



ASSET MANAGEMENT PLAN

Community Wastewater Management Systems

Tatiara District Council



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1.0 EXECUTIVE SUMMARY

1.1 The Purpose of the Plan

This Community Wastewater Management Systems (CWMS) Asset Management Plan (AMP) details information about infrastructure assets with actions required to provide an agreed level of service in the most cost-effective manner while outlining associated risks. The plan defines the services to be provided, how the services are provided and what funds are required to provide the services. The AMP will link to Tatiara District Council's (Council) Long-Term Financial Plan which typically considers a 10 year planning period.

1.2 Asset Description

Council owns and operates four CWMS schemes in the townships of Bordertown, Keith, Mundulla and Wolseley. This plan covers the infrastructure assets summarised in Table 1.2-1.

Table 1.2-1: CWMS Infrastructure Summary

CWMS Element	Element Component	Bordertown	Keith	Mundulla	Wolseley
Collection Network	Connected Connection Points	1,373	618	83	48
	Gravity Mains (m)	37,445	15,270	2,938	3,087
	Manholes & Inspection Points	588	281	52	47
	Pump Stations	8	10	1	1
	Pumps	16	20	2	2
	Flowmeters	7	10	1	1
	Rising Mains (m)	6,415	10,198	1,017	1,045
Treatment Infrastructure	Lagoons	1	1	1	1
	Surface Area (m ²)	51,300	17,000	2,328	19,922

The above infrastructure assets have replacement value in order of \$32,801,116 at 30 June 2024.

1.3 Levels of Service

The allocation in the planned budget is sufficient to continue providing existing services at current levels for the planning period.

1.4 Future Demand

The factors influencing future demand and the impacts they have on service delivery are created by:

- Population
- Technological changes
- Climate change
- Cost of service

These demands will be approached using a combination of managing existing assets, upgrading existing assets and providing new assets to meet demand. Demand management practices may also include a combination of non-asset solutions, insuring against risks and managing failures.

- Optimise the utilisation / performance of existing assets.
- Reduce or defer the need for new assets.
- Meet the organisation's strategic objectives.
- Deliver a more sustainable service.
- Respond to customer needs.

1.5 Lifecycle Management Plan

1.5.1 What does it Cost?

The forecast lifecycle costs necessary to provide the services covered by this AMP includes operation, maintenance, renewal, acquisition, and disposal of assets. Although the AMP may be prepared for a range of time periods, it typically informs a Long-Term Financial Planning period of 10 years. Therefore, a summary output from the AMP is the forecast of 10 year total outlays, which for the CWMS Infrastructure is estimated as \$963,173 on average per year.

1.6 Financial Summary

1.6.1 What we will do

Estimated available funding for the 10 year period is expected to be 100% of the cost to sustain the current level of service at the lowest lifecycle cost.

The infrastructure reality is that only what is funded in the long-term financial plan can be provided. The Informed decision making depends on the AMP emphasising the consequences of Planned Budgets on the service levels provided and risks.

1.6.2 Managing the Risks

Our present budget levels are sufficient to continue to manage risks in the long term.

The main risk consequences are:

- Environmental in relation to possible spills or overflows to the environment and leakage from lagoons into groundwater
- Financial or Infrastructure in relation to
 - The unknown condition of underground assets
 - The absence of easements to identify infrastructure exclusion zones
 - Hidden failures in the systems

We will endeavour to manage these risks within available funding by:

- Routine site visits and inspections
- Online monitoring of systems
- Timely response to alarms generated from the systems
- Timely response to customer reports
- Optimised management and operation of systems

1.7 Asset Management Planning Practices

Assets requiring renewal are identified from either the asset register or an alternative method.

- The timing of capital renewals based on the asset register is applied by adding the useful life to the year of acquisition or year of last renewal,
- Alternatively, an estimate of renewal lifecycle costs is projected from external condition modelling systems and may be supplemented with, or based on, expert knowledge.

Both the Asset Register and Alternate Method was used to forecast the renewal lifecycle costs for this AMP.

This AMP is based on a highly reliable level of confidence information.

1.8 Monitoring and Improvement Program

This plan is a living document that is owned by the Manager Assets and will be internally reviewed annually. A full review will be undertaken to as documented in the Asset Management Strategy and to meet the requirements of the *Local Government Act 1999*.

Key areas of improvement are:

- Clear documented processes around trade waste management.
- Clear documented processes for building over or adjacent to underground infrastructure.

2.0 Introduction

2.1 Background

Local Government exists to provide services to meet the needs of its community. To ensure the needs of the community are met, Council is the owner and organisation responsible for CWMS schemes in Bordertown, Keith, Mundulla and Wolseley and its associated operation including septic tank effluent collection and transportation. These schemes are Septic Tank Effluent Disposal (STED) systems and the collection, transfer and treatment of septic tank effluent for disposal requires a clear focus on safety towards the community. Each scheme has been subject to community involvement as part of its design and construction process.

2.2 Purpose

This AMP documents the management of CWMS infrastructure to achieve required levels of service to the community. The provision of maintenance is defined and Council's asset management practices and lifecycle strategy is outlined.

This AMP 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.

2.3 Related Documents

The AMP is to be read with the Asset Management Policy and Asset Management Strategy, along with other key documents captured in Table 2.3-1. The relationship of this AMP with key documents is illustrated in Figure 2.3-1.

Table 2.3-1: Key Documents

Document	Role in Asset Management
Strategic Plan	The Strategic Management Plan provides a focus for Council's service delivery over a ten year period.
Long Term Financial Plan	This plan outlines all aspects of the key financial strategy objectives and commitments. Since financial resources are limited, the long term financial plan will both inform and interpret the Strategic Plan
Annual Business Plan	The Budget details resources needed to deliver services on an annual basis. In addition, it outlines the service delivery programs and projects of the Council and details performance measures (both financial and non-financial) in which the efficiency and effectiveness of the service delivery can be gauged.
CWMS Operation and Maintenance Manual for each scheme	Details each systems components, maintenance regimes, contingency planning, system monitoring and recording regimes.
Council's Strategic and Operational Risk Register	Details and analyses the risks involved with managing Council's CWMS infrastructure and plans to minimise these risks within available resources and budgets.
Customer Charter – Water and Effluent Retail Services	Outlines, for CWMS customers, the standards of service they can expect and their rights and responsibilities.
CWMS Policy and Pricing Schedule	Outlines, for CWMS customers, the annual pricing for the service and the justification for the prices.
Safety, Reliability, Maintenance & Technical Management Plan (SRMTMP)	Developed to meet the requirements of the Water Industry Act 2012 and associated Water Industry Regulations 2012 as required by the Technical Regulator.

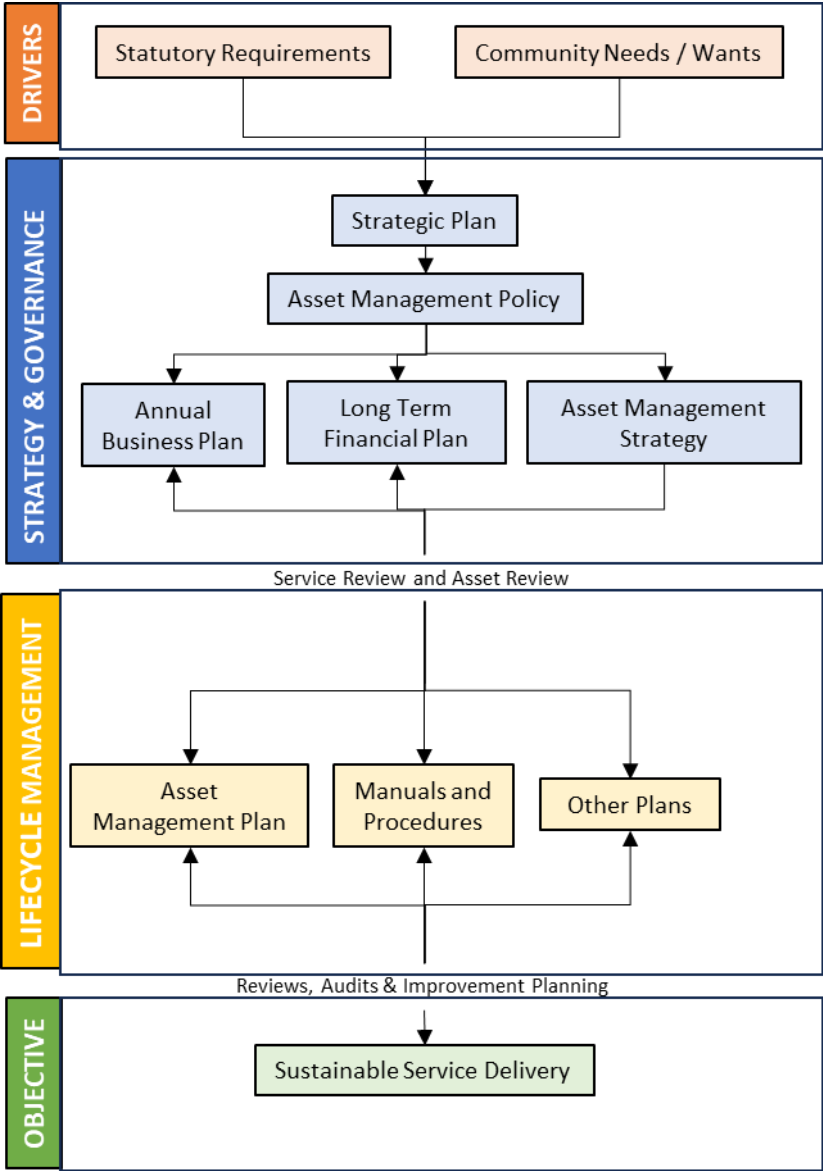


Figure 2.3-1: AMP Document Framework

This asset management plan has been developed in line with the principles laid out in ISO 55000:2014, ISO 55001:2014 and ISO 55002:2018 that prescribe the international standards for asset management. This plan has been documented following the NAMS+ Asset Management Plan Template which provides guidance on how to meet the ISO principles.

2.4 Infrastructure Assets

The infrastructure assets covered by this AMP include wastewater infrastructure from customer connections to treatment facilities and includes gravity and rising mains, pump stations, manholes, flushing points and lagoons. For a detailed summary of the assets covered in this AMP refer to Table 1.2-1.

The infrastructure assets included in this plan have replacement value in order of \$32,801,116 at 30 June 2024 as per Table 2.4-1. Figure 2.4-1 demonstrates the distribution of the replacement values by asset.

Table 2.4-1: CWMS Infrastructure Replacement Values as at 30 June 2024

CWMS Element	Element Component	Bordertown	Keith	Mundulla	Wolseley
Collection Network	Connection Points	\$2,258,501	\$938,124	\$145,898	\$132,767
	Gravity Mains	\$9,046,763	\$3,764,819	\$721,952	\$734,965
	Manholes & Inspection Points	\$2,149,879	\$457,732	\$108,838	\$85,801
	Pump Stations	\$1,974,842	\$2,354,271	\$234,978	\$234,978
	Rising Mains	\$1,472,755	\$2,695,968	\$220,087	\$221,886
Treatment Infrastructure	Lagoons	\$1,171,248	\$795,825	\$92,243	\$785,993
Total		\$18,073,989	\$11,006,739	\$1,523,997	\$2,196,391

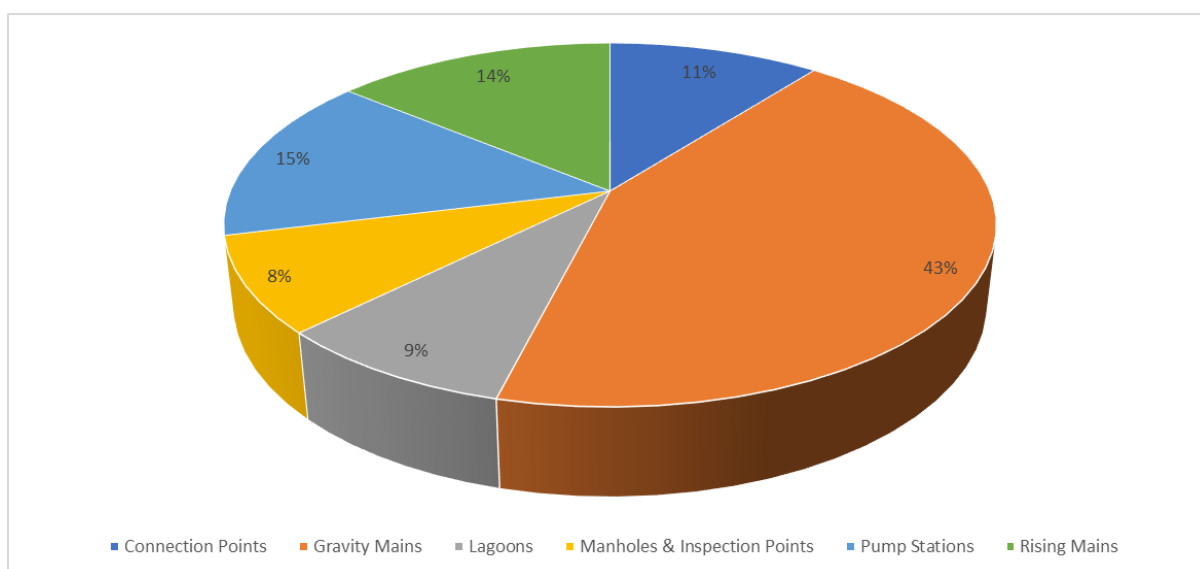


Figure 2.4-1: Distribution of Replacement Value by CWMS Asset as at 30 June 2024

Table 2.4-2: Adopted CWMS Infrastructure Values as at 30 June 2024

CWMS Scheme	Replacement Cost	Depreciated Replacement Cost	Accumulated Depreciation	Depreciation Expense
Bordertown	\$18,073,989	\$5,109,299	\$12,964,690	\$291,300
Keith	\$11,006,739	\$5,125,791	\$5,880,948	\$207,676
Mundulla	\$1,523,997	\$624,460	\$899,537	\$26,654
Wolseley	\$2,196,391	\$1,478,925	\$717,467	\$26,598
Total	\$32,801,116	\$12,338,475	\$20,462,641	\$552,228

2.5 Key Stakeholders

Key stakeholders in the preparation and implementation of this AMP are shown in Table 2.5-1.

