Tablelands Regional Council

Asset Management Plan
WASTEWATER
2023-2032

TRC
TABLELANDS REGIONAL COUNCIL

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1.0 EXECUTIVE SUMMARY

1.1 The Purpose of the Plan

This Asset Management Plan demonstrates that we are managing Tablelands Regional Council's (TRC) wastewater assets in a responsible manner. It has been developed in accordance with our Asset Management Policy and principles of the Strategic Asset Management Plan (SAMP).

This Asset Management Plan details information about our Wastewater assets. The plan outlines the management approach to:

- Describing and aligning delivery objectives of wastewater assets to Tableland 2030+ strategic objectives,
- Managing the future demand for assets to achieve and maintain financial sustainability,
- Optimising the lifecycle management of assets (achieving service demand at lowest lifecycle cost),
- Identifying and managing risks associated with wastewater assets,
- Funds required to operate the wastewater assets; and
- Continual improvement in the management of the assets and performance monitoring.

1.2 Asset Description

This Asset Management Plan has a focus on wastewater services provided to the community and the infrastructure assets that support these services.

Our wastewater asset portfolio has an estimated replacement cost of **$114 million** (as at 30 June 2023).

The Wastewater asset portfolio includes wastewater mains, pump stations, manholes, and sewage treatment plants.

1.3 Levels of Service

We are continuing to develop comprehensive levels of service for our wastewater assets to meet community expectations whilst maintaining financial sustainability. At present, management of wastewater assets, including intervention points and chosen treatment methods, is based upon:

- Available budget and resource allocations,
- Feedback from the community,
- Active monitoring of the performance of the wastewater asset portfolio; and
- Conditions contained within the Environmental Authority EPPR00584813 for the operation of the wastewater networks.

Our customer levels of service are outlined in Council's Customer Service Standards Water & Wastewater 2020 – 2025. We are currently in the process of finalising technical service standards.

1.4 Future Demand

It is expected that future demand for services will be driven by:

- Population change,
- Change in design standards,
- Increase in level of service,
- Climate change,
- Council financial sustainability,
- Community satisfaction; and

- Changes to legislations, codes of practice, and guidelines.

These demand drivers will be managed through a combination of managing existing assets, upgrading of existing assets, construction of new assets, non-asset based demand management initiatives, minimising climate change impact on assets, and better management of customer expectations whilst maintaining financial sustainability.

1.5 Lifecycle Management Plan

Lifecycle planning describes the approach to maintaining an asset from construction to disposal. It involves the prediction of future performance of an asset, or a group of assets, based on investment scenarios and maintenance strategies.

Our current approach to managing and operating our Wastewater assets is transitioning to a more proactive approach as we are continually improving our knowledge on asset condition, performance, and service demands.

We are always striving to improve our approach to lifecycle management to make sure that we deliver on our service commitments in the most cost effective and efficient manner.

1.6 Financial Summary

Based on our current forecasting, the renewal demand of existing wastewater assets over the next ten (10) years is **$15.5 million** or **$1.55** million on average per year. This total renewal demand is inclusive of **$1.9 million** of renewal backlog.

Our Long-Term Financial Plan has currently allocated about **$8.57 million** for wastewater asset renewals over the next 10 years, which means we are only funding **55%** of our required renewal over the next 10 years. The following graph shows the financial summary of wastewater assets.

It is expected that the above funding ratio would change significantly in the next couple of years as asset data is cleansed, and detailed renewal plans are developed following the undertaking of condition assessments as per tasks identified in the Improvement Plan (Section 9.1).

At present, the condition data from the valuation reports provides the best available source of consolidated condition information. As such the existing assets in operation, and their condition may not be accurately reflected.

1.7 Our priority

We will continue to inspect and maintain our wastewater assets to ensure they are safe and functional within the current levels of service. We also need to prioritise renewals, upgrades, expansion and adding new wastewater assets to our asset base according to priorities and annual budget allocations to ensure that wastewater assets meet customer service levels and comply with all relevant statutory requirements and Australian Standards.

We will continue to work with local community, industries, businesses and both state and federal government to press for more funding to ensure that the Tablelands continues to grow.

1.8 Risk Management

There are a number of strategic risks that need to be carefully managed in order to maintain our asset base to the expected standards and continue to provide the current level of service. These risks, existing risk treatments, and residual risk ratings are documented in our corporate risk register and carefully monitored by the Council. These risks are:

- Business Disruption,
- Inability to effectively coordinate response to disaster,
- Poor operational management,
- Inability to effectively engage with the community - poor communication and engagement,
- Legislative Non-Compliance,
- Lack of capacity, skills, or capabilities to meet emerging needs and impacts service delivery,
- Infrastructure planning and delivery fail to meet community and service standards; and
- Risks associated with Climate Change.

We are currently in the process of reviewing our operational risks relevant to wastewater services.

1.9 Improvement Plan

This Wastewater Asset Management Plan has identified 25 improvement actions to improve overall management of Wastewater assets in the following areas:

- Asset data management,
- Level of service,
- Condition assessments,
- Renewal program development,
- Operational risk assessment, and
- Resource requirements.

2.0 INTRODUCTION

2.1 Background

The TRC local government area is located in Far North Queensland, about 100 kilometres south-west of Cairns. The considerable range in elevation, rainfall and soil types produce an incredibly diverse and beautiful region encompassing World Heritage rainforests, crater lakes, dry savannah, wetlands, tropical waterfalls and unique birdlife and wildlife. The Tablelands region is perfectly positioned as the food bowl of the tropics and is an ideal outdoor recreation destination.

With the Tablelands an ideal place to raise a family, we are experiencing exponential growth particularly in Atherton, Tolga and Yungaburra. Our population is approaching 27,000 and many of the new arrivals are young professionals with families.

Figure 1: Tablelands Regional Council Area

The Tablelands Regional Council have wastewater treatment plants in Atherton, Malanda, Ravenshoe, Tinaroo and Yungaburra. All other towns operate on septic systems.

2.2 Purpose of the Plan

This Asset Management Plan covers a 10-year horizon and is intended to demonstrate how we will support Council's vision in the provision of wastewater assets to plan, develop and maintain infrastructure that is sustainable. This is achieved by applying the principles of responsible asset management planning, the objective of which is to deliver the required level of service to existing and future customers in the most cost-effective way.

The purpose of the Asset Management Plan is to ensure our wastewater assets fulfil their intended purpose and life expectancy at the most economical cost to the community. It balances financial, design, and technical practices with community expectations to achieve this purpose.

The key objectives of this plan are to:

- Provide a plan to convey the long-term planning and strategy for the management of our wastewater assets;
- Improve understanding of service level standards and options, while improving customer satisfaction and organisational image;
- Identify optimal whole of lifecycle costs to provide target levels of service;
- Provide the basis for improved understanding and forecasting of asset related management options and costs to identify funding requirements;
- Clearly justify long term works programmes and evidence of future funding requirements; and
- Manage the environmental, financial and reputational risks of asset failure.

2.3 Asset Management Plan Structure

This Asset Management Plan has been prepared using good practice guidance from the *ISO55000 - Asset Management standard, International Infrastructure Management Manual* and has been developed based on existing processes, practices, data, and standards. We are committed to striving towards best appropriate asset management practices and it is recognised that this Asset Management Plan will need to be updated periodically to reflect changes to management of our assets.

It is intended that our Asset Management Plans should always reflect as closely as practicable actual practices used in managing its assets. Only in this way will we be best able to ascertain the long-term financial needs for delivering sustainable assets and services.

2.4 Our Wastewater Assets

The following table shows the summary of our Wastewater assets.

Asset Class	Asset Type	Asset Quantity
Wastewater	Sewer Mains	178km
	Manholes	2733
	Sewage Treatment Plants	5
	Sewer Pump Stations	32

Table 1: Summary of Wastewater Assets

2.5 Key Stakeholders

The following table presents a list of key stakeholders in wastewater services.

Key Stakeholder	Role in Asset Management Plan
Connected customers	Customers receiving wastewater services from Council's wastewater network develop community expectations.
Councillors	Represent needs of community/shareholders, Allocate resources to meet planning objectives in providing services while managing risks, Ensure organisation is financial sustainable, and Endorse asset management policy and plan
Executive Leadership Team	Ensure compliance and delivery
Council Officers	Compilation and verification of data. Ensure plan represent the technical and community service levels, Review AMPs; and Operate and maintain assets in accordance with the AMP.
Department of Environment and Science	Implementation and enforcement of the Environment Protection Act and Environmental Authorities in place for the operation of the sewerage networks

Table 2: Key Stakeholders - Wastewater Services

3.0 STRATEGIC ALIGNMENT

This Asset Management Plan is aligned with the TRC Asset Management Policy, Strategic Asset Management Plan (SAMP) and Corporate Plan 2021-2026. The objective of this Asset Management Plan is to support the Tablelands 2030+ Community Plan.

3.1 Strategic Goals and Objectives

Tablelands 2030+ is Council's Community Plan. It outlines the community's aspirations and long-term vision for TRC. The vision of Tablelands 2030+ is,

"We will celebrate and embrace our uniqueness, community connections, First Nations Peoples, diversity, and enviable healthy lifestyle.

We will continue to focus on sustainable provision of assets, business development and regional planning while protecting our natural environment and good quality agricultural land.

We will be inclusive, respecting diversity and providing equitable access to all.

We will be resilient and adaptable, responding to change and opportunities".

Tablelands 2030+ has been prepared by Council in collaboration with, and on behalf of residents. Responsibility for meeting the long-term community vision and desired outcomes rests with everyone.

The Tablelands 2030+ Community Plan not only provides a clear vision it also sets out the priority steps we can take towards achieving that vision so that we can work together to make the Tablelands the place we want it to be.

The Tablelands 2030+ makes a commitment to outcomes and priority initiatives across several strategic objectives that align with the Community Vision. The key aims and priority areas of the Community are:

- Environment,
- Healthy Lifestyle,
- Community,
- Infrastructure; and
- Economy.

Effective asset management supports the strategic objectives and outcomes of Tablelands 2030+ and the delivery of sustainable services and programs. This Asset Management Plan is integrated with Tablelands 2030+ and provides a view (both strategic and in financial terms) of how we propose to manage the wastewater assets that we own and control.

3.1.1 TABLELANDS 2030+ Key Priority Areas – Wastewater Assets

The following table presents the key priority areas relevant to wastewater services in Tablelands 2030+.

Key Priority Area	Objective	Outcome
Environment	Climate Resilience	Community is prepared for the potential increase in natural disasters
		Climate impacts are accounted for when planning essential services and infrastructure.
Infrastructure	Future Living	Reduction in time taken to apply/ approve infrastructure development
	Serving Community	Efficient and adequate essential services.
Economy	Local Skills	Increased in-region training opportunities.
		Specially skilled workforce unique to region.

