Water Infrastructure Asset Management Plan

CITY OF ADELAIDE

Contents

1.0 EXECUTIVE SUMMARY

1.1 The Purpose of the Plan

The City of Adelaide is responsible for an extensive and diverse asset portfolio valued at more than $2 billion, which represents a significant investment made over multiple generations. These assets play a vital role in providing essential services to our community and it is critical to ensure these assets continue to be effectively managed to enable ongoing service provision and benefits for both current and future generations.

Under South Australia's *Local Government Act 1999*, we are required to develop Asset Management Plans for a period of at least 10 years, which includes information about the operation, maintenance, renewal, acquisition, expansion, upgrade and disposal for each infrastructure assets class under our care and control.

The City of Adelaide has six Asset Management Plans, which includes Water Infrastructure, Transportation, Park Lands & Open Space, Buildings, Public Lighting and Electrical and Urban Elements. The fundamental purpose of this Water Infrastructure Asset Management Plan is to outline the Council's high-level asset management priorities for the operation, maintenance and renewal of our assets over the next 10 years. Additionally, it aims to improve the long-term strategic management of our Water Infrastructure assets, to cater for the community's required levels of service both now and into the future.

Work is currently underway to significantly improve the spatial data, asset condition information and asset attribute information utilised within this Water Infrastructure Asset Management Plan. These activities align with good asset management practices and will provide more granular information to enable robust analysis to inform future decision making. The outcome of this work, which is due for completion by June 2025, will enable a more mature Water Asset Management Plan with a higher degree of confidence for the future requirements of the asset class.

Therefore, due to the current maturity level of the asset data, this Water Infrastructure Asset Management Plan will be considered an interim document, which will be updated following the completion of the condition audit, and subsequent modelling and analysis.

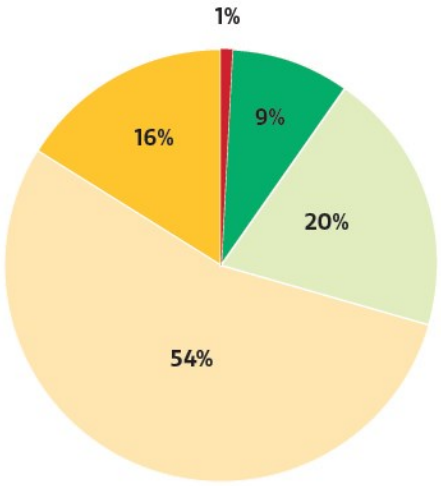
This interim plan defines the current state of our $282.1 million Water Infrastructure asset portfolio, as well as the asset management activities and associated funding requirements recommended for inclusion into the Long-Term Financial Plan and to achieve our asset performance targets.

1.2 Our Water Infrastructure Assets

The City of Adelaide's Water Infrastructure portfolio is valued at approximately $282.1 million and provides critical services which protect the community from heavy rainfall and flood events, conserve the ecological health of our waterways and provide recreational facilities and natural amenity within our Park Lands. These assets include the underground stormwater drainage network, stormwater management devices (e.g. detention basins, gross pollutant traps), Karrawirra Pari/River Torrens, Park Lands watercourses, potable and non-potable water distribution systems and sewer infrastructure.

A small proportion of our Water Infrastructure assets have shared management responsibilities with other government agencies. These include the Karrawirra Pari/River Torrens as well as specific Brown Hill Keswick Creek stormwater management devices located within Pakapakanthi/Park 16 and Kurangga/Park 20. The Torrens Lake, upstream of the Torrens Weir extending to Albert Bridge, is the sole responsibility of the City of Adelaide, with the remaining sections of the River outside of this area having shared management responsibilities. Stormwater infrastructure located within our Park Lands associated with the Brown Hill Keswick Creek catchment falls under the responsibility of the Brown Hill Keswick Creek Board, where financial contributions are made annually by subsidiaries in accordance with a funding deed.

To monitor the performance of our Water Infrastructure assets, we undertake condition audits at regular intervals. Asset condition information is analysed with respect to technical intervention criteria to inform our maintenance and renewal programs. The condition of our Water Infrastructure is generally rated in a fair condition, with an overall condition index rating of 2.8. 83% of assets are estimated to be in a very good to fair condition and 17% of assets are estimated to be in a poor or very poor condition, which form the general basis of our future renewal program priorities.



Condition Grading	Description of Condition
1	**Very Good:** free of defects, only planned and/or routine maintenance required
2	**Good:** minor defects, increasing maintenance required plus planned maintenance
3	**Fair:** defects requiring regular and/or significant maintenance to reinstate service
4	**Poor:** significant defects, higher order cost intervention likely
5	**Very Poor:** physically unsound and/or beyond rehabilitation, immediate action required

The Torrens Weir is an aging asset, originally constructed in 1881 with sluice gates added in 1929. Majority of its components are rated in a fair to poor condition and engineering inspections and recommendations have identified the need to undertake an options analysis (currently underway) to guide the future management of the asset as it approaches the end of its useful life.

It is important to note that the condition data for the underground stormwater network is considered to be of low reliability. Network wide condition data is not available and age data has been utilised to forecast the estimated condition rating where no condition data is available. A comprehensive network wide condition audit is currently underway for the underground stormwater network, which will provide improved asset data for renewal modelling and analysis for the next revision of this Asset Management Plan.

1.3 Community Engagement and Customer Satisfaction

In November 2021, we undertook an engagement process with city residents and visitors to better understand and measure levels of customer satisfaction for the services provided by our Water Infrastructure assets. A summary of the responses is shown below.

Category	Average Score	Very Poor (<40%)	Poor (40-54%)	Average (55-69%)	Good (70-84%)	Excellent (>85%)
Underground Stormwater Drainage Network	93%					●
Karrawirra Pari/River Torrens and Park Lands watercourses	85%					●

The overall feedback confirmed appropriate levels of customer satisfaction for the maintenance and renewal of our Water Infrastructure assets.

A Recommended Levels of Service Report was presented to Council, with the recommendations approved in November 2023. This report noted the community consultation undertaken and the associated benchmarking of current user satisfaction. Additionally, Council also approved the development of the Water Infrastructure Asset Management Plan based on the planning principles and recommended management strategies presented within the report and its attachments.

1.4 Current and Future Demands

It is anticipated that City of Adelaide will be subject to considerable change over the next ten years. This will result in our Water Infrastructure being subject to new demands that have the potential to impact future service delivery and the requirements of our existing assets.

Key demand drivers and future challenges will include:

- City growth
- Changing demographic
- Tourism & event growth
- Climate change and carbon neutrality
- Emerging technology
- Legislation & regulation

Demand for new services will be managed through a combination of managing existing assets, upgrading of existing assets, providing new assets to meet demand and demand management. Demand management practices can include non-asset solutions, such as educating the community around alternative options, which facilitates service provision without the need to invest in new or upgraded infrastructure.

Demand management will include:

- Continuing to engage with our community through annual City User Profile surveys
- Developing a Stormwater Management Plan (SMP) to understand the existing performance of the stormwater drainage network and to provide solutions to mitigate flood risk and improve water quality
- Completion of the Adelaide Park Lands Strategic Water Resources Study to identify key initiatives to enable sustainable water resource planning for current and future demands
- Completion of the Water Sensitive Urban Design (WSUD) Priority Investment Study to identify key upgrade projects that will improve the quality of stormwater runoff
- Delivering priority upgrade/new projects identified within the Strategic Plan and Strategic Documents
- Ensuring stormwater assets are renewed to accommodate current and forecasted future storm events
- Ensuring climate risk mitigation and adaptation is a key focus for strategic planning, asset management and project delivery
- Continuing to review and update design standards and technical specifications to ensure our assets transition towards having a lower carbon footprint with improved circular economy outcomes through increased usage of recycled materials
- Continuing to partner with industry, to monitor and evaluate new and emerging technologies, with trials of new materials, approaches, and methodologies
- Continuing to monitor changes to legislation and ensure appropriate adaptation into asset management practices

1.5 Strategic Planning

Under the *Local Government Act (SA) 1999*, we are legislatively required to establish a suite of Strategic Management Plans, which guide Council's future planning, asset management and financial sustainability. An overview of these strategic management plans are shown below:

Strategic Plan ***Community***	Long term with a four year delivery focus. *Planning for the vision and aspirations of the Adelaide Capital City.*
Long-Term Financial Plan ***Financial***	Ten year Plan, revised annually to ensure a ten year view is maintained. *Planning for the long-term financial sustainability of the City of Adelaide.*
Asset Management Plans ***Infrastructure***	Suite of ten year Plans. *Planning for the sustainable renewal and maintenance of Council assets.*
City Plan ***Development / Built Form***	Ten year Spatial Plan. *Planning for the future land uses and built form of the Adelaide Capital City.*

Through the City of Adelaide Strategic Plan 2024 – 2028, Council's vision is:

Our Adelaide. Bold. Aspirational. Innovative.

Achieving our vision for the future will be guided by our long term aspirations:

Our Community: Vibrant, connected and inclusive
Our Environment: Resilient, protected and sustainable
Our Economy: Growing, innovative and responsive
Our Places: Interesting, purposeful and safe
Our Corporation: High performing, customer-centric and bold

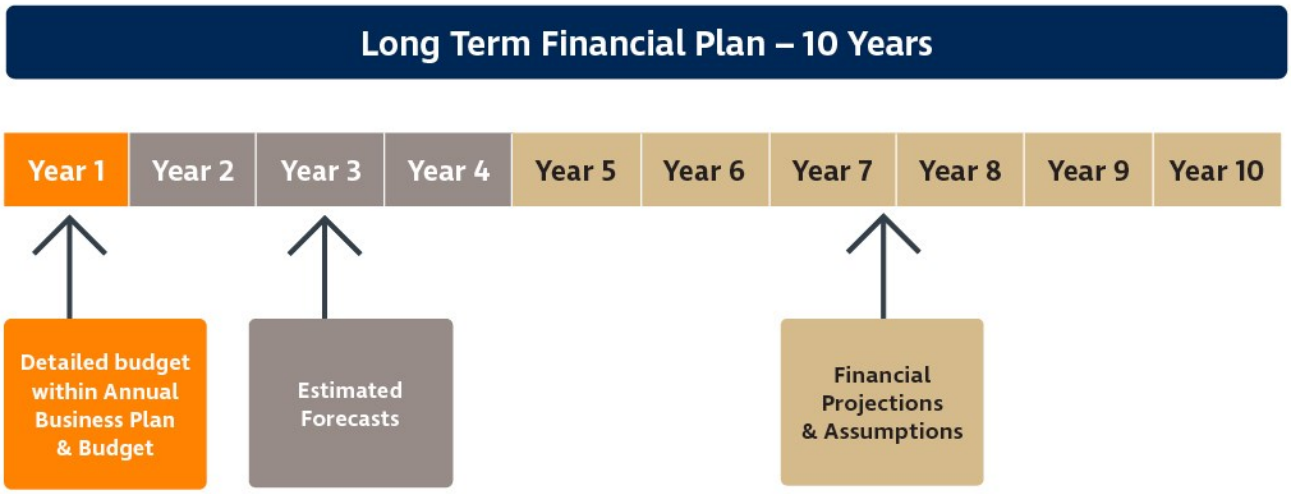
As Adelaide grows, we will need to consider economic vitality, social connectivity and wellbeing, distinctive precincts, environmental and financial sustainability, asset management and service delivery. To ensure we maintain our liveability and to support growth, these principles will underpin everything we do:

- Exceptional Amenity – Be bold and courageous in our pursuit of excellence for our city
- Quality Housing – Strive for liveability and affordability to attract and retain residents
- Community Connection – Strengthen connection, accessibility, diversity and inclusivity by putting people first
- Unique Experiences – Create interesting experiences for our residents, workers and visitors
- Climate Resilience – Embed climate resilience in all that we do
- Economic Growth – Encourage innovation, investment and development in current and emerging sectors
- Budget Repair – Provide quality services and ensure long-term financial sustainability

The Strategic Plan is supported by a suite of long and short-term strategies and action plans as well as a Resource Plan. The Resource Plan provides a four-year view of new and upgrade projects, resources, and budget requirements to deliver our Strategic Plan aspirations and objectives.

Integrated Delivery Planning ensures that prudent and efficient decisions are made, with line-of-sight between Council's Strategic Plan objectives and the major infrastructure projects we deliver. While this Asset Management Plan does not identify financial forecasts associated with new and upgrade projects, it does ensure required asset renewals are aligned (where practical) with key new and upgrade projects specified within the Resource Plan.

Each year our annual business plan and budget formalises funding allocations to continue providing services and progress new projects. It enables existing projects to move from one delivery stage to the next (e.g. progress concept design to detailed design and detailed design to construction) as well as consider emerging risks and opportunities that may result from Council decisions, community requests or other external factors.



1.6 Lifecycle Management

In order to effectively manage our assets, it is important to understand the relationship between all stages of the asset lifecycle. Effective asset management and sustainable financial planning requires a balance between the maintenance, renewal and disposal of existing assets and the delivery of new and upgraded assets.

Our goal is to provide assets that service the needs of the community, providing the agreed levels of service at the lowest lifecycle cost. To enable this, it is important to understand:

- How our assets are performing
- How our assets should be operated and maintained
- When our assets should be renewed
- When we should consider upgrading existing assets or constructing new assets
- How funding for new and upgraded assets is prioritised
- When we should consider disposing underperforming or underutilised assets

This Asset Management Plan's renewal strategy aims to minimise the number of assets that deteriorate into a poor condition and prohibit assets reaching a very poor condition. This strategy ensures we can continue to provide services in line with the community's expectations, appropriately manage risk and optimise whole-of-life costs. Renewal requirements have been identified through a combination of workshops with key infrastructure and maintenance staff and available condition audit information.

In addition to condition based renewal interventions, this asset management plan also forecasts service/capacity based renewal interventions to address known performance deficiencies (i.e. where pipe sizes and side entry pit inlet capacity is not sufficient to manage stormwater runoff) at strategic locations where streetscape upgrades are being undertaken (eg. Main Street Revitalisation Projects) as well as significant road renewal projects.

While we have proactive maintenance programs associated with legislative requirements for water quality testing, general operational and maintenance activities are typically evaluated and prioritised with respect to budget provisions within the Long-Term Financial Plan and Annual Business Plan and Budget. Following the completion of this Asset Management Plan, we will be reviewing operations and maintenance standards for Water Infrastructure assets, with a view to develop more structured and proactive maintenance regimes which provide an acceptable balance between cost, risk, and customer expectations. The associated financial impacts will need to be further considered in future revisions of this Asset Management Plan and the Long-Term Financial Plan.

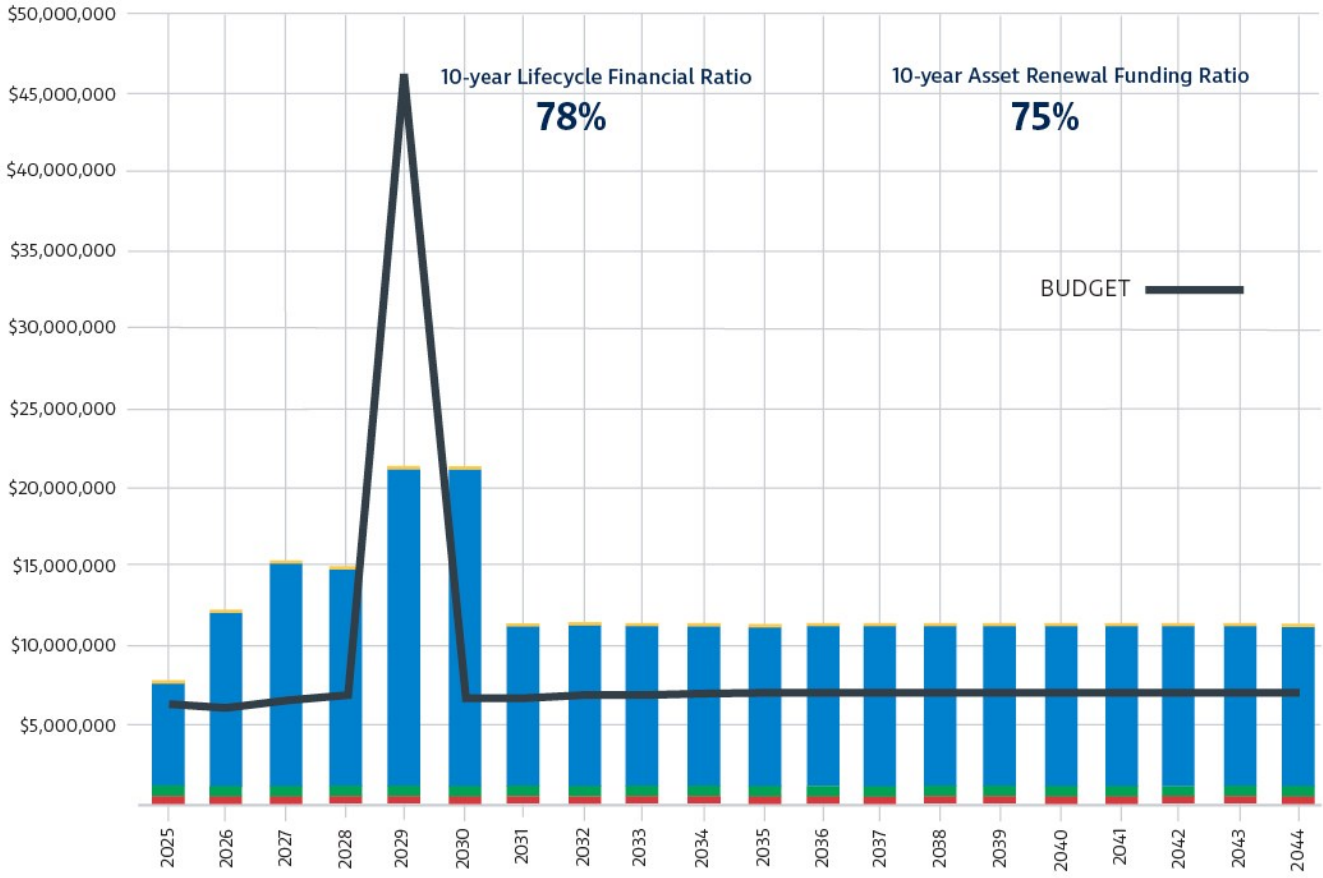
This Asset Management Plan does not identify financial forecasts associated with asset disposal, however where recommended, significant assets will be identified for decommissioning and disposal through Council Reports, to then be considered within the Long-Term Financial Plan and Business Plan and Budget.

1.7 Financial Summary

This Asset Management Plan defines the asset management activities and associated funding requirements recommended for inclusion into the Long-Term Financial Plan to achieve our asset performance targets. The lifecycle costs necessary to operate, maintain and renew our assets as outlined within this Asset Management Plan is approximately $13.95 million on average each year across the 10-year planning period. The associated 10-year annual average financial forecasts for renewal, maintenance and operation are presented below for Water Infrastructure assets.