Table 2.5-1: Key Stakeholders in the AMP

Key Stakeholder	Role in Asset Management Plan
Council	- Stewards for the infrastructure assets - Set levels of service, risk and cost standards - Allocate resources and funding to meet planning objectives in providing services while managing risks - Ensure the service is sustainable
Maintenance Contractor	Maintenance and repairs as directed by Council
South Australian State Government (including but not limited to; Environmental Protection Authority (EPA), Essential Services Commission of South Australia (ESCOSA), Office of the Technical Regulator (OTR), Department for Health and Wellbeing (DHW), Department of Primary Industries and Regions South Australia (PIRSA), Department of Environment and Water (DEW))	Legislators / Regulators / Licensing
Residents and Visitors (of/to townships serviced by the schemes)	Discharge of wastewater into the CWMS network
Local Businesses	Discharge of wastewater into the CWMS network
Trade Waste Customers	Discharge trade waste into the CWMS network in line with Trade Waste Authorisation issued under <i>South Australian Water Industry Act 2012</i> and associated regulations
Ratepayers	Contribute to the funding of the services

2.6 Organisational Structure

Figure 2.6-1 illustrates the organisational structure within Council that has the responsibility for the service delivery from the CWMS infrastructure assets. The adopted team structure reflects the roles of all levels of Council employees over the breadth of the Council.

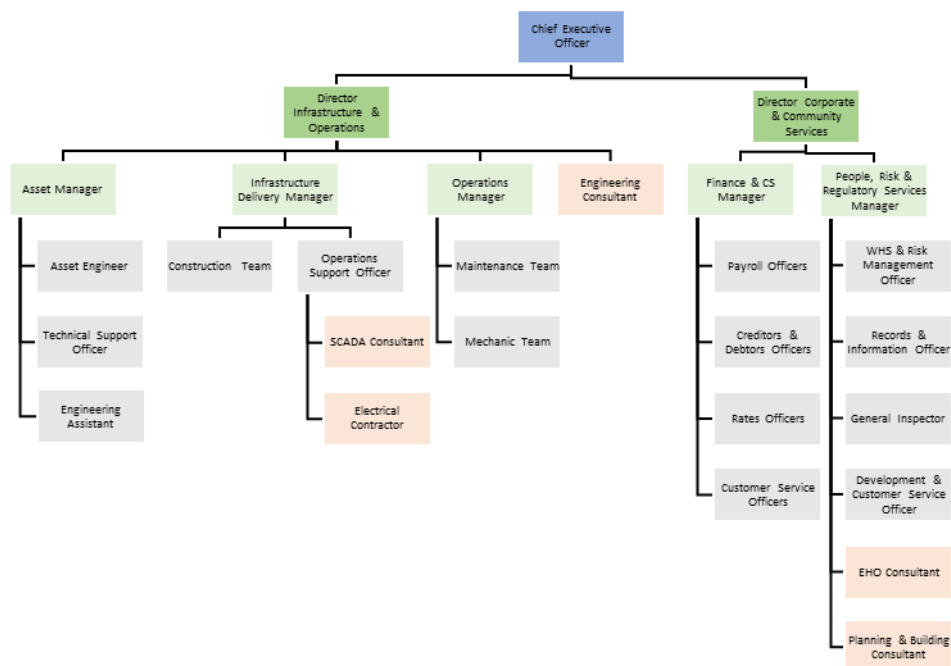


Figure 2.6-1 Organisational Structure specific to management and operation of CWMS

2.7 Goals and Objectives of Asset Ownership

Council's 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. Council operates and maintains the CWMS infrastructure to ensure safe and responsible management of wastewater generated by the connected households and businesses in the schemes.

Council's key goals and objectives for operating and maintaining the CWMS infrastructure 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 for maintenance, renewal and upgrade requirements.

The key elements of asset management framework applied by Council are:

- Levels of service – documentation of the services and levels of service to be provided,
- Risk Management – identification of risks and their preventative measures or actions to reduce or remove the risks where applicable,
- Future demand – how this will impact on future service delivery and how this is to be met,
- Lifecycle management – how to manage existing and future assets to provide defined levels of service,
- Financial summary – what funds are required to provide the defined services and where a funding gap is identified,

- Asset management practices – how the provision of the services are managed,
- Monitoring – how the service will be monitored to ensure service levels are being met,
- Asset management improvement plan – how asset management maturity will be further developed within the organisation.

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

- International Infrastructure Management Manual 2015 ¹
- ISO 55000²

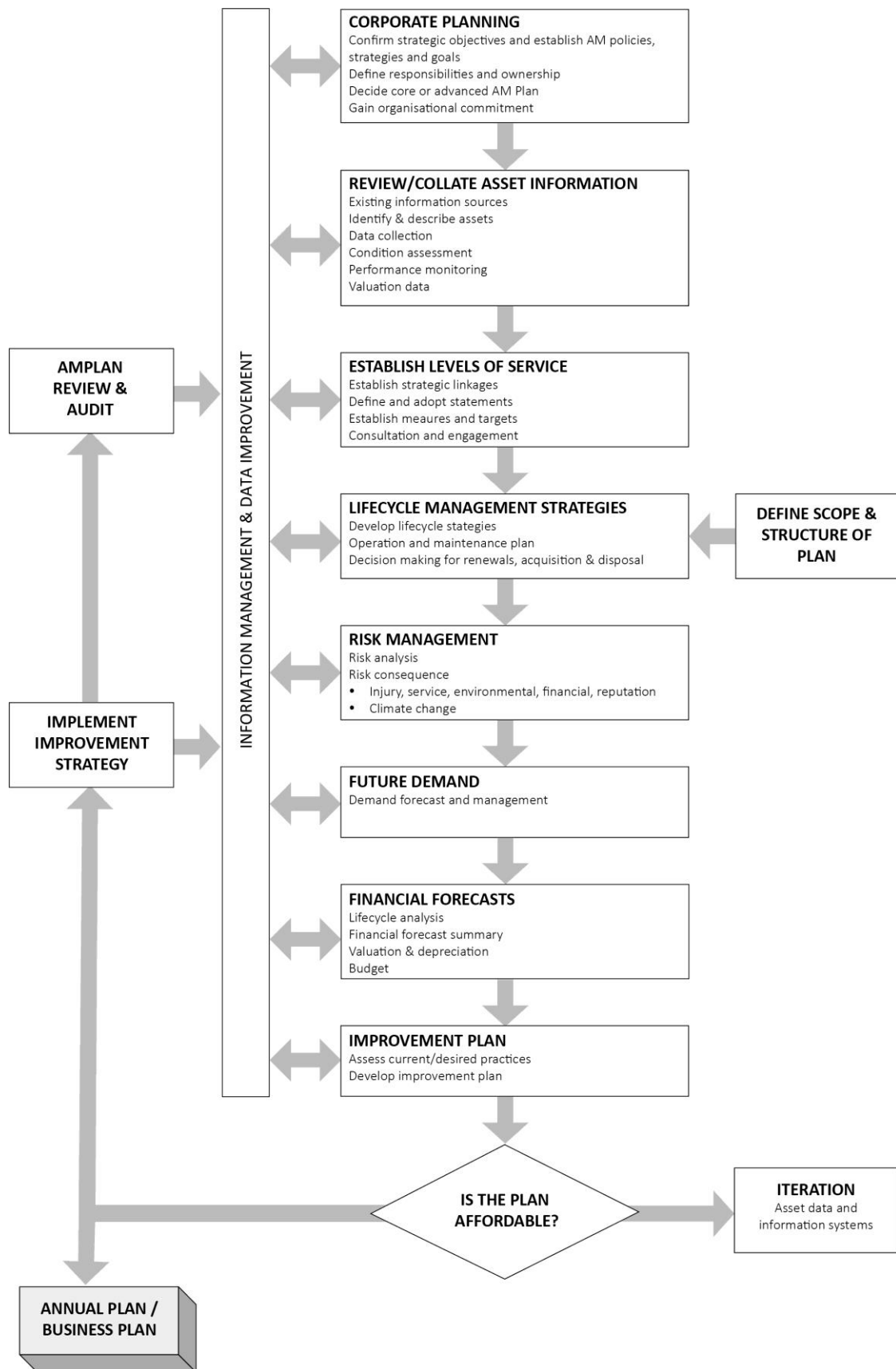
A road map for preparing an AMP is shown below.

¹ Based on IPWEA 2015 IIMM, Sec 2.1.3, p 2 | 13

² ISO 55000 Overview, principles and terminology

Road Map for preparing an Asset Management Plan

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



3.0 LEVELS OF SERVICE

3.1 Customer Research and Expectations

With wastewater management being an essential service, connected households and businesses expect that wastewater services will be provided at all times, with minimal interruptions due to planned maintenance or emergency responses. It is also expected that Council manages the wastewater collected in accordance with legislative requirements to minimise the risks to public health and the environment.

Council's [Customer Charter – Water and Effluent Retail Services](#) outlines, for customers, the standards of service they can expect and their rights and responsibilities. Council's [CWMS Policy and Pricing Schedule](#), informs CWMS customers of the pricing for their service. The two abovementioned documents are published on Council's website (<https://www.tatiara.sa.gov.au/council-services/community-wastewater-management-scheme>) to meet customers expectations along with Council's [Customer Complaints & Dispute Resolution Policy](#) that outlines for customers how their complaint will be processed and timeframes for a response from Council.

3.2 Strategic and Corporate Goals

This AMP is prepared under the direction of the Council's vision, goals and objectives.

Council's vision is:

A vibrant, prosperous and connected community building its own opportunities.

Council's strategic goals are documented in its [Strategic Plan](#). The relevant goals and objectives and how these are addressed in this AMP are summarised in Table 3.2-1.

Table 3.2-1: Goals and how these are addressed in this AMP

Goals		Strategies		How Goal and Objectives are addressed in the AMP
1.1	Foster engaged communities with a shared vision and common purpose	1.1.1	Facilitate Community Planning in the Tatiara's seven towns and settlements	Where the community plans identify areas of development that may encompass the requirement for an extension of the CWMS infrastructure, this AMP will identify the works involved and funding requirements.
2.2	Provide appropriate infrastructure that supports our district's growth	2.2.2	Prepare and maintain infrastructure asset management plans	The preparation and adoption of this document addresses this goal and strategy.
		2.2.3	Maintain, renew and upgrade infrastructure in accordance with asset management plans	The preparation and adoption of this document addresses this goal and strategy.

Goals		Strategies		How Goal and Objectives are addressed in the AMP
3.1	Advance our economic position as a strong, diverse and innovative regional centre	3.1.2	Provide suitable land and infrastructure for industry and economic development	Where development is identified that encompasses an extension of the CWMS infrastructure and connections to existing CWMS infrastructure, this AMP will identify the works involved and funding requirements.
3.2	Support business development in the district	3.2.1	Provide business support through regulatory services, reduction of red tape, development of infrastructure, incentives or business grants	Where development is identified that encompasses an extension of the CWMS infrastructure and/or connection to existing CWMS infrastructure, this AMP will capture the works involved and funding requirements.
4.3	Build an agile, cohesive, customer focused organisation that provides value for money	4.3.1	Implement systems and programs that support effective management of assets, finances and operations	The preparation, adoption and implementation of this document addresses this goal and strategy along with the associated key documents.

3.3 Legislative Requirements

There are many legislative requirements relating to the management of assets. South Australian legislative requirements that impact the delivery of the service provided by the CWMS infrastructure are outlined in Table 3.3-1.

Table 3.3-1: Legislative Requirements

Legislation	Requirement
<i>Aboriginal Heritage Act 1988</i>	An Act to provide for the protection and preservation of the Aboriginal heritage in sites, objects and remains.
<i>Development Act 1993</i>	An Act to provide for planning and regulate development in the State; to regulate the use and management of land and buildings; to make provision for the maintenance and conservation of land and buildings where appropriate; and for other purposes.
<i>Environmental Protection (Water Quality) Policy 2015</i>	The principal object of this policy is to achieve the sustainable management of water, by protecting or enhancing water quality while allowing economic and social development. The policy has several obligations which are required to be adhered to such as; • General obligation to avoid discharge etc into waters • Obligation not to cause certain environmental harm Obligation not to contravene water quality criteria listed in (Schedule 2)

Legislation	Requirement
<i>Environmental Protection Act 1993</i>	This Act places a 'duty of care' on people not to undertake activities that will cause environmental harm.
<i>Essential Services Commission Act 2002 and Regulations</i>	Sets out role, purpose, responsibilities and powers of ESCOSA in particular its regulation of CWMS pricing and monitoring of compliance of CWMS schemes.
<i>Landscape South Australia Act 2019 and associated regulations</i>	An Act to promote sustainable and integrated management of the State's landscapes for the protection of natural resources through ecologically sustainable development.
<i>Local Government Act 1999 and Regulations</i>	Sets out 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.
<i>Public Health Act 2011 and Regulations</i>	This Act provides for the prevention and spread of disease. It covers the responsibility for administering waste control systems.
<i>Water Industry Act 2012 and Regulations</i>	An act to facilitate planning and regulation for water and sewerage infrastructure.
<i>Work Health and Safety Act 2012 and Regulations</i>	An Act to provide for the health, safety and welfare of persons at work.