Table 3: Strategic Community Objectives – Wastewater Assets

In addition to these key areas, under the strategic theme "Infrastructure" in our Corporate Plan 2021-2026, we are committed to provide ***"effective water and wastewater planning and management"***.

The Tablelands Regional Council's Operational Plan holds an annual list of specific KPIs assigned to the wastewater section. These are reviewed and adopted on an annual basis.

3.2 Council Policies, Strategies and Plans Relevant to Wastewater Assets

The following table shows various Council policies, strategies and plans that are relevant to and support management of Wastewater assets.

Policy/Strategy/Plan
Asset Management Policy
Strategic Asset Management Plan
Revenue Policy
Long Term Financial Plan
10-year Capital Plan
Communication and Engagement Strategy
Procurement Policy
Enterprise Risk Framework and Corporate Risk Registe
Business Continuity Plan
Corporate Plan 2021-2026
TRC Planning Scheme
Operational Plan and Annual Budget
Customer Experience Strategy

Local Disaster Management Plan and Subplans
Customer Service Standards Water and Wastewater 2020 - 25

4.0 LEVELS OF SERVICE

Levels of Service is the defined quality of service of an asset. Understanding the required level of service is vital for lifecycle management, as this largely determines an asset's development, operation, maintenance, replacement, and ultimate disposal. In developing the levels of service outlined in this Asset Management Plan, we have given due regard to the following:

Community Requirements ***(Customer Expectations)***	These are the expectations of the customers/community. These expectations must be balanced with the community's ability and desire to pay (balancing risk, cost, and performance).
Strategic Goals and Objectives ***(Strategic Drivers)***	The lifecycle management of assets (service offered by assets, service delivery mechanism and specific levels of service that Council wishes to achieve) will be consistent with goals and objectives stated in the Community Vision and Council Plan.
Legislative Requirements ***(Mandatory Requirements)***	These are the objectives and standards that must be met, set by legislation, regulations, Codes or Practice, etc that impact the way assets are managed.
Industry Standards and Guidelines ***(Operating Requirements)***	Design and construction standards and guidelines that provide the principles and minimum standards for an asset.

4.1 Customer Research and Expectations

At TRC we realise in order to create a great customer experience we need to work in partnership with our community and respond to our customers' needs. The Customer Service Strategy 2021-2024 commits TRC to being a leading customer-centric organisation by delivering consistent, respectful, and timely customer interactions, customer-focused systems and processes, and enhanced digital and face-to-face opportunities to support customers to transact and interact how they want, when they want.

The TRC Corporate Plan 2021–26 sets the strategic direction for activities and guides the delivery of quality services for our community. Our purpose is to be a community focused, efficient and sustainable organisation. The key strategic themes are:

- Our Organisation — is progressive, efficient, transparent, and collaborative,
- Our Community — is active, inclusive, connected and empowered,
- Our Economy — is growing, diverse, resilient, and agile,
- Our Environment — is valued, managed and healthy; and
- Our Infrastructure — is well planned, integrated and fit-for-purpose.

This strategy aligns with our organisational commitment to:

- Model leadership and good governance,
- Collaborate and build partnerships to plan and deliver quality services,
- Deliver customer focussed systems and processes; and
- Grow a high-performance culture that delivers excellent outcomes and financial sustainability.

It informs and supports several documents including those relating to communication and engagement, economic development, culture, inclusion, information management, community services, planning and development, facilities and complaints.

Evolving customer needs and expectations are captured through:

- Customer feedback — evaluating compliments and complaints.
- Internal feedback — from frontline staff who interact directly with our customers and staff who indirectly influence the customer experience.
- Data analysis — information on our customers, services, and communication/service channels.
- Industry trends — industry and local government trends in delivering quality customer experiences.
- Community consultation — for example Community Satisfaction Report 2019.

Driving improvements in customer experience will be underpinned by continuous improvement within the focus areas of:

- People are priority.
- Streamlined systems and processes.
- Access and inclusion.

We will use our customer interactions, internal systems, customer satisfaction surveys, community engagement and third-party audits to collect feedback and be responsive to evolving customer and community expectations, priorities and aspirations.

4.1.1 Community Satisfaction/Importance Rating

To measure community perceptions of Council services and in particular satisfaction with those services provided by Council, community satisfaction survey was conducted between 20 September and 13 October 2019.

A total of 668 residents across 6 communities completed the survey and was representative across age and gender within the region. The ccommunities were defined by the closest town respondent lives near and the 6 communities and corresponding towns are shown in the table below.

Community	Towns
Community 1	Herberton and Wondecla
Community 2	Evelyn, Innot Hot Springs, Millstream North, Millstream South, Mt Garnet, Ravenshoe, and Tumoulin
Community 3	Malanda, Millaa Millaa and Tarzali
Community 4	Lakeside, Peeramon, Tinaroo Park, Tinaroo Waters and Yungaburra
Community 5	Atherton
Community 6	Kairi, Tinaroo, Tolga and Walkamin

Table 4: Communities and Corresponding Towns - Community Survey 2019

The following diagram shows the satisfaction with wastewater services by our communities as per our 2019 community satisfaction survey results. Approximately 85% of the customers are totally satisfied or neither satisfied nor dissatisfied with our wastewater services.

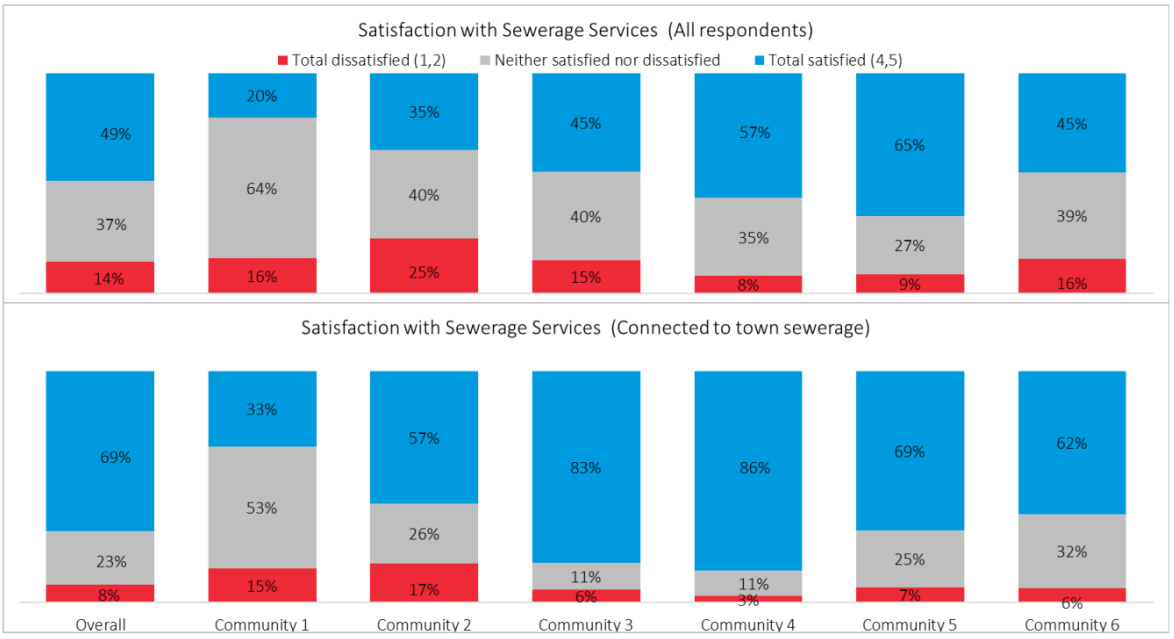

Figure 2: Satisfaction with Wastewater Services by Community – 2019 Community Satisfaction Survey

According to the 2019 community satisfaction survey results, wastewater (sewerage) services has been identified as a service of high importance with generally a high or neutral satisfaction rating from the community.

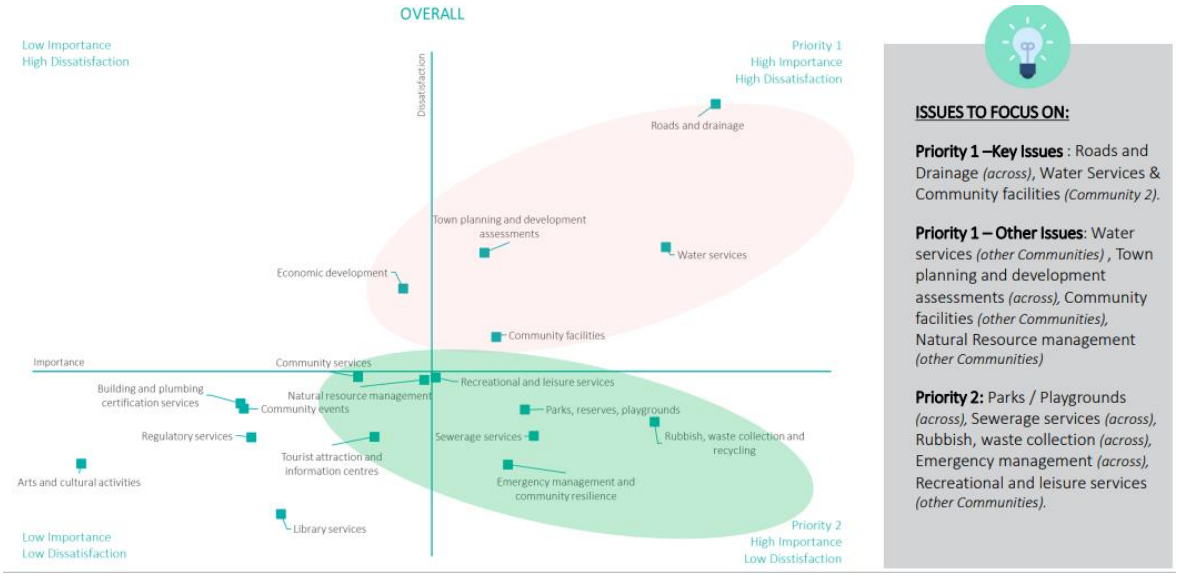

Figure 3: Rating-Wastewater Services - 2019 Community Satisfaction Survey

4.2 Legislative Requirements

There are many legislative requirements relating to the management of assets. The following table shows a list of the main legislations applicable to wastewater assets.