Lifecycle Category	10-Year Annual Average Forecast
Renewal	$12.60 M
Maintenance	$0.73 M
Operation Cost	$0.62 M
Lifecycle Cost	$13.95 M

Currently, the lifecycle budget allocation within the Long-Term Financial Plan is only $10.84 million on average each year. This leaves a funding shortfall of $3.11 million on average each year and means we currently only have 78% of the costs (Lifecycle Financial Ratio) to deliver the required activities to sustain current levels of service.



LIFECYCLE SUMMARY

Annual Average first 10 years

Lifecycle Forecast	$13,952,439
Planned Budget	$10,842,650
Shortfall	-$3,109,789

MAINTENANCE

Annual Average first 10 years

Planned Budget	$734,502
Lifecycle Forecast	$734,502

OPERATION

Annual Average first 10 years

Planned Budget	$620,937
Lifecycle Forecast	$620,937

RENEWAL

Annual Average first 10 years

Planned Budget	$9,487,211
Lifecycle Forecast	$12,597,000

Noting that this Asset Management Plan has not forecast any additional operational and maintenance requirements, the identified lifecycle funding shortfall is associated with the revised asset renewal forecasting. The Water Infrastructure asset class generally requires additional renewal funding across the 10-year planning period to maintain existing levels of service.

The Asset Renewal Funding Ratio indicates that over the next 10 years our current budgets within the Long-Term Financial Plan account for 75% of the forecast funding required for the optimal renewal of our Water Infrastructure Assets. Contributing factors for the gap between the forecast renewal costs and current budgets within the Long-Term Financial Plan include:

- Not achieving our Asset Renewal Funding Ratio targets over the past 3 years (a result of covid-19 resourcing impacts and project delays associated with market saturation)
- Comprehensively reviewing our stormwater management planning principles, to appropriate recognise service-based renewal interventions aligned with key streetscape upgrade projects, with a requirement for increased pipe sizes and catchpit arrangements
- Ensuring we accurately recognise asset replacement costs, utilising current unit rates that take into consideration increasing costs associated with inflation and industry escalations. (We have experienced significant increases in project unit rates, noting that the Local Government Association (LGA) have indicated that costs and materials have increased up to 25% post pandemic).

Only what is funded in the Long-Term Financial Plan and approved through the Annual Business Plan and Budget can be delivered. Should the Long-Term Financial Plan be unable to accommodate the revised asset renewal forecasts recommended within this Asset Management Plan, there will be associated service and risk impacts.

Continuing to leverage off external funding opportunities will allow us to maintain and enhance the quality of the service we provide, while reducing financial pressures through the efficiencies in an increased revenue. We will continue to work in partnership with both the State and Federal Governments to pursue these opportunities for both renewal and significant new and upgrade projects.

1.8 Potential Service and Risk Impacts

If the forecast activities outlined within this Asset Management Plan (operations, maintenance, renewal) are unable to be accommodated into the Long-Term Financial Plan, there will be potential service consequences for users. These service consequences include:

- Reduced levels of service for Water Infrastructure
- Reduced customer satisfaction levels associated with the management of our existing assets
- Intergenerational inequity (burdening future generations)

These associated risk consequences include:

- Increased safety and property damage risks from stormwater flooding
- Increased safety risks associated with assets deteriorating beyond recommended intervention levels
- Increased environmental risks and associated reduction in amenity due to insufficient management of the Karrawirra Pari/River Torrens and Park Lands water courses including adjacent assets
- Increased reputational risks associated with services not aligning with community expectations
- Increased financial risks associated with additional maintenance requirements that cannot be accommodated within existing budgets
- Increased financial risks associated with higher renewal and/or rehabilitation treatments as asset renewals are not funded at the optimal point in time
- Increased economic risk associated with reduced business activity, events and tourism
- Intergenerational inequity (passing on costs and risk to future generations)

If the forecast activities outlined within this Asset Management Plan are unable to be accommodated into the Long-Term Financial Plan, we will endeavour to manage these risks within available funding by:

- Continuing to undertake regular asset condition and maintenance inspections
- Prioritising all asset renewal and maintenance activities with respect to available budget
- Revising our levels of service to establish an acceptable balance between cost, level of service and risk
- Developing a communication strategy to manage expectations and educate the community around affordable levels of service
- Continuing to seek out external funding opportunities
- Prioritisation of the delivery of key actions from the Improvement Plan

1.9 Monitoring and Improvement Program

The next steps resulting from this Asset Management Plan to improve asset management practices are:

	Improvement Plan Actions
1	Comprehensive update of this Asset Management Plan following the completion of spatial data improvements, asset condition audit and asset revaluation.
2	Finalise the Stormwater Management Plan to identify key priority upgrade projects that will improve the city's overall flood resiliency as well as improve water quality for the Karrawirra Pari/River Torrens and Park Lands watercourses.
3	Finalise the Adelaide Park Lands Strategic Water Resources Study to identify key initiatives to enable sustainable water resource planning for current and future demands.
4	Finalise the Water Sensitive Urban Design (WSUD) Priority Investment Study to identify key priority upgrade projects that will improve the quality of stormwater runoff that is discharged into natural water courses.
5	Finalise a 4-year Resource Plan to identify key upgrade/new projects to deliver Council's Strategic Plan objectives. Once key projects are recognised within the Long Term Financial Plan, Asset Management Plans will be updated to ensure associated acquisition costs (upgrade/new) and ongoing operational and maintenance costs are appropriately recognised, in conjunction with any scheduling adjustments required for asset renewal programs.
6	Revise asset renewal forecasts for the Torrens Weir following the completion of the Lifecycle Study and Options Analysis.
7	Continue to work in partnership with both the State and Federal Governments to pursue external funding opportunities for both renewal and significant upgrade/new water infrastructure projects.
8	Review and update operations and maintenance standards, to develop more structured and proactive maintenance regimes which provide an acceptable balance between cost, risk, and customer expectations. Include changes into future revisions of this Asset Management Plan and Long Term Financial Plan.
9	Continue to undertake regular condition audits and revaluation for all our water infrastructure assets within the nominated 4-year cycles, including regular review of asset useful lives.
10	Continue to review our technical standards for water infrastructure with respect to climate resilience, circular economy, recycled materials, durability and performance, whole-of-life cost, amenity, and heritage requirements.
11	Continue to monitor forecast climate change impacts to ensure we remain resilient through proactively implementing appropriate mitigation and adaptation controls.
12	Improve the capture of carbon emission data for technical standards and project procurement to support lower carbon decision making.
13	Review of corporate performance measure targets for customer satisfaction, to assist with performance gap analysis.
14	Review and standardise asset hierarchies for all asset categories within Water Infrastructure.
15	Review customer service requests codes to better align with Level of Service reporting and operational and maintenance sub-activities.

2.0 INTRODUCTION

2.1 Background

First shaped by the Kaurna People of the Adelaide Plains, then by Colonel William Light, Adelaide is a dynamic, accessible and safe city, that offers an enviable quality of life. The physical layout of the city enhances the attributes that make Adelaide unique. From the Nationally Heritage Listed Park Lands that surround our city, to the compact layout that makes the city walkable and cyclable, to our unique neighbourhoods and precincts, all these factors place Adelaide on the path to being one of the most liveable cities in the world. Despite our small footprint, the City of Adelaide is home to over 26,000 residents, 12,000 businesses and accommodates over 300,000 visitors daily, contributing close to 18% of the State's economic value.

The City of Adelaide's Water Infrastructure network is essential to the health, wellbeing and safety of our community. It provides critical services which protect the community from heavy rainfall and flood events, conserve the ecological health of our waterways and provide recreational facilities and natural amenity within our Park Lands.

This asset portfolio is valued at approximately $282.1 million and includes the underground stormwater drainage network, stormwater management devices (e.g. detention basins, gross pollutant traps), Karrawirra Pari/River Torrens, Park Lands water courses, potable and non-potable water distribution systems and sewer infrastructure.

A small proportion of our Water Infrastructure assets have shared management responsibilities with other government agencies. These include the Karrawirra Pari/River Torrens as well as specific Brown Hill Keswick Creek stormwater management devices located within Pakapakanthi/Park 16 and Kurangga/Park 20. The Torrens Lake, upstream of the Torrens Weir extending to Albert Bridge, is the sole responsibility of the City of Adelaide, with the remaining sections of the River outside of this area having shared management responsibilities. Stormwater infrastructure located within our Park Lands associated with the Brown Hill Keswick Creek catchment falls under the responsibility of the Brown Hill Keswick Creek Board, where financial contributions are made annually by subsidiaries in accordance with a funding deed.

With projected City and metropolitan growth, a changing climate, and advancements in technology, it is anticipated that higher demand will be placed on our existing assets and there will be increasing requirements for new and upgraded infrastructure.

With Council's strategic objectives to create a City that is welcoming, inclusive, and accessible to all, it is critical to ensure that our water infrastructure network continues to be appropriately managed, ensuring we provide appropriate services and benefits for both current and future generations.

Work is currently underway to significantly improve the spatial data, asset condition information and asset attribute information utilised within this Water Infrastructure Asset Management Plan. These activities align with good asset management practices and will provide more granular information to enable robust analysis to inform future decision making. The outcome of this work, which is due for completion by June 2025, will enable a more mature Water Asset Management Plan with a higher degree of confidence for the future requirements of the asset class. Therefore, due to the current maturity level of the asset data, this Water Infrastructure Asset Management Plan will be considered an interim document, which will be updated following the completion of the condition audit, and subsequent modelling and analysis.

This interim Water Infrastructure Asset Management Plan communicates the requirements for the sustainable delivery of services through management of assets, compliance with regulatory requirements, and required funding to provide the appropriate levels of service over the planning period. The infrastructure assets covered by this Asset Management Plan, including their quantities and replacement costs are shown in Table 2.1 below.

Table 2.1: Infrastructure Assets covered by Water Infrastructure Asset Management Plan

Asset Category	Asset Type	Quantity/Dimension	Replacement Value
Underground Stormwater Drainage Network	Stormwater Pits	3927 assets	$26.56 million
	Stormwater Junction Boxes	1800 assets	$17.22 million
	Stormwater Pipes	137.7 km	$144.05 million
	Stormwater Culverts	217 assets	$4.52 million
Stormwater Management Devices	Detention basins	16 assets	$6.80 million
	Bio-retention basins	1 asset	$0.18 million
	Gross Pollutant Trap	17 assets	$4.05 million
River Torrens and Park Lands Water Courses	Earth retaining structures	48 assets	$31.72 million
	Open channels and creeks	7.8 km	$9.59 million
	Weirs	3 assets	$35.12 million
Potable and Non Potable Water Distribution	Potable Water Distribution	3 locations	$0.77 million
	Non Potable Water Distribution	1 location	$0.36 million
Sewer	Sewer	3 locations	$1.17 million
Total			$282.11 million

This Asset Management Plan is to be read in conjunction with the Asset Management Policy, Strategic Asset Management Plan and the following key Corporate planning documents:

- City of Adelaide Strategic Plan (2024-2028)
- Active City Strategy (2013-2023)
- Adelaide Park Lands Management Strategy (2014-2025)
- Carbon Neutral Strategy (2015-2025)
- Climate Change Risk Adaptation Action Plan (2021-2026)
- Community Land Management Plans
- Disability Access and Inclusion Plan (2019-2022)
- Heritage Strategy and Action Plan (2021-2036)
- Integrated Biodiversity Management Plan 2018-2023
- Park Land and Precinct Master Plans
- Public Health and Wellbeing Plan (2020-2025)
- Smart Move Transport and Movement Strategy (2012-2022)
- The 30-Year Plan for Greater Adelaide (2017) - State Government
- Integrated Transport and Land Use Plan for Greater Adelaide - State Government
- South Australian Walking Strategy (2022-2032) – State Government
- South Australia's Road Safety Strategy (to 2031) – State Government
- Water Sensitive Action Plan 2021-2025

As existing planning documents are updated and new planning documents are approved by Council, Asset Management Plans will be reviewed and updated as required.

Infrastructure projects will reference the Adelaide Design Manual for transformational projects supported by upgrade/new funding allocated with the Business Plan and Budget and Long-Term Financial Plan.

2.2 Goals and Objectives of Asset Ownership

Our goal for managing infrastructure assets is to meet the defined level of service (as amended from time to time) in the most cost effective manner for present and future consumers.

The key elements of infrastructure asset management are:

- Providing a defined level of service and monitoring performance,
- Managing the impact of growth through demand management and infrastructure investment,
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service,
- Identifying, assessing, and appropriately controlling risks, and
- Linking to a Long-Term Financial Plan which identifies required, affordable forecast costs and how it will be allocated.

Key elements of the planning framework are:

- Levels of service – specifies the services and levels of service to be provided,
- Risk Management,
- Future demand – how this will impact on future service delivery and how this is to be met,
- Lifecycle management – how to manage its existing and future assets to provide defined levels of service,
- Financial summary – what funds are required to provide the defined services,
- Asset management practices – how we manage provision of the services,
- Monitoring – how the plan will be monitored to ensure objectives are met,
- Asset management improvement plan – how we increase asset management maturity.

Other references to the benefits, fundamentals principles and objectives of asset management are:

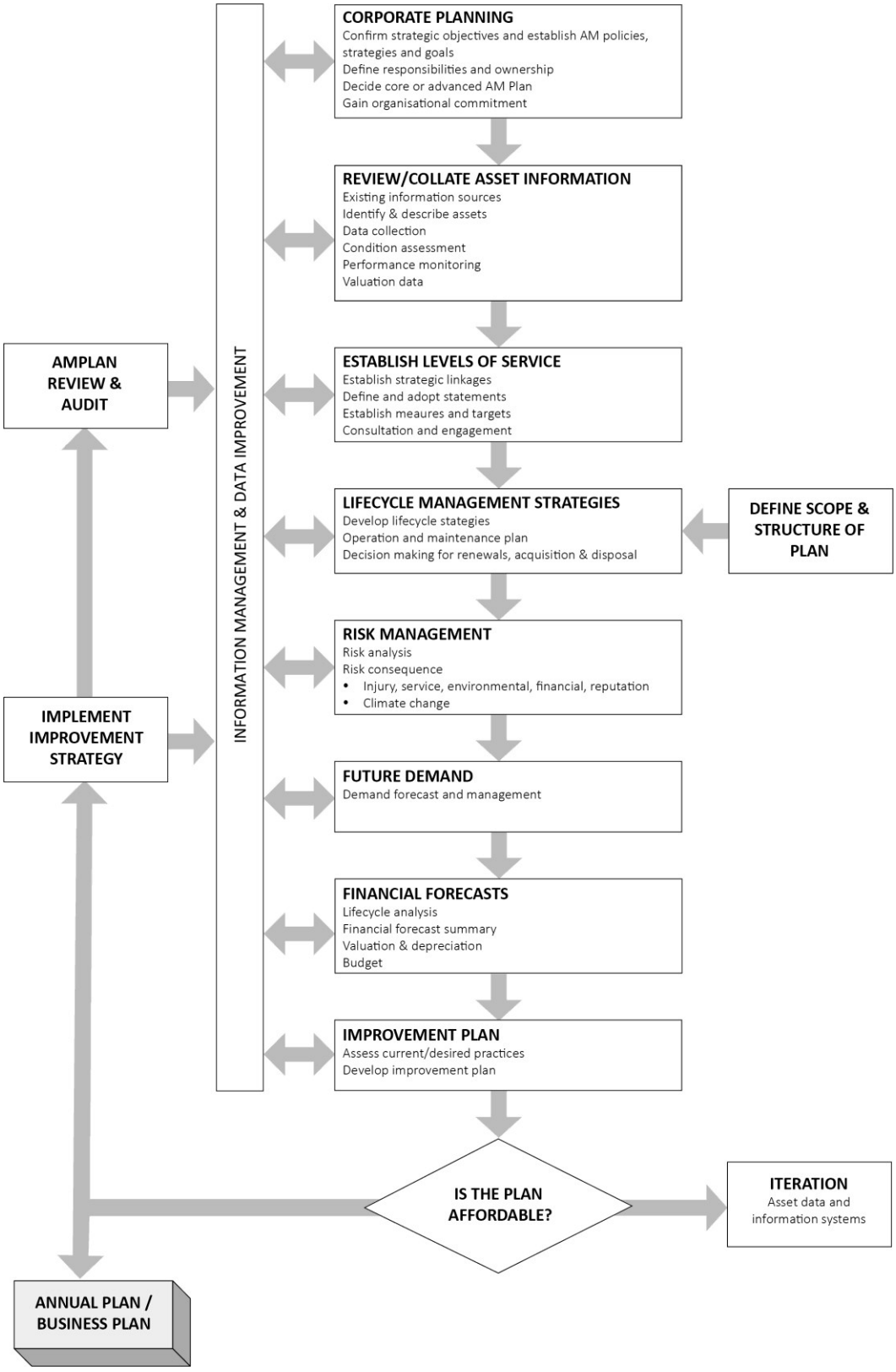
- International Infrastructure Management Manual 2015 [1]
- ISO 550002

[1] Based on IPWEA 2015 IIMM, Sec 2.1.3, p 2| 13
[2] ISO 55000 Overview, principles and terminology

A road map for preparing an Asset Management Plan is shown below:

Figure 2.2: Road Map for preparing an Asset Management Plan

Source: IPWEA, 2006, IIMM, Fig 1.5.1, p 1.11



2.3 Key Stakeholders & Organisational Responsibilities

Key stakeholders in the preparation and implementation of this Asset Management Plan are shown in Table 2.3.