There are a wide range of codes, standards, policies and guidelines relating to the management of Council infrastructure. Where practical, Council seeks to operate within these guidelines. These include but are not limited to:

- Australian Accounting Standards
- Australian Standards
- Building Code of Australia
- Plumbing Code of Australia
- Local Government Association of South Australia publications
- Institute of Public Works Engineering Australasia publications
- Water Services Association of Australia publications

3.4 Customer Values

Service levels are defined in three ways, customer values, customer levels of service and technical levels of service.

Customer Values indicate:

- what aspects of the service is important to the customer,
- whether they see value in what is currently provided and
- the likely trend over time based on the current budget provision.

Table 3.4-1 presents the current customer values. Current performance is based on the last full reporting year prior to the preparation of the AMP.

Table 3.4-1: Customer Values

Service Objective: Well maintained and fit-for-purpose wastewater collection and disposal system			
Customer Values	Customer Satisfaction Measure	Current Feedback FY23/24	Expected Trend Based on Planned Budget
No public health or environmental risks	Number of complaints registering releases to the environment or private property	Zero (0) customer service complaint	No more than five (5) customer service complaints per reporting period

Service Objective: Provide a system with minimal breakdowns			
Customer Values	Customer Satisfaction Measure	Current Feedback FY23/24	Expected Trend Based on Planned Budget
No loss of service	Number of complaints registering inability to connect to the system	Zero (0) customer service complaints	100% of residential properties within existing service areas able to connect 100% of extensions to existing collection network for development can be accommodated by the wastewater treatment systems

Service Objective: Septic tank pump outs are completed on time			
Customer Values	Customer Satisfaction Measure	Current Feedback FY23/24	Expected Trend Based on Planned Budget
Notification of works provided within timeframes as prescribed	Records maintained of pump outs completed and completion date to ensure frequency is as per prescribed	Compliant - Council undertakes the letter mail out	Letters are delivered to residents prior to septic tank pump out
Works completed within stated timeframes	Number of complaints registering septic tank has not been pumped out	267 septic tanks pumped out between Bordertown (169) and Keith (98)	Septic tank pump out completed once every 5 years ³

Service Objective: Reasonable timeframe to respond to reported issues			
Customer Values	Customer Satisfaction Measure	Current Feedback FY23/24	Expected Trend Based on Planned Budget
Response from Council received within reasonable timeframe	Number of complaints registering reported issue not being addressed	Zero (0) customer service complaints	No more than five (5) customer service complaints per reporting period

³ As documented in [Council's Customer Charter – Water and Effluent Retail Services](#)

3.5 Customer Levels of Service

The Customer Levels of Service are considered in terms of:

Condition 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?

In Table 3.5-1 under each of the service measures types (Condition, Function, Capacity/Use) there is a summary of the performance measure being used, the current performance, and the expected performance based on the current budget allocation. Current performance is based on the last full reporting year prior to the preparation of the AMP.

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 3.5-1: Customer Level of Service Measures

Type of Measure	Level of Service	Performance Measure	Current Performance FY23/24	Expected Trend Based on Planned Budget
Condition	Well maintained and fit-for-purpose wastewater collection and disposal system	Number of customer service complaints	Zero (0) customer service complaint	No more than five (5) customer service complaints per reporting period
	Confidence levels		High	High
Function	Provide a system with minimal breakdowns	Number of customer service complaints	Zero (0) customer service complaint	No more than five (5) customer service complaints per reporting period
		System works records	5 records of reactive works completed	No more than four (4) reactive works per reporting period
	Confidence levels		High	Low
Function	Meet legislative and regulatory standards	Number of reportable non-compliances	Zero (0) reportable non-compliance	No more than five (5) reportable non-compliances per reporting period
	Confidence levels		High	High
Capacity	Systems have capacity to meet existing flows	Number of wastewater overflows / spills	Zero (0) overflow incidents	Overflow target of ≤1 per reporting period
	Confidence levels		High	Low

3.6 Technical Levels of Service

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. replacing a pipeline with a larger size) or a new service that did not exist previously (e.g. a new connection or a subdivision).
- **Operation** – the regular activities to provide services (e.g. inspections, approvals for new connections, feedback on development proposals 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. pump maintenance),
- **Renewal** – the activities that return the service capability of an asset up to that which it had originally provided (e.g. pipeline and pump replacement),

Service and asset managers plan, implement and control technical service levels to influence the service outcomes.⁴

Table 3.6-1 shows the activities expected to be provided under the current 10 year Planned Budget allocation, and the Forecast activity requirements being recommended in this AMP. Current performance is based on the last full reporting year prior to the preparation of the AMP.

Table 3.6-1: Technical Levels of Service

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
TECHNICAL LEVELS OF SERVICE				
Acquisition	Infrastructure is fit-for-purpose and upgraded as needed	Performance of the system	Compliant	Continue to undertake asset assessments to inform asset service level and upgrade requirements
	Infrastructure is fit-for-purpose and constructed as needed	The potential impact on the CWMS infrastructure is assessed with each development application that relate to additions to the system	Compliant	Continue to undertake asset assessments to inform asset service level and upgrade requirements
Operation	Review and update of Operation and Maintenance Manual for each scheme	Annual review	Compliant	Maintenance of annual review requirement to ensure continuous improvement and best practice are sustained
	Meet regulatory reporting requirements and timeframes	Annual ESCOSA reports Annual OTR reports Annual EPA reports Non-compliance reports	Compliant	Continue to meet regulatory reporting requirements and timeframes
	Remote monitoring and logging of all CWMS pump stations	All CWMS pump stations are visible and data is being recorded on the remote monitoring and logging system	Compliant	Continue to employ remote monitoring and logging of all CWMS pump stations

⁴ IPWEA, 2015, IIMM, p 2|28.

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
	Regular inspections of infrastructure as prescribed	Records maintained of inspections and asset system updated with data recorded on site	Non-compliant in 23/24 – regular inspections were not performed in accordance with Operation and Maintenance Manuals	Ensure effective implementation of Operation and Maintenance Manuals for regular inspections to be sustained
Maintenance	Programmed maintenance of pump stations and manholes	System works records	Non-compliant in 23/24 – regular maintenance on pump stations was not performed in accordance with Operation and Maintenance Manuals Manhole inspections were undertaken in 2022 with gravity mains flushing	Ensure effective implementation of Operation and Maintenance Manuals for regular inspections to be sustained Manhole repairs and renewals to be programmed into capital works program
	Gravity mains flushing program	System works records	Gravity mains were flushed during 2022	Continue with gravity main flushing program.
	Septic tank desludging program	System works records	Compliant	Continue with septic tank desludging program
	Reactive Maintenance	Number of call out	1 call out	Reduce the number of the call outs through implementation of programmed maintenance activities
Renewal	Infrastructure is fit-for-purpose and replaced as needed	Renewal of infrastructure is undertaken in accordance with current standards and best practice principles	Compliant	Renewal of infrastructure is undertaken in accordance with current standards and best practice principles at the time of the renewal
Disposal	Infrastructure that is being replaced or is not in use and will never be returned to use is removed from site	System works records	Compliant	Disposal activities are undertaken as required and identified through the upgrade or renewal program
	Infrastructure that is not in use and will never be returned to use but cannot be removed from site, e.g. underground pipe, is fully disconnected from the system and made safe to remain in-situ	System works records	Compliant	Disposal activities are undertaken as required and identified through the upgrade or renewal program

Note: * Current activities related to Planned Budget.

** Expected performance related to forecast lifecycle costs.

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.

4.0 FUTURE DEMAND

4.1 Demand Drivers

Drivers affecting demand include things such as population change, regulations, changes in demographics, seasonal factors, consumer preferences and expectations, technological changes, economic factors, agricultural practices, environmental awareness, etc.

The key demand drivers that impact CWMS services and infrastructure include:

- Population
- Technological changes
- Climate change
- Cost of service

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 in Sections 4.2.1 to 4.2.4.

4.2.1 Population

The population recorded for the townships serviced by the CWMS schemes in the 2021 census and published by the Australia Bureau of Statistics (ABS) are:

- Bordertown 2,840
- Keith 1,405
- Mundulla 324
- Wolseley 207

Population estimates are projected to remain stable within Council's district for the life of this AMP and it is envisaged this will be very similar for the townships serviced by CWMS. The influence of COVID-19 has been in relation to the change of population dynamics with increasing trends towards remote working and a desire to move away from major urban centres. The relocation from major urban centres has also contributed to the aging population experienced in regional districts.

Council are aware of land developments that will increase the customer contributions to the CWMS that will be implemented during the life of this plan. The land developments known to Council at the time of releasing this AMP are:

- Bordertown Industrial Estate
- Keith Industrial Estate
- Ramsey Terrace Residential Subdivision in Bordertown
- Bennet Street Residential Subdivision in Keith
- Hill Street Residential Subdivision in Keith

4.2.2 Technological changes

New technologies are opening avenues for greater operating efficiencies however with the new technologies comes the requirement for the skills to work the technology. The technological changes forecast to have an impact on the delivery of CWMS services during the life of this AMP and into the future are:

- Developments in communications and remote monitoring technology
- Underground pipeline renewal technology

4.2.3 Climate Change

Climate change will continue to have major impacts on regional Australia through prolonged periods of severe conditions and more volatile weather events. Over the next decade the district is expected to experience more frequent heatwaves, less rainfall and increased bushfire risk. The increased risk of the natural disasters in turn increases the risk of infrastructure damage from such events.

In the event infrastructure is damaged from a natural disaster the infrastructure will be assessed and replaced/renewed accordingly. As this work is typically reactive, resources including funding will be required to be diverted from programmed works that may result in a backlog of work and correlating funding gap.

4.2.4 Cost of Service

The cost of service is are defined in two ways, cost to Council and cost to customer. The cost of service has increased and will increase over time.

For Council there are significant regulatory requirements with a high level of monitoring and reporting requirements that will be increasing into the future. An example of this is the implementation of the National Performance Report that Council will be required to commence annual reporting for as at 1 July 2025 for the 2024-2025 reporting period. Another aspect of increase to cost for Council is that materials and replacement parts and components have all increased in price, this impacts Council's ability to undertake the full scope of works within the defined funding i.e. less is able to be achieved with the set budget limit.

With the increase in cost of living pressures as an aftereffect of COVID-19 and other factors this may impact the CWMS services into the future as customers struggle with the cost of living pressures.

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 4.3-1. 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 include non-asset solutions, insuring against risks and managing failures. Non-asset solutions focus on providing the required service without the need for the council to own the assets. Examples of non-asset solutions include providing services from existing infrastructure such as aquatic centres and libraries that may be in another council area or public toilets provided in commercial premises.

Opportunities identified to date for demand management are shown in Table 4.3-1. Further opportunities will be developed in future revisions of this AMP.

Table 4.3-1: Demand Management Plan

Demand driver	Current position	Projection	Impact on services	Demand Management Plan
Population	- Bordertown 2,840 - Keith 1,405 - Mundulla 324 - Wolseley 207	Increase to number of customers in Bordertown and Keith due to land developments	Increased quantity of flows	Council have completed capacity assessments of the two systems and will be implementing the recommendations through the works program
	Aging population		Decrease in availability of skilled staff and/or contractors	Council will look to engage contractors with the skills required to implement the new technology

Demand driver	Current position	Projection	Impact on services	Demand Management Plan
Technological change	All Council's CWMS pump stations are currently configured with remote monitoring and logging	Infrastructure renewals and upgrades will be undertaken with consideration of new technologies	Improved service delivery, reduced risk of service failure and reduced response times to service failures	The adoption of new technology will be considered with planned renewals and upgrades
	Council engages contractors with the skills required to implement the new technology		Improved replacement techniques and lower replacement costs	
Climate Change	Council CWMS schemes have sufficient capacity and built-in redundancy	Increase to number of customers in Bordertown and Keith due to land developments	Increased quantity of flows	Council have completed capacity assessments of the two systems and will be implementing the recommendations through the works program
Cost of Service	New infrastructure is funded through agreements with developers	Developers will continue to fund the construction of new infrastructure for their projects	Increased quantity of flows	Council will assess the relevant system capacity with each large scale development

4.4 Asset Programs to meet Demand

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

Acquiring new assets will commit the Council 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 for inclusion in the long-term financial plan (Refer to Section 5.0).

4.5 Climate Change Adaptation

The impacts of climate change may have a significant impact on the assets Council 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.⁵

As a minimum Council consider how to manage our existing assets given potential climate change impacts for the region.