Legislation	Requirement
Local Government Act 2009	This Act provides for the transparent and equitable conduct of elections of councillors of Queensland's local governments. The Act also ensures and reinforces integrity in Queensland's local governments.
Work Health and Safety Act 2011	Sets out roles and responsibilities to secure the health, safety, and welfare of persons at work and covering injury management, emphasising rehabilitation of workers particularly for return to work. Organisations are to provide a safe working environment and supply equipment to ensure safety.
Environmental Protection Regulation 2019	Sets out the framework for the management of prescribed Environmentally Relevant Activities including sewage treatment.
Public Health Act 2010	Addresses a range of public health matters, such as notification of diseases and conditions and the regulation of areas that have the potential to affect public health.

Table 5: Legislations Relevant to Wastewater Services

4.3 Industry Standards and Guidelines

The majority of standards applicable to our wastewater infrastructure are covered by the Water Services Association of Australia (WSAA), the Far North Queensland Regional Organisation of Councils (FNQROC) Development Manual, along with a range of other industry standards.

4.4 Levels of Service

Levels of service are generally set based on legislative and compliance obligations, and historical standards that we have used in the past. To support this, we have prepared high level performance measures to monitor the effectiveness of its service delivery for community and technical levels of service. In future, we expect to undertake community consultation to validate our levels of service.

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

4.4.1 Customer Levels of Service

Customer Levels of Service measure how the customer receives the service and whether value to the customer is provided. Customer levels of service measures used in the Asset Management Plan are:

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

Table 6: Customer Service Measures

We are committed to the delivery of wastewater services to the Tablelands community and our Customer Service Standards Water & Wastewater 2020-25, detail our obligations, expectations from the community,

levels of services and processes. As part of our commitment we have established and strive to achieve the performance measures in Table 7.

Performance Measure	Target Performance	Current Performance (2022)
Wastewater main breaks and chokes	Less than 10 breaks and chokes per 100km of pipe	2.8
Response time	Maximum of 5 hours for 100% of wastewater issues	100%
Number of complaints	Less than 50 per 1000 connections	1.2

Table 7: Customer Service Standards

4.4.2 Technical Levels of Service

Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance. Technical service measures are linked to the activities and annual budgets covering the items in the table below.

Operations (Reliability, Safety, and Responsiveness)	The regular activities to provide services
Maintenance (Reliability, Safety, and Responsiveness)	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
Renewal (Condition and Cost)	The activities that return the service capability of an asset up to that which it had originally
Asset Improvements (Availability, Function, Sustainability and Capacity)	The activities to provide a higher level of service or a new service that did not exist previously.

Table 8: Technical Service Measures

We are currently in the process of developing our technical levels of service. The following table shows technical levels of service indicators that are part of our annual reporting to Queensland Government in 2022 and two new indicators; asset renewal ratio and asset consumption ratio as stipulated by Department of State Development, Infrastructure, Local Government and Planning.

	Performance Indicator	Performance Measure	Target	Reported (2022)
Operations & Maintenance	Annual Maintenance Cost	TBD	TBD	$1,237,000
	Operating cost per property	TBD	TBD	$815
	Annual operating cost	TBD	TBD	$4,668,000
	Volume of recycled water produced	TBD	TBD	370ML
Capital Works	Forecast 5 Year average annual renewals	TBD	TBD	$971,000
	Percentage of capital works completed	TBD	TBD	TBD
	Asset renewal ratio	TBD	TBD	N/A

Finance	Asset consumption ratio	TBD	TBD	N/A

Table 9: Technical Level of Service Indicators (Proposed)

Improvement Opportunity

1. Review current technical levels of service.
2. Adopt and document technical levels of service.

5.0 FUTURE DEMAND

The objective of asset management is to create, operate, maintain, rehabilitate, and replace assets at the required level of service for present and future customers in a cost effective and environmentally sustainable manner. The Asset Management Plan must therefore forecast the needs and demands of the community in the future and outline strategies to develop the assets to meet these needs.

5.1 Demand Forecasts and Impacts on Assets

The present position, demand drivers, and their potential impacts on future service delivery and use of assets are presented in table below.

Demand Drivers	Present Position	Projection	Impact
Population Change	26,844 in June 2022	27,243 by 2031	Future population growth will generate additional demand for Wastewater infrastructure.
Increase in Levels of Service	Council is in the process of evaluating current levels of service.	It is expected that levels of service will increaseto meet legislations as they change, and to meet customer expectations.	Increase in capital costs. Increase in operational costs. Additional resource requirements.
Aging Infrastructure	Current water asset consumption is 30% indicating an aging asset base	Assets will continue to age. Timely renewal of aging assets based on the condition will help alleviate impacts of aging assets.	Increase in maintenance and renewal requirements. Risks associated with potential asset failures.
Climate Change	The *Bureau of Meteorology and CSIRO 2022 State of the Climate* report outlines the following impacts of climate change in Australia • Australia's climate has warmed by an average of 1.47 ± 0.24 °C since national records began in 1910. • Sea surface temperatures have increased by an average of 1.05 °C since 1900. This has led to an increase in the frequency of	More intense and frequent rainfallMore severe drought periods. Changes to humidity levelsLonger and more intense heat spellsChanges in ground water levels	Higher levels of deterioration may result in increased asset maintenance requirements and changed schedules to maintain asset in a serviceable condition, resulting in increased maintenance costsFrequent drying and wetting of soil causing stabilisation issues in buried pipes.

	extreme heat events over land and sea.		
Council Financial Sustainability	Utility charges are the main source of funding for renewal, upgrade and new projects.	May result in funding constraints for future projects.	Achieving equitable distribution of resources. Ensure community receives maximum benefit from the investment in Wastewater infrastructure.
Community Satisfaction	Poor rating of Wastewater supply and service	Increased expectations from the community	Council will be expected to revisit asset intervention levels to meet community expectations. Need for management of community expectations.
Changes in Legislation	Council is required to meet all legislative requirements relevant to Wastewater services.	The changes in legislation may add an additional demand for asset upgrades.	Increased monitoring, reporting, and increased operational and capital costs.

Table 10: Demand Drivers, Projections, and Impact on Wastewater Service

5.2 Demand Management Strategy

Table 11 presents the additional strategies being implemented to meet the current projected demands on wastewater assets.

Demand	Demand Management Activities
Population Change/Increase in Level of Service/Changes in Legislation	Develop and implement a wastewater strategy
Increased Community Expectations	Conduct community engagement to understand expectations. Prepare long term wastewater asset maintenance and renewal programs.
Achieve Financial Sustainability	Review asset criticality, inspection programs and maintenance programs to identify improvements.

	Conduct levels of service analysis including community desired levels of service and review affordability and risks.
	Ensure that the Financial Plan and Asset Plan are integrated and reflect future asset needs.
Adapting to climate change	Undertake impact analysis of climate change on wastewater assets.
	Use results of recent flood studies/modelling to identify impact on wastewater assets.
Design Standards	Ensure design standards take into consideration climate change, local conditions, increasing demand and whole of life costings.

Table 11: Demand Management Strategies – Wastewater

5.3 Programs to Meet Demand

New and upgrade projects to meet our future demand, included in the 10 Year CAPEX program are listed in following table below.

	Program	10 Year Total
New & Upgrade	Sewerage Improvements/Upgrades	$1,000,000
	Sewage reticulation upgrades - pump station TC & mains Tinnaburra	$1,400,000
	Sewage Treatment Plant Upgrade D&C - Atherton	$26,800,000
	Sewage Treatment Plant Upgrade D&C - Yungaburra	$4,184,000
	Sewer Tinaburra Peninsula	$1,500,000
	Trunk sewer upgrades construction - Atherton (growth driven)	$3,000,000

Table 12: Planned New and Upgrade Projects to Meet Demand

Atherton STP assets are nearing their end of life and due to the growth of this area, about $27 million has been allocated for the upgrade of the STP. The upgrade work is anticipated to commence within the next 5 years.

Yungaburra STP will also undergo minor upgrades within the next 10 years. These works will also include upgrades to the inlet works, alkalinity dosing, secondary chlorine dose point, and an effluent filter.

Improvement Opportunity

3. Develop and implement a wastewater strategy.

6.0 LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how we plan to manage and operate the assets at the agreed levels of service while managing life cycle costs.

We are the custodian of a portfolio of wastewater assets with a replacement value of $114 million as reported in our financial statements as at 30 June 2023. These assets require ongoing planning and management to meet both stakeholder and legislative requirements within the financial resources available to us. Our Wastewater portfolio is summarised in Table 13.

Asset Class	Asset Type	Replacement Value	Accumulated Depreciation	Written Down Value
Wastewater	Mains (178km)	$77,144,620	$20,293,151	$56,851,469
	Pump Stations (32)	$7,524,597	$3,078,905	$4,445,691
	Sewage Treatment Plants (5)	$29,342,866	$10,678,099	$18,664,767
	Total	**$114,012,083**	**$34,050,155**	**$79,961,928**

Table 13: Financial Summary – Wastewater Assets

The responsibility of managing roads and buildings supporting wastewater services are currently being reviewed by the executive leadership team.

Improvement Opportunity
4. Clarify roles and assign responsibilities of asset management of roads and buildings supporting wastewater services.

6.1 Asset Data & Information

Council is committed to maintain the currency of all wastewater asset data. There are a number of initiatives currently underway to improve asset data and systems to centralise wastewater asset information:

- Understanding all capabilities of new Asset Management Information System (TechOne), including staff training,
- Wastewater asset data cleansing, and
- Development of data hierarchy for wastewater assets.

The current asset register does not contain all relevant attribute data of wastewater assets, highlighting the need for register review and collection of relevant attribute data.

The information handover process of new assets created as part of the capital works program and new developments needs to be improved and streamlined in order to keep asset registers up to date.

It should also be noted that, while asset inspection programs are in place for key assets, currently we do not systematically record maintenance history of all wastewater assets and this poses a challenge for informed decision making, particularly when it comes to renewals and resource allocations.

Improvement Opportunity

5. Continue cleansing of wastewater asset data.
6. Develop a data schema for wastewater assets.
7. Review all asset data and collect missing information.
8. Develop an asset hierarchy for all wastewater assets.
9. Configure new asset hierarchy in the Asset Management Information System (AMIS).
10. Upload all wastewater asset data on to AMIS and Geographic Information System (GIS).
11. Align financial asset register with the register within AMIS.

Improvement Opportunities

12. Review asset handover process upon completion of capital works, identify gaps, and implement improvements.
13. Review asset handover process for assets created by new developments, identify gaps, and implement improvements.

6.2 Data Confidence

Data is important in underpinning our approach to consistent levels of service, asset management, and investment decision making. It is therefore important for us to understand the data we have available on our assets, the level of confidence there is in that data, and any data gaps that may exist. Descriptions of each of the confidence levels are provided in Table 14. The data confidence assessment structure is based on the International Infrastructure Management Manual and the dimensions used are those that are considered to be the foundation for enabling good practice asset management.