Table 2.3: Key Stakeholders in the Asset Management Plan

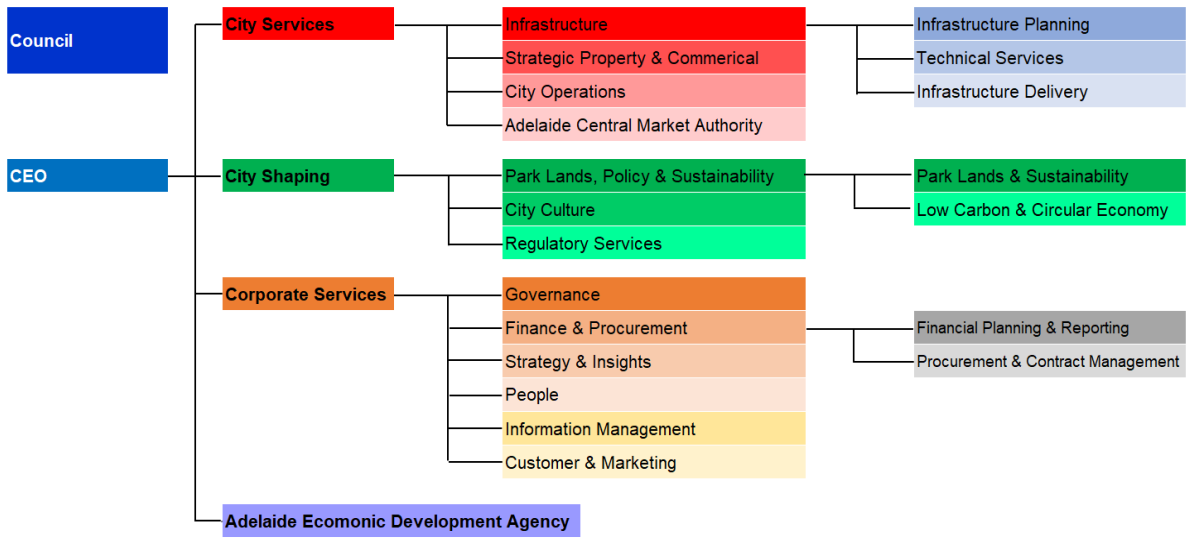
Key Stakeholder	Role in Asset Management Plan
Residents, Ratepayers & Businesses	Provide feedback on current and desired levels of service, which is considered in the development of Asset Management Plans.
Workers, Visitors, Tourists and Students	
Capital City Committee (CCC)	Intergovernmental body established under the City of Adelaide Act (1998) which initiates new projects to enhance and promote the development of the City of Adelaide as the capital city of the state.
Lord Mayor & Elected Members	Represent and advocate for the needs of the community and set high level direction through the development of asset management principles in the Strategic Plan. Approve the Asset Management Plan and Long-Term Financial Plan, to ensure the organisation maintains financial sustainability over the short, medium, and long terms, with consideration of community needs/expectations and corporate risk management requirements.
Chief Executive Officer & Executive Leadership Team	Responsible for the allocation of resources and development of sound asset management practice across the organisation as well as ensuring that all asset management activities are consistent with the objectives of Council's Strategic Plan, the Business Plan and Budget process and the Long-Term Financial Plan. Responsible for ensuring the financial projections in the adopted Asset Management Plans are reflected in the Long-Term Financial Planning and include sustainable maintenance, operations, renewal, and upgrade costs of current and future assets.
Associate Director Infrastructure	Responsible for providing leadership and direction for Council's Asset Management Framework and Project Delivery.
Infrastructure Planning	Responsible for the lifecycle management of Council's Infrastructure Assets and the development of Asset Management Plans, ensuring alignment with the Strategic Management Framework and principles and objectives outlined in the Strategic Plan and other relevant corporate planning documents.
Park Lands & Sustainability	Responsible for developing the Adelaide Park Lands Management Strategy, Park Lands and Square Master Plans and initiating priority Park Lands & Open Space upgrade/new project initiatives. Responsible for facilitating the identification of climate change risks and potential impacts to infrastructure assets.

Key Stakeholder	Role in Asset Management Plan
Low Carbon & Circular Economy	Responsible for facilitating the identification of opportunities to improve circular economy outcomes within infrastructure standards and specifications.
Traffic & Transport	Responsible for developing the Integrated Transport Strategy, Corridor Planning Studies and initiating priority Transportation upgrade/new project initiatives as well as providing technical traffic advice for capital works projects and operational issues.
Strategy & Insights	Responsible for the Strategic Management Framework, including the development of the Strategic Plan in consultation with the Executive Leadership Team, Elected Members, and key strategic stakeholders.
Technical Services	Responsible for technical design documentation to facilitate construction of infrastructure projects, review, and update infrastructure technical standards to ensure they are fit-for-purpose as well as the provision of general engineering and technical advice.
Infrastructure Delivery	Responsible for delivering Capital Works Projects identified in the Asset Management Plan and Annual Business Plan and Budget.
Financial Planning & Reporting	Responsible for the development and currency of the Asset Accounting Policy, Fixed Asset Guideline, as well as the preparation of asset sustainability and financial reports, which incorporate depreciation and asset revaluations in compliance with Australian accounting standards.
Procurement & Contract Management	Responsible for ensuring appropriate procedures are in place to enable efficient and effective procurement and contract management that demonstrates value for money and ensure public money is appropriately spent in accordance with the Local Government Act.
City Operations	Responsible for delivering day-to-day maintenance and operational activities, ensuring works are prioritised, planned and delivered consistently with operational and maintenance plans.
Regulatory Services	Responsible for issuing permits with conditions to enable external parties to undertake works on Council Infrastructure as well as enforcing rectification for works that are not compliant with CoA construction standards.
Stormwater Management Authority (SMA)	The SMA acts as a stormwater planning and prioritisation body for South Australia. It promotes the development of Stormwater Management Plans (SMPs) by local government. The SMA administers the Stormwater Management Fund (SMF) which was established to primarily work with Local Government to assist with meeting the costs of stormwater management planning and stormwater infrastructure.

Key Stakeholder	Role in Asset Management Plan
Adjacent Councils	Project partners in the development stormwater management plans impacting water catchments in the Adelaide Metropolitan Area.
Green Adelaide	Statutory board established by the SA Government, to create a cooler, greener, wilder and climate resilient Adelaide. Green Adelaide provides grant funding opportunities to local government to deliver greening outcomes, incorporating water sensitive urban design (WSUD) or biodiversity sensitive urban design (BSUD) principles.
Department of Infrastructure and Transport (DIT)	Collaborative partner for major projects.
SA Water	Shared management responsibility for sections of Karrawirra Pari/River Torrens (below pool level). The Torrens Lake, upstream of the Torrens Weir extending to Albert Bridge, is the sole responsibility of the City of Adelaide, with the remaining sections of the River outside of this area having shared management responsibilities.
Brownhill and Keswick Creeks Stormwater Board	The Brown Hill and Keswick Creeks Stormwater Board is a regional subsidiary responsible for coordinating delivery of a Stormwater Management Plan, which aims to mitigate serious flood risks and help safeguard properties across the catchment.

Our organisational structure for service delivery associated with infrastructure assets is shown in Figure 2.3.

Figure 2.3: Organisational Structure



3.0 LEVELS OF SERVICE

3.1 Customer Research and Expectations

In November 2021, the City of Adelaide undertook an engagement process with City residents and visitors to better understand and measure levels of customer satisfaction for users who utilise the services provided by our Water Infrastructure. The engagement was advertised on signage in City Streets as well as through the City of Adelaide's social media platforms.

The insights from the Survey are intended to be used to identify where current levels of service are not meeting the community's expectation. This will enable recommendations to be made to Council regarding future resourcing requirements for specific services.

The engagement process was primarily undertaken through questionnaire surveys (113 total respondents), where information was collected online using the YourSay platform (61 respondents), as well as through on street intercepts at various locations across the City (52 respondents). Additional information and feedback relating to CoA's infrastructure assets was also collected through the 2021 Resident Survey (318 comments) and engagement with the Disability Access and Inclusion Panel (44 comments).

The demographic distribution of respondents who provided feedback is presented across Figures 3.1-1 to 3.1-3 There were significantly more survey responses received from City visitors compared to residents and an even balance across genders.

Figure 3.1-1: Respondent distribution

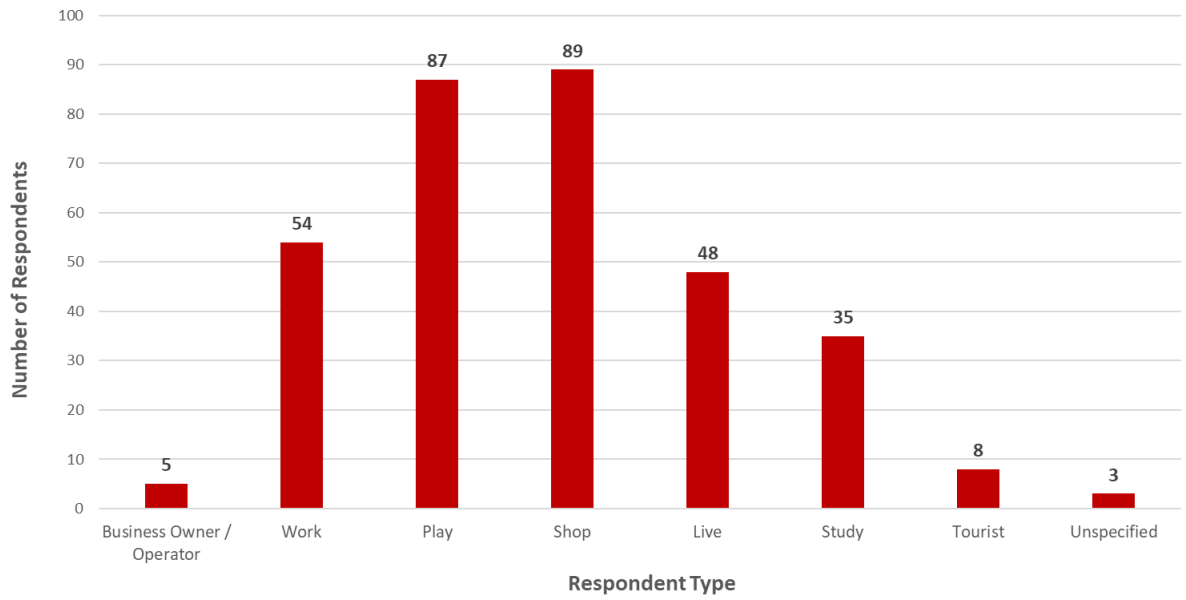


Figure 3.1-2: Respondent Distribution (Residents v Visitors)

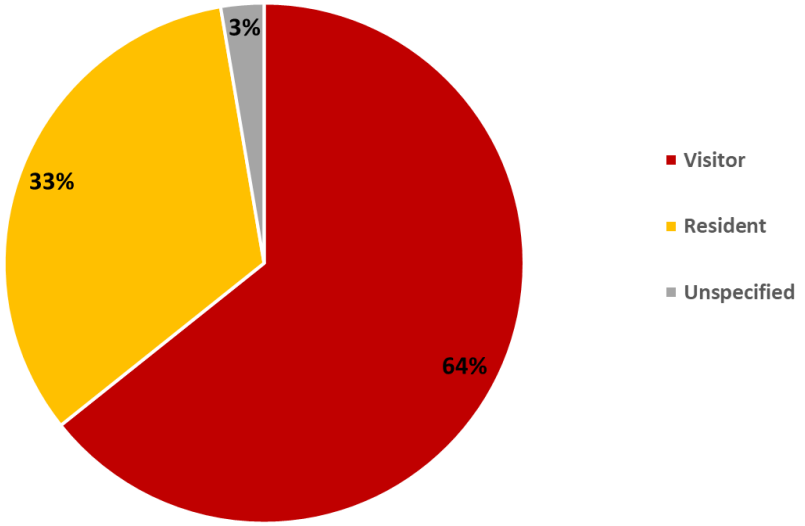
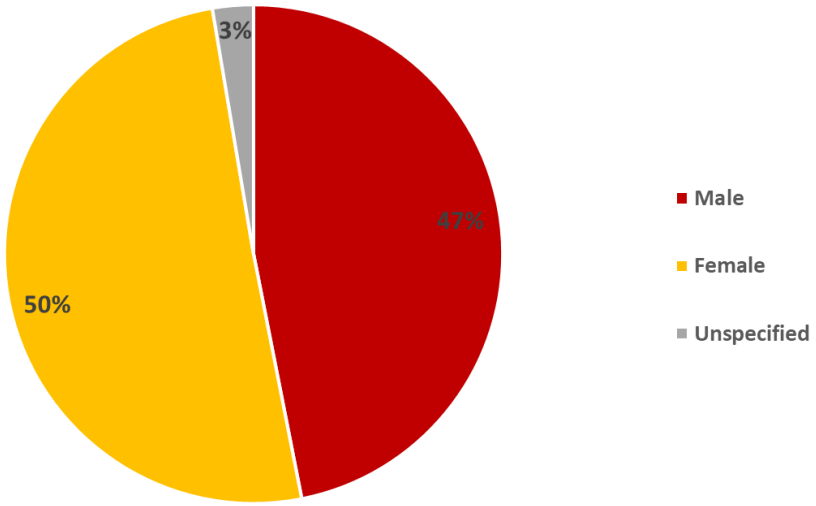


Figure 3.1-3: Respondent Distribution (Gender)



To ensure that data was collected to enable a clear line of sight for decision making purposes, the questionnaire was structured to differentiate responses relating to the City's streets and the Park Lands.

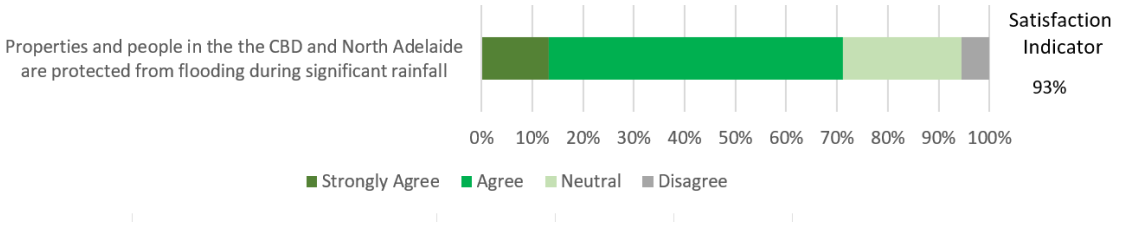
For each performance measure, a customer satisfaction indicator was calculated which represents the percentage of respondents who were satisfied with the service (neutral responses were omitted from the calculation). These figures can then be compared against CoA's organisation scorecard target of 70% satisfaction to identify where our services are not being delivered in line with community expectations.

The results for City Streets and Park Lands Water Infrastructure assets are presented and discussed below.

City Streets

Respondents were very satisfied with the level of flood protection provided by our Water Infrastructure on City Streets, where the performance measure had a satisfaction indicator of 93%, which is well above CoA's 70% target, as shown in Figure 3.1-4 below.

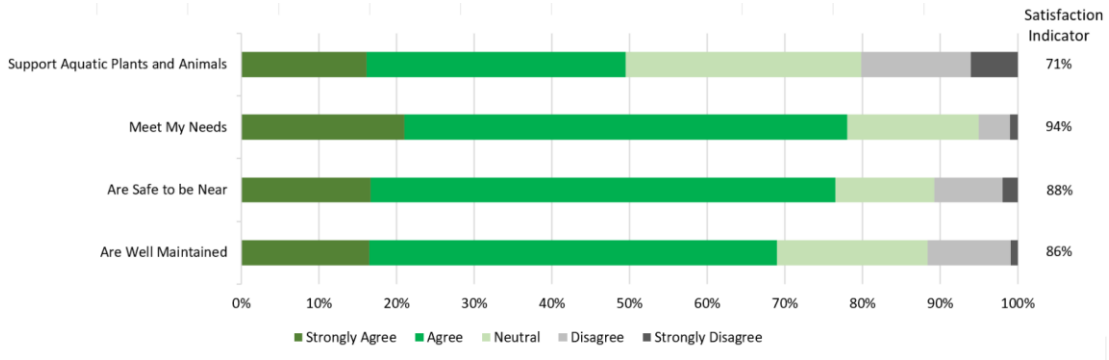
Figure 3.1-4: Properties are safe from flooding following rainfall



Park Lands

Respondents were satisfied with the overall performance of the Karrawirra Pari/River Torrens, creeks and Park Lands water courses, where each of the performance measures had satisfaction indicators exceeding CoA's 70% target, as shown in Figure 3.1-5 below.

Figure 3.1-5: Karrawirra Pari/ River Torrens, creeks and Park Lands water courses



Summary

Table 3.1. below provides a high-level summary of the community's feedback for our water infrastructure.

Table 3.1: Consultation Summary Table

Category	Average Score	Very Poor (<40%)	Poor (40-54%)	Average (55-69%)	Good (70-85%)	Excellent (>85%)
Underground Stormwater Drainage Network	93%					●
Karrawirra Pari/River Torrens and Park Lands watercourses	85%				●	

The overall feedback confirmed appropriate levels of customer satisfaction for all water infrastructure assets.

A Recommended Levels of Service Report was presented to Council, with the recommendations approved in November 2023. This report noted the community consultation undertaken and the associated benchmarking of current user satisfaction. Additionally, Council also approved the development of the Water Infrastructure Asset Management Plan based on the planning principles and recommended management strategies presented within the report and its attachments.

It is critical that future revisions of the Water Infrastructure Asset Management Plan appropriately recognise the strategic direction set by the Stormwater Management Plan (scheduled for completion in 2026). The Stormwater Management Plan will identify key priority projects across the City of Adelaide to improve stormwater drainage capacity and improve water quality for the Karrawirra Pari/River Torrens and Park Lands water courses.

3.2 Strategic Planning

Under the Local Government Act (SA) 1999, we are legislatively required to establish a suite of Strategic Management Plans, which guide Council's future planning, asset management and financial sustainability. An overview of these strategic management plans are shown below in Table 3.2-1:

Table 3.2-1: Strategic Management Documents

Strategic Plan *Community*	Long term with a four year delivery focus. *Planning for the vision and aspirations of the Adelaide Capital City.*
Long-Term Financial Plan *Financial*	Ten year Plan, revised annually to ensure a ten year view is maintained. *Planning for the long-term financial sustainability of the City of Adelaide.*
Asset Management Plans Infrastructure	Suite of ten year Plans. *Planning for the sustainable renewal and maintenance of Council assets.*
City Plan *Development / Built Form*	Ten year Spatial Plan. *Planning for the future land uses and built form of the Adelaide Capital City.*

Through the City of Adelaide Draft Strategic Plan 2024-2028, Council's vision is:

Our Adelaide. Bold. Aspirational. Innovative.

Achieving our vision for the future will be guided by our long term aspirations:

Our Community: Vibrant, connected and inclusive
Our Environment: Resilient, protected and sustainable
Our Economy: Growing, innovative and responsive
Our Places: Interesting, purposeful and safe
Our Corporation: High performing, customer-centric and bold

As Adelaide grows, we will need to consider economic vitality, social connectivity and wellbeing, distinctive precincts, environmental and financial sustainability, asset management and service delivery. To ensure we maintain our liveability and to support growth, these principles will underpin everything we do:

- Exceptional Amenity - Be bold and courageous in our pursuit of excellence for our city.
- Quality Housing - Strive for liveability and affordability to attract and retain residents.
- Community Connection - Strengthen connection, accessibility, diversity and inclusivity by putting people first.
- Unique Experiences - Create interesting experiences for our residents, workers and visitors.
- Climate Resilience - Embed climate resilience in all that we do.
- Economic Growth - Encourage innovation, investment and development in current and emerging sectors.
- Budget Repair - Provide quality services and ensure long-term financial sustainability.

