, 6.1
6.2.1	The organisation shall establish asset management objectives at relevant functions and levels.	Section 5
6.2.1	The organisation shall retain documented information on the asset management objectives.	1.3, 6.1, 6.10
6.2.2	The organisation shall ensure that its asset management related risks are considered in the organisation's risk management approach including contingency planning.	6.10
7.1	The organisation shall determine and provide the resources needed for the establishment, implementation, maintenance and continual improvement of the asset management system.	Section 3 Section 6

Table 12 ISO 55001 'shall' statement map

Clause	'Shall' statement	SAMP Reference
7.1	The organisation shall provide the resources required for meeting the asset management objectives and for implementing the activities specified in the asset management plan(s).	5.1, 6.2
7.4	The organisation shall determine the need for internal and external communications relevant to assets, asset management and the asset management system including: ▪ on what it will communicate ▪ when to communicate ▪ with whom to communicate ▪ how to communicate.	1.3
7.5	The organisation shall determine the requirements for alignment of financial and non-financial terminology relevant to asset management throughout the organisation.	
7.5	The organisation shall ensure that there is consistency and traceability between the financial and technical data and other relevant non-financial data, to the extent required to meet its legal and regulatory requirements while considering its stakeholders' requirements and organisational objectives.	2.2, 6.4
8.2	The organisation shall ensure that such risks are managed in accordance with 6.9	6.9
8.3	When the organisation outsources any activities that can have an impact on the achievement of its asset management objectives, it shall assess the associated risks.	Not addressed in this SAMP
8.3	The organisation shall ensure that outsourced processes and activities are controlled.	Not addressed in this SAMP
8.3	The organisation shall determine and document how these activities will be controlled and integrated into the organization's asset management system.	Not addressed in this SAMP
8.3	The organisation shall determine: ▪ the processes and activities that are to be outsourced (including the scope and boundaries of the outsourced processes and activities and their interfaces with the organisation's own processes and activities) ▪ the responsibilities and authorities within the organisation for managing the outsourced processes and activities ▪ the processes and scope for the sharing of knowledge and information between the organisation and its contracted service provider(s)."	Not addressed in this SAMP
8.3	When outsourcing any activities, the organisation shall ensure that: ▪ the outsourced resources meet the requirements of 7.2, 7.3 and 7.6 ▪ the performance of the outsourced activities is monitored in accordance with 9.1.	Not addressed in this SAMP
9.3	Top management shall review the organisation's asset management system, at planned intervals, to ensure its continuing suitability, adequacy and effectiveness.	Section 3

Table 12 ISO 55001 'shall' statement map

Clause	'Shall' statement	SAMP Reference
9.3	The management review shall include consideration of: ▪ the status of actions from previous management reviews ▪ changes in external and internal issues that are relevant to the asset management system ▪ information on the asset management performance, including trends in: ▪ non-conformities and corrective actions ▪ monitoring and measurement results ▪ audit results ▪ asset management activity ▪ opportunities for continual improvement ▪ changes in the profile of risks and opportunities.	1.1, 1.2, 2.2, 2.3, 5.1, 6.1, 6.9
9.3	The outputs of the management review shall include decisions related to continual improvement opportunities and any need for changes to the asset management system.	6.1
9.3	The organisation shall retain documented information as ISO artefact of the results of management reviews.	6.1

8.3 Asset Management Plans (AMPs) – Outline of minimum required content.

The following list outlines the expected content for all asset classes. Some asset classes may have more detailed information and additional sections depending on both the maturity and level of asset management required for the asset class, and the detail in supporting documentation such as maintenance or operations plans.

1.0 Executive summary

2. Introduction

2.1 Purpose

2.2 Document hierarchy

2.3 Governance and methodology

2.4 Information sources

2.5 External business environment

2.6 Roles and responsibilities

2.7 Stakeholders and customers

3. Asset overview

3.1 Assets in scope

3.2 Asset function and purpose

3.3 Asset inventory

3.4 Critical assets

3.5 Management practices (level of capability)

4. Current and future levels of service

4.1 How levels of service are set

4.2 Current levels of service

4.3 Desired levels of service

4.4 Risks to service levels

5. Asset performance monitoring

5.1 Condition and performance assessment methods

5.2 Asset condition report

5.3 Asset performance against objectives

5.4 Backlog of lifecycle activities

5.5 Asset information integrity

6. Lifecycle management plan

6.1 Overall activities

6.2 Five-year activity timetable

7. Financial summary

7.1 Current asset valuation

7.2 Current and projected operating costs

7.3 Capital plan and projected costs

8. Plan improvement and monitoring

8.1 Audits and reviews conducted

8.2 Improvement plan

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Nếu cần thông dịch viên, hãy gọi đến số trên đây

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