Confidence Level	Description
High	Data based on sound records, procedures, investigations, and analysis, documented properly but has minor shortcomings. Dataset is complete and estimated to be accurate ±10%
Medium	Data based on sound records, procedures, investigations, and analysis which is incomplete or unsupported, or extrapolated from a limited sample. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated ±25%
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%

Table 14: Data Confidence Level Description

Whilst the condition data from the valuation registers provides the best available source of consolidated condition information, the asset register may not accurately reflect the existing assets in operation and the condition data may not reflect the current condition of the assets.

The following Table 15 presents the current confidence level of wastewater asset information.

Asset Category	Asset Type	Completeness of Asset Register	Attribute Details	Spatial Data	Condition Information	Maintenance History
Sewer Mains	Mains	Medium	Low	High	Low	Medium
Sewer Pump Stations (SPS)	Civil	Low	Low	High	High	Medium
	Electrical	Low	Low	High	Medium	Medium
	Mechanical	Low	Low	Low	Low	Low
Sewerage Treatment Plant (STP)	Civil	Low	Low	Low	Low	Low
	Electrical	Low	Low	Low	Low	Low
	Instrumentation	Medium	Medium	Medium	Medium	Medium
	Mechanical	Medium	Medium	Medium	Medium	Medium
	Structures	Medium	Medium	Medium	Medium	Medium

Table 15: Data Confidence Level of Wastewater Assets

6.3 Asset Condition

Asset condition is a measure of the health of an asset and is a key consideration in determining remaining useful life, as well as predicting how long it will be before an asset needs to be repaired, renewed, or replaced. Asset condition is also an indicator of how well it can perform its function. Condition data is valuable for developing long term funding scenarios for strategic planning of our budgets.

We use a 1 to 5 condition rating system for wastewater assets as described in Table 16.

Score	Condition Rating	Characteristics
1	Very Good	Asset is new or very close to as new.
2	Good	Asset is no longer in new condition. Only minor maintenance may be required.
3	Fair	The asset is serviceable and in a satisfactory condition however some maintenance may be required to address aesthetic, safety, or functional issues.
4	Poor	Asset requires significant maintenance or replacement of the asset is required
5	Very Poor	Asset is physically unsound, and replacement is required

Table 16:Condition Rating System

Our condition grading system follows good practice guidance as provided by various industry standards including the *International Infrastructure Management Manual.* Condition data for our wastewater assets is derived from valuation registers as at June 2023 and the derived condition data have been used for renewal modelling.

6.3.1 Current Condition – Sewer Mains

Majority of sewer mains are in very good to good condition. Approximately 12% of mains (Pipes -SL, i.e., pipes with short life (80)) are in poor to very poor condition. If the data reflects current status, then immediate attention may be required for these assets.

Over the next 10 years, about $5.9 million has been allocated for sewer mains CCTV inspections and relining program.

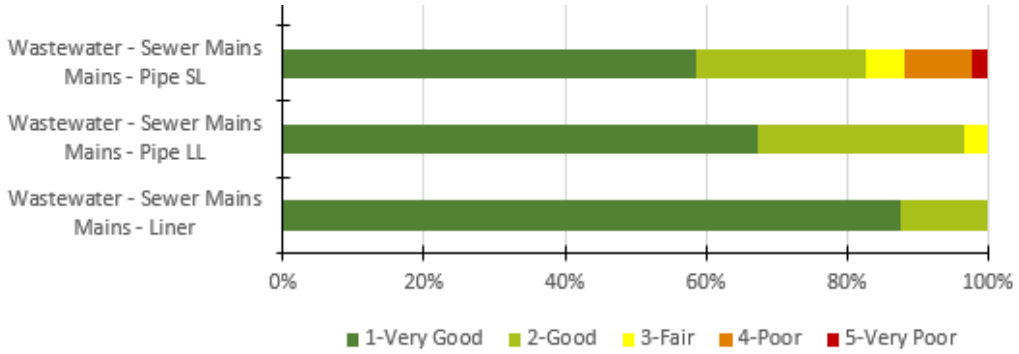

Figure 4: Condition profile – Sewer Mains

6.3.2 Current Condition – Sewer Pump Stations

Approximately 50% of pumps are in poor to very poor condition. A condition assessment of the pumps needs to be undertaken to verify this information and replacement of these pumps based on the findings. The remaining pump stations assets are in very good to fair condition apart from 10% of various mechanical assets.

Over the next 10 years $225K has been allocated for pump well replacement and $340K for pump replacement.

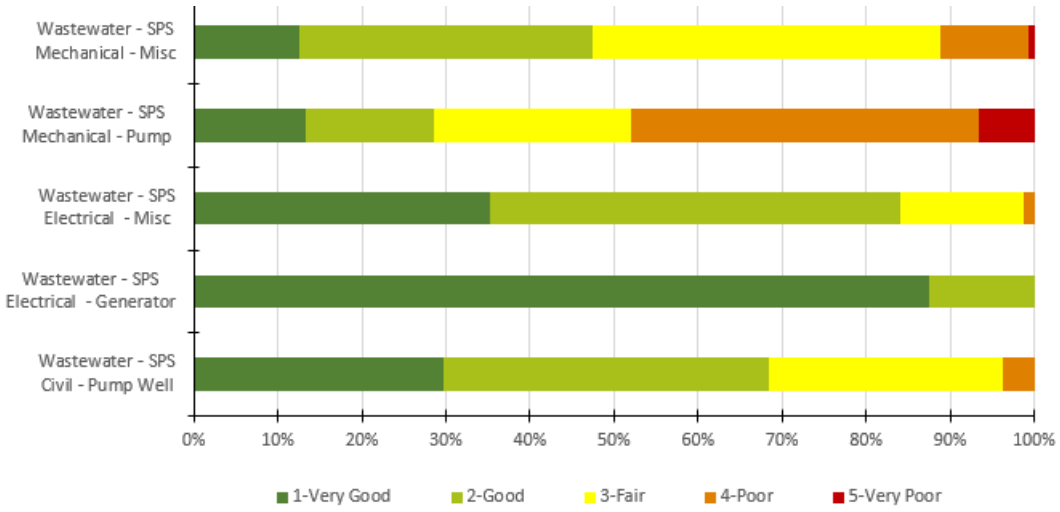

Figure 5:Condition profile – Sewer Pump Station Assets

6.3.3 Current Condition – Sewerage Treatment Plant (STP)

Approximately 20% of SCADA, 12% of instrumentation, 11% of mechanical, and 10% of structures are in poor to very poor condition and may require intervention soon. A SCADA Strategy has been completed in 2021 and is currently being implemented over consecutive years to address identified condition issues of SCADA assets.

The remaining treatment plant assets are in very good to fair condition. There has been $1.275 million allocated for STP renewals within the next 10 years.

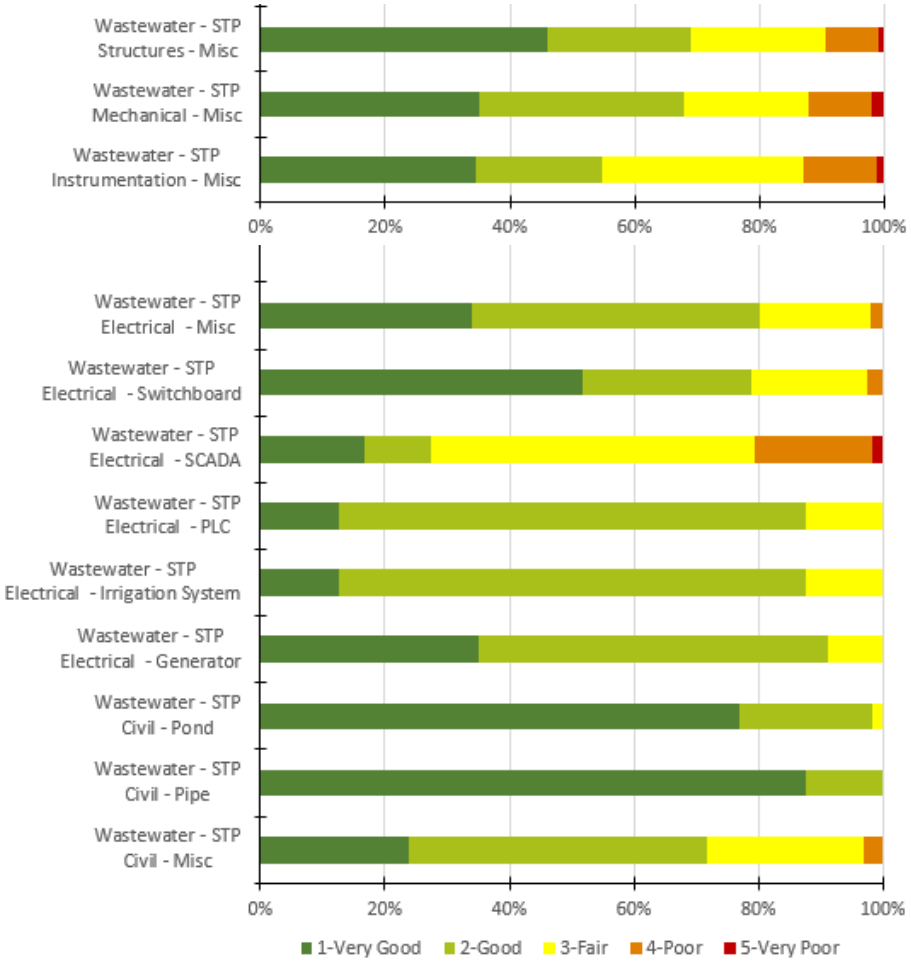

Figure 6: Condition Profile – Sewerage Treatment Plant Assets

6.4 Asset Maintenance and Inspections – Wastewater Assets

We carry out a number of maintenance and inspection programs to meet our compliance requirements and ensure that key assets are kept in working order. We are currently in the process of reviewing and consolidating our routine and maintenance and inspections schedules for the entire wastewater asset base. We are aiming to provide optimum level of maintenance and care in a financially and environmentally sustainable manner with the available resources.

In order to carry out effective planning and competent management of our Wastewater assets, it is essential that maintenance and performance related information is collected through disciplined and regular inspections of the whole portfolio.

Some programs we are currently undertaking are listed below.

- All compliance related maintenance and inspections
- Regular pump station inspections
- Generator inspections and maintenance.

However, our inspections and maintenance are predominantly paper based, and we are moving towards implementing a planned maintenance and inspections program.