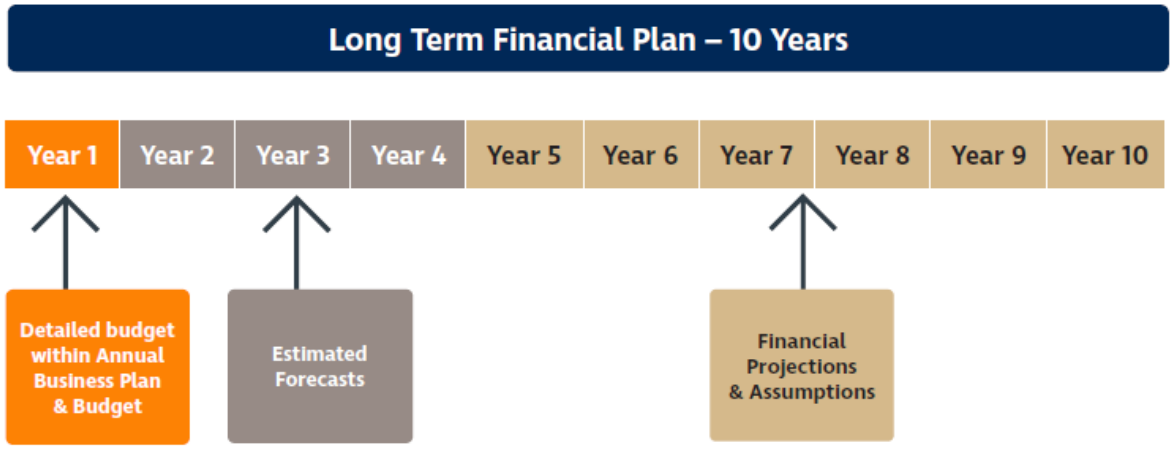
The Strategic Plan is supported by a suite of long and short-term strategies and action plans as well as a Resource Plan. The Resource Plan will provide a 4-year view of the projects, resources, and budgets required to deliver our Strategic Plan objectives. It informs the Long-Term Financial Plan (as shown in Figure 3.2) and acts as the key link between the Strategic Plan and Annual Business Plan & Budget, providing transparency between our vision and the key projects we deliver.

Integrated Delivery Planning ensures that prudent and efficient decisions are made, with line-of-sight between Council's Strategic Plan objectives and the major infrastructure projects we deliver. While this Asset Management Plan does not identify financial forecasts associated with new and upgrade projects, it does ensure required asset renewals are aligned (where practical) with key new and upgrade projects specified within the Resource Plan. Infrastructure projects will reference the Adelaide Design Manual for

transformational projects supported by upgrade/new funding allocated with the Resource Plan and Long-Term Financial Plan.

Each year our annual business plan and budget formalises funding allocations to continue providing services and progress new projects. It enables existing projects to move from one delivery stage to the next (e.g. progress concept design to detailed design and detailed design to construction) as well as consider emerging risks and opportunities that may result from Council decisions, community requests or other external factors.

Figure 3.2: Long-Term Financial Plan



The relevant aspirations and objectives of the City of Adelaide Draft 2024-2028 Strategic Plan and how they are considered within this Asset Management Plan are summarised in Table 3.2-2.

Table 3.2-2: Strategic aspirations, objectives and outcomes and how these are considered in this Plan

Aspirations	Objectives	Outcomes	Asset Management Alignment
Our Communities *Vibrant, connected and inclusive*	Support our communities thrive Create fun, lively and interesting experiences Celebrate and honour community and cultures	Drive affordable, safe and quality housing outcomes that attract and retain residents in our city An interesting and engaging place to live, learn and visit An inclusive, equitable and welcoming community where people feel a sense of belonging	• Create enabling infrastructure to support world class events, festivals and activation • Support the development of new cultural and civic infrastructure • Deliver asset renewal and asset maintenance programs to ensure our assets are safe for people of all ages and abilities
Our Environment *Resilient, protected and sustainable*	Protect, enhance, and activate our Park Lands and open space Be climate conscious and resilient Prioritise sustainability in our decisions for the future	Lead as a Low Carbon Emissions City A sustainable city where climate resilience is embedded in all that we do The status, attributes and character of our green spaces and the Park Lands are protected and strengthened	• Increase the use of recycled or sustainable materials • Implement sustainable, renewable and green systems, infrastructure, practices and materials in our projects and services • Adapt to climate change and enhancing our climate resilience through upgrading our existing assets and creating new assets • Ensure all asset investment (design, construct and maintenance) considers and embeds appropriate climate resilience measures • Enhance the environmental value, productivity, quality and biodiversity of the Park Lands, squares, open space and streetscapes • Protect and restore native habitat in our city • Increase in tree canopy cover and green spaces
Our Economy *Growing, innovative and responsive*	Continue to grow our economy in alignment with the Community Support existing businesses to be agile and responsive to change Create strong skilled workforces	Adelaide's unique experiences and opportunities attract visitors to our city Achieve a critical mass of jobs and investment and attract and retain businesses by growing a dynamic, holistic economy Council is driving development opportunities for our community via diverse commercial activities	• Deliver infrastructure upgrade projects to attract increased visitation into the City and promote business development and economic growth • Explore project partnership opportunities with State Government, developers and other third-parties
Our Places *Interesting, purposeful and safe*	Manage assets to meet the needs of our community Encourage bold, interesting and purposeful development Facilitate and activate our places in a safe and accessible way for our community	Community assets are adaptable and responsibly maintained Encourage bold, interesting and purposeful development that supports the changing needs of our community and city Create safe, inclusive and healthy places for our community	• Deliver asset renewal and asset maintenance programs to ensure our assets are safe for people of all ages and abilities • Ongoing review of asset management strategies and technical standards to optimise whole-of-life costs • Continue to undertake regular condition audits and revaluation for all our Water Infrastructure assets within the nominated 4-year cycles, including regular review of asset useful lives • Deliver quality street and laneway upgrades, main streets, precincts and neighbourhood revitalisation and improvements that make Adelaide well-designed, safe and unique • Support the creation of multi-use green spaces such as open space, community gardens and pocket parks that enable shared use and community connection • Deliver Park Land and Streetscape improvements to cater for emerging community needs • Preserve and promote heritage assets

3.3 Legislative Requirements

There are many legislative requirements relating to the management of infrastructure assets including Australian Legislation, State Legislation and State Regulations. Legislative requirements relevant to the Water Infrastructure Asset Management Plan are outlined in Table 3.3.

Table 3.3: Legislative Requirements

Legislation	Requirement
Aboriginal Heritage Act 1988	An Act to provide for the protection and preservation of the Aboriginal heritage
Adelaide Park Lands Act 2005	An Act and Framework that promotes the special status, attributes, and character of the Adelaide Park Lands; to provide for the protection of those Park Lands and their management as a world class asset to be preserved as an urban park for the benefit of present and future generations
Australian Accounting Standards	Standards that set out the financial reporting standards relating to the revaluation and depreciation of assets
Australian Standards	All of Council's infrastructure projects are undertaken in accordance with Australian Standards, or in the absence of, best practice guidelines
Australian Road Rules 1999	The Australian Road Rules have been made into regulations under the Road Traffic Act (South Australia) and came into operation throughout Australia on 1 December 1999
City of Adelaide Act 1998	An Act to establish mechanisms to enhance the role of the city of Adelaide as the capital city of South Australia; to make special provision in relation to the local governance of the city of Adelaide; and for other purposes
Civil Liability Act 1936	An Act to outline liability of road authorities under Section 42
Development Act 1993	An Act to provide for planning and regulate development in the state; to regulate the use of management of land and building; and for other purposes
Emergency Management Act 2004	An Act to establish an emergency management framework for the State reflecting the collective responsibility of all sectors of the community including both Local and State government and recognising that a co-ordinated approach is required
Environment Protection Act 1993	An Act established to enable the Environment Protection Authority (EPA) to monitor and regulate all relevant environmental matters, including water quality, and pollution and waste control
Environment Protection (Water Quality) Policy 2015	Under the Environmental Protection Act, provides specific and detailed protection of the state's surface, marine and underground water sources

Highways Act 1926	An Act to provide for the appointment of a Commissioner of Highways and to make further and better provisions for the construction and maintenance of roads and works and for other purposes
Linear Parks Act 2006	An Act to provide the protection of the River Torrens Linear Park, as world-class assets to be preserved as public parks for the benefit of present and future generations
Local Government Act 1999	An Act to set out the role, purpose, responsibilities, and powers of local governments including the preparation of a Long-Term Financial Plan supported by asset management plans for sustainable service delivery
National Construction Code 2019	Sets our minimum standards for stormwater management for property developments
Natural Resources Management Act 2004, Water Industry Act & Regulations 2012	An act established to enable the Department of Environment and Water (DEW) to provide of advice to water industry entities, and to develop new water and wastewater legislation in the form under the Water Industry Act 2012.
Roads (Opening and Closing) Act 1991	An Act to provide for the opening and closing of roads and allows for formalisation of roadway status
State Records Act 1997	An Act to ensure Local Government's record and store all relevant information as set out by the State Government of South Australia
Water Industry Act & Regulations 2012	An Act established to enable the Office of the Technical Regulator (OTR) to monitor and regulate the safety and technical standards associated with the water industry, including the related infrastructure and installations extending to associated equipment
Work Health and Safety Act 2012	Provides minimum standards for health and safety of individuals performing works

3.4 Customer Levels of Service

Customer Levels of Service measure how the community receives a service and whether the organisation is providing community value. Levels of service are monitored and adjusted from the public consultation process, customer satisfaction surveys and customer service centre feedback.

The Customer Levels of Service are considered in terms of:

Quality How good is the service … what is the condition or quality of the service?

Function Is it suitable for its intended purpose …. Is it the right service?

Capacity Is the service over or under used … do we need more or less of these assets?

In Tables 3.4 under each of the service measures types (Quality, Function, Capacity) there is a summary of the performance measure being used, the current performance, and the expected performance based on the current budget allocation.

These are measures of fact related to the service delivery outcome (e.g. number of occasions when service is not available or proportion of replacement value by condition %'s) to provide a balance in comparison to the customer perception that may be more subjective.

Table 3.4: Customer Level of Service Measures

Type of Measure	Level of Service	Performance Measure	Current Performance	Expected Trend Based on Current Budget
Quality	Condition – Water Infrastructure assets are well maintained and in an appropriate condition	Customer service requests relating to reported hazards and maintenance of Water Infrastructure.	2022 – 71 requests Past 4 years average –-54/year	Expected to increase as aging stormwater infrastructure deteriorates
	Confidence levels		**Medium**	**Medium**
	Amenity – Water Infrastructure assets are clean and free from debris	Customer service requests relating to stormwater catchpits being blocked and the water quality of Torrens Lake and Park Lands creeks	2022 – 59 requests Past 4 years average - 47/year	Expected to remain the same
		Customer satisfaction survey results relating to the cleanliness of Karrawirra Pari/River Torrens and Park Lands watercourses	94%	Expected to remain the same
		Customer satisfaction survey results relating to River Torrens, creeks and Park Lands Water Courses water quality supporting aquatic plants and animals	71%	Expected to remain the same
	Confidence levels		**Medium**	**Medium**
Function	Fit for Purpose - Water Infrastructure provides required level of service for the intended purpose and meets community needs	Customer service requests relating to stormwater ponding and flooding	2022 – 28 requests Past 4 years average - 24/year	Expected to decrease as stormwater pipes and catchpits are renewed to required service standards
		Customer satisfaction surveys relating to properties being safe from flooding	93%	Expected to decrease as stormwater pipes and catchpits are renewed to required service standards
Capacity	Capacity – Water Infrastructure network has adequate capacity to meet the expectations of residents	Customer service requests relating to new Water Infrastructure	Not currently measured	Subject to Council adoption of upgrade/new projects through Business Plan and Budget
	Confidence levels		**Medium**	**Medium**

3.5 Technical Levels of Service

To deliver the customer values, and impact the achieved Customer Levels of Service, are operational or technical measures of performance. These technical measures relate to the activities and allocation of resources to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- **Acquisition** – the activities to provide a higher level of service (e.g. widening a road, sealing an unsealed road, replacing a stormwater pipe with a larger size) or a new service that did not exist previously (e.g. a new library)
- **Operation** – the regular activities to provide services (e.g. opening hours, cleansing, mowing grass, energy, inspections, etc
- **Maintenance** – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. road patching, unsealed road grading, building and structure repairs)
- **Renewal** – the activities that return the service capability of an asset up to that which it had originally provided (e.g. road resurfacing and pavement reconstruction, stormwater pipe replacement and building component replacement)
- **Disposal** – the activities to remove and/or dispose of an asset that may be considered as underperforming, underutilised or obsolete

Service and asset managers plan, implement and control technical service levels to influence the service outcomes.[3]

Table 3.5 shows the activities expected to be provided under the current 10 year Planned Budget allocation, and the Forecast activity requirements being recommended in this Asset Management Plan.

It is important to monitor the service levels regularly as circumstances can and do change. Current performance is based on existing resource provision and work efficiencies. It is acknowledged changing circumstances such as technology and customer priorities will change over time.

[3] IPWEA, 2015, IIMM, p 2|28.

Table 3.5: Technical Levels of Service

Lifecycle Category	Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance	Recommended Performance
Acquisition (upgrade/new)	Upgrade / New Projects	To upgrade and further develop the water infrastructure network to ensure it is safe, fit-for-purpose and meets the needs of the community	Delivery of key upgrade/new projects	Upgrade/new projects aligned to Strategic Plan objectives are initiated through the Business Plan and Budget process on an annual basis, where projects are evaluated and prioritised based on strategic alignment and financial capacity.	Upgrade/new projects aligned to Strategic Plan objectives are informed by the Stormwater Management Plan, with financial requirements accommodated into the Long-Term Financial Plan. Initiatives are confirmed to proceed annually through the Business Plan and budget process.
			Budget:	As adopted annually in BP&B	To be developed
Operation	Condition Audits	To collect asset condition data to inform capital renewal planning and revaluation	Condition audit of Water Infrastructure assets	Every 4 years	Every 4 years
	Stormwater Pipe Cleaning	To ensure pits and pipes are clean and free of debris to remain operable	Frequency of stormwater pit and pipe cleaning	As required following customer service requests Seasonal cleaning at critical locations with high leaf fall litter	To be reviewed with planned updates to operations and maintenance standards
	Open Channel Cleaning	To ensure open channels are clean and free of debris	Frequency of open channel cleaning	Inspected annually and cleansed as required	To be reviewed with planned updates to operations and maintenance standards
	Gross Pollutant Trap (GPT) waste removal	To ensure GPT's can continue to perform their function efficiently	Frequency of GPT waste removal	Inspected approximately every 6 months, with waste removed as required.	To be reviewed with planned updates to operations and maintenance standards
	Water Quality Testing for Torrens Lake	To ensure water quality in Torrens Lake meets minimum standards as guided by SA Health to allow management of the Torrens Lake below SA Health threshold triggers for primary or recreational secondary contact To keep track of blue-green algae levels ensuring the correct levels are maintained in the Torrens Lake. Water quality data is shared with relevant authorities to aid in decision making	Frequency of testing	Summer Program – Weekly programme Rest of the year – Monthly programme	To be reviewed with planned updates to operations and maintenance standards
	Non-Potable Water Testing	To ensure infrastructure is operated and managed in accordance with legislative requirements	Frequency of testing	Annual inspections are undertaken by a certified plumber for the backflow device	Annual inspections are undertaken by a certified plumber for the backflow device
			Budget	Condition audits: $140k/average every 4 years Stormwater cleaning: $420k/year Water quality testing: $200k/year	To be reviewed with planned updates to operations and maintenance standards

Lifecycle Category	Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance	Recommended Performance
Maintenance	Maintenance Audits	To ensure Water Infrastructure asset defects are proactively identified prior to faults occurring.	Frequency of maintenance inspections for water infrastructure assets	Water infrastructure maintenance inspections are undertaken following the identification of a deficiency through general parklands and street inspections and customer service requests	To be reviewed with planned updates to operations and maintenance standards
	Maintenance Activities	To ensure water infrastructure is maintained in a serviceable condition to ensure it remains operable and free of hazards	Completion of planned and reactive maintenance	Maintenance works are delivered based on priority (location and severity) with consideration of available budget	To be reviewed with planned updates to operations and maintenance standards
			Budget	Water Infrastructure maintenance: $734,000	To be reviewed with planned updates to operations and maintenance standards
Renewal	Renewal Projects	To ensure assets are renewed, providing service in line with community expectations at lowest lifecycle costs	% of assets in condition 4 & 5	Condition 4 – 16% Condition 5 - 1%	Condition 4 less than 10% Condition 5 0%
			Asset renewal funding ratio	90% (existing Asset Management Plan)	100% (assuming budget is adopted)
			Budget	$5,182,156	*$12,597,000 (10 Year Average)*
Disposal	Disposals Projects	To ensure that assets that may be underperforming, underutilised or obsolete are removed from service	Disposal of assets	Major assets are recommended for disposal through Council decision, with financial requirements identified and incorporated through the Business Plan and Budget	Major assets are recommended for disposal through Council decision, with financial requirements identified and incorporated through the Business Plan and Budget
			Budget	As adopted annually in BP&B	As adopted annually in BP&B

4.0 FUTURE DEMAND

4.1 Demand Drivers

The drivers affecting demand on assets include population change, regulations, changes in demographics, seasonal factors, vehicle ownership rates, consumer preferences and expectations, technological changes, economic factors, and environmental impacts.

4.2 Demand Forecasts

The present position and projections for demand drivers that may impact future service delivery and use of assets have been identified and documented.

4.3 Demand Impact and Demand Management Plan

The impact of demand drivers that may affect future service delivery and use of assets are shown in Table 4.3.

Demand for new services will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand and demand management. Demand management practices can also include non-asset solutions with a focus on providing the required service without the need for the organisation to invest in new or upgraded infrastructure. Management actions could include reducing the demand for the service or educating users around alternative options. It is important to ensure that these strategies consider the associated risks and consequences.

Opportunities identified to date for demand management are shown in Table 4.3. Further opportunities will be developed in future revisions of this Asset Management Plan.

Table 4.3: Demand Management Plan

Demand driver	Current position	Projection	Impact on services	Demand Management Plan
City Growth	2021 Statistics: Residents - 25,551 Businesses – 11,519 Daily Visitors – 321,500	2041 Forecast: 46,000 residents 2036 Target: 50,000 residents Anticipated ongoing business growth in line with residential city growth and South Australian State growth projections Anticipated daily visitor growth in line with South Australian State growth projections	City growth will result in an increased urban density and a reduction in pervious areas, placing increasing demands and capacity requirements for our water infrastructure assets.	Delivery of prioritised upgrade/new projects identified in the Strategic Plan and key Corporate planning documents (referenced in Section 2.1) to enhance the water infrastructure and accommodate city growth through upgrading existing assets and creating new assets to align service provision with the evolving needs of the community. This Asset Management Plan will ensure asset renewals will consider and align where practical with these key upgrade/new initiatives. Finalise the Stormwater Management Plan to identify key priority upgrade projects that will improve the City's overall flood resiliency.
Changing Demographic	2021 Statistics 0 to 11 Years 1,246 (5%) 12 to 17 Years 587 (2%) 18 to 34 Years 12,117 (51%) 35 to 49 Years 4,409 (19%) 50 to 59 Years 2,281 (10%) 60 to 69 Years 2,233 (10%) 70 Years & Above 2,633 (3%)	2041 Forecast 0 to 11 Years 2,633 (6%) 12 to 17 Years 1,501 (3%) 18 to 34 Years 21,771 (47%) 35 to 49 Years 8,933 (19%) 50 to 59 Years 4,272 (9%) 60 to 69 Years 3,274 (7%) 70 Years & Above 4,175 (9%)	Changing expectations from a demographically diverse customer base will result in our Water Infrastructure, particularly natural water assets within the Park Lands, being subject to new demands.	Ongoing engagement with city users through annual City User Profile surveys, and ensuring that Strategic Documents are updated on a cyclic basis to reflect changes with community expectations. Delivery of prioritised upgrade/new projects identified in the Strategic Plan and key Corporate planning documents (referenced in Section 2.1) to align service provision with the evolving needs of the community. This Asset Management Plan will ensure asset renewals will consider and align where practical with these key upgrade/new initiatives.
Tourism & Event Growth	A key objective in Council's 2023-24 Business Plan and Budget was to provide 'year round' events that attract people to visit the City. Investment in public infrastructure has also been identified as part of the South Australian Tourism Plan (2020) and the SA Visitor Economy Sector Plan 2030. In 2020 annual tourism expenditure in Adelaide was estimated to be approximately $3.9 billion	Cultural and event infrastructure will be an ongoing and increasing priority for both the City of Adelaide and South Australian State Government. It is projected that annual tourism expenditure will continue to grow and it is estimated to be $7.7 billion/year by 2030.	There will be increasing demands for higher levels of service for water infrastructure to support tourism and event growth. This could include improving the amenity of Torrens Lake as well as additional sewer and water distribution systems to facilitate new permanent event sites.	Delivery of prioritised upgrade/new projects identified in the Strategic Plan and key Corporate planning documents (referenced in Section 2.1) to support tourism and event growth. This Asset Management Plan will ensure asset renewals will be consider and align where practical with these key upgrade/new initiatives.