Risk and opportunities identified to date are shown in the risk register (Appendix A)

Additionally, the way in which we construct new assets should recognise that there is opportunity to build in resilience to climate change impacts. Building resilience can have the following benefits:

⁵ IPWEA Practice Note 12.1 Climate Change Impacts on the Useful Life of Infrastructure

- Assets will withstand the impacts of climate change;
- Services can be sustained; and
- Assets that can endure may potentially lower the lifecycle cost and reduce their carbon footprint

Table 4.5-1 summarises some asset climate change resilience opportunities.

Table 4.5-1: Building Asset Resilience to Climate Change

New Asset Description	Climate Change impact These assets?	Build Resilience in New Works
All new assets	Rainfall intensity, stormwater inundation and groundwater infiltration	Build new infrastructure out of flood zone or above flood levels as per flood modelling and lidar. Consider capacity of collection network and treatment facilities to accept increased stormwater.

The impact of climate change on assets is a new and complex discussion and further opportunities will be developed in future revisions of this AMP.

5.0 LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how Council plans to manage and operate the assets at the agreed levels of service (Refer to Section 3.0) while managing life cycle costs.

5.1 Background Data

The CWMS schemes involve the collection of septic tank wastewater flows from the boundary connection point of each property via a network of gravity mains. These gravity mains flow to pumping stations at lower points that pump the wastewater through rising mains and eventually to the treatment lagoons.

The plumbing system and septic tank on each private property is the responsibility of the individual landholder. Council is responsible for the drains and infrastructure beyond the effluent connection point at each property boundary. Generally, Council owned infrastructure is located on roadways, footpaths or rear lanes, however in some cases, these assets are located on or traverse private property and may or may not be the subject of a formal easement. Further detail of each CWMS scheme can be found in Council's SRMTMP.

The operating environment varies between the schemes with areas of different soil types and water ways impacting on asset useful lives, predicted replacement costs and environmental risks.

5.1.1 Physical parameters

The assets covered by this AMP are shown in Table 1.2-1. The values of the assets covered by this plan are provided in Table 2.4-1 and Table 2.4-2. All figure values are shown in current day dollars.

The year of construction for each scheme is presented in Table 5.1-1. The age profile of the assets included in this AMP is shown in Figure 5.1-1.

Table 5.1-1: CWMS Scheme Year of Construction

Scheme	Year of Construction
Bordertown	1966
Keith	1985
Mundulla	1983
Wolseley	1992

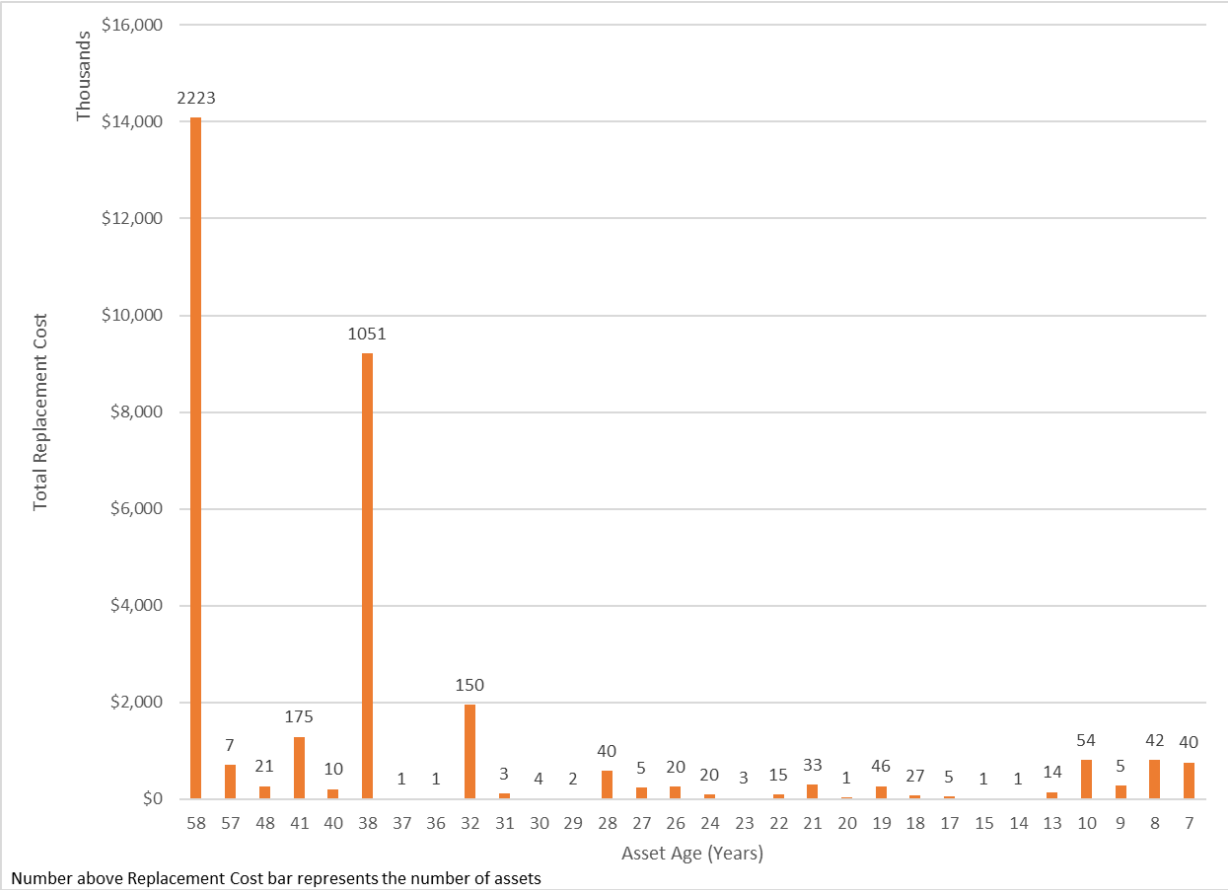


Figure 5.1-1: Asset Age Profile as at 30 June 2024

Figure 5.1-1 illustrates that the majority (91%) of the CWMS assets are older than 30 years and these reflect 85% of the value of the assets. Theoretically where peaks of investment, i.e. asset construction, were completed it follows that renewals will peak when useful life is attained. Reviewing the age profile for each scheme in relation to current adopted useful life values (Table 5.3-1); it suggests the Bordertown assets on average have consumed 74% of allocated useful life in comparison to Keith and Mundulla which are to have an average consumption of 52% and 57% respectively. Wolseley is sitting with the lowest consumption at an average of 43%. The average consumption also align with the order of the scheme construction as captured in Table 5.1-1.

5.1.2 Asset capacity and performance

Assets are generally provided to meet design standards where these are available. However, there is insufficient resources to address all known deficiencies. Locations where deficiencies in service performance are known are detailed in Table 5.1-2.

Table 5.1-2: Known Service Performance Deficiencies

CWMS Scheme	Location	Service Deficiency
Bordertown	BPS1, BPS3, BPS4 and BPS5	Wastewater backs up in the gravity system of the pump station catchment during peak hours due to pump capacity being less than peak inflow.
Bordertown	BPS4 rising main	Rising main size has been identified as a potential cause for an increase to power usage due to friction loss.

CWMS Scheme	Location	Service Deficiency
Bordertown	BPS5 and BPS6	Emergency storage capacity is insufficient and additional storage tanks are required to meet the 20% storage criteria
Bordertown	SCADA control	The failure of a receiving pump station downstream of or more pump stations does not inhibit the upstream pump station/s through the SCADA system, it is recommended that this is configured.
Bordertown	Gravity main between Venn Avenue and BPS4	Insufficient capacity to manage flows.
Keith	KPS1 rising main	Rising main experiences a high number of failures. It is suspected that the class of the pipe installed was not correct and the pipe may need to be fully replaced.
Keith	Lagoons	Water balance calculations indicated that the Keith lagoon is leaking wastewater at a rate higher on average than recommended by EPA Guidelines for wastewater lagoon construction.

The above service deficiencies were identified from Keith CWMS Capacity Assessment (WGA, 2023), Bordertown Davis Street Development CWMS Capacity Assessment Technical Memorandum (WGA, 2024) and Bordertown CWMS Capacity Assessment (WGA, 2024). The service deficiencies have been captured and assessed in the Risk Register (Appendix A).

5.1.3 Asset condition

Condition is measured using a 1 – 5 grading system⁶ as detailed in Table 5.1-3. 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 AMP results are translated to a 1 – 5 grading scale for ease of communication.

Table 5.1-3: Condition Grading System

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

Condition is currently monitored as per the schedule set out in the Asset Management Strategy.

5.1.3.1 Pipe Network Condition

The pipe network, due to being buried is very difficult and expensive to ascertain accurate condition data for. Council engages contractors to carry out CCTV condition assessments of a sample of the underground pipes within each scheme with a view that this data can be extrapolated across each network to give a reasonable

⁶ IPWEA, 2015, IIMM, Sec 2.5.4, p 2|80.

level of confidence in the condition of the pipe network. This method not only captures the condition of an underground pipe but also a record of CCTV footage of the pipe and of leaks and blockages at the time of CCTV inspection. There are however, limitations to utilising CCTV cameras to assess the condition of the pipe network. These include:

- Pipe size – the size of the pipe network has an impact on the type of camera that can be used to carry out the assessment and the majority of Council’s pipe network is under 100mm in diameter limiting the length of pipe that can be assessed using this method.
- Pipe access – There are limited numbers of manholes and inspection points that allow access to the pipe network.
- Pipe obstructions - obstructions in the pipe such as root intrusion, foreign objects, tight bends and full pipes prevent assessments of the full length of pipe as the camera is unable to pass the obstruction.
- Outage times – to carry out the assessment, rising mains need to be shut down. The time rising mains can be shut down is limited to the capacity of the downstream pump station and gravity system.
- Cost – specialist equipment and trained personnel are required to conform with pipe condition assessment codes IPWEA Practice Note 7 – Water Supply & Sewerage and WSA O5-2020 Conduit Inspection Reporting Code of Australia.

Pipe network condition is assessed using two parameters, structural and service, that are rated in the 1 to 5 scale. Structural condition refers to structural capacity of the pipe such as cracks and deformation. Service condition refers the serviceability of the pipe e.g. are there any blockages, foreign debris in the pipes or fat build up that will limit the serviceability of the pipe.

The most recent pipe condition assessment was completed in March and April 2024 by contractors. Previous assessments were completed by contractors in 2014 and 2016. The condition profile of the pipe network sample is shown in Figure 5.1-2.

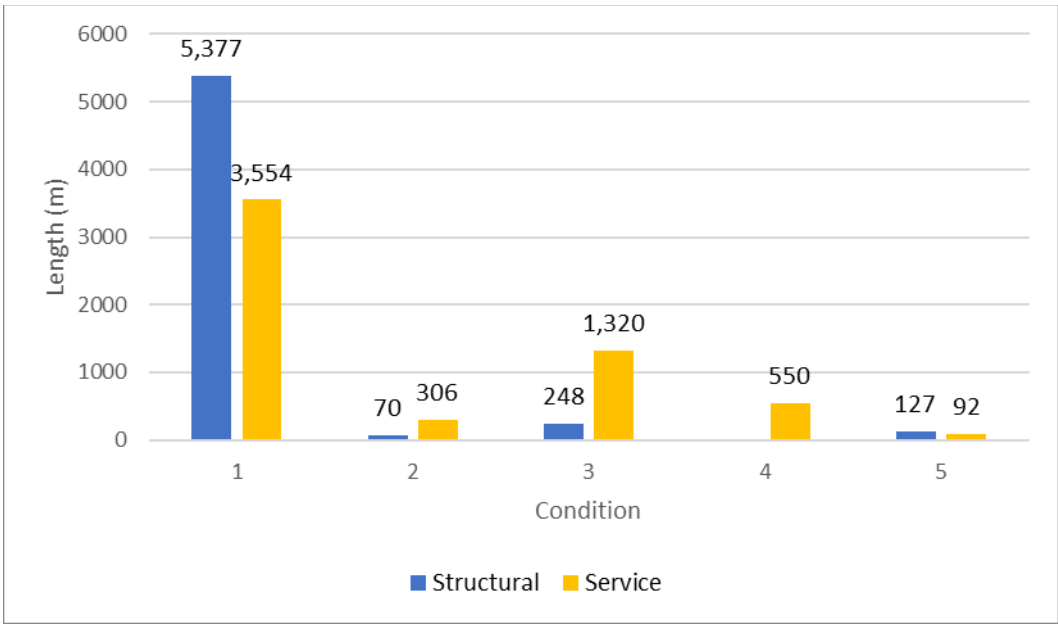


Figure 5.1-2: Pipe Network Sample Structural and Service Condition Profile

The majority of the pipe network sample demonstrated an Excellent structural and service condition profile. There are a few assets that present at lower condition which will be investigated further to understand rectification works required as captured in the Risk Register (Appendix A) and Improvement Program (Table 8.2-1).

5.1.3.2 Manhole Condition

Manhole condition assessment have been completed either in conjunction with pipe network condition assessments or mains flushing programs. The most recent manhole condition assessment was performed by

the mains flushing contractor in 2022. Only a sample of manholes are assessed with each round of condition assessments that are completed.