Improvement Opportunity

14. Review and implement planned maintenance and inspection program for wastewater assets.
15. Identify resource requirement for implementation of planned maintenance and inspection program.
16. Allocate funding for planned maintenance and inspection programs through the Long-Term Financial plan (LTFP).
17. Review work order management process and identify improvements to record and automate work order management process.

6.4.1 Future Operations and Maintenance Costs

The figure below outlines the forecast operations and maintenance budget based on the understanding of the current levels of service delivered for our wastewater assets.

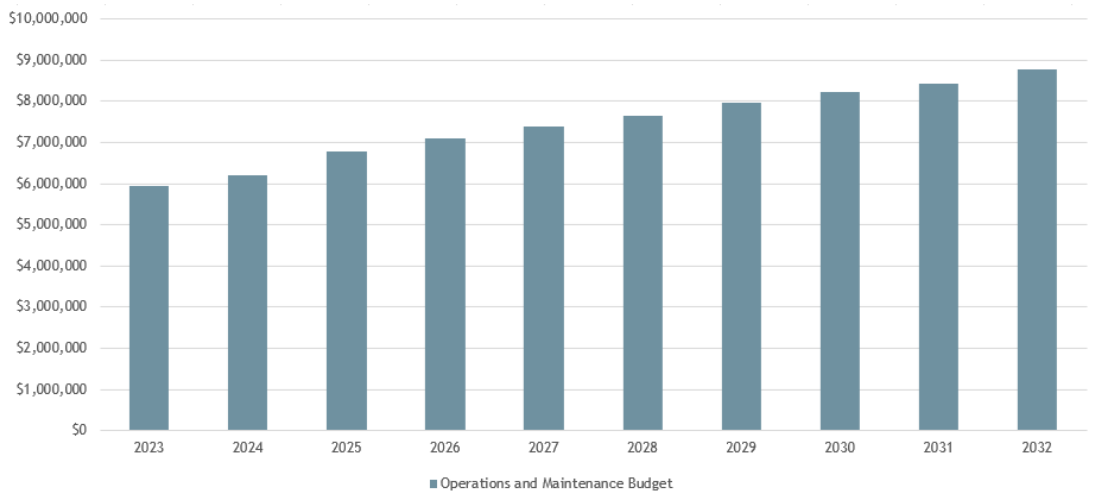

Figure 7:Operations and Maintenance Budget

The total operations and maintenance budget over the next 10-years starting from 2023/24 is $74.5 million. This is the required operations and maintenance budget to continue to deliver present service standards over the long term.

The maintenance expenditure requirements comprise two components: routine maintenance and operations, and reactive maintenance. The routine program is made up of ongoing activities required to maintain the amenity, safety, and functionality of our wastewater networks. The increase in the routine program is indicative of the need to fund operations and maintenance associated with the creation of new assets acquired over the period. The majority of these new assets are created through our own capital works program.

The Council is currently meeting all key customer levels of service included in the Customer Service Standards, and Environmental Authority limits, under current budget allocations.

As noted above, the planned maintenance and inspection schedules are currently being reviewed. Current budget allocations will be reviewed at the end of this review process to ensure that allocations are adequate to support new planned maintenance and inspection schedules.

6.5 Wastewater Asset Renewals

Renewal is major work that does not increase the design capacity of an asset but restores, rehabilitates, replaces, or renews the asset to its original service potential. Work over and above restoring an asset to original service potential is an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

6.5.1 Renewal Strategy

Renewal strategies are based on assessing a range of factors to ensure the appropriate level of investment is targeted at the optimum time to ensure assets remain fit for purpose and that renewal plans are efficient and effective. The factors considered include the following:

- Criticality,
- Maintenance and/or failure history,
- Age,
- Expected life,
- Remaining useful life,
- Condition (where known),
- Condition prediction,
- Geographical grouping,
- Demand and use patterns; and
- Timing in relation to associated asset renewal plans.

As a general principle the number and cost of repairs will determine the optimum timing to invest in the renewal of assets. Every time an asset is repaired it provides information about its performance, rate of deterioration, and a prediction of the optimum time to renew. As the rate of repairs increase a prediction can be made about the best time for renewal of an asset to keep the cost of ownership at the lowest possible levels.

6.5.2 Renewal Ranking Criteria

In general, renewal works are prioritised and planned by assessing the following considerations:

- Risk and asset criticality,
- Physical condition,

- Ability to meet service levels,
- Safety issues,
- Community/user feedback; and
- Location.

The following indicators are used to determine the criticality of an asset:

- Have a high consequence of failure,
- Have high use and subsequent impact on users would be greatest,
- Have the highest average age relative to their expected lives,
- Are identified in the Asset Management Plan as key cost factors,
- Have high or increasing operational or maintenance costs; and
- Have replacement with a modern equivalent asset that would provide the equivalent service and provide operational savings.

It should be noted that many of our renewals are reactive and there is a need for development of a condition-based renewal program.

Improvement Opportunities

18. Undertake cyclic condition assessments to identify and record asset condition.
19. Develop renewal programs based on observed asset conditions.
20. Develop a renewal ranking and prioritisation criteria.

6.5.3 Summary of 10-Year Wastewater Asset Renewal Program

The following table presents a summary of our 10-year wastewater asset renewal and upgrade programs. No new projects have been identified in the current 10-year capital program.

	Program	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10 Year Total
Renewal	Electrical switchboard renewal water, wastewater and waste sites	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$16,667	$16,667	$16,667	$16,667	$126,667
	Malanda Sewage Treatment Plant SBR membranes replacement	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$150,000
	Pump station wet well renewal	$0	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$225,000
	Renewal of buildings across water, wastewater and waste	$0	$20,000	$0	$20,000	$0	$20,000	$0	$20,000	$25,000	$20,000	$125,000
	Reticulation sewer pumps renewal	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$50,000	$50,000	$340,000
	SCADA renewal and upgrade water, wastewater and waste sites	$83,333	$83,333	$83,333	$66,667	$66,667	$66,667	$50,000	$66,667	$66,667	$66,667	$700,000
	Sewer mains CCTV inspection and relining program	$500,000	$500,000	$500,000	$600,000	$600,000	$600,000	$600,000	$600,000	$700,000	$700,000	$5,900,000
	Sewer Treatment Plant ageing infrastructure replacement program	$75,000	$75,000	$75,000	$100,000	$100,000	$100,000	$100,000	$100,000	$200,000	$200,000	$1,125,000

Table 17: 10 Year Renewal Program - Wastewater Assets

It should be noted renewal funding for buildings and fencing have been omitted from wastewater renewal forecast. The funding allocations for switchboards and SCADA include switchboards and SCADA for water, wastewater, and waste services. Therefore, only 1/3 of the total renewal funding was applied for renewal of switchboards and SCADA within wastewater services.

6.5.4 Renewal Modelling Assumptions

The analysis to determine future asset renewal requirements is based on the best available information held by the Council. The future funding forecasts will be revised and refined to best represent the performance of the asset base as the maturity of the asset management practices improves.

The renewal funding projections presented within this asset management plan are based on the following assumptions:

- The renewal costs are based on the asset data register as of 1 July 2023,
- Asset quantities and financial information within the current asset registers are assumed to be correct,
- Asset condition was derived using useful life, accumulated depreciation, and replacement cost of assets presented in the financial information,
- Intervention standards is based on providing a balanced level of service before assets reach “very poor” condition,
- The renewal models are subject to the limitations of the CT Management renewal model and data used in it, which includes assumed performance of the asset types, deterioration curves, and trigger intervention levels,
- Useful lives for Wastewater assets are Council’s adopted lives and are assumed to be a reasonable estimate of the life of the Wastewater assets,
- All projections are in present dollar value,
- Future renewal funding levels are derived from the Financial Plan,
- Service levels are based on current service levels and may not reflect community expectations; and
- Wastewater asset hierarchy built for the purpose of renewal modelling was not provided within the financial information. The hierarchy adopted is a reasonable approximation of the hierarchy of wastewater assets.

6.5.5 Asset Useful Lives

The following table shows useful lives of wastewater assets used in renewal modelling.

Asset Category	Asset Type	Asset Sub Type	Useful Life (Years)
Sewer Mains	Mains	Liner	40
		Pipe LL	150
		Pipe SL	80
Sewer Pump Stations (SPS)	Civil	Pump Well	80
	Electrical	Generator	25
		Misc	20
	Mechanical	Pump	15
		Misc	20
Sewerage Treatment Plant (STP)	Civil	Misc	40
		Pipe	80
		Pond	100
	Electrical	Generator	25
		Irrigation System	40
		PLC	20
		SCADA	15
		Switchboard	25
		Misc	20
	Instrumentation	Misc	15
	Mechanical	Misc	20
	Structures	Misc	60

Table 18: Useful Life- Wastewater Assets

6.6 Overall Renewal Forecast and Budget – Wastewater Assets

Capital budget renewal forecasts have been developed primarily from condition ratings and financial useful lives in valuation reports where available, and where not available aged-based data as an indicative guide. The data confidence levels in table 15 reflect the varying levels of confidence in the completeness of the asset registers and the accuracy of the condition ratings. However, with asset registers now consolidated and a project to optimise asset records underway, future budgets are expected to be amended. This project will strengthen our records and provide data confidence enabling enhanced forecasting of new, renewal and upgrade works. On completion of this project, our LTFP will align with the endorsed capital requirements identified.

The following graph shows:

- Level of funding required for renewal of Wastewater assets to achieve our service level objectives,

- The amount of funding which we are projected to commit for renewal from our current Long Term Financial Plan (LTFP); and
- Total renewal demand over the next 10 years ($ 15.5 million).

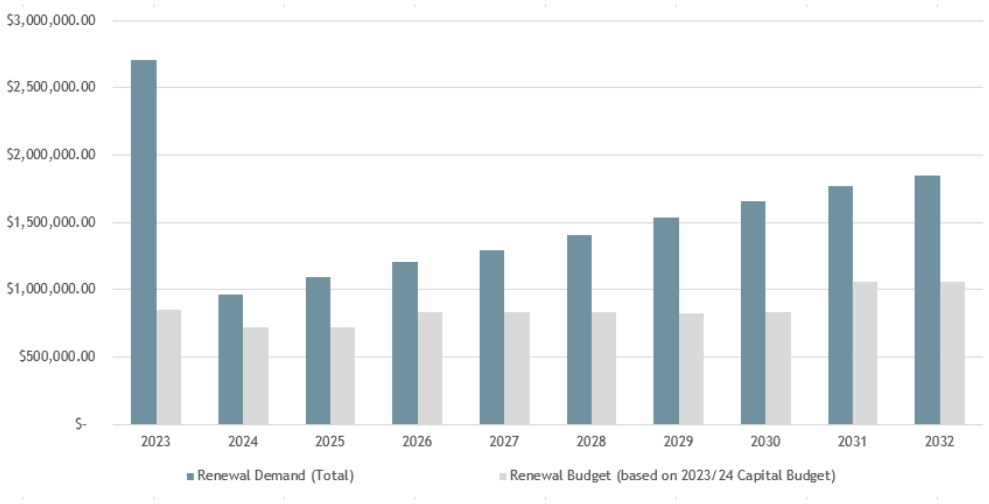

Figure 8: Renewal Forecast Vs Renewal Budget - Wastewater Assets

The Following graph shows the distribution of overall condition of wastewater assets over the next years under current funding levels. It is forecasted that the value of assets in "very poor" condition will increase from $1 million to $12.5 million over the next 10 years under current funding levels.