Demand driver	Current position	Projection	Impact on services	Demand Management Plan
Environmental Sustainability & Carbon Neutrality	Changes to the global climate (climate change) are clear. There are documented increases in the average air and ocean temperature, widespread melting of snow and ice, and rising average sea levels. City of Adelaide's 2020-2024 Strategic Plan has an objective to become one of the world's first carbon neutral cities by 2025. Additionally, a Climate Action Plan (2022-2025) has been developed to ensure we continue to drive down our carbon footprint and mitigate climate impacts for our residents and visitors. Currently City of Adelaide include recycled materials in Water Infrastructure projects, where there is demonstrated environmental benefits that also consider cost and performance.	Inaction to climate change and climate risk will result in negative health impacts to our community and potentially impact to our businesses and economy. Reduced water availability and increasing heat will result in increased stress and resources required for maintaining and operating our assets. To effectively manage climate change and climate risk Council will need to continue to respond through substantial reductions in greenhouse gases (mitigation controls) and helping to prepare for and respond to the changing climate (adaptation controls).	There will be an increased demand to ensure we utilise more environmentally sustainable materials and construction techniques for water infrastructure projects, with lower carbon footprint and improved circular economy outcomes. It is anticipated that additional new and upgraded water infrastructure will be required to improve stormwater runoff that is discharged into the River Torrens and Park Lands Open channels.	Our Strategic Planning, Asset Management and Project Delivery (including design and procurement) will continue to focus on ensuring that climate risk mitigation and adaption is a key focus. Ongoing reviews and updates to our design standards and technical specifications to ensure our assets transition towards having a lower carbon footprint with improved circular economy outcomes, as well as ensure they are more resilient to withstand extreme weather events. Finalise the Stormwater Management Plan to identify key priority upgrade projects that will improve water quality for the Karrawirra Pari/River Torrens and Park Lands watercourses. Finalise the Adelaide Park Lands Strategic Water Resources Study to identify key initiatives to enable sustainable water resource planning for current and future demands. Finalise the Water Sensitive Urban Design (WSUD) Priority Investment Study to identify key priority upgrade projects that will improve the quality of stormwater runoff that is discharged into natural water courses. Delivery of prioritised upgrade/new projects identified in the Strategic Plan and key corporate planning documents (referenced in Section 2.1), which support environmental sustainability and climate risk mitigation and adaptation. This Asset Management Plan will ensure asset renewals will consider and align where practical with these key upgrade/new initiatives.
Emerging Technology	Asset construction techniques and associated materials are currently undertaken in line with industry standards	Alternative construction techniques and materials with durability and sustainability benefits will continue to become more readily available and standardised.	Improvements in construction techniques and materials could result in improved asset durability, increased asset lifespans, reduced whole-of-life costs and improved environmental outcomes.	Continue to partner with industry, to monitor and evaluate new and emerging technologies, with trials of new materials, approaches, and methodologies to inform appropriate changes to standards and practices.
	Asset management systems and condition audit methodologies are in line with industry standards and best practice.	Asset management systems and technology will continue to evolve over time, particularly with respect to the collection of condition data and monitoring of asset deterioration over time.	Improved asset information and systems will enable improved decision making and efficiencies with respect to optimising whole-of-life-costs and managing asset risks.	
Legislation & Regulation	Legislation exists which outlines requirements for how Council's must manage infrastructure assets.	There is potential for future changes to legislation will influence how Council's infrastructure is managed.	New legislation may impose or require changes to asset management planning principles and activities. They may include requirements that have a financial and/or service level impact that must be met.	Continue to monitor changes to legislation and ensure appropriate adaptation into asset management practices. Any material impacts would be considered as part of the Annual Business Plan and Budget process and included in the next revision of the Asset Management Plan.

4.4 Asset Programs to meet Demand

The new assets required to meet demand will be acquired, donated or constructed. Additional assets are discussed in Section 5.4.

Acquiring new assets will commit City of Adelaide to ongoing operations, maintenance and renewal costs for the period that the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operations, maintenance and renewal costs.

All upgrade/new projects responding to demand will involve developing business cases, cost estimates and facilitating decision making to integrate upgrade/new project initiatives with operational asset management planning and the Long-Term Financial Plan. This process will be facilitated with Council and the Community through the Annual Business Plan & Budget Process.

4.5 Climate Change Adaptation

The impacts of climate change may have a significant impact on the assets we manage and the services they provide. In the context of the Asset Management Planning process climate change can be considered as both a future demand and a risk.

How climate change impacts on assets will vary depending on the location and the type of services provided, as will the way in which we respond and manage those impacts. As a minimum we consider how to manage our existing assets given potential climate change impacts for our region.

Risk and opportunities identified to date are shown in Table 4.5

Table 4.5 Managing the Impact of Climate Change on Water Infrastructure Assets and Services

Climate Change Description	Projected Change	Potential Impact on Assets and Services	Management
Increasing temperatures and more frequent, long-running and intense heatwaves	The number of days over 40°C to double by 2050 Average temperatures to increase across all seasons by between 1.5°C and 2°C by 2050	Increased heat related damage to assets including concrete cracking. Reduced lifespan of water infrastructure assets Increased costs to provide the same level of service Premature obsolescence as functionality is not met	Strategic Planning, Asset Management and Project Delivery (including design and procurement) will continue to focus on ensuring that climate risk mitigation and adaption is a key focus. Mitigation and adaptation measures will include: • Ongoing reviews and updates to our design standards and technical specifications to ensure our assets transition towards having a lower carbon footprint with improved circular economy outcomes as well as ensure they are more resilient to withstand extreme heat events • Proactively reviewing our asset management strategies with respect to the impacts of climate change, to ensure we continue to provide the agreed level of service at the lowest lifecycle cost
Less rain overall but more intense storms and flooding	Average annual rainfall to decrease by 7% by 2050 Intensity of heavy rainfall events to increase by at least 10% by 2050	Increased stormwater related damage to assets including earth, rubble and concrete erosion resulting in a loss of structural integrity/strength Reduced lifespan of water infrastructure assets Increased costs to provide the same level of service Premature obsolescence as functionality is not met (e.g. open channel capacity does not meet demand)	Strategic Planning, Asset Management and Project Delivery (including design and procurement) will continue to focus on ensuring that climate risk mitigation and adaption is a key focus. Mitigation and adaptation measures will consider: • Ongoing reviews and updates to our design standards and technical specifications to ensure our assets transition towards having a lower carbon footprint with improved circular economy outcomes as well as ensure they are more resilient to increased flood risk and inundation • Proactively reviewing our asset management strategies with respect to the impacts of climate change, to ensure we continue to provide the agreed level of service at the lowest lifecycle cost • Developing stormwater management plans to identify assets at risk and priority mitigation controls such as upgrading existing underground assets and creating new assets such as wetlands and detention basins to increase water storage capacity

The impact of climate change on assets is a new and complex discussion and further impacts and management strategies will considered and developed in future revisions of this Asset Management Plan. It is recommended to continue monitoring the impacts of climate conditions and associated cost implications as further investigation is undertaken and more data becomes available. This is included as a key action within this Asset Management Plans Improvement Plan.

5.0 LIFECYCLE MANAGEMENT PLAN

5.1 Lifecycle Management Overview

In order to effectively manage our assets, it is important to understand the relationship between all stages of the asset lifecycle. Effective asset management and sustainable financial planning requires a balance between the maintenance, renewal and disposal of existing assets and the delivery of new and upgraded assets.

Our goal is to provide assets that service the needs of the community, providing the agreed levels of service at the lowest lifecycle cost. To enable this, it is important to understand:

- How our assets are performing
- How our assets should be operated and maintained
- When our assets should be renewed
- When we should consider upgrading existing assets or constructing new assets
- How funding for new and upgraded assets is prioritised
- When we should consider disposing underperforming or underutilised assets

An overview of the asset lifecycle is shown in Figure 5.1 below:

Figure 5.1: Asset Lifecycle Overview

The lifecycle management plan details how CoA plans to manage and operate the assets at the agreed levels of service (Refer to Section 3) while managing life cycle costs.

5.2 Background Data

5.2.1 Physical parameters

The assets covered by this Asset Management Plan are shown in Table 5.2.1 and all figure values are shown in current day dollars.

Table 5.2.1: Assets Covered by this Plan

Asset Category	Asset Type	Quantity/Dimension	Replacement Value
Underground Stormwater Drainage Network	Stormwater Pits	3927 assets	$26.56 million
	Stormwater Junction Boxes	1800 assets	$17.22 million
	Stormwater Pipes	137.7 km	$144.05 million
	Stormwater Culverts	217 assets	$4.52 million
Stormwater Management Devices	Detention basins	16 assets	$6.80 million
	Bio-retention basins	1 asset	$0.18 million
	Gross Pollutant Trap	17 assets	$4.05 million
River Torrens and Park Lands Water Courses	Earth retaining structures	48 assets	$31.72 million
	Open channels and creeks	7.8 km	$9.59 million
	Weirs	3 assets	$35.12 million
Potable and Non Potable Water Distribution	Potable Water Distribution	3 locations	$0.77 million
	Non Potable Water Distribution	1 location	$0.36 million
Sewer	Sewer	3 locations	$1.17 million
Total			$282.11 million

5.2.2 Asset capacity and performance

Assets are generally provided to meet design standards where these are available. However, there are insufficient resources to address all known deficiencies. Locations where deficiencies in service performance are known are detailed in Table 5.2.2.

Table 5.2.2: Known Service Performance Deficiencies

Asset / Location	Service Deficiency
Underground Drainage Network	Since our underground drainage network was first constructed, the City has developed significantly resulting in increased impervious areas and increased volumes of stormwater being discharged onto our roads. This has placed higher demands on our underground drainage network to capture this surface runoff and remove it from our streets. A number of our aged stormwater pipes no longer have the required capacity to service these increased demands and will need to be replaced with larger pipes. The Stormwater Management Plan (scheduled for completion 2026) will enable us to better understand the existing performance of the underground drainage network and identify key priority locations to address performance deficiencies.

Torrens Weir	The Torrens Weir is an aging asset, originally constructed in 1881 with sluice gates added in 1929. The asset is approaching the end of its useful life and is planned for renewal/rehabilitation within this Asset Management Plan. A lifecycle study and options analysis is currently underway, which will guide the future management of the asset and inform updates to the forecast timing and costs of required renewal works.
River Torrens	The River Torrens is subject to environmental and biological pollutants including sedimentation deposits, duckweed overgrowth and cyanobacteria (blue-green algae) blooms. Upstream sedimentation loads result in silt deposits which build up over time and impact lake operations. Cyclic dredging is required to remediate these deficiencies. Torrens Lake is at times subject to duckweed overgrowth caused by still and warm weather. While having a significant benefit to water quality and no associated public health risks, excessive levels of aquatic vegetation in the Torrens can impact the activities of licensed users. During the summer months, Torrens Lake can experience cyanobacteria blooms, where in some instances it becomes necessary to close the lake to safeguard the health of rowing and boating activities and restrict human contact. To ensure cyanobacteria blooms do not result in more serious outbreaks, the City of Adelaide and the Torrens Lake Cyanobacteria Advisory Committee (TLCAC) chaired by Green Adelaide, regularly monitor the water quality during the summer period (December to March). While it is challenging to prevent these blooms, currently the most efficient way for managing cyanobacteria blooms below the SA Health threshold is releasing water from the Kangaroo Creek Reservoir, which upon flowing downstream, helps cool, disperse and dilute the cyanobacteria levels in the lake.
Creeks & Open Channels	Some of our Park Lands Creeks and Open Channels have insufficient capacity to meet required stormwater flows, with deep vertical banks at some locations and erosion undermining tree roots in particular locations. Some open channels transport large sediment loads and are prone to blockage by debris from upstream catchments and the Park Lands. The deficiencies at these locations are well understood and are planned to be addressed through this Asset Management Plans renewal program.

5.2.3 Asset condition

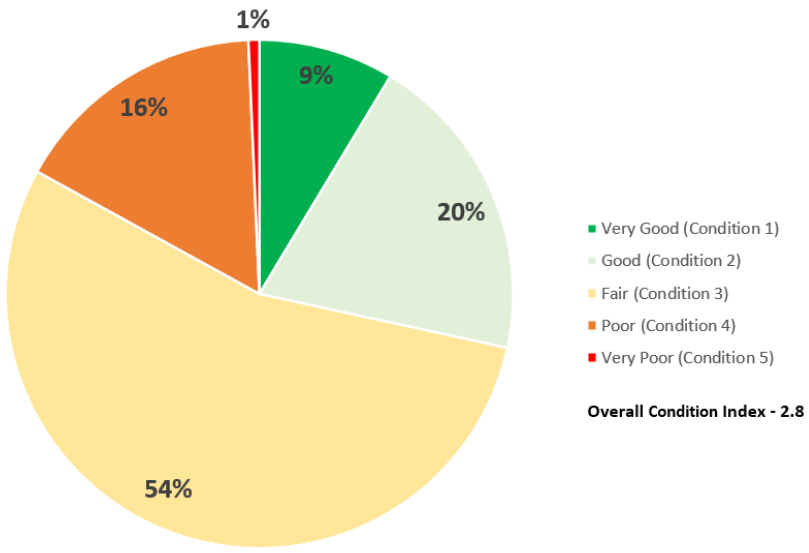
Condition is measured using a 1 - 5 grading system as detailed in Table 5.2.3. It is important that a consistent approach is used in reporting asset performance enabling effective decision support. A finer grading system may be used at a more specific level, however, for reporting in the Asset Management plan results are translated to a 1 – 5 grading scale for ease of communication.

Table 5.2.3: Condition Grading System

Condition Grading	Description of Condition
1	**Very Good**: free of defects, only planned and/or routine maintenance required
2	**Good**: minor defects, increasing maintenance required plus planned maintenance
3	**Fair**: defects requiring regular and/or significant maintenance to reinstate service
4	**Poor**: significant defects, higher order cost intervention likely
5	**Very Poor**: physically unsound and/or beyond rehabilitation, immediate action required

Water Infrastructure assets are typically condition audited every 4 years, with the most recent condition audit undertaken in 2020. It is important to note that condition audits of underground drainage assets have historically been undertaken through partial network audits as they are considered long-life, low risk assets. Figure 5.2.3 presents the predicted Water Infrastructure condition distribution as of November 2023. Overall, the current condition of our Water Infrastructure assets are rated in a good to fair condition, with a combined overall condition index rating of 2.8. 83% of assets are rated in a very good to fair condition and 17% of assets are rated in poor or very poor condition, which will form the general basis of our renewal program priorities.

Figure 5.2.3: Network Condition Profile



It is important to note that the condition data for the underground stormwater network is considered to be of lower reliability. Network wide condition data is not available for all assets and age data has been utilised to forecast the estimated condition rating where no condition data is available. A comprehensive network wide condition audit is currently underway for the underground stormwater network, facilitated through external grant funding by the Federal Government through the Disaster Ready Fund (DRF), which will provide improved asset data for renewal modelling and analysis for the next revision of this Asset Management Plan. Once this condition audit is complete, with an accompanying asset revaluation, a comprehensive update to this Asset Management Plan will be undertaken.

5.3 Operations and Maintenance Plan

Operations include regular activities to provide services. Examples of typical operational activities include stormwater pipe and pit cleansing, removal of waste from gross pollutant traps, asset inspections and water quality testing.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating. Examples of typical maintenance activities include stormwater pipe and pit repairs. Requirements are informed by both customer service requests and proactive maintenance inspections.

Currently, maintenance activities are generally evaluated and prioritised with respect to annual budgets. This process is undertaken by experienced staff, where risk-based assessment and resource allocation considers the severity of the defect as well as its location. Any critical maintenance requirements that cannot be accommodated within exiting budgets are assessed through regular budget reviews to ensure resources are appropriately re-allocated.

Following the completion of this Asset Management Plan, we will be reviewing operations and maintenance standards for Water Infrastructure assets, with a view to develop more structured and proactive maintenance regimes which provide an acceptable balance between cost, risk, and customer expectations. This activity has been recognised as an action within the Improvement Plan of this Asset Management Plan (Chapter 8), where the associated financial impacts will need to be further considered in future revisions of this Asset Management Plan and the Long-Term Financial Plan.

Updated standards will document both maintenance intervention levels and response times. Intervention levels will document the criteria for actioning maintenance defects and response times will set targets that we aim to work within to repair defects. Typically, both of these elements will vary depending on the severity of the defect as well as its position/location within the asset hierarchy.

Monitoring whether maintenance activities are being delivered in accordance with the specified intervention levels and response times, will enable us to understand whether resourcing levels are sufficient. Where resourcing levels are identified as insufficient, additional budget requirements can be considered through the business plan and budget process, or intervention levels and response times can be adjusted with respect to budget constraints.

5.3.1 Maintenance Budget Trends

The trend in maintenance budgets for all water infrastructure assets over the past 4 years is shown in Table 5.3.1.