Figure 5.1-3 captures the manhole condition profile for each scheme, where a condition score of 0 has been captured this indicates either that the manhole was not able to be located by the contractor or was not accessible for various reasons such as a fence has been constructed over the manhole. Council has captured in it's improvement plan works to further investigate the manholes with a zero condition score so that a true condition score can be assigned.

The manhole condition profile demonstrates that the majority of manholes that were assessed have conditions of Excellent and Good with only a few manholes in Bordertown and Wolseley that are in a Very Poor condition.

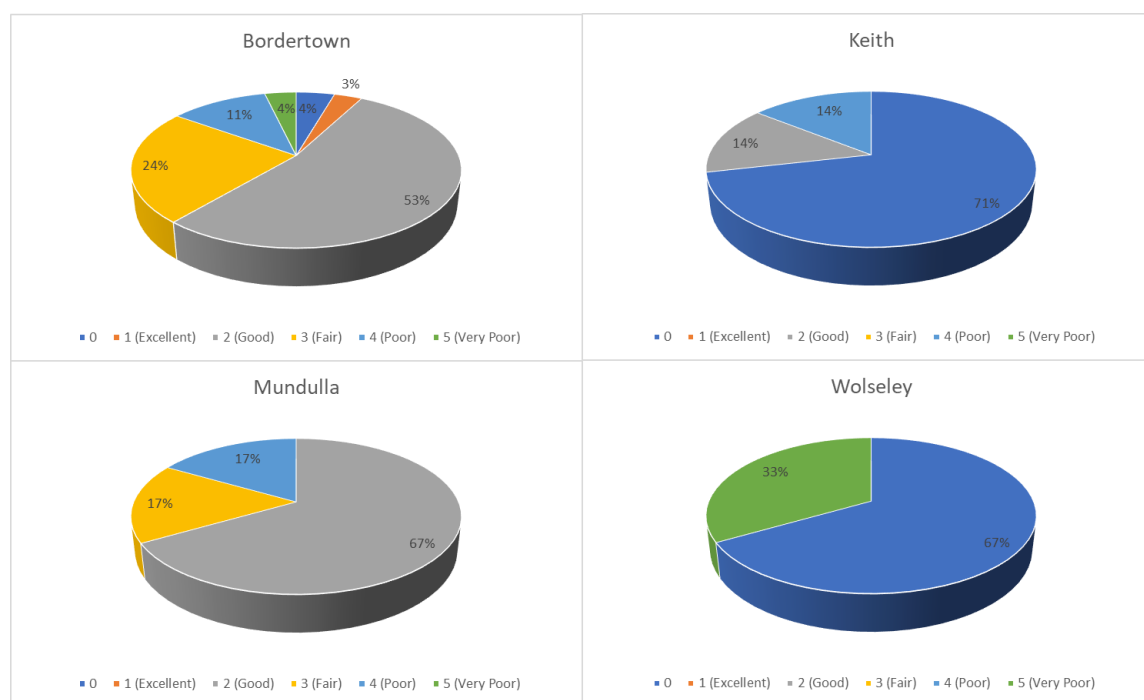


Figure 5.1-3: Manhole condition profile per scheme as at 2022

5.1.3.3 Pump Station Condition

The most recent pump station component condition assessment was performed internally and completed in March 2024. The pump station component condition profile for the schemes have been provided in Figure 5.1-4 to Figure 5.1-6.

The methodology employed for the pump component condition assessment was based on the IPWEA Practice Note 7 – Water Supply & Sewerage. As per the IPWEA Practice Note 7 – Water Supply & Sewerage, pump assets were assessed in relation to Vibration, Temperature, Noise, Grease/Oil Leaks and External Condition that were each rated in the 1 to 5 scale and then using a weighted average calculation the overall condition was calculated.

As shown in Figure 5.1-4 the majority of the Bordertown scheme's pump station components are in excellent condition with a few components in Very Good condition and a handful in Good condition. Keith's pump station components are mainly in Excellent condition and a few sitting in between Excellent and Very Good and at Very Good (Figure 5.1-5). Mundulla's pump station components are mainly in Very Good condition with a few at Excellent condition (Figure 5.1-6). Wolseley's pump station components were found to be in Excellent and Very Good condition with one in Good condition (Figure 5.1-6).

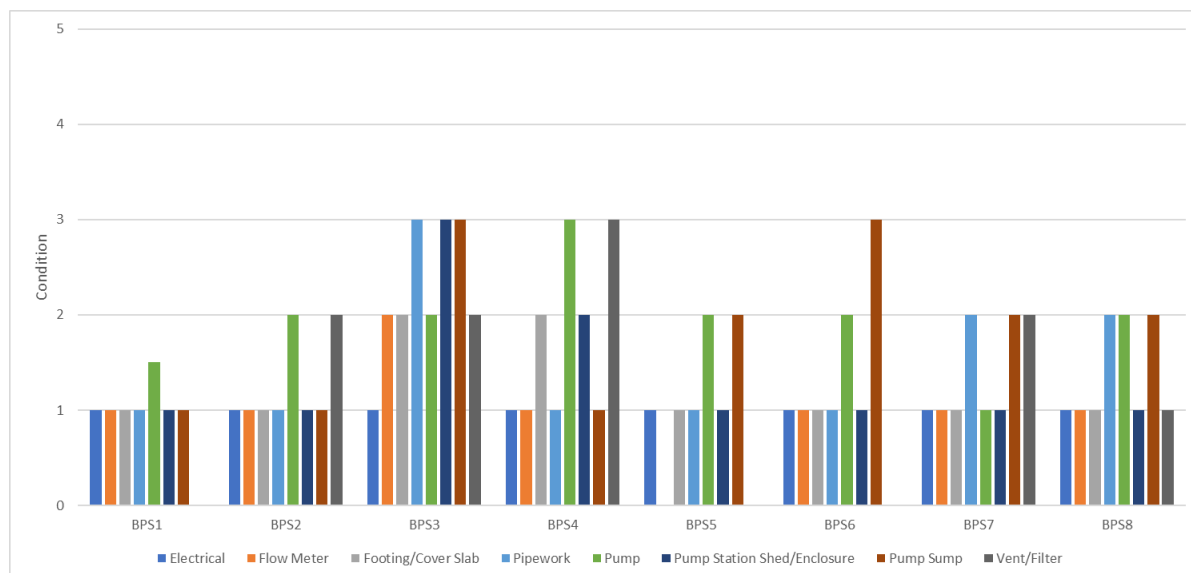


Figure 5.1-4: Bordertown Pump Station Component Condition as at March 2024

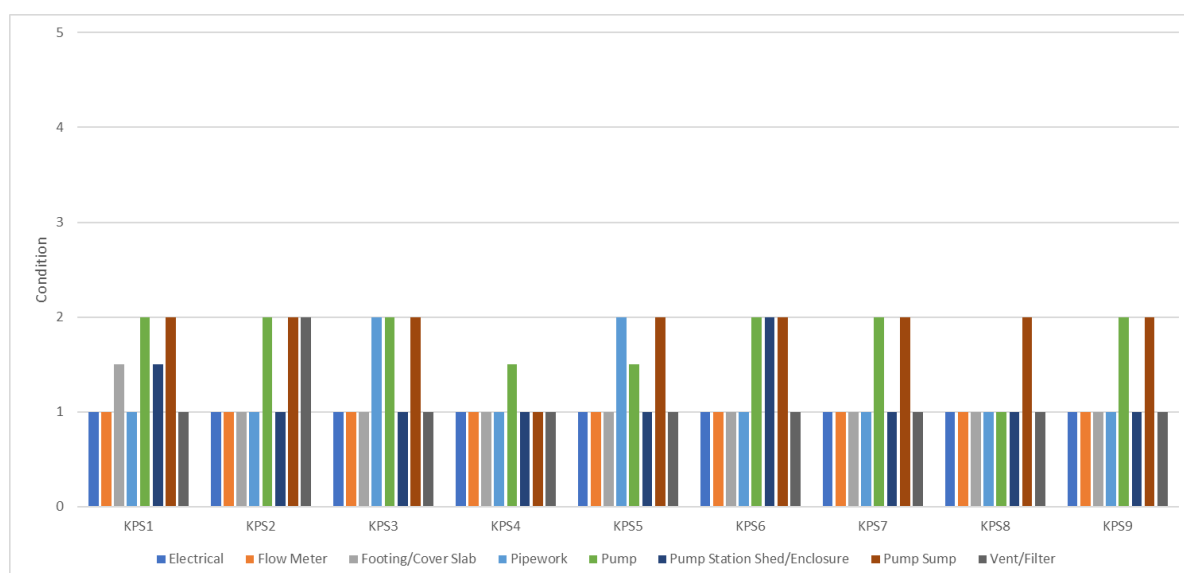


Figure 5.1-5: Keith Pump Station Component Condition as at March 2024

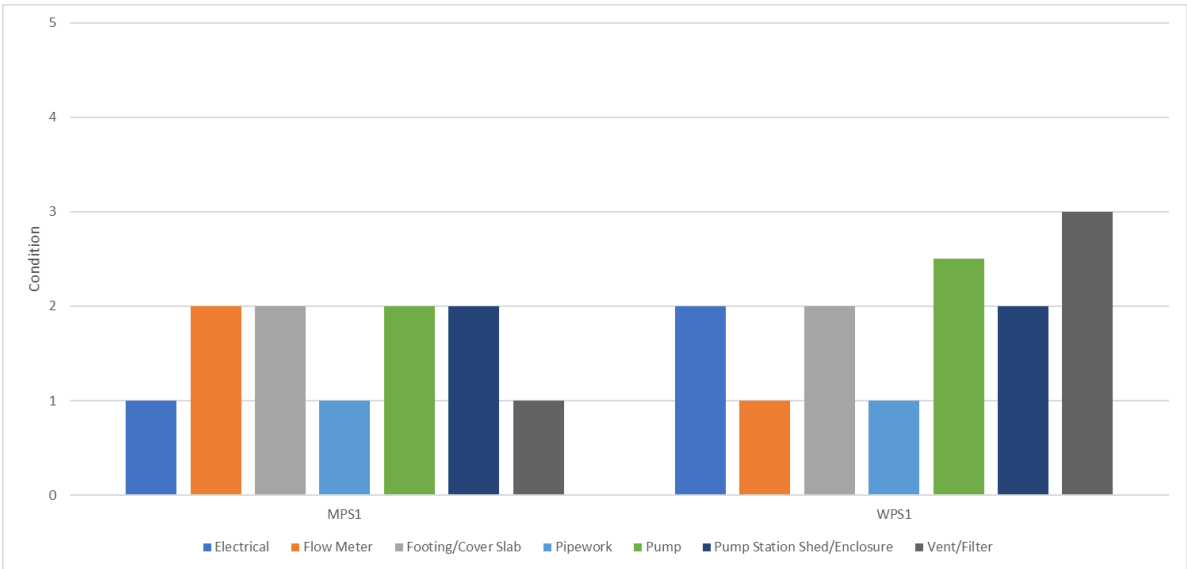


Figure 5.1-6: Mundulla and Wolseley Pump Station Component Condition as at March 2024

5.2 Operations and Maintenance Plan

Operations include regular activities to provide services. Examples of typical operational activities include cleaning, asset inspection, and utility costs.

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 pipe repairs, pipe flushing, and equipment repairs.

The trend in maintenance budgets are shown in Figure 5.2-1.

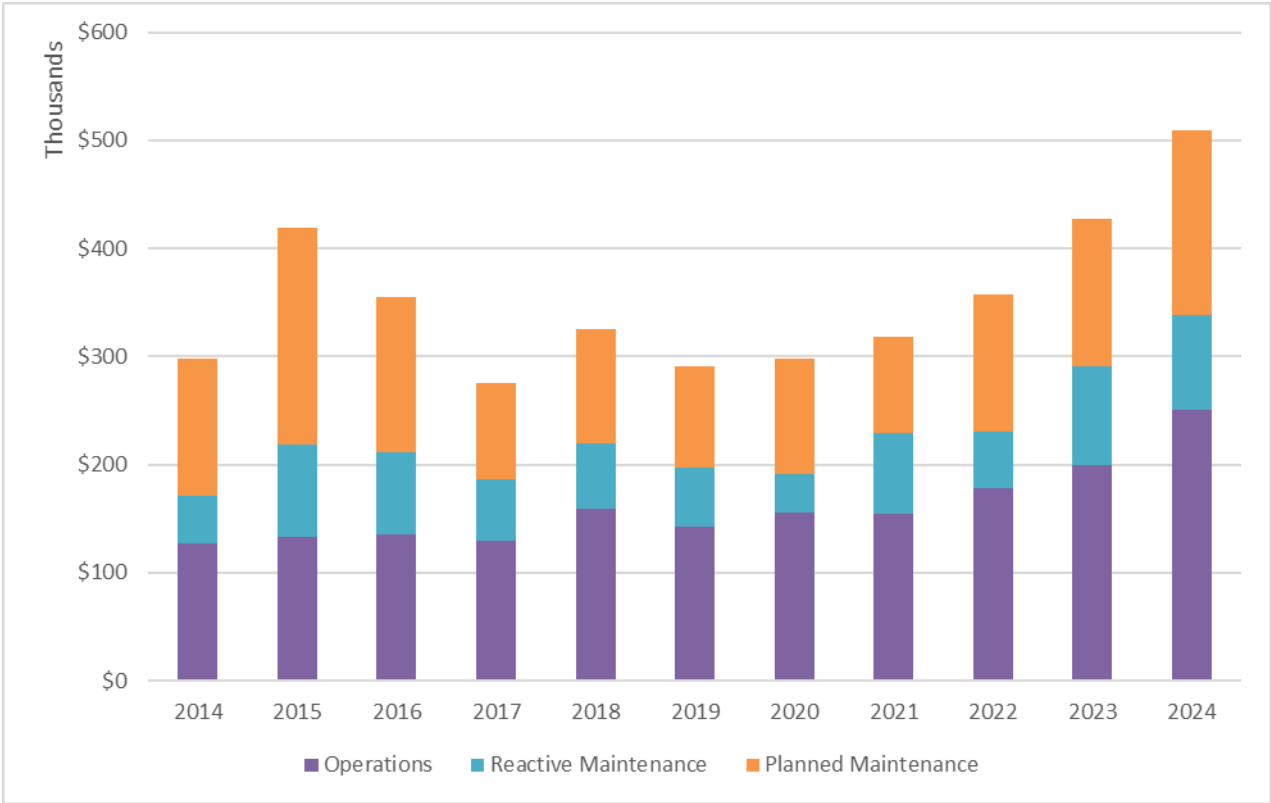


Figure 5.2-1: Maintenance Budget Trend

Maintenance budget levels are considered to be adequate to meet projected service levels, which may be less than or equal to current service levels. Where maintenance budget allocations are such that they will result in a lesser level of service, the service consequences and service risks have been identified and are highlighted in this AMP and service risks considered in the Risk Register (Appendix A).