Therefore, it is important to conduct condition assessments of all wastewater assets which will further strengthen the level of confidence in data. The renewal programs based on observed condition data oppose to age- based condition data will enable enhanced long-term renewal forecasts.

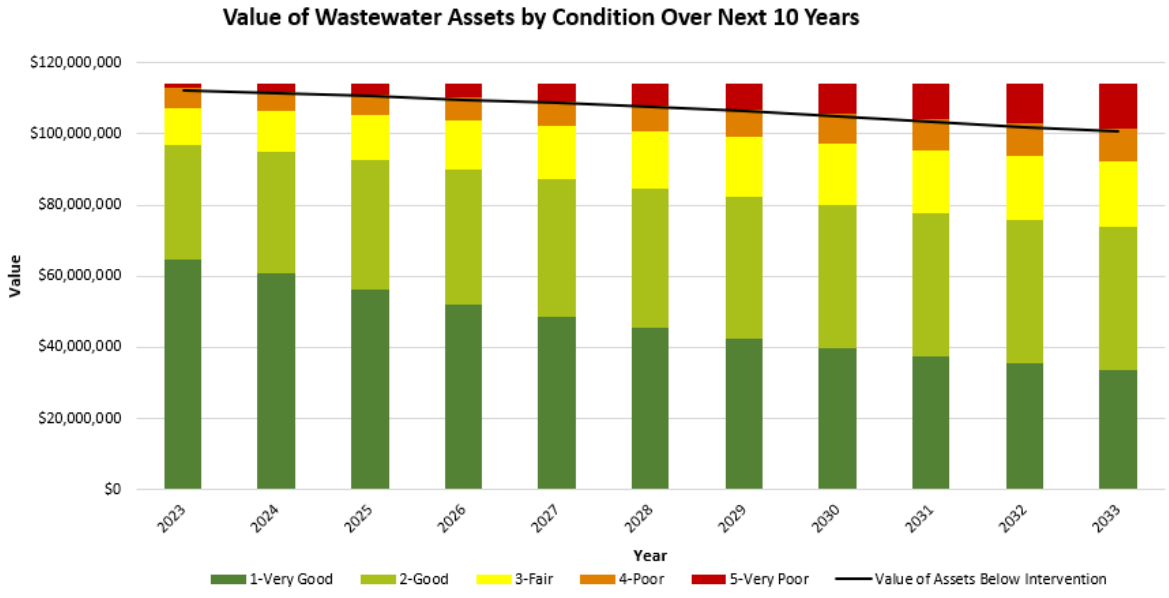

Figure 9: Condition Distribution of Wastewater Assets Over Next 10 Years

Improvement Opportunities

21. Review current renewal funding allocations to identify gaps.

6.7 New/Upgrade/Expansion Plan

Decisions pertaining to the acquisition (new), upgrade, and expansion of an asset is carried out taking into account full lifecycle costing of the planned asset. The following criteria is used when budget proposals are prepared.

- Capital cost of the asset,
- Total borrowing costs associated with acquisition of the asset (if any),
- Total capital outlay required for the asset (sum of the above),
- Expected annualised maintenance & operational costs associated with the asset,
- Expected reduction in any existing annualised maintenance & operational costs via efficiency gains or asset rationalisations,
- Expected annualised renewal costs associated with the asset,
- Total annualised lifecycle cost (sum of the above annualised costs),
- Total lifecycle cost (total annualised cost times useful life), and
- Forecasted net position after acquisition, and consequences of not acquiring the asset.

The current forecast is based on Wastewater new and upgrade capital projects included in the capital works program. Total forecast expenditure on Wastewater new, upgrade, and expansion projects totals $37.9 million over the next 10 years which is an average of $3.79 million per annum.

Council's 10-year wastewater upgrade/new asset forecast is shown in the graph below.

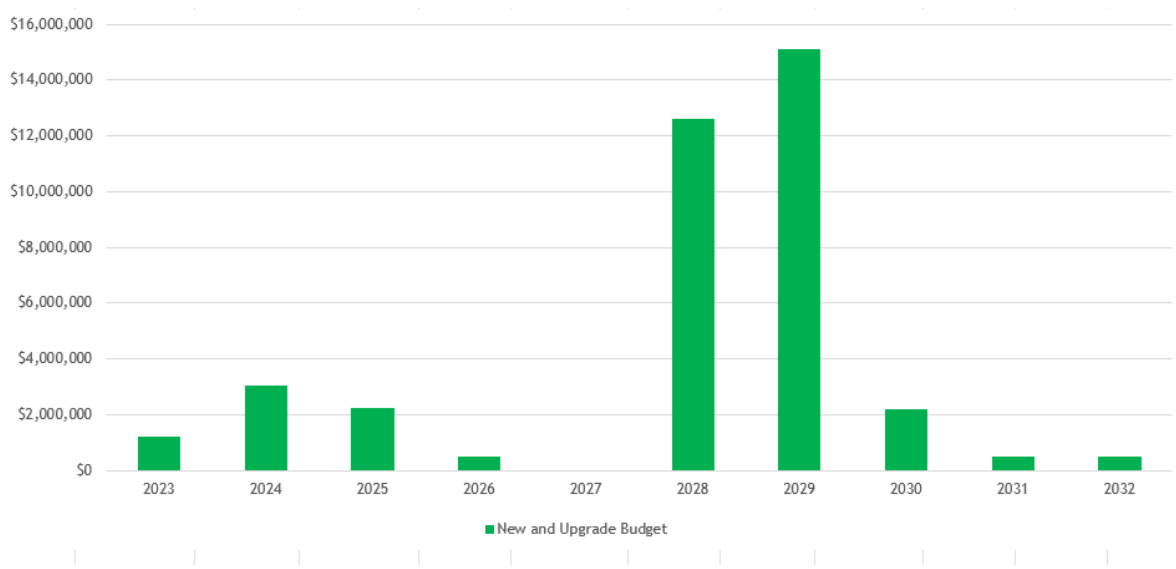

Figure 10: Budget - New, Upgrade, and Expansion Projects

The following table presents a summary of our 10-year wastewater asset new and upgrade programs.

	Program	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10 Year Total
New & Upgrade	Sewerage Improvements/Upgrades	$0	$0	$0	$0	$0	$0	$0	$0	$500,000	$500,000	$1,000,000
	Sewage reticulation upgrade - pump station TC & mains, Tinnaburra design	$500,000	$900,000	$0	$0	$0	$0	$0	$0	$0	$0	$1,400,000
	Sewage Treatment Plant upgrade D&C - Atherton	$200,000	$400,000	$0	$0	$0	$12,600,000	$13,600,000	$0	$0	$0	$26,800,000
	Sewage Treatment Plant upgrade D&C - Yungaburra	$0	$250,000	$250,000	$0	$0	-	$1,500,000	$2,184,000	$0	$0	$4,184,000
	Sewer Tinaburra Peninsula	$0	$500,000	$1,000,000	$0	$0	$0	$0	$0	$0	$0	$1,500,000
	Trunk sewer upgrades construction - Atherton (growth driven)	$500,000	$1,000,000	$1,000,000	$500,000	$0	$0	$0	$0	$0	$0	$3,000,000

Table 19: 10 Year New & Upgrade Program - Wastewater Assets

6.8 Disposal Plan

Assets are considered suitable for disposal for the following reasons:

- No longer required (service no longer provided/unsuitable for re-use),
- Unserviceable, operationally inefficient or beyond economic repair,
- Functionally and/or technologically obsolete,
- Surplus to current or immediately foreseeable needs,
- Part of an asset replacement program; and
- Contains environmentally sensitive or hazardous material.

Council's Asset Disposal Policy provides for the identification, assessment and decision-making processes that inform the Council of their responsibilities in the asset disposal process. This Policy applies to all Council staff, volunteers and contractors involved in the disposal of Council assets.

6.9 Summary of Asset Expenditure Requirements

We are projecting a deficit in capital and operational funding when compared to the level of funding that we predict will be required over the forthcoming 10-year period as shown in Table 20.

Key Financial Performance Indicators for Current Projected Funding	
Total Lifecycle Costs over next 10 years (Projected Demand)	**$128,229,158**
Total Lifecycle Budget over next 10 years (From Financial Plan)	**$120,953,289**
Total Lifecycle Funding Deficit	**-$7,275,869**
Average Lifecycle Funding Deficit per Annum	**-$727,587**
Percentage Lifecycle Funding Being Met	**94%**

Table 20: Key Financial Indicators - Wastewater Assets

However, we need to ensure that our forecasts are correct and need to put effort into reviewing our asset condition and useful lives, and the funding we are proposing to set aside in our long-term plans. It should be noted that condition data has been derived using useful life and remaining life data provided in the 2023 valuation data. Therefore, it is important that the Council undertake condition assessment of all wastewater assets to validate these forecasts. We also need to focus on determining appropriate and affordable levels of service in consultation with the community. It is only once service standards have been agreed to can well informed lifecycle costs be projected and used to inform the Financial Plan.

7.0 RISK MANAGEMENT

The purpose of this section is to describe the basis of our strategic risk and investment policies and the way it will manage risk associated with our wastewater assets.

7.1 Risk Management Process

Our risk management framework and processes are in accordance with AS/NZS ISO 31000:2009 – Risk Management – Principles and Guidelines. The Framework is designed to provide the architecture for a common platform for all risk management activities undertaken by Council and is used to identify specific risks associated with our delivery of services and management of assets. The objective of the risk management process with regards to our assets is to ensure that:

- All significant operational and organisational risks are understood and identified,
- The highest risks that need to be addressed in the short to medium term are identified; and
- Strategies and treatments to address risks are identified and applied.

An assessment of risks associated with service delivery from infrastructure assets has identified the most critical risks we face in relation to our Wastewater asset portfolio. The risk assessment process identifies and assesses risks, develops a risk rating and develops a risk treatment plan for non-acceptable risks.