Table 5.3.1: Maintenance Budget Trends

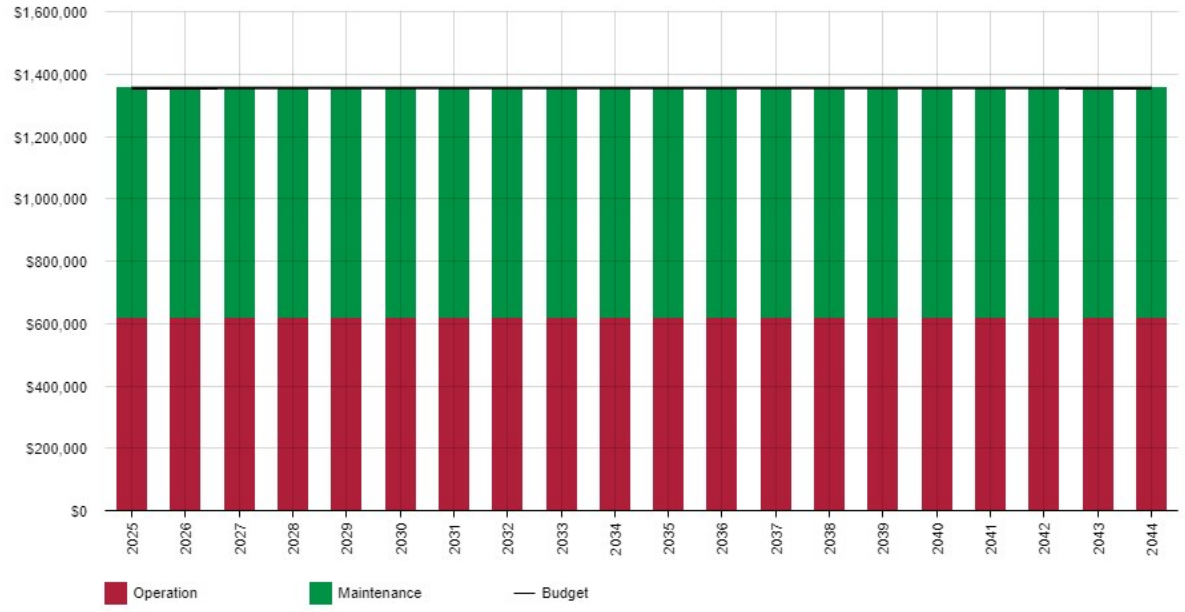
Year	Water Infrastructure
2020-21	$370,004
2021-22	$614,433
2022-23	$612,910
2023-24	$734,502

5.3.2 Summary of future operations and maintenance costs

Forecast operations and maintenance costs are expected to vary in relation to the total value of the asset stock. If additional assets are acquired, the future operations and maintenance costs are forecast to increase. If assets are disposed of the forecast operation and maintenance costs are expected to decrease.

The forecast operations and maintenance costs for the water infrastructure assets, relative to the proposed operations and maintenance budgets are shown in Figure 5.3.2. Future revisions of this Asset Management Plan will further review forecast requirements based on updated operations and maintenance standards. All values are shown in current day dollars.

Figure 5.3.2: Operations and Maintenance Summary



5.4 Renewal Plan

Renewal is major capital work which does not significantly alter the original service provided by the asset, but restores, rehabilitates, replaces, or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an acquisition (new/upgrade) resulting in additional future operations and maintenance costs.

Asset renewal is typically undertaken to:

- Ensure ongoing reliability of existing infrastructure to deliver the service it was constructed to facilitate
- Ensure infrastructure is of sufficient quality to meet the service requirements
- Optimise whole-of-life costs, when maintenance activities are no longer economical

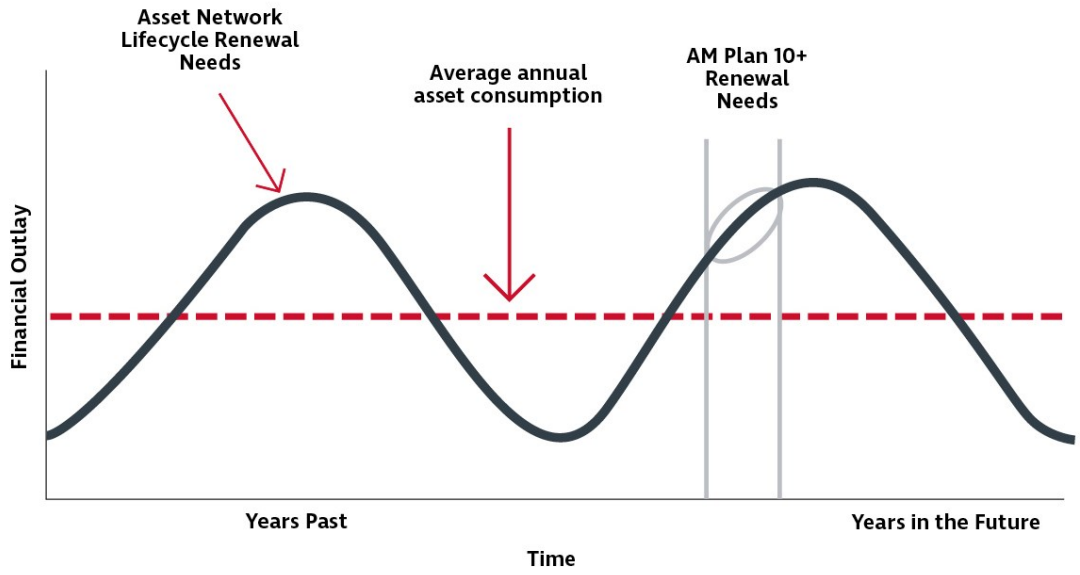
We are currently in the process of transforming the maturity of our Water Infrastructure asset management data. This includes improving the spatial data, asset condition information and asset attribute information utilised within this Water Infrastructure Asset Management Plan. This updated asset data will enable a more mature Water Infrastructure Asset Management Plan with a higher degree of confidence for the future requirements of the asset class. Following the completion of these improvements this Asset Management Plan will be comprehensively updated, utilising predictive deterioration modelling to improve renewal forecasting and overall asset management practices.

This interim AM Plan's renewal strategy aims to minimise the number of assets that deteriorate into a poor condition and prohibit assets reaching a very poor condition. In addition to condition-based renewal interventions, this asset management plan also forecasts service /capacity-based renewal interventions to address known performance deficiencies (i.e. where pipe sizes and side entry pit inlet capacity are not sufficient to manage stormwater runoff) at strategic locations where streetscape upgrades are being undertaken (e.g. Main Street Revitalisation Projects) as well as significant road renewal projects. Assets can generally be cost effectively maintained and provide appropriate levels of service up to a fair condition, however assets in poor and very poor condition have higher risk profiles and maintenance treatments are generally not economical. This strategy ensures we can continue to provide services in line with the community's expectations, appropriately manage risk and optimise whole-of-life costs.

Asset renewal planning is undertaken with a holistic and integrated approach, to ensure consideration is given to asset functionality, adjacent assets and Council's higher-level strategic objectives (e.g. new and upgrade requirements). This allows capital works programming to be optimised through the development of logical works packages, that provide value to the community.

It is important to understand that infrastructure networks are comprised of assets with varying age profiles and different useful lives and replacement costs. This results in having to replace more assets in some periods when compared with others and means that it's very unlikely that asset renewal needs will be consistent over time. Figure 5.4-1 highlights a typical scenario of varying asset renewal expenditure requirements over the asset lifecycle.

Figure 5.4-1: Asset Network Lifecycle Renewal Needs



To account for fluctuations in asset lifecycle renewal needs and enable efficient resourcing planning, often there will be a need to smooth out expenditure requirements over multiple years through a combination of deferring renewal (where appropriate) and bringing scheduled works forward.

At times, this may result in a small number of assets exceeding prescribed renewal intervention criteria~~,~~ requiring projects to be prioritised with respect to available budget. It is possible to prioritise renewals by identifying assets or asset groups that:

- Have a higher consequence of failure
- Have higher usage and the subsequent impact on users would be more significant
- Have higher than expected operational and maintenance costs

Prioritisation criteria used to inform the renewal forecasts within this Asset Management Plan include:

- Compliance with current legislative requirements
- Alignment with Strategic Plan objectives and corporate strategies
- Alignment with Main Streets projects and major road renewal projects to address capacity deficiencies
- Asset condition
- Asset hierarchy and criticality
- Cost effectiveness of maintenance investment
- Financial capacity and sustainable financial management principles
- Council decisions
- Community interest

The typical useful lives of assets used to develop projected asset renewal forecasts are shown in Table 5.4. Asset useful lives were last reviewed in 2023.

Table 5.4: Useful Lives of Assets

Asset Class	Asset Type	Intervention Level	Useful Life (Years)
Underground Stormwater Drainage Network	Stormwater Pits	4.5	125
	Stormwater Junction Boxes	4.5	125
	Stormwater Pipes	4.5	125
	Stormwater Culverts	4.5	125
Stormwater Management Devices	Detention Basins	4	80
	Bioretention Basins	4	80
	Sedimentation basins	4	80
	Gross Pollutant Traps	4	40
River Torrens & Park Lands Water Courses	Torrens Weir Components	4	100*
	Earth retaining structures	4	100
	Concrete Open Channel	4	100
	Natural Open Channel	4	80
Potable Water Distribution	uPVC Pipes	4	50
	Pump Station	4	40
Non Potable Water Distribution	uPVC Pipes	4	50
	Pump Station	4	40
Sewer Infrastructure	Sewer Rising Main	4	50
	uPVC pipes	4	50
	Pump Station	4	40

* Estimated useful life for the whole structure, note there are shorter useful lives for minor components

5.4.1 Summary of Future Renewal Costs

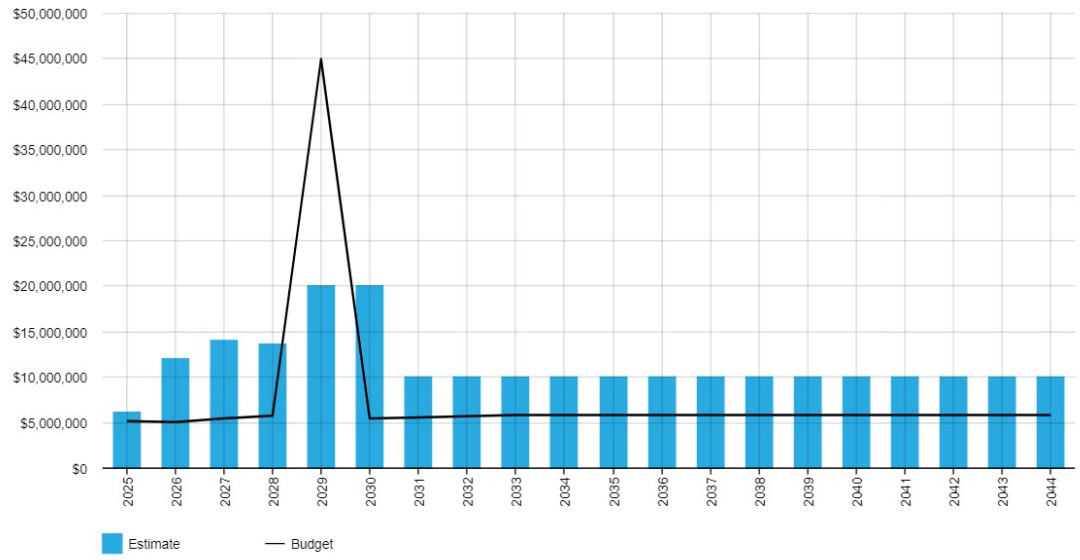
The recommended asset renewal strategy aims to minimise the number of assets that deteriorate into condition 4 (target less than 5%) and prohibit condition 5 (target 0%) based on our current understanding of the condition of the stormwater network. In addition to condition-based renewal interventions, this asset management plan also forecasts service /capacity-based renewal interventions to address known performance deficiencies at strategic locations where streetscape upgrades are being undertaken (e.g. Main Street Revitalisation Projects). To enable this, an increase in renewal funding to $6.2 million, $12.0 million, $14.1 million, $13.7 million, is required over the first four years. For years 5-20, the AM Plan forecasts the renewal of the Torrens Weir (years 5 and 6), as well as provides a forecast average renewal funding provision of $6 million/year based on the condition of assets, and a forecast funding provision for capacity-based renewals for anticipated future stormwater works required to be delivered in conjunction with streetscape upgrades of $4 million/year.

Torrens Weir will be a key priority within this Asset Management Plan, as condition monitoring has identified the aging structure (constructed in 1881) is approaching the end of its useful life. Within the next 10 years significant capital works will be required to either rehabilitate or replace the asset. Through the development of this Asset Management Plan, it has been recognised that it is appropriate to forecast the costs of these major works over two financial years.

For preliminary planning purposes, renewal forecasts have assumed the full replacement of the Torrens Weir, however a lifecycle study and options analysis is currently being undertaken to inform recommendations to finalise the scope, cost and timing of capital works moving forward. The options analysis will consider capital costs, intended lifespan and durability, operational and maintenance costs, heritage retention and current and hydraulic risk. Revision of asset renewal forecasts following the completion of the options analysis has been recognised as a key action within the Improvement Plan (Chapter 8).

The projected 20-year renewal forecast compared against the current Long-Term Financial Plan budget allocation for the Water Infrastructure is shown in Figure 5.4.1 below (note: all figure values are shown in current day dollars). When comparing the forecast renewal costs against the existing budget allocation (black line), it is evident that there is a funding shortfall and additional funding is required to address the renewal backlog and maintain current levels of service.

Figure 5.4.1: Forecast Renewal Costs



Not funding the shortfall will result in the health of the Water Infrastructure to continue steadily decreasing over time, resulting in increased whole-of-life costs, risks of asset failure and service deficiencies that cannot be rectified through maintenance resources.

5.5 Acquisition of Assets (New & Upgrade)

Acquisition reflects new assets that did not previously exist or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, demand, social or environmental needs. Assets may also be donated to the City of Adelaide.

Opportunities for acquisition of new assets, and upgrade of existing assets, are identified from various sources such as community requests, initiatives identified within strategic plans and corporate strategies as well as partnerships with third parties (e.g. State Government and Developers).

Potential new and upgrade works should be reviewed to verify that they are essential to City of Adelaide's needs and include analysis to understand ongoing operations, maintenance and renewal requirements to ensure that the services are sustainable over the longer term.

While this Asset Management Plan does not identify financial forecasts associated with new and upgrade projects, it does ensure required renewal scheduling is aligned (where practical) with key new and upgrade initiatives linked to our Strategic Plan through Integrated Delivery Planning.

Prioritisation and scheduling of new and upgrade works is currently undertaken on an annual basis through the business plan and budget process, where key prioritisation criteria include:

- Alignment with Strategic Plan objectives and corporate strategies
- Financial capacity and sustainable financial management principles
- Council decisions
- Asset functionality deficiencies
- Asset condition
- Compliance with current legislative requirements
- Community interest

The Resource Plan will provide a 4-year view of new and upgrade projects, resources, and budgets required to deliver our Strategic Plan objectives. It will inform the Long-Term Financial Plan and act as the key link between the Strategic Plan and Annual Business Plan & Budget.

Transformational new and upgrade projects will reference the Adelaide Design Manual that have allocated funding within the Resource Plan and Long-Term Financial Plan.

5.6 Disposal of Assets

Disposal includes any activity associated with the disposal of a decommissioned asset including sale, demolition or relocation. Disposal can be considered when an asset has been identified as underperforming, underutilised, or obsolete and does not provide value to the community.

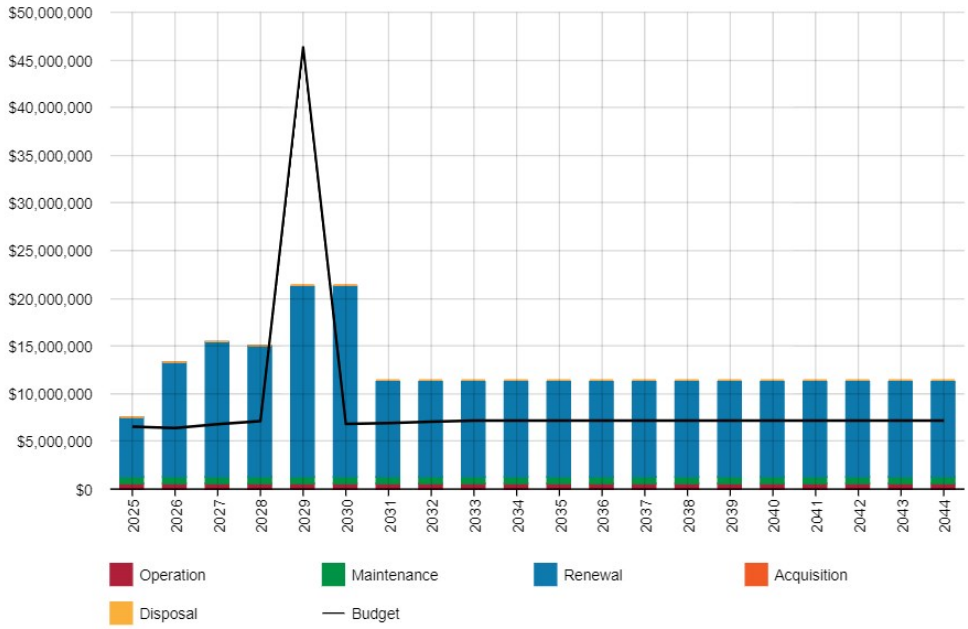
This Asset Management Plan does not identify financial forecasts associated with asset disposal, however where recommended, significant assets will be identified for decommissioning and disposal through Council Reports. To enable informed decision making, reports will include any anticipated impacts to service provision as well as financial impacts including disposal costs, revenue gained and estimated reductions in annual operations and maintenance expenditure that will be included into the Business Plan and Budget and Long-Term Financial Plan.

5.7 Summary of Asset Forecast Costs

The total financial projections from this Asset Management Plan are shown in Figures 5.7 below for each asset class. These projections include forecast costs for acquisition, operation, maintenance, renewal, and disposal. These forecast costs are shown relative to the proposed budget.

The bars in the graphs represent the forecast costs needed to minimise the life cycle costs associated with the service provision. The proposed budget line indicates the estimate of available funding. The gap between the forecast work and the proposed budget is discussed in detail within sections 5.3 and 5.4.

Figure 5.7: Lifecycle Summary



6.0 RISK MANAGEMENT PLANNING

The purpose of infrastructure risk management is to document the findings and recommendations resulting from the periodic identification, assessment and treatment of risks associated with providing services from infrastructure, using the fundamentals of International Standard ISO 31000:2018 Risk management – Principles and guidelines.

Risk Management is defined in ISO 31000:2018 as: 'coordinated activities to direct and control with regard to risk'[4].

An assessment of risks[5] associated with service delivery will identify risks that will result in loss or reduction in service, personal injury, environmental impacts, a 'financial shock', reputational impacts, or other consequences. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, and the consequences should the event occur. The risk assessment should also include the development of a risk rating, evaluation of the risks and development of a risk treatment plan for those risks that are deemed to be non-acceptable.

6.1 Critical Assets

Critical assets are defined as those which have a high consequence of failure causing significant loss or reduction of service. Critical assets have been identified and along with their typical failure mode, and the impact on service delivery, are summarised in Table 6.1. Failure modes may include physical failure, collapse or essential service interruption.