Assessment and priority of reactive maintenance is undertaken by staff using experience and judgement.

General maintenance strategies include:

- Ensuring the infrastructure is maintained in accordance with agreed levels of service
- Deferring maintenance work and grouping in the capital improvement program annually unless urgent or safety related.

The planned maintenance activities are mapped out in the Operation and Maintenance Manual that has been developed for each scheme.

Summary of forecast 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. Figure 5.2 shows the forecast operations and maintenance costs relative to the proposed operations and maintenance Planned Budget.

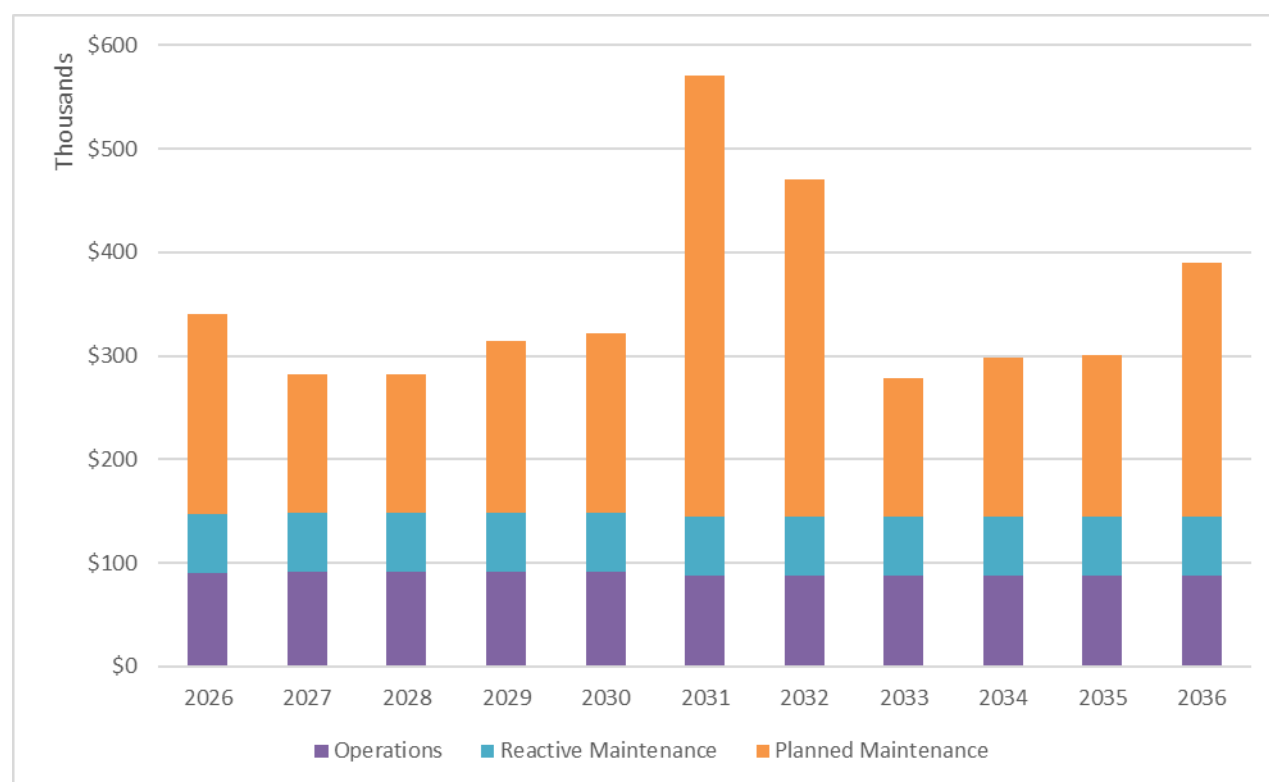


Figure 5.2-2: Maintenance Budget Projection

All figure values are shown in current day dollars.

5.3 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 resulting in additional future operations and maintenance costs.

Assets requiring renewal are identified from one of two approaches in the Lifecycle Model.

- The first method uses Asset Register data to project the renewal costs (replacement cost) and renewal timing (acquisition year plus updated useful life to determine the renewal year), or
- The second method uses an alternative approach to estimate the timing and cost of forecast renewal work (i.e. condition modelling system, staff judgement, average network renewals, or other).

Asset renewal is typically undertaken to either:

- Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate, or
- To ensure the infrastructure is of sufficient quality to meet the service requirements.

It is possible to prioritise renewals by identifying assets or asset groups that:

- Have a high consequence of failure,
- Have high use and subsequent impact on users would be significant,
- Have higher than expected operational or maintenance costs, and
- Have potential to reduce life cycle costs by replacement with a modern equivalent asset that would provide the equivalent service.

The pumps and electrical infrastructure of the CWMS would be expected to follow the bathtub failure curve model (Figure 5.3-1). This model accounts for early failure which would be consistent with faulty mechanical parts followed by low failure rates until an increased wear out of components at the end of their expected useful lives.

All other infrastructure such as sheds, pipes and tanks would be expected to have a fatigue failure curve (Figure 5.3-1) and be expected to fail with age or general wear and tear.



Figure 5.3-1: Failure Curve Models

As assets begin to reach the end of their lifecycle it would be expected that condition assessments would generally be undertaken more regularly to ensure increased maintenance, renewal work or replacements could be scheduled before failure occurred. Pipe infrastructure would be the exception to this, as condition assessment of underground assets is both expensive and time consuming. Council performs CCTV assessments of a subset of the pipe network every 5 years and the results of these assessments assist in determining the long-term strategy for the pipe infrastructure.

The typical useful lives of assets used to develop projected asset renewal forecasts are shown in Table 5.3-1. Asset useful lives were last reviewed as at July 2021.⁷

⁷ Tonkin, November 2021, CWMS Asset Valuation and Methodology 1 July 2021

Table 5.3-1: CWMS Asset Useful Life⁸

CWMS Element	Element Component	Detail	Bordertown	Keith	Mundulla	Wolseley
Collection Network	Connection Points		70	67 (Boundary Kit 100)	68	69
	Gravity Mains	40 - Polyethylene	100			
		150 - Polyethylene		100		
		40 - PVC	70			
		50 - PVC	70			
		60 - PVC	70			
		100 - PVC	70	67	68	68
		125 - PVC	70			
		150 - PVC	70	67	68	
		200 - PVC			68	
		225 - PVC		67		
	Manholes & Inspection Points		80			
	Pump Stations	Electrical	15			
		Concrete Floor	15			
		Concrete Sump	60			
		Generator	10			
		Pipework	15			
		Shed/Enclosure	25			
		Vent/Filter	35			
	Pumps	Mono & Submersible	15			
	Flowmeters	Mag Flow	15			

⁸ Useful Life is represented in years

CWMS Element	Element Component	Detail	Bordertown	Keith	Mundulla	Wolseley
	Rising Mains	Relief Valve	46			
		40 - Polyethylene	100			
		40 – PVC	65			
		50 - Polyethylene		100		
		50 – PVC	65	65		
		65 – PVC		65		
		75 - PVC	65			
		100 – PVC		65		
		125 - Polyethylene	100			
		125 – PVC	65			
		150 - PVC		65		
		50 - Unknown				65
		65 - Unknown			65	
Treatment Infrastructure	Lagoons		1,000			

5.4 Summary of future renewal costs

Forecast renewal costs are projected to increase over time if the asset stock increases. The forecast costs associated with renewals are shown in Figure 5.4.1. A detailed summary of the forecast renewal costs is shown in Appendix B.

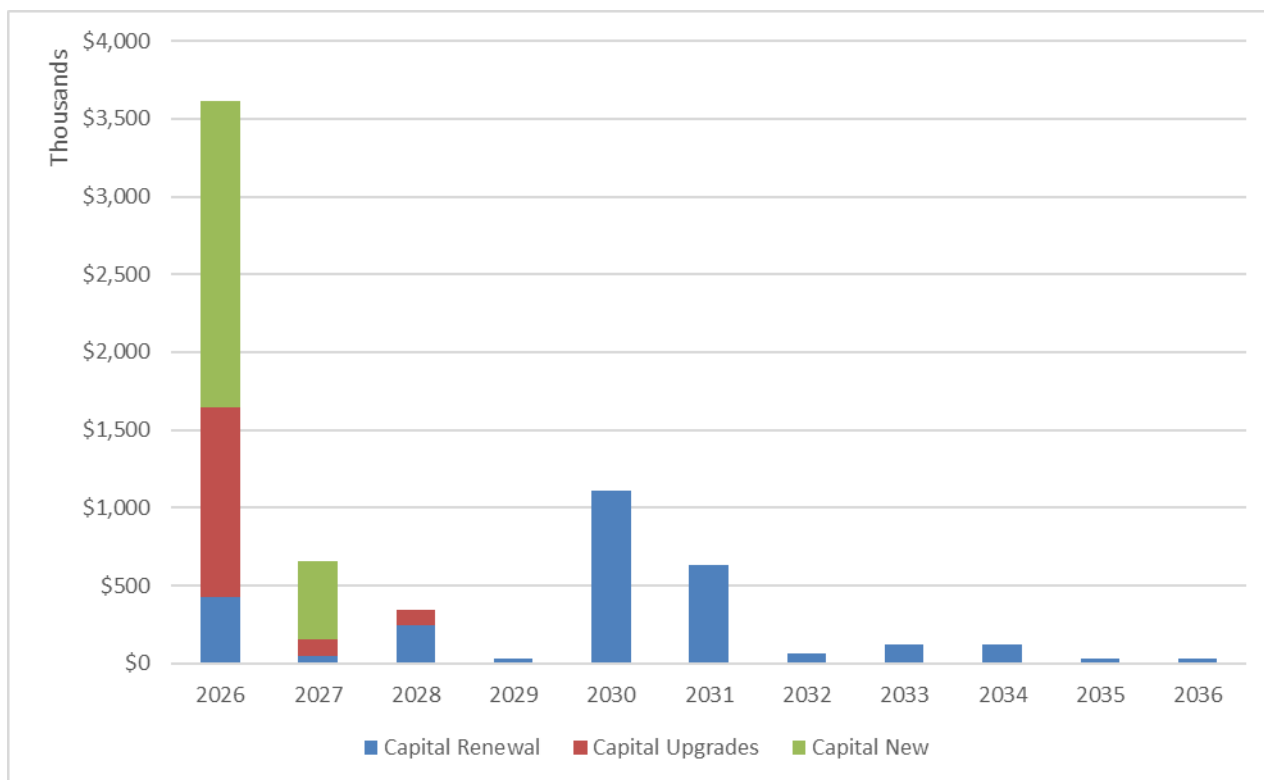


Figure 5.4-1: Capital Budget Projection

All figure values are shown in current day dollars.

5.5 Acquisition Plan

Acquisition reflects are 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 Council.

Proposed acquisition of new assets, and upgrade of existing assets, are identified from various sources such as community requests, proposals identified by strategic plans or partnerships with others. Potential upgrade and new works should be reviewed to verify that they are essential to the Entities needs. Proposed upgrade and new work analysis should also include the development of a preliminary renewal estimate to ensure that the services are sustainable over the longer term

Forecast acquisition asset costs are summarised in Figure 5.4-1. The forecast acquisition capital works program is shown in Appendix B.

When an Entity commits to new assets, they must be prepared to fund future operations, maintenance and renewal costs. They must also account for future depreciation when reviewing long term sustainability. When reviewing the long-term impacts of asset acquisition, it is useful to consider the cumulative value of the acquired assets being taken on by the Entity.

Expenditure on new assets and services in the capital works program will be accommodated in the long-term financial plan, but only to the extent that there is available funding.

5.6 Disposal Plan

Disposal includes any activity associated with the disposal of a decommissioned asset including sale, demolition or relocation. Disposal of any asset is undertaken in accordance with Council's [Disposal of Land and other Assets Policy](#). There are currently no CWMS assets identified for disposal.