This process helps to determine the risks associated with wastewater assets by identifying the use, priority and timeframes to be considered. The principal objectives of this risk management process in relation to wastewater assets includes:

- To provide safe Wastewater supply and service to the community,
- To enable a system of proactive maintenance (where possible),
- To identify areas that require maintenance through a systematic and prioritised inspection system,
- To facilitate scheduling and resource allocation where required, and
- To establish a priority system for carrying out maintenance works.

7.1.1 Risk Assessment

There are four (4) types of inspections that Council carries out with respect to risk identification and assessment. They are,

- Routine Inspections,
- Supplementary Inspection,
- External Inspection Request, and
- Internal Inspection Request.

Routine Inspections are the primary type of inspection carried out by Council and represent a proactive method of risk identification.

The supplementary inspections are performed in addition to routine inspections. These inspections may be performed for the following reasons:

- Following a storm event, flood, bushfire;
- Review / audit of previously completed routine inspections;
- Inspection seeking a specific defect type; and
- Criticality of asset.

External inspection requests are the requests from the public on condition and risks associated with our Wastewater assets. These inspection requests are registered by Council's Customer Request Management (CRM) system and assigned to the appropriate council officer for action.

Internal inspection requests are generated by councillors, council staff and other Council representatives. These requests are handled in the same manner as an External Inspection Requests.

7.1.2 Risk Control

During inspections control of "risk exposure" requires control measures to be implemented. Some of the control measures that Council will be able to use to lessen our exposure to risk are,

- Use of warning signs to indicate potential hazard,
- Erection of temporary barriers or barricades around the area until the risk is eliminated,
- Eliminate the risk by asset repair; and
- Planning and allocating resources for the long-term replacement.

All requests are assigned a typical response time based on the criticality of asset and the level of service prescribed in our Customer Service Standards, Water & Wastewater 2020-25.

7.2 Critical Assets

Assets which have a high consequence of failure are identified as critical assets. Generally, criticality frameworks assess assets against the following areas outlined in Risk Management Framework:

- Service interruption,
- Public safety,
- Environmental impact,
- Financial Impact,
- Reputation/ Complaints and Legal Action Impact,
- Political Impact; and
- Obligation/ Legislative/ Standard Compliance Impact.

We are currently in the process of reviewing critical wastewater assets including those identified in Table 21.

Critical Asset(s)	Failure Mode	Impact
Sewer Pump Stations	Pump, motor or switchboard fault	Environmental and public health impact from sewer overflows
	Extended electricity supply interruption	
Sewer mains	Blockage or breakage	Environmental and public health impact from sewer overflows
Sewage Treatment Plants	Mechanical, electrical or civil infrastructure failure	Failure to meet license limits
	Extended electricity supply interruption	Environmental and public health impacts
SCADA and Telemetry assets	Electrical, instrumentation or communications failure	Inability to receive alarms or monitor asset performance

Table 21: Critical Assets - Wastewater

Improvement Opportunities

22. Develop an asset criticality framework.
23. Assess assets and identify criticality of assets based on asset criticality framework.

7.3 Risks and Treatment Plans – Wastewater Assets

The following table presents risks relevant to wastewater assets.

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan
Sewer mains	Blockages and mains breaks. Due to the size and possible access difficulties failure of these mains could potentially cause interruptions in service.	VH	Ongoing assessments including CCTV inspections, root clearing and sewer relining
Pump stations	Failure to operate would realise possible short-term interruptions and potential environmental and public health impacts	H	Periodic maintenance and upgrades to switchboards, pumps and valves to reduce risk. Stand by generators in place where required
Catchment management	Failure to meet relevant standards can compromise the health of water bodies.	VH	Inspections to identify contamination and general risk assessment of catchment area. SCADA monitoring and alarms generated for faults.
Decreasing grant opportunities	Failure to meet capital investments required to meet demand	VH	Achieving equitable distribution of resources. Consideration given to decreasing grant opportunities in long term financial planning.

Table 22: Risks Associated with Wastewater Assets

7.4 Operational Risk Register

Our operational risk register is currently being developed. Some of the operational risks that will be identified within the operational risk register are:

- Absence of record keeping for routine maintenance and inspection programs for all asset classes,
- Impact of asset failure on business continuity, and
- Identification of critical assets.

Improvement Opportunities

24. Identify operational risks associated with management of Wastewater assets.
25. Develop an Operational Risk Register

7.5 Climate Change Risk

The impacts of climate change have the potential to have a significant impact on the assets that we manage and the services that are provided. 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 will impact on assets can vary significantly depending on the location and the type of asset and services provided, as will how we respond and manage these impacts.

Adaption and mitigation strategies for our Wastewater assets are developing as we understand the climate change impacts in greater detail. As a minimum we consider how to manage our existing assets given potential climate change impacts for our region. Climate change indicators, potential impacts as they relate to Wastewater assets and suitable management actions have been identified in the table below:

Climate Change Indicator	Potential Impact on Wastewater Assets and Services	Management Actions
Extreme Rainfall (Flooding)	Accelerated degradation of assets, reduced life expectancy, and increased lifecycle costs.	Identify when and where wastewater assets are most likely to be exposed to increased frequency and intensity of riverine and pluvial flooding through asset risk modelling. Undertake flood mapping to identify hot spots.
		Reactive and proactive maintenance – to identify and initiate repairs where needed to maintain/improve asset integrity now.
		Factor future flooding impacts into designs (particularly STP capacity) and maintenance program.
Soil Subsidence	Soil expansion and contraction causing damage to Wastewater mains	Use climate risk modelling to identify when and where wastewater assets are most likely to be exposed to soil subsidence.
		Understand the prevalence of clay soils and changes to the wetting and drying climate cycles.
Bushfires	Destruction of Wastewater assets	Use climate risk modelling to identify when and where wastewater assets are most likely to be exposed to bushfire.
		Plan for rapid assessment of fire impacted assets to ensure that assets have maintained integrity post event.
		Train staff for assessment tasks particularly for priority asset classes.
Extreme wind	Trees and debris causing damage to assets	Identify when and where assets are most likely to be exposed to increased frequency and intensity of extreme wind through asset risk modelling.
		Where possible initiate ongoing management of vegetation to reduce risk of trees and debris impacting wastewater assets.

Higher Carbon Emissions	Legislative requirements to reduce emissions.	Implement energy efficient methods in operation and maintenance of assets.

Table 23: Management of Climate Change Impact on Wastewater Assets

7.6 Building Resilience into New and Upgraded Assets

The way in which we construct new assets should recognise that there is opportunity to design and build in resilience to climate change impacts. Building resilience in our wastewater assets will have the following benefits:

- Assets will withstand the impacts of climate change,
- Services can be sustained,
- Assets that can endure may potentially lower the lifecycle cost and reduce their carbon footprint, and
- Potentially increasing asset life and protecting financial investment returns.

As a minimum, we need to consider how to manage existing assets given the potential impacts of climate change and how to create resilience to climate change in any new works or acquisitions.

The table below summarises climate change resilience opportunities for wastewater assets.

Climate Change Risk Event	Wastewater Asset Resilience Opportunities
Accelerated degradation and structural damage due to climate change	Review engineering standards to ensure more robust climate resilient structures.
	Factor in coefficient of thermal expansion for materials used where applicable (increased movement allowances).
	Use trenchless technologies
High rainfall and storm events	Use materials that will weather and withstand future conditions, that is materials that are stronger, can withstand longer periods of wetting, are more resistant to thermal expansion and contraction, and are more durable in acid and saline conditions. Incorporate stormwater inflow into sewer network to determine manageable capacity requirement at the STPs.
Increased frequency and intensity of flooding/storm	Design assets above flood levels (where applicable) or outside of flood zones, low-lying areas, and areas vulnerable to rising Wastewater table.
Bushfires	Design assets that are cheap and replaceable in localities that are likely to experience multiple and frequent climate risks.
	Implement appropriate vegetation management programs
Reduced Carbon Emissions	Use low embodied energy materials and employ energy efficient operation and maintenance practises.
	Use either LED or solar LED and purchase green power and other renewable energy sources for lighting.

Table 24: Climate Change Resilience Opportunities - Wastewater Assets

8.0 FINANCIAL SUMMARY

Our Long-Term Financial Plan (LTFP) provides a view of the resources that we expect to be available to us and how these will be allocated and prioritised over the next ten (10) years. Our LTFP identifies current and projected financial capacity to continue delivering high quality services, facilities, and infrastructure while identifying critical new capital investment to support our community's prosperity and to respond to our future challenges. This Wastewater Asset Management Plan will inform the budgets and projections outlined in our LTFP for Wastewater asset management. Ongoing affordability and financial sustainability are our key objectives and the LTFP in combination with Asset Management Plans support in achieving these objectives.

This section contains the financial information resulting from all the information presented in the previous sections of this Asset Management Plan. The financial forecasts made will be refined as we improve our understanding of future asset performance and required levels of service.

8.1 Financial Statements and Projections

8.1.1 Asset valuations

The value of the assets covered by this Wastewater Asset Management Plan as recorded in our financial asset register as of 30 June 2023 are shown below.

Current Replacement Cost	**$114,012,083**
Accumulated Depreciation	**$34,050,155**
Written Down Value (WDV)	**$79,967,769**
Annual Average Asset Consumption	**$1,981,436**

8.1.2 Asset Sustainability

We use the following indicators to measure asset sustainability:

- Asset renewal funding ratio, and
- Projected funding requirements compared with budget allocations (Long Term Financial Plan).

8.1.3 Asset Renewal Funding Ratio

Asset Renewal Funding Ratio	**54%**

The Asset Renewal Funding Ratio is the most important indicator and shows that over the next ten (10) years we are expected to have 54% of the funds required for the optimal renewal and replacement of assets. The Asset Renewal Funding Ratio is calculated as the ratio between the calculated asset renewal forecast and allocated renewal funding.

8.1.4 Projected Expenditure for Long Term Financial Plan

Our Asset Management Plans and LTFP are the foundation of our long-term resource planning. These plans work together to ensure that expectations are achievable and sustainable. We are working to improve the integration between our Asset Management Plans and LTFP. The Asset Management Plans inform the Long-Term Financial Plan by identifying the amounts that are required to renew, maintain, and improve our assets over their lifecycle. The LTFP determines how much funding is available to support our assets. It incorporates knowledge of the condition of our assets, and risk assessment issues, as well as the impact of reviewing and setting intervention and service levels for our infrastructure.

The financial projections from this Asset Management Plan are shown in Figure 11 and Table 25. This covers the full lifecycle costs over the next ten (10) years to sustain current levels of service. Note that all costs are shown in real values.

The bars in the graphs represent the anticipated budget needs required to achieve the lowest lifecycle costs, the budget line indicates the funding that is forecast to be available.