Table 6.1 Critical Assets

Critical Asset(s)	Failure Mode	Impact
Torrens Weir	Failure of weir control system to maintain water level in the lake or failure of major structural components	Fatality and catastrophic damage to private and public infrastructure downstream as a result of flooding. Loss of amenity and recreational service provision within Torrens Lake. Environmental impacts to the River Torrens, both upstream and downstream of the weir, with detrimental effects to biodiversity
Earth retaining structures along the Karrawirra Pari/River Torrens	Structural failure of earth retaining structure causing bank instability	Public safety risks associated with failure of adjacent infrastructure such as footpath and lighting infrastructure. Restricted access resulting in disruption to the footpath network.
Torrens Lake	During the summer months, Torrens Lake can experience cyanobacteria (blue-green algae) blooms. If not proactively managed these can escalate into cyanobacteria outbreaks.	Contaminated water, subjecting the public to potential health risks. Restricted access to Torrens Lake impacting the activities of licensed users (e.g. Popeye and Rowing Clubs)

[4] ISO 31000:2009, p 2

[5] REPLACE with Reference to the Corporate or Infrastructure Risk Management Plan as the footnote

Critical Asset(s)	Failure Mode	Impact
Torrens Lake	Upstream sedimentation loads resulting in silt deposits which build up over time	Restricted access to Torrens Lake impacting the activities of licensed users (e.g. Popeye and Rowing Clubs)
Stormwater Trunk Drains	Structural failure of trunk drain	Public safety risk for road users. Significant disruption to the road network Trunk drain becomes inoperative, resulting in flood risk to the broader catchment.
Sewer Infrastructure	Failure of pump and pipes	Public health risks associated with discharge of effluent into public areas.
Road Culverts	Structural failure of culvert	Public safety risks to road users Significant disruption to the road network Road culvert becomes inoperative, resulting in flood risk to the broader catchment

By identifying critical assets and failure modes an organisation can ensure that investigative activities, condition inspection programs, maintenance and capital expenditure plans are targeted at critical assets.

6.2 Risk Assessment

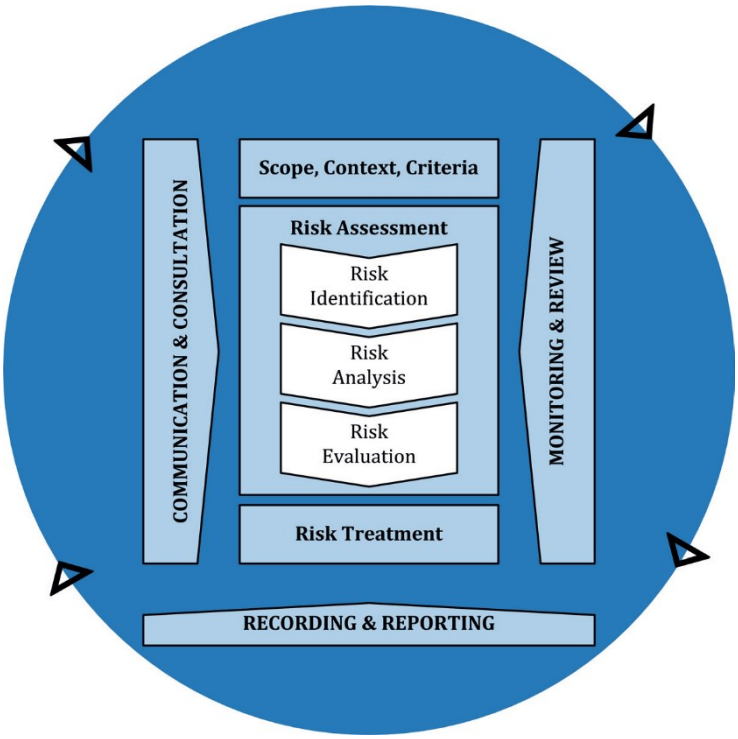
The risk management process used is shown in Figure 6.2 below.

It is an analysis and problem-solving technique designed to provide a logical process for the selection of treatment plans and management actions to protect the community against unacceptable risks.

The process is based on the fundamentals of International Standard ISO 31000:2018.

Fig 6.2 Risk Management Process – Abridged

(Source: ISO 31000:2018, Figure 1, p9)



The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, development of a risk rating, evaluation of the risk and development of a risk treatment plan for non-acceptable risks.

An assessment of risks associated with service delivery will identify risks that will result in loss or reduction in service, personal injury, environmental impacts, a 'financial shock', reputational impacts, or other consequences.

Critical risks are those assessed with 'Extreme' (requiring immediate corrective action) and 'High' (requiring corrective action) risk ratings identified in the Infrastructure Risk Management Plan. The residual risk and treatment costs of implementing the selected treatment plan is shown in Table 6.2. It is essential that these critical risks and costs are reported to management and the Strategic Risk and Internal Audit Group (SRIA).

Table 6.2: Risks and Treatment Plans

Asset at Risk	What can Happen	Risk Rating	Risk Treatment Plan	Residual Risk	Treatment Cost
All Water Infrastructure Assets	Renewal, maintenance, and operational budgets are not adopted as recommended in Asset Management Plan, resulting in increased asset risk, reduced levels of service and increased whole of life costs	High	Reduce levels of service, to better align asset management activities with financial constraints. This will result in renewal and maintenance activities being prioritised, with respect to available budgets.	Medium	Within existing resources / budgets
	Increasing demands placed on the water infrastructure network, with growing populations and increased development contributing to increased overall stormwater runoff due to increase in overall impervious areas.	High	Engage with the community and develop a Stormwater Management Plan (SMP) to establish a long-term vision for the Water Infrastructure Network Delivery of prioritised upgrade/new projects identified within the SMP to enhance the water infrastructure network and accommodate city growth through upgrading existing assets and creating new assets to align service provision with the evolving needs of the community.	Medium	Within existing resources / budgets Upgrade/new projects are considered as part of the Annual Business Plan & Budget
	CoA do not have the financial capacity to undertake all recommended upgrades in conjunction with asset renewal projects to address functionality deficiencies and strategic objectives.	High	Upgrade opportunities associated with significant renewal projects are discussed with Council on an annual basis through the Business Plan and Budget Process. Prior to allocating resources to detailed design and construction activities, concept design options are developed with cost estimates and presented to CoA's Senior Leadership Team, to confirm project priority in conjunction with the recommended scope and timing of works.	Medium	Upgrade/new projects are considered as part of the Annual Business Plan & Budget
	Compromised decision making caused by insufficient asset information	High	Continue to regularly collect and update asset condition and financial information in our asset management system, to inform sound decision making. Undertake predictive scenario modelling to effectively communicate the relationship between cost, level of service and risk to inform asset management strategies.	Medium	Within existing resources / budgets
	Accelerated asset deterioration and technical obsolescence, resulting in assets requiring renewal earlier than scheduled within Asset Management Plan.	High	Undertake regular condition audits and routine maintenance inspections to understand asset deterioration trends. Review emerging renewal priorities on a regular basis and update the 4-year renewal plan through the business plan and budget process on an annual basis as required.	Medium	Within existing resources / budgets
	Increasing operational and maintenance requirements and costs	High	Undertake routine maintenance inspections and maintenance planning to proactively identify financial risks associated with maintenance requirements to provide the agreed level of service. Review and update maintenance standards, intervention levels and response times following adoption of Asset Management Plan. Utilise established processes through the annual business plan and budget to submit a business case to re-forecast additional operational and maintenance costs.	Medium	Within existing resources / budgets

Asset at Risk	What can Happen	Risk Rating	Risk Treatment Plan	Residual Risk	Treatment Cost
All Water Infrastructure Assets	Gifted assets associated with developments are not constructed in accordance with CoA standards, resulting in potential hazards to public and/or premature asset failure and reduced useful life.	High	All third-party works require City Works Permits, to ensure works are delivered in accordance with City Works Guidelines and CoA standards. Additionally, where appropriate, infrastructure agreements are established with developers to ensure proposed works are designed and constructed in accordance with CoA standards. Defects and omission inspections are undertaken following the completion of works to ensure compliance with CoA standards and/or infrastructure agreement. Where defects are identified the developer is instructed to undertake required rectifications works.	Medium	Within existing resources / budgets
Torrens Weir	Failure of weir control system and/or major structural components causing flooding downstream, endangering public safety and causing catastrophic damage to properties , infrastructure and biodiversity	Very High	Regular engineering inspections and condition audit of the Weir. Lifecycle study of the weir is currently underway including, structural and stability assessment, assessment of the condition and performance of the mechanical and electrical equipment and operations for the weir control system, hydraulic assessment and a Dam Safety review in accordance with Australian National Committee on Large Dams (ANCOLD) guidelines. Proactive maintenance inspections and maintenance works are undertaken for the electrical and control systems	Medium	Within existing resources / budgets
Torrens Lake Earth Retaining Structures	Structural failure of earth retaining structure resulting in bank instability and public safety risks including footpaths and public lighting.	High	Cyclic condition audits to monitor the condition of assets. Annual reviews of the capital works program	Medium	Within existing resources / budgets
Torrens Lake	During the summer months, Torrens Lake can experience cyanobacteria (blue-green algae) blooms. If not proactively managed these can escalate into cyanobacteria outbreaks, subjecting the public to potential health risks and the requirement to restricted access to Torrens Lake.	High	City of Adelaide and the Torrens Lake Cyanobacteria Advisory Committee (TLCAC) chaired by Green Adelaide, regularly monitor the water quality during the summer period (December to March)	Medium	Within existing resources / budgets
Stormwater Trunk Drain	Structural collapse of stormwater drain resulting in public safety risks, significant disruption to the road network and the asset becoming inoperative causing flood risk to the broader catchment	High	Cyclic condition audits to monitor the condition of stormwater drains. Annual reviews of the capital works program	Medium	Within existing resources / budgets
Sewer Infrastructure	Failure of sewer distribution pipes, pumps and componentry, resulting in public health risks associated with discharge of effluent into public areas.	High	Proactive maintenance inspections and servicing Cyclic condition audits to monitor the condition of sewer infrastructure Annual reviews of the capital works program	Medium	Within existing resources / budgets
Road Culverts	Structural collapse of culvert resulting in public safety risks, significant disruption to the road network and the asset becoming inoperative causing flood risk to the broader catchment	High	Cyclic condition audits to monitor the condition of road culvert assets. Annual reviews of the capital works program	Medium	Within existing resources / budgets

6.3 Infrastructure Resilience Approach

The resilience of our infrastructure is vital to the ongoing provision of services to customers. To adapt to changing conditions we need to understand our capacity to 'withstand a given level of stress or demand', and to respond to possible disruptions to ensure continuity of service.

Our current measure of resilience is shown in Table 6.3 which includes the type of threats and hazards and the current measures that the organisation takes to ensure service delivery resilience.

Ensuring we remain resilient to the impacts of projected future climate will require ongoing investigation, monitoring and adaption within future revisions of this Asset Management Plan. This has been recognised as a key action within the Improvement Plan (Chapter 8).

Table 6.3: Resilience Assessment

Threat / Hazard	Assessment Method	Current Resilience Approach
Increasing temperatures and more frequent, long-running and intense heatwaves	Data SA Climate Projections for South Australia Climate change modelling scenarios based on weather station data	Implementation key actions from the Climate Change Risk Adaptation Action Plan, which include: • Continuing to work with industry to identify new/superior products (or new applications) for application in CoA
Less rain overall but more intense storms and flooding	Data SA Climate Projections for South Australia Climate change modelling scenarios based on weather station data	Implementation of key actions from the Climate Change Risk Adaptation Action Plan, which include: • Continuing to work with industry to identify new/superior products (or new applications) for application in CoA • Developing a Stormwater Management Plan to understand current and future upgrade priorities to manage flood risk • Finalise the Adelaide Park Lands Strategic Water Resources Study to identify key initiatives to enable sustainable water resource planning for current and future demands

6.4 Service and Risk Trade-Offs

The decisions made in adopting this Asset Management Plan are based on the objective to achieve the optimum benefits from the available resources.

6.4.1 What we cannot do

Based on our current Long-Term Financial Plan budgets, there are some operations and maintenance activities and capital projects that are unable to be undertaken within the next 10 years.

Maintenance & Operations

Currently, maintenance activities are evaluated and prioritised with respect to available budgets. While make-safe treatments are always undertaken as soon practical (generally within 24 hours), we are currently unable to undertake all permanent repairs within the timeframes aligned with community expectations. Following the completion of this Asset Management Plan, we will be updating maintenance standards to formalise maintenance intervention levels and response times, with the objective of establishing an acceptable balance between cost, risk, and customer expectations.

This activity has been recognised as an action within the Improvement Plan of this Asset Management Plan (Chapter 8), where the associated financial impacts will need to be further considered in future revisions of this Asset Management Plan and the Long-Term Financial Plan.

Renewal

There is an estimated $3.11 million renewal funding shortfall on average per year over the next 10 years, to continue to provide services in line with community expectations and reduce whole-of-life costs.

Acquisition (New & Upgrade)

It will not be possible to deliver all new and upgrade initiatives identified within corporate strategies and action plans within the 10-year planning period. New and upgrade initiatives will be prioritised and assessed against key criteria (see section 5.5) and considered with respect to available budgets. This process will be undertaken in consultation with the community through the business plan and budget process and the development of the Resource Plan.

6.4.2 Service trade-off

If there is forecast work (operations, maintenance, renewal, acquisition or disposal) that cannot be undertaken due to available resources, then this will result in service consequences for users. These service consequences include:

- Reduced levels of service for the Water Infrastructure network (maintenance and renewal backlog)
- Reduced customer satisfaction levels associated with the management of our existing assets
- Intergenerational inequity (burdening future generations)

6.4.3 Risk trade-off

The operations and maintenance activities and capital projects that cannot be undertaken may sustain or create risk consequences. These risk consequences include:

- Increased safety and property damage risks from stormwater flooding
- Increased safety risks associated with assets deteriorating beyond recommended intervention levels
- Increased environmental risks and associated reduction in amenity due to insufficient management of the Karrawirra Pari/River Torrens and Park Lands water courses including adjacent assets
- Increased reputational risks associated with services not aligning with community expectations
- Increased financial risks associated with additional maintenance requirements that cannot be accommodated within existing budgets
- Increased financial risks associated with higher renewal and/or rehabilitation treatments as asset renewals are not funded at the optimal point in time
- Increased economic risk associated with reduced business activity, events and tourism
- Intergenerational inequity (burdening future generations)

7.0 FINANCIAL SUMMARY

This section contains the financial requirements resulting from the information presented in the previous sections of this Asset Management Plan. The financial projections will be improved as the discussion on desired levels of service and asset performance matures.

7.1 Financial Sustainability and Projections

7.1.1 Sustainability of service delivery

There are two key indicators of sustainable service delivery that are considered in the Asset Management Plan for this service area. The two indicators are the:

- Asset renewal funding ratio (proposed renewal budget for the next 10 years / forecast renewal costs for next 10 years)
- Medium term forecast costs/proposed budget (over 10 years of the planning period)

Asset Renewal Funding Ratio

The Asset Renewal Funding Ratio is 75%. This is an important indicator and illustrates that over the next 10 years we expect to have 75% of the funds required for the optimal renewal of assets. The forecast renewal work along with the proposed renewal budget, and the cumulative shortfall, is illustrated in Appendix C.

Contributing factors for the gap between the forecast renewal costs and current budgets include:

- Not achieving our Asset Renewal Funding Ratio targets over the past 3 financial years as a result of covid-19 resourcing impacts and project delays associated with post-pandemic market saturation.
- Comprehensively reviewing our stormwater management planning principles, to appropriate recognise service-based renewal interventions aligned with key streetscape upgrade projects, with a requirement for increased pipe sizes and catchpit arrangements
- Undertaking a comprehensive review of existing funding allocations and appropriately re-forecasting asset renewal requirements within this Asset Management Plan (noting the last comprehensive update was undertaken in 2015, with a desktop update made to financial forecasts and LTFP in 2021).
- Ensuring we accurately recognise asset replacement costs, utilising current unit rates that take into consideration increasing costs associated with inflation and industry escalations (We have experienced significant increases in project unit rates, noting that the Local Government Association (LGA) have indicated that costs and materials have increased up to 25% post pandemic).

Medium Term – 10 Year Financial Planning Period

This Asset Management Plan identifies the forecast operations, maintenance and renewal costs required to provide an agreed level of service to the community over a 10 year period. This provides input into 10 year financial and funding plans aimed at providing the required services in a sustainable manner. This forecast work can be compared to the proposed budget over the first 10 years of the planning period to identify any funding shortfall.

The forecast operations, maintenance and renewal costs for the Water Infrastructure over the 10 year planning period is approximately $13.95 million on average per year.

The current (budgeted) operations, maintenance and renewal funding is approximately $10.84 million on average per year giving a 10 year funding shortfall of approximately $3.11 million on average per year.

This indicates that approximately 78% of the forecast costs needed to provide the services documented in this Asset Management Plan are accommodated in the proposed budget. Note, these calculations exclude acquired assets.

Providing sustainable services from infrastructure requires the management of service levels, risks, forecast outlays and financing to achieve a financial indicator of approximately 100% for the first years of the Asset Management Plan and ideally over the 10 year life of the Long-Term Financial Plan.

7.1.2 Forecast Costs (outlays) for the Long-Term Financial Plan

Providing services in a financially sustainable manner requires a balance between the forecast outlays required to deliver the agreed service levels with the planned budget allocations in the Long-Term Financial Plan.

A gap between the forecast outlays and the amounts allocated in the financial plan indicates further work is required on reviewing service levels in the Asset Management Plan or revising the Long-Term Financial Plan.

The forecast costs (outlays) required for consideration in the 10 year Long-Term Financial Plan are shown below in Table 7.1.2, where forecast costs are shown in 2024/25 dollar values

Table 7.1.2: Forecast Costs (Outlays) for the Long-Term Financial Plan

Year	Acquisition	Operation	Maintenance	Renewal	Disposal
2024/25	$0	$620,937	$734,502	$6,200,000	$0
2025/26	$0	$620,937	$734,502	$11,970,000	$0
2026/27	$0	$620,937	$734,502	$14,100,000	$0
2027/28	$0	$620,937	$734,502	$13,700,000	$0
2028/29	$0	$620,937	$734,502	$20,000,000	$0
2029/30	$0	$620,937	$734,502	$20,000,000	$0
2030/31	$0	$620,937	$734,502	$10,000,000	$0
2031/32	$0	$620,937	$734,502	$10,000,000	$0
2032/33	$0	$620,937	$734,502	$10,000,000	$0
2033/34	$0	$620,937	$734,502	$10,000,000	$0

For the next revision of this Asset Management Plan, it is recommended to include the acquisition costs (upgrade/new) that are specified within the Resource Plan and are accommodated within the Long-Term Financial Plan. This has been recognised as an action within the Improvement Plan (Chapter 8). Costs associated with asset disposal, will continue to be identified through Council Reports and accommodated within the annual Business Plan and Budget and Long-Term Financial Plan as required.

7.2 Funding Strategy

The proposed funding for assets is outlined in the City of Adelaide Annual Business Plan and Budget and Long-Term Financial Plan.

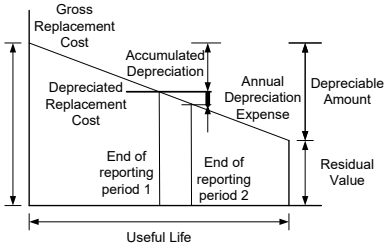
The financial strategy of the entity determines how funding will be provided, whereas the Asset Management Plan communicates how and when this will be spent, along with the service and risk consequences of various service alternatives.

7.3 Valuation Forecasts

7.3.1 Asset Valuations

The best available estimate of the value of assets included in this Asset Management Plan are shown below. The assets are valued at fair value cost to replace service capacity in accordance with Australian Accounting Standards.