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’⁹.

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. 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.

The risk assessment and risk register development has been performed in accordance with Council’s [Risk Management Policy](#) and [Risk Management Framework](#).

6.1 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.

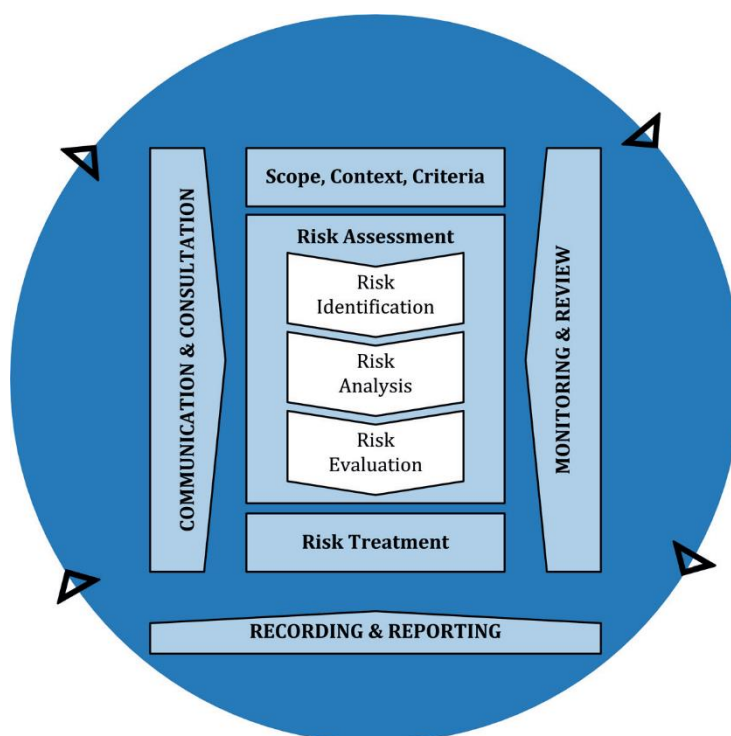


Fig 6.2 Risk Management Process – Abridged
Source: ISO 31000:2018, Figure 1, p9

⁹ ISO 31000:2009, p 2

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 Risk Register (Appendix A).

6.2 Infrastructure Resilience Approach

The resilience of CWMS 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.

Section 4.5 details the adaptations that are being implemented to build resilience to climate change. Resilience will be built into new developments with each development application being assessed individually on a case by case basis.

Further resilience will be investigated for implementation after the growth forecasts and land use planning are adopted for each location. Adoption of the land use planning will allow for capacity assessments and options studies to be performed.

7.0 FINANCIAL SUMMARY

This section contains the financial requirements resulting from the information presented in the previous sections of this AMP. 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 AMP for this service area. The two indicators are the:

- Asset Renewal Funding Ratio (proposed renewal budget for the next 10 years / proposed renewal outlays for the next 10 years shown in the AMP), and
- Lifecycle Funding Ratio (proposed lifecycle budget for the next 10 years / proposed lifecycle outlays for the next 10 years shown in the AMP).

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio¹⁰ 100%

The Asset Renewal Funding Ratio is an important indicator and illustrates that over the next 10 years we expect to have 100% of the funds required for the optimal renewal of assets.

The forecast renewal work along with the proposed renewal budget, and the cumulative shortfall where one exists, is illustrated in Appendix B.

Lifecycle Funding Ratio – 10 year financial planning period

This AMP identifies the forecast operations, maintenance and renewal costs required to provide an agreed, and affordable 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 over the 10 year planning period is \$115,908 on average per year.

Providing sustainable services from infrastructure requires the management of service levels, risks, forecast outlays and financing to achieve a financial indicator of approximately 1.0 for the first years of the AMP 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

Table 7.1-1 shows the forecast costs (outlays) required for consideration in the 10 year 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 AMP and/or financial projections in the LTFP.

We will manage any 'gap' by developing this AMP to provide guidance on future service levels and resources required to provide these services in consultation with the community.

Forecast costs are shown in current dollar values.

¹⁰ AIFMM, 2015, Version 1.0, Financial Sustainability Indicator 3, Sec 2.6, p 9.

Table 7.1-1: Forecast Costs (Outlays) for the Long-Term Financial Plan

Year	Acquisition & Upgrade	Operation	Maintenance	Renewal	Total
2026	\$3,190,000	\$90,000	\$250,540	\$425,000	\$3,955,540
2027	\$610,000	\$91,000	\$190,936	\$50,000	\$941,936
2028	\$100,000	\$91,000	\$190,936	\$241,000	\$622,936
2029	\$0	\$91,000	\$222,936	\$30,000	\$343,936
2030	\$0	\$91,000	\$230,936	\$1,110,000	\$1,431,936
2031	\$0	\$87,500	\$482,936	\$630,000	\$1,200,436
2032	\$0	\$87,500	\$382,936	\$60,000	\$530,436
2033	\$0	\$87,500	\$190,936	\$120,000	\$398,436
2034	\$0	\$87,500	\$210,936	\$120,000	\$418,436
2035	\$0	\$87,500	\$212,936	\$30,000	\$330,436
2036	\$0	\$87,500	\$302,936	\$30,000	\$420,436

7.2 Funding Strategy

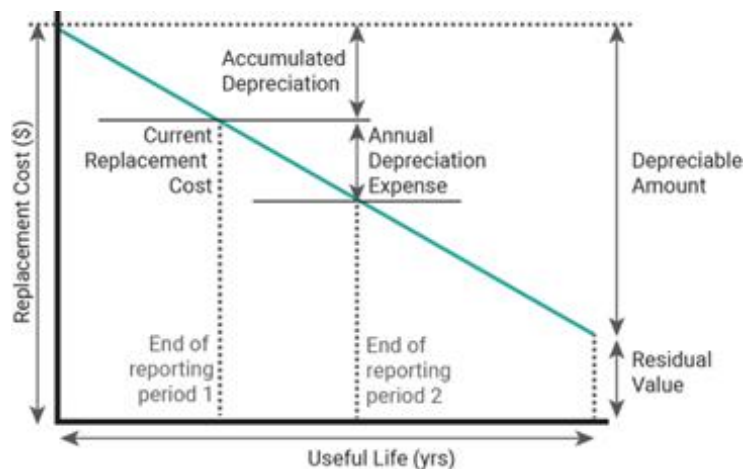
The proposed funding for assets is outlined in the Entity's budget and Long-Term financial plan.

The financial strategy of the entity determines how funding will be provided, whereas the AMP 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 AMP are shown below.



The assets are valued at fair value to replace service capacity:

Replacement Cost (Gross) \$32,801,116

Depreciable Amount \$32,801,116

Current Replacement Cost¹¹ \$12,338,475

Annual Depreciation Expense \$552,228

Council's sustainability reporting provides information on the rate of annual asset consumption and compares this to asset renewal and asset upgrade and expansion:

¹¹ Also reported as Written Down Value, Carrying Amount or Net Book Value in some jurisdictions.

7.3.2 Valuation forecast

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

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.

7.4 Key Assumptions Made in Financial Forecasts

In compiling this AMP, it was necessary to make some assumptions. This section details the key assumptions made in the development of this AMP and should provide readers with an understanding of the level of confidence in the data behind the financial forecasts.

Key assumptions made in this AMP are:

- The Long-term Financial Plan will contain sufficient budget allocations to meet 100% of the planned capital and operational works.
- Current asset age and useful life are accurate.

7.5 Forecast Reliability and Confidence

The forecast costs, proposed budgets, and valuation projections in this AM 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 scale¹² 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 $\pm 2\%$
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 $\pm 10\%$
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 $\pm 25\%$
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 $\pm 40\%$
E. Very Low	None or very little data held.

The estimated confidence level for and reliability of data used in this AM Plan is shown in Table 7.5-2.

¹² ISO 55000 Refers to this as the Asset Management System

Table 7.5-2: Data Confidence Assessment for Data used in AMP

Data	Confidence Assessment	Comment
Demand drivers	B. High	
Growth projections	B. High	
Acquisition forecast	C. Medium	
Operation forecast	A. Very High	
Maintenance forecast	A. Very High	
Renewal forecast	B. High	
- Asset values		
- Asset useful lives	C. Medium	
- Condition modelling	C. Medium	
Disposal forecast	B. High	

The estimated confidence level for and reliability of data used in this AMP is considered to be High.

8.0 PLAN IMPROVEMENT AND MONITORING

8.1 Status of Asset Management Practices¹³

8.1.1 Accounting and financial data sources

This AMP utilises accounting and financial data. The source of the data is Synergy Soft and Univerus Assets.

8.1.2 Asset management data sources

This AMP also utilises asset management data. The source of the data is Univerus Assets.

8.2 Improvement Plan

It is important that an entity recognise areas of their AMP and planning process that require future improvements to ensure effective asset management and informed decision making. The improvement plan generated from this AMP is shown in Table 8.2-1.

Table 8.2-1: Improvement Plan

Task		Timeline
1	Install appropriate signage at lagoons	2025
2	Purchase adjustable gibbaults, stock replacement parts	2025
3	Implement sludge level monitoring at Wolseley lagoons	2025
4	The failure of a receiving pump station downstream of or more pump stations does not inhibit the upstream pump station/s through the SCADA system, it is recommended that this is configured	2025
5	Further investigate the manholes with a zero-condition score so that a true condition score can be assigned.	2026
6	Action defects identified through the condition assessments to return the assets to fit-for-purpose service.	2026
7	Identify training for new employees or refresher training for current staff	2026
8	Upgrade gravity main between Venn Avenue and BPS4 to 225 mm diameter or install new gravity main of 150 mm diameter along Venn Avenue, Ramsey Terrace, and South Avenue to divert wastewater upstream of Venn Avenue.	2026
9	Review maps number of connections and reconcile with Synergy Soft billing records	2026
10	Design (WGA) and implement solution to address high risk at Keith Lagoons	2026
11	Bordertown BPS1, BPS3, BPS4 and BPS5 investigate options for pump capacity upgrade	BPS4 – 2026 BPS3 & BPS5 – 2027 BPS1 – 2028
12	Bordertown BPS2 located on Creecoona Tce requires safety barriers to be installed to protect the PS due there having been several near misses of vehicular collisions with the PS	2026

¹³ ISO 55000 Refers to this as the Asset Management System

Task		Timeline
13	Upgrade Bordertown BPS5 and BPS6 emergency storage capacity.	BPS5 – 2027 BPS6 - 2028
14	Check all relevant pump stations for installation of non-return valves on overflows and if not installed, install non return valves	2028
15	Develop CCTV program for CWMS networks	2028
16	KPS6 and BPS6 require relining of sumps	2028
17	Bordertown BPS4 rising main, investigate options for upgrade to 150 mm or 200 mm diameter from current 125 mm diameter.	2030
18	Review CWMS SCADA control operation.	2030
19	Replace DN150 KPS1 rising main with correct pipe class, if failures continue to occur	2030
20	Replace DN150 KPS1 rising main with correct pipe class, if failures continue to occur	2030
21	Smoke testing to be undertaken in selected areas (Bordertown industrial estate)	2030
22	Upgrade BPS6 rising main that flows into BPS5	2031
23	Council's pump station switchboard components are aging and there is potential to look for alternative options for switchboard components	2031 - 2034

8.3 Monitoring and Review Procedures

This AMP 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 AMP 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 budget are incorporated into the Long-Term Financial Plan or will be incorporated into the Long-Term Financial Plan once completed.

The AMP is due for complete revision and updating as per the program documented in the Asset Management Strategy.

8.4 Performance Measures

The effectiveness of this AMP can be measured in the following ways:

- The degree to which the required forecast costs identified in this AMP 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 AMP,
- 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 (this target is often 90 – 110%).

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10.0APPENDICES

Appendix A CWMS Risk Register

Qualitative Measures of Likelihood

Likelihood	Explanation – Operations	Explanation – Projects/ Business Case	FREQUENCY
Certain	It is expected to occur in most circumstances, immediately or within a short period – likely to occur most weeks or months.	Could be expected to occur more than once during the study or project delivery	Expected to occur in most circumstances
Likely	Will probably occur in most circumstances – several times a year.	Could easily be incurred and has generally occurred in similar studies or projects.	Probably will occur
Possible	Might occur at some time - within a one – two year period.	Incurred in a minority of similar studies or projects	Moderate probability of an incident
Unlikely	Could occur at some time - in a two - five year time frame.	Known to happen, but only rarely.	Low probability of an incident
Rare	May occur only in exceptional circumstances. Could be incurred in a 5-30 year timeframe.	Has not occurred in similar studies or projects. Conceivable but in extreme circumstances.	Extremely low probability. Will only occur in exceptional circumstances

Qualitative Measures of Consequence

Descriptor	Financial/Infrastructure	People	Reputation	Environment	Legal / Regulatory / Policy	Service Delivery	Opportunities	Project Specific				
								Cost	Schedule	Performance	Reputation	Safety
Insignificant	Financial – low financial loss <\$20,000 impact on operating result	No Injury/First Aid only. No impact on morale No lost time	Some complaints or negative comments on Council’s social media (< than 3 people). No media/political attention.	Minor Instance of environmental damage. Can be reversed immediately.	Immaterial legal, regulatory or internal policy failure. No penalty or liability	Insignificant interruption to a service – no impact to customers/business	<\$1,000 gain -No impact on customers, levels of service or Council systems -No impact to reputation -No public interest	< 2.5% of total Project Budget	< 2.5% of total Project Schedule	Would cause the delivered capability to be functionally fit for all desired missions or tasks, but there may be some qualification to the level to which it would perform non-critical elements of the mission or task. Few such qualifications would exist.	Little community interest, low profile, no media items	Minor injuries not requiring first aid treatment, or near miss
Minor	Financial – medium financial loss >\$20,000 and <\$50,000	Minor Medical attention (first aid). Negligible impact on morale No lost time	Some Local Media or Political Attention. Community Concern – little adverse effect	Minor impact to environment. Can be reversed in the short term.	Minor legal or regulatory/internal policy failure – resolved without penalty & minor liability exposure	Minor interruption to a service with minimal impact to customers/business	-\$1,000 < \$10,000 gain -Minor positive impact on Council systems, some operational efficiencies realised -Minor positive impact on reputation, compliments and positive feedback received	2.5-10% of total Project Budget	2.5-10% of total Project Schedule	Would cause the delivered capability to be functionally fit for all desired missions or tasks, but there would be some qualification to the level to which it would perform non-critical elements of the mission or task. Several such qualifications would exist.	Low impact, some passing interest, low media profile	Minor Medical attention. Negligible impact on morale

Qualitative Measures of Consequence

Descriptor	Financial/Infrastructure	People	Reputation	Environment	Legal / Regulatory / Policy	Service Delivery	Opportunities	Project Specific				
								Cost	Schedule	Performance	Reputation	Safety
Moderate	Financial – high financial loss >\$50,000 and <\$250,000	Significant Injury requiring medical attention. Short Term effect on morale and business	Significant Media Attention. Significant Public interest. Potential for adverse local media or potential attention	Moderate impact to environment. Localised damage that has potential to spread but can be contained or reversed with intensive efforts.	A repeated legal, regulatory or internal policy failure. Resulting in a penalty and potential liability exposure	Moderate Interruption to service delivery. Customer impact up to 48 hrs. Partial BCP action may be needed	- \$10,000 -< \$100,000 gain -Noticeable positive impact on customers and levels of service -Positive local press coverage received	10-14% of total Project Budget	10-14% of total Project Schedule	Would cause the delivered capability to be partly functionally fit for purpose (i.e. degraded ability to perform all desired missions or tasks; however, there are known workarounds). There would be some qualification to the level to which it would perform (e.g. due to issues of relationships, concurrency, etc.). Several such qualifications would exist.	Moderate impact, moderate public interest, public embarrassment, moderate media profile	Medical attention required. Short Term effect on morale and project outcome.
Major	Financial – major financial loss >\$250,000 and <\$1,500,000	Serious Long-Term Injury. Temporary disablement. Significant impact on morale and business	Regional or State wide media Attention. Public interest. Long term effect on reputation	Severe Loss of environmental amenity, Danger of continuing environmental damage.	Systematic legal, regulatory or internal policy failure. Major penalty requiring full review. Significant liability exposure	Major interruption to service delivery or production capability, Customer impact > 7 days. Component of BCP action may be needed.	- \$100,000 -< \$500,000 gain -Major positive impact on customers and levels of service -Positive comments and coverage in industry media articles and national media	15-19% of total Project Budget	15-19% of total Project Schedule	Would cause the delivered capability to be only partly functionally fit for purpose (i.e. degraded ability to perform some core missions or essential tasks or unable to perform non-core missions or tasks, and there are no known workarounds).	Sustained public interest, high negative media profile, Premier/Cabinet publicly involved, third party action	Serious Long-Term Injury. Temporary disablement. Significant impact on morale and project outcome.
Catastrophic	Financial –catastrophic financial loss/exposure >\$1,500,000	Major Injury/disablement or death. Long term effect on morale and performance of business	Community outrage about issue; community pages established on social media & high instance of posts on Council's social media pages. Organised community campaigning involving sustained coverage in state or national media.	Major loss of environmental amenity – irrecoverable environmental damage.	Substantial failure in administrating legal, regulatory and policy requirements. Significant penalty and liability exposure	Major interruption to delivery of all or most services for more than 14 days. Full BCP action required.	- > \$500,000 gain -Dramatic and long lasting positive impact on customers and levels of service -Receive industry award and front page coverage in industry media articles and national media	>20% of total Project Budget	>20% of total Project Schedule	Would cause the delivered capability to be functionally unfit for its intended purpose (i.e. unable to perform core missions or essential tasks).	Widespread public agitation, Government censure, high multiple impacts, widespread negative media profile	Death. Long term effect on morale and project outcome.

Risk Matrix

	CONSEQUENCE				
LIKELIHOOD	Insignificant	Minor	Moderate	Major	Catastrophic
Certain	Medium (M14)	High (H21)	High (H22)	Extreme (E24)	Extreme (E25)
Likely	Medium (M12)	Medium (M13)	High (H19)	High (H20)	Extreme (E23)
Possible	Low (L6)	Medium (M10)	Medium (M11)	High (H17)	High (H18)
Unlikely	Low (L4)	Low (L5)	Medium (M8)	Medium (M9)	High (H16)
Rare	Low (L1)	Low (L2)	Low (L3)	Medium (M7)	High (H15)

STAKEHOLDER DRIVERS		HAZARD			INHERENT RISK			EXISTING CONTROLS	RESIDUAL RISK			ACCEPT	RISK TREATMENT	
Stakeholder	Stakeholder Desired Outcome	Hazardous Event & Source of Hazardous Event	Description of Risk	Risk Category / Driver	Consequence	Likelihood	Inherent Risk Rating		Consequence	Likelihood	Current Risk Rating	Y or N	Further Treatment Plan (Additional Controls)	Comments
DIO	No loss of service	Inadequate or no maintenance leading to equipment failure	1. Poor planning; 2. Limited budget; 3. Limited resources; 4. Conflicting priorities; 5. Incompetent or untrained staff; 6. (Spare) Parts availability; 7. Third party availability and reliance on them; 8. Lack of appropriate tools for the job; 9. Lack of communication of faults; 10. Register not maintained; 11. Lack of maintenance schedule or system 12. Downtime and inability to provide services due to equipment breakdown / failure	Environment	Moderate	Likely	High (H19)	1. Maintenance schedule recorded 2. Staff are trained 3. Current policies and procedures in place 4. Toolbox meetings and communication with staff 5. Contingency stock 6. Schedule services 7. Asset renewal	Minor	Unlikely	Low (L5)	Y		
DIO	No loss of service	Council is unable to operate and maintain the Community Wastewater Management Scheme (CWMS), adversely affecting the delivery of this service.	1. Complex regulations and legislation 2. Increased public health and environmental risks 3. Aging system 4. Extensive network 5. Lack of resources 6. Lack of appropriate skill set 7. Lack of forward planning 8. Inability to monitor underground asset	People	Major	Possible	High (H17)	1. Asset Management Plan 2. Trained staff 3. Contractor engaged for water testing at wetlands 4. Inspection schedule 5. EPA for compliance 6. Operations and Maintenance Plans 7. SRMTMP	Minor	Unlikely	Low (L5)	Y		
DIO	No loss of service	Pump station service failure, pump stops working, sump failure	1. Aging infrastructure 2. Pump fault 3. PS damage due to external factors such as vehicle collision	Financial/Infrastructure	Moderate	Likely	High (H19)	1. All dual pump PSs 2. PS inspection regime 3. Reactive maintenance 4. Pump station condition assessments and replacement programming 5. 24 hour monitoring via SCADA 6. Emergency generator and appropriate fitting at each PS 7. Standardised pumps so they can be swapped from one pump station to another. 8. Stock spare parts.	Minor	Possible	Medium (M10)	Y	Bordertown BPS2 located on Creecoona Tce requires safety barriers to be installed to protect the PS due there having been several near misses of vehicular collisions with the PS (approx \$20,000)	
DIO	No injury to staff and contractors working on the scheme	Injury caused by inadequate OH&S measures at PS's	1. Aging infrastructure 2. Changing standards 3. Inadequate safety features to prevent injury	People	Catastrophic	Possible	High (H18)	1. Staff and contractor education 2. PS condition assessment and hazard identification 3. Physical controls such as fitted barriers around PS manholes 4. Safety procedures including SOP, SWMS and JSA's	Minor	Unlikely	Low (L5)	Y		
DIO	No loss of service	Ingress of floodwater from Tatiara Ck via overflow pipes	1. High creek flow 2. Absence of non return valve	Financial/Infrastructure	Minor	Likely	Medium (M13)		Minor	Likely	Medium (M13)	Y	Check all relevant pump stations for installation of non return valves on overflows and if not installed, install non return valves	

STAKEHOLDER DRIVERS		HAZARD			INHERENT RISK			EXISTING CONTROLS	RESIDUAL RISK			ACCEPT	RISK TREATMENT	
Stakeholder	Stakeholder Desired Outcome	Hazardous Event & Source of Hazardous Event	Description of Risk	Risk Category / Driver	Consequence	Likelihood	Inherent Risk Rating		Consequence	Likelihood	Current Risk Rating	Y or N	Further Treatment Plan (Additional Controls)	Comments
DIO	No loss of service or environmental impact	Rising main fails	1. Substandard rising main class and soil movement. 2. Excessive pressure 3. Incorrect pipe diameter	Financial/Infrastructure	Minor	Certain	High (H21)	1. PS Pressure monitoring via SCADA 2. Operations and Contingency Plans 3. Spatial data capture of failure to monitor trends 4. Proactive main replacements as required	Moderate	Likely	High (H19)	Y	Bordertown BPS4 rising main, investigate options for upgrade to 150 mm or 200 mm diameter from current 125 mm diameter. Bordertown BPS6 rising main that flows into BPS5 may require upgrade due to developments that will flow into BPS6 leaving BPS6 undersized as well as its rising main	Ensure correct pipe class is installed.
DIO	No loss of service or environmental impact	Gravity line blockage, failure, cracking	1. Debris intrusion into system 2. Root intrusion 3. Aging infrastructure	Financial/Infrastructure	Minor	Certain	High (H21)	1. CCTV condition monitoring of pipework 2. Local contractor with pipe clearing capability 3. Operations and Contingency Plans	Minor	Certain	High (H21)	Y		
DIO	No loss of service or environmental impact	In event of pump or power failure retention times do not meet minimum requirements	1. Inadequate storage capacity at PS	Financial/Infrastructure	Moderate	Certain	High (H22)	1. Capacity assessments completed in Keith and Bordertown that identify capacity limitations 2. SA Health seek approval from Council prior to increase in connections 3. SCADA provides inhibit functionality to provide additional capacity within the system	Minor	Certain	High (H21)	N	Install additional storage capacity at BPS5 and BPS6, new pump in BPS4 and upgrade inadequate main between Venn Ave and South Toe	Approx 650K
DIO	No loss of service or environmental impact	Staff unavailability, cannot find replacement parts for gravity lines	1. Lack of staff particularly during periods of holidays 2. No access to replacement parts	Financial/Infrastructure	Minor	Possible	Medium (M10)	1. Phones provided to critical staff and backup staff 2. Contingency plans.	Minor	Unlikely	Low (L5)	Y		
DIO	No loss of service or environmental impact	Effluent backflow into residents from gravity line	1. Failure to install and maintain gully traps	Financial/Infrastructure	Minor	Rare	Low (L2)	1. Desktop approval of gully traps. 2. Education and awareness for flushing contractors.	Minor	Rare	Low (L2)	Y		
DIO	No loss of service or environmental impact	Power outage at pump station results in system overflow.	1. Loss of supply, from natural disaster, planned power outage etc prevent pumps from working.	Financial/Infrastructure	Moderate	Unlikely	Medium (M8)	1. Emergency storage within system has been assessed and majority complies with Dept Health standards. 2. SCADA monitoring 3. Emergency generator connections at PSs 4. Access to contractor to cart waste water	Moderate	Rare	Low (L3)	Y		Unlikely to be major overflow events as no power in residences will also minimise use of water in dwellings due to inability to pump water
DIO	No injury to public	Unauthorised access into lagoons	1. Lack of knowledge	People	Insignificant	Possible	Low (L6)	1. 6" fence and locked gates	Insignificant	Possible	Low (L6)	Y	Install appropriate signage at lagoons	
DIO	No loss of service or environmental impact	Unable to locate network infrastructure	1. Illegal building work 2. No easements 3. Road construction 4. Poor or inaccurate records 5. Development as constructed information is not provided to Council to enable the capturing of the records of the infrastructure assets	Financial/Infrastructure	Minor	Likely	Medium (M13)	1. Mapped asset register 2. DGPS asset locations 3. Enforce easement on new subdivisions	Minor	Likely	Medium (M13)	Y		

STAKEHOLDER DRIVERS		HAZARD			INHERENT RISK			EXISTING CONTROLS	RESIDUAL RISK			ACCEPT	RISK TREATMENT	
Stakeholder	Stakeholder Desired Outcome	Hazardous Event & Source of Hazardous Event	Description of Risk	Risk Category / Driver	Consequence	Likelihood	Inherent Risk Rating		Consequence	Likelihood	Current Risk Rating	Y or N	Further Treatment Plan (Additional Controls)	Comments
DIO	No spills or releases to the environment	Overflow from wetlands into watercourses	1. Inadequate storage capacities	Environment	Moderate