These amounts need to be verified against affordable levels of expenditure as determined through our LTFP and cyclic condition assessment of wastewater assets. The gap between these informs the discussion on achieving the balance between services, costs, and risk to achieve best value outcomes.

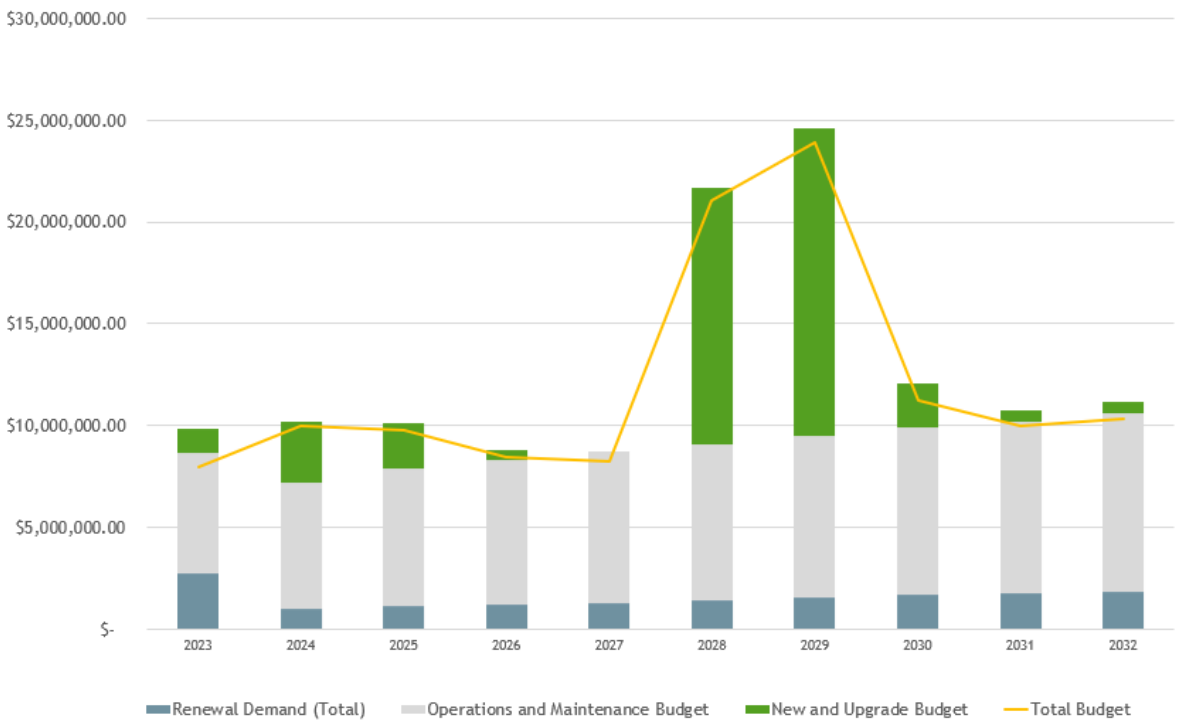

Figure 11: Total Life Cycle Cost and Demand – Wastewater Assets

Year	Renewal Forecast	Renewal Budget	New and Upgrade	Operation & Maintenance	Total Budget	Total Lifecycle Demand
2023	$2,692,334	$848,333	$1,200,000	$5,934,876	$7,983,209	$9,827,211
2024	$979,021	$723,333	$3,050,000	$6,195,692	$9,969,025	$10,224,713
2025	$1,140,377	$723,333	$2,250,000	$6,793,320	$9,766,654	$10,183,697
2026	$1,264,480	$831,667	$500,000	$7,117,236	$8,448,902	$8,881,716
2027	$1,367,830	$831,667	$0	$7,400,756	$8,232,423	$8,768,586
2028	$1,476,234	$831,667	$12,600,000	$7,645,561	$21,077,228	$21,721,795
2029	$1,591,568	$821,667	$15,100,000	$7,965,445	$23,887,112	$24,657,014
2030	$1,698,639	$838,333	$2,184,000	$8,228,894	$11,251,228	$12,111,533
2031	$1,785,144	$1,058,333	$500,000	$8,438,763	$9,997,097	$10,723,907
2032	$1,846,909	$1,058,333	$500,000	$8,782,078	$10,340,412	$11,128,987
Total	**$15,842,535**	**$8,566,667**	**$37,884,000**	**$74,502,622**	**$120,953,289**	**$128,229,158**

Table 25: 10 Year Total Forecast and Current Budget - Wastewater Assets

8.2 Funding Sources

Funding for assets is provided from our annual budget and Financial Plan. Our financial strategy determines how funding will be provided, whereas the Asset Management Plan communicates how and when this will be spent, particularly in the area of renewal investments. Major funding sources to maintain, renew and improve our wastewater assets are shown in the table below.

Activity	Funding Source
Maintenance and Operations	Residential and non-residential utility charges
Renewal	Residential and non-residential utility charges
Capital Investments (i.e., New, upgrade, and expansion)	Renewal component of project - residential and non-residential utility charges
	Growth component of project - developer contribution charges. State and Federal Government grants

Table 26: Funding Sources

8.3 Key Assumptions Made in Financial Forecasts

The key assumptions made in this asset management plan are presented below to enable readers to gain an understanding of the levels of confidence in the data behind the financial forecasts. Key assumptions made in this Asset Management Plan are:

- Current levels of service reflect community needs,
- Future funding levels are derived from the Long-Term Financial Plan,
- No known legislative changes or other influences that will impact on or demand a change in level of service and associated funding throughout the period of the plan,
- Adequate funds to maintain Wastewater are provided to maintain the current level of service; and
- 2023 valuation data, and the condition of assets derived from 2023 valuation data are accurate and valid for the purpose of renewal modelling.

9.0 PLAN IMPROVEMENT AND MONITORING

Number of improvements for overall asset management have been identified in this Wastewater Asset Management Plan. It is important that these improvement actions are prioritised based on the business needs/ongoing projects and sufficiently resourced.

9.1 Improvement Plan

The asset management improvement plan identified within this Asset Management Plan is shown in Table 27.

No	Task	Category	Responsibility	Resource Type	Priority	2023/24	2024/25	2025/26
1	Review current technical levels of service.	Service Levels	Manager Water & Waste	Internal	Medium			
2	Adopt and document technical levels of service.	Service Levels	Manager Water & Waste	Internal	Medium			
3	Develop and implement a wastewater strategy	Service Levels	Manager Water & Waste	External	Medium			
4	Clarify roles and assign responsibilities of asset management of roads and buildings supporting wastewater services.	Operation & Maintenance	Manager Strategic Assets	Internal	Medium			
5	Continue cleansing of wastewater asset data.	Data & System Improvements	Manager Water & Waste/ Manager Strategic Assets	Internal/External	High			
6	Develop a data schema for wastewater assets.	Data & System Improvements	Manager Water & Waste/ Manager Strategic Assets	Internal/External	High			
7	Review all asset data and collect missing information.	Data & System Improvements	Manager Water & Waste/ Manager Strategic Assets	Internal/External	High			
8	Develop an asset hierarchy for all wastewater assets.	Data & System Improvements	Manager Water & Waste/ Manager Strategic Assets	Internal	High			
9	Configure new asset hierarchy in AMIS.	Data & System Improvements	Manager Strategic Assets	Internal	High			
10	Upload all wastewater asset data on to AMIS and GIS.	Data & System Improvements	Manager Strategic Assets	Internal	High			
11	Align financial asset register with the register within Asset Management Information System (AMIS).	Data & System Improvements	Manager Strategic Assets/ Manager Finance	Internal	High			
12	Review asset handover process at the completion of capital works, identify gaps, and implement improvements.	Data & System Improvements	Manager Strategic Assets/ Manager Finance	Internal	High			
13	Review asset handover process for donated assets, identify gaps, and implement improvements.	Data & System Improvements	Manager Strategic Assets/ Manager Finance	Internal	High			
14	Review and implement planned maintenance and inspection program for wastewater assets.	Operation & Maintenance	Manager Water & Waste	Internal/External	Medium			
15	Identify resource requirement for implementation of planned maintenance and inspection program.	Operation & Maintenance	Manager Water & Waste	Internal	Medium			
16	Allocate funding for planned maintenance and inspection programs through Long Term Financial plan (LTFP).	Finance	Manager Finance	Internal	Medium			
17	Review work order management process and identify improvements to record and automate work order management process.	Data & System Improvements	Manager Strategic Assets	Internal	Medium			
18	Undertake cyclic condition assessments to identify and record asset condition.	Renewal Planning	Manager Strategic Assets	Internal/External	High			
19	Develop renewal programs based on observed asset conditions.	Renewal Planning	Manager Water & Waste Manager Strategic Assets	Internal	High			
20	Develop a renewal ranking and prioritisation criteria.	Renewal Planning	Manager Water & Waste	Internal	Medium			
21	Review current renewal funding allocations to identify gaps.	Renewal Planning	Manager Water & Waste	Internal	Medium			
22	Develop an asset criticality framework.	Risk	Manager Water & Waste	Internal	Medium			
23	Assess assets and identify criticality of assets based on asset criticality framework.	Risk	Manager Water & Waste	Internal	Medium			
24	Identify operational risks associated with management of wastewater assets.	Risk	Manager Water & Waste	Internal	High			
25	Develop an Operational Risk Register	Risk	Manager Water & Waste	Internal	High			

Table 27: Improvement Actions - Wastewater Services

9.2 Monitoring and Review - Improvement Actions

Prioritisation and Implementation of the improvement plan of this Wastewater Asset Management Plan will be the responsibility of the Manager Water & Waste with the support and guidance from the Executive Leadership Team.

9.3 Monitoring and Review – Asset Management Plan

This Asset Management Plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The Asset Management Plan will be updated annually to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values incorporated into the Financial Plan.

The Asset Management Plan will be completely reviewed every 4 years.

9.4 Performance Measures

Performance measures will be developed to ensure that work practices and the Asset Management Plan are reflective of each other.

The performance of the Asset Management Plan shall be monitored against the following criteria in accordance with the process detailed below:

- Maintenance and renewal programs - to confirm that allocated budget projects were delivered on time, within budget and to the specified level of service:
- Inspection programs - to confirm that they were undertaken as specified in the asset management plans, and any other service level agreements which may be in operation including scheduled condition surveys – to confirm that they were undertaken as required,
- Maintenance of asset information systems - to ensure that stored data is current and accurate; and
- External factors - including legislative requirements, ongoing development of Council policies, plans, and other major system implementations, that may affect the contents of the asset management plan.