Gross Replacement Cost	$282.11 million
Depreciable Amount	$282.11 million
Depreciated Replacement Cost[6]	$138.77million
Depreciation	$2.82million



7.3.2 Valuation Forecast

Asset values are forecast to increase as additional assets are added to the network.

Additional assets will generally add to the operations and maintenance needs in the longer term. Additional assets will also require additional costs due to future renewals. Any additional assets will also add to future depreciation forecasts.

Increases to asset valuation are formally recognised through asset revaluations in conjunction with updates to Asset Management Plans, which are both typically undertaken every 4 years.

[6] Also reported as Written Down Value, Carrying or Net Book Value.

7.4 Key Assumptions Made in Financial Forecasts

In compiling this interim Asset Management Plan, it was necessary to make some assumptions due to incomplete data. This section details the key assumptions made in the development of this Asset Management plan and provides readers with an understanding of the level of confidence in the data behind the financial forecasts.

Key assumptions made in this Asset Management Plan are:

- All current assets will remain within the organisation's ownership throughout the planning period
- Renewal forecasts associated with the Torren Weir assume the full replacement of the existing structure. The scope, costs and timing of the recommended capital works will be better understood following the completion of the Options Analysis (currently underway and scheduled for completion in 2024). Outcomes will be revised into this Asset Management Plan and Long Term Financial Plan in the future as soon as practical
- Renewal forecasts are based on modern equivalent replacement (i.e. anticipate increases in pipe size and capacity for underground stormwater infrastructure to ensure it alignment with stormwater management service standards). They do not account for additional costs to create new ancillary assets
- Renewal forecasts have been derived from treatment rates established from quantity surveyor estimates or contract rates, applied to asset dimensions recognised within the Asset Management System
- Renewal forecasts have been escalated into FY24/25 dollars (based on historic and forecast inflation)
- Renewal forecasts account for external design requirements, where costs are allocated within each FY of the Asset Management Plan as a "Design Program" where applicable (typically between 5-10% of annual construction costs, depending on asset class)
- Renewal forecasts consider asset condition, asset capacity and integrated planning principles
- Renewal forecasts have been aligned where appropriate with upgrade projects approved by Council and recognised in the Long-Term Financial Plan (e.g. Main Streets). Renewal extents assume the full length of the street for Main Street Revitalisation Projects, however as the extent of each revitalisation project is confirmed, renewal forecasts will be review and adjusted as required
- Renewal forecasts do not account for internal staff resourcing. These resources are to be allocated through a capital resource overhead and accommodated into the Long-Term Financial Plan separately
- Asset useful lives align with current levels of service and are based on the judgment and experience of internal staff
- Asset remaining useful life estimates are based off asset condition data, renewal intervention levels aligned with current levels of service and technical asset deterioration profiles which are based on the judgement and experience of internal staff and available industry standards
- Asset useful life and remaining useful life estimates assume existing maintenance resourcing levels are continued
- Acquisition (upgrade/new) costs are not recognised within this Asset Management Plan. These costs will be recognised in the Resource Plan and incorporated into the Long-Term Financial Plan separately
- Operations and maintenance forecasts are prioritised and delivered with respect to existing budget (standards to be reviewed and associated cost impacts to be incorporated into a future revision of this Asset Management Plan)
- Operations and maintenance forecasts do not currently account for the future acquisition of new assets through upgrade/new projects or gifted assets (to be considered through the annual business plan and budget and incorporated into future revisions of this Asset Management Plan)
- The Long-Term Financial Plan will appropriately escalate financial outlays communicated within this Asset Management Plan

7.5 Forecast Reliability and Confidence

The forecast costs, proposed budgets, and valuation projections in this Asset Management Plan are based on the best available data. For effective asset and financial management, it is critical that the information is current and accurate. Data confidence is classified on a A - E level scale[7] in accordance with Table 7.5-1.

Table 7.5-1: Data Confidence Grading System

Confidence Grade	Description
A. Very High	Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete and estimated to be accurate ± 2%
B. High	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate ± 10%
C. Medium	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated ± 25%
D. Low	Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete, and most data is estimated or extrapolated. Accuracy ± 40%
E. Very Low	None or very little data held.

The estimated confidence level for and reliability of data used in this Asset Management Plan is shown in Table 7.5-2. This Asset Management Plan's Improvement Plan (Chapter 8) outlines further steps recommended to be undertaken to continue to increase the maturity and confidence in asset management and financial forecasts.

Table 7.5-2: Data Confidence Assessment for Data used in Asset Management Plan

Data	Confidence Assessment	Comment
Demand drivers	High	Based off corporate planning documents and strategies
Growth projections	High	Based off State government projections and industry research and analysis
Acquisition forecast	Low	Not accommodated within this Asset Management Plan
Operation forecast	Medium	Based off known requirements and known costs for condition audits
Maintenance forecast	Low	Maintenance requirements are not forecasted, currently just aligned to existing budget allocations

[7] IPWEA, 2015, IIMM, Table 2.4.6, p 2|71.

Asset values	Medium	Asset revaluation was last undertaken in 2018/19. Renewal forecasts have utilised updated 2023 treatment rates derived from quantity surveyor estimates, with adjustments for increased pipe sizes and financial escalations to represent anticipated costs to deliver works in 2024/25 dollars
Asset useful lives	High	In line with industry standards with regular review
Condition modelling	Low	The condition data for the underground stormwater network is considered to be of lower reliability. Network wide condition data is not available for all assets and age data has been utilised to forecast the estimated condition rating where no condition data is available. Further works are recognised in the improvement plan to define assets at amore granular level to improve condition auditing and deterioration modelling.
Disposal forecast	Low	Not accommodated within this Asset Management Plan

8.0 PLAN IMPROVEMENT AND MONITORING

8.1 Status of Asset Management Practices

8.1.1 Accounting and financial data sources

This Asset Management Plan utilises accounting and financial data. The source of the data is from the accounting module of CoA's Asset Management System (Assetic).

8.1.2 Asset management data sources

This Asset Management Plan also utilises asset management data. The source of the data is from CoA's Asset Management System (Assetic).

8.2 Improvement Plan

It is important that an entity recognise areas of their Asset Management Plan and planning process that require future improvements to ensure effective asset management and informed decision making. The improvement plan generated from this Asset Management Plan is shown in Table 8.2.

Table 8.2: Improvement Plan

Task	Task	Responsibility	Resources Required	Timeline
1	Comprehensive update of this Asset Management Plan following the completion of spatial data improvements, asset condition audit and asset revaluation.	Infrastructure Planning	Within existing resource allocations	2024-25
2	Finalise the Stormwater Management Plan and identify key priority projects for inclusion within the Resource Plan. Asset Management Plans to be reviewed and updated where required, considering any impacts to planned asset renewal programs.	Infrastructure Planning	Within existing resource allocations	2026-27
3	Finalise the Adelaide Park Lands Strategic Water Resources Study to identify key initiatives to enable sustainable water resource planning for current and future demands.	Infrastructure Planning, Park Lands & Sustainability	Within existing resource allocations ($50k grant)	2024-25
4	Finalise the Water Sensitive Urban Design (WSUD) Priority Investment Study to identify key priority upgrade projects that will improve the quality of stormwater runoff that is discharged into natural water courses.	Park Lands & Sustainability	Within existing resource allocations	2024-25
5	Finalise a 4-year Resource Plan to identify key upgrade/new projects to deliver Council's Strategic Plan objectives. Once key projects are recognised within the Long Term Financial Plan, Asset Management Plans will be updated to ensure associated acquisition costs (upgrade/new) and ongoing operational and maintenance costs are appropriately recognised, in conjunction with any scheduling adjustments required for asset renewal programs.	Strategy, Insights & Performance, with organisational support Infrastructure Planning	Within existing resource allocations	2024-25

6	Revise asset renewal forecasts for the Torrens Weir following the completion of the Lifecycle Study and Options Analysis.	Infrastructure Planning	Within existing resource allocations	2024-25
7	Continue to work in partnership with both the State and Federal Governments to pursue external funding opportunities for both renewal and significant upgrade/new water projects.	City Services Executive	Within existing resource allocations	2024-25 2025-26
8	Review and update operations and maintenance standards, to develop more structured and proactive maintenance regimes which provide an acceptable balance between cost, risk, and customer expectations. Include changes into future revisions of this Asset Management Plan and Long-Term Financial Plan.	Infrastructure Planning, City Operations	Within existing resource allocations	2024-25 2025-26
9	Continue to undertake regular condition audits and revaluation for all our water infrastructure assets within the nominated 4-year cycles, including regular review of asset useful lives.	Infrastructure Planning	Within existing resource allocations	Ongoing
10	Continue to review our technical standards for water infrastructure with respect to climate resilience, circular economy, recycled materials, durability and performance, whole-of-life cost, amenity, and heritage requirements.	Infrastructure Planning, Technical Services	Within existing resource allocations	Ongoing
11	Continue to monitor forecast climate change impacts to ensure we remain resilient through proactively implementing appropriate mitigation and adaptation controls.	Sustainability, Infrastructure Planning	Within existing resource allocations	Ongoing
12	Improve the capture of carbon emission data for technical standards and project procurement to support lower carbon decision making	Low Carbon & Circular Economy, Infrastructure Planning, Technical Services	Led by existing resources, with external support identified through the Business Plan and Budget	Ongoing
13	Review of corporate performance measure targets for customer satisfaction, to assist with performance gap analysis	Strategy, Insights & Performance, Infrastructure Planning	Within existing resource allocations	2024-25
14	Review and standardise asset hierarchies for all asset classes within Water infrastructure.	Infrastructure Planning, City Operations	Within existing resource allocations	2024-25
15	Review customer service requests codes to better align with Level of Service reporting and operational and maintenance sub-activities.	Infrastructure Planning, City Operations, Customer Centre	Within existing resource allocations	2024-25

8.3 Monitoring and Review Procedures

This Asset Management Plan will be reviewed during the annual budget planning process and revised to show any material changes in service levels, risks, forecast costs and proposed budgets as a result of budget decisions.

The Asset Management Plan will be reviewed and updated annually to ensure it represents the current service level, asset values, forecast operations, maintenance, renewals, acquisition and asset disposal costs and planned budgets. These forecast costs and proposed budgets will be incorporated into the Long-Term Financial Plan once completed.

The Asset Management Plan has a maximum life of 4 years and is due for complete revision and updating within two years of a general Council election, pursuant to section 122 of the Local Government Act 1999 (SA).

8.4 Performance Measures

The effectiveness of this Asset Management Plan can be measured in the following ways:

- The degree to which the required forecast costs identified in this Asset Management Plan are incorporated into the Long-Term Financial Plan
- The degree to which the 1-5 year detailed works programs, budgets, business plans and corporate structures consider the 'global' works program trends provided by the Asset Management Plan
- The degree to which the existing and projected service levels and service consequences, risks and residual risks are incorporated into the Strategic Planning documents and associated plans
- The Asset Renewal Funding Ratio achieving the Organisational target (90-110%)
- Achieving Technical Level of Service objectives
- Reviewing changes to customer service request numbers and customer satisfactory surveys
- Progressing with the implementation of Improvement Actions identified in Table 8.2
- Reviewing and update of the Plan at minimum every four years

9.0 REFERENCES

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10.0 APPENDICES

Appendix A Operation Forecast

The forecast operational costs for the Water Infrastructure network are shown below. Future revisions of this Asset Management Plan will further review forecast requirements based on updated operations and maintenance standards. All values are shown in current day dollars.

Table A - Operation Forecast Summary

Year	Operation Forecast	Additional Operation Forecast	Total Operation Forecast
2024-25	$620,937	$0	$620,937
2025-26	$620,937	$0	$620,937
2026-27	$620,937	$0	$620,937
2027-28	$620,937	$0	$620,937
2028-29	$620,937	$0	$620,937
2029-30	$620,937	$0	$620,937
2030-31	$620,937	$0	$620,937
2031-32	$620,937	$0	$620,937
2032-33	$620,937	$0	$620,937
2033-34	$620,937	$0	$620,937

Appendix B Maintenance Forecast

The forecast maintenance costs for the Water Infrastructure network are shown below. Future revisions of this Asset Management Plan will further review forecast requirements based on updated operations and maintenance standards. All values are shown in current day dollars.

Table B - Maintenance Forecast Summary

Year	Maintenance Forecast	Additional Maintenance Forecast	Total Maintenance Forecast
2024-25	$734,502	$0	$734,502
2025-26	$734,502	$0	$734,502
2026-27	$734,502	$0	$734,502
2027-28	$734,502	$0	$734,502
2028-29	$734,502	$0	$734,502
2029-30	$734,502	$0	$734,502
2030-31	$734,502	$0	$734,502
2031-32	$734,502	$0	$734,502
2032-33	$734,502	$0	$734,502
2033-34	$734,502	$0	$734,502

Appendix C Renewal Forecast Summary

The forecast renewal costs for the Water Infrastructure network, relative to current renewal budgets are shown below, in conjunction with the annual renewal budget shortfall and the cumulative budget shortfall over the 10-year planning period. All Forecast costs are shown in 2024-25 dollar values.

Table C - Renewal Forecast Summary

Year	Renewal Forecast	Renewal Budget	Annual Budget Shortfall	Cumulative Budget Shortfall
2024-25	$6,200,000	$5,182,156	-$1,017,844	-$1,017,844
2025-26	$11,970,000	$5,057,968	-$6,912,032	-$7,929,876
2026-27	$14,100,000	$5,462,271	-$8,637,729	-$16,567,605
2027-28	$13,700,000	$5,771,245	-$7,928,755	-$24,496,360
2028-29	$20,000,000	$44,972,348	$24,972,348	$475,988
2029-30	$20,000,000	$5,467,581	-$14,532,419	-$14,056,431
2030-31	$10,000,000	$5,577,064	-$4,422,936	-$18,479,367
2031-32	$10,000,000	$5,703,793	-$4,296,207	-$22,775,574
2032-33	$10,000,000	$5,838,842	-$4,161,158	-$26,936,732
2033-34	$10,000,000	$5,838,842	-$4,161,158	-$31,097,890

Across the 10-year planning period, the forecast renewal costs are $125.97m, with a current budget allocation of $94.87 m, resulting in a cumulative budget shortfall of -$31.1 m. This equates to an asset renewal funding ratio of 75%.

Appendix D Budget Summary by Lifecycle Activity

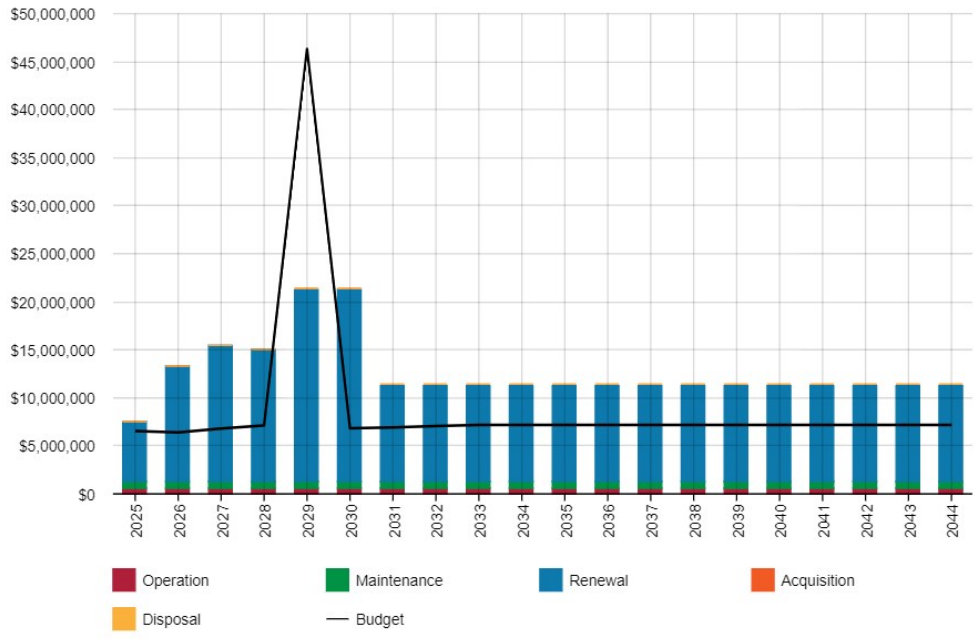
The forecast costs (outlays) required for consideration in the 10 year Long-Term Financial Plan are provided in shown below. These costs include renewal, maintenance, and operations of our existing assets. For the next revision of this Asset Management Plan, it is recommended to include the acquisition costs (upgrade/new) that are specified within the Resource Plan and are accommodated within the Long-Term Financial Plan. This has been recognised as an action within the Improvement Plan (Chapter 8). Costs associated with asset disposal, will continue to be identified through Council Reports and accommodated within the annual Business Plan and Budget and Long-Term Financial Plan as required. All forecast renewal costs are shown in 2024/25 dollar values and operations/maintenance costs are shown in 2023/24 dollar values.

Table D – Budget Summary by Lifecycle Activity

Year	Acquisition *	Operation	Maintenance	Renewal	Disposal
2024-25	$0	$620,937	$734,502	$6,200,000	$0
2025-26	$0	$620,937	$734,502	$11,970,000	$0
2026-27	$0	$620,937	$734,502	$14,100,000	$0
2027-28	$0	$620,937	$734,502	$13,700,000	$0
2028-29	$0	$620,937	$734,502	$20,000,000	$0
2029-30	$0	$620,937	$734,502	$20,000,000	$0
2030-31	$0	$620,937	$734,502	$10,000,000	$0
2031-32	$0	$620,937	$734,502	$10,000,000	$0
2032-33	$0	$620,937	$734,502	$10,000,000	$0
2033-34	$0	$620,937	$734,502	$10,000,000	$0

*Costs accounted for within the Resource Plan and incorporated into Long-Term Financial Plan separately (i.e. not through the Asset Management Plan)

Figure D: Budget Summary by Lifecycle Activity



Appendix E Asset Renewal Intervention Levels

Water Infrastructure

Table E: Renewal Condition Intervention Levels

Asset Class	Asset Type	Intervention Level	Useful Life (Years)
Underground Stormwater Drainage Network	Stormwater Pits	4.5	125
	Stormwater Junction Boxes	4.5	125
	Stormwater Pipes	4.5	125
	Stormwater Culverts	4.5	125
Stormwater Management Devices	Detention Basins	4	80
	Bioretention Basins	4	80
	Sedimentation basins	4	80
	Gross Pollutant Traps	4	40
River Torrens & Park Lands Water Courses	Torrens Weir Components	4	100*
	Earth retaining structures	4	100
	Concrete Open Channel	4	100
	Natural Open Channel	4	80
Potable Water Distribution	uPVC Pipes	4	50
	Pump Station	4	40
Non Potable Water Distribution	uPVC Pipes	4	50
	Pump Station	4	40
Sewer Infrastructure	Sewer Rising Main	4	50
	uPVC pipes	4	50
	Pump Station	4	40

*Estimated useful life for the whole structure, note there are shorter useful lives for minor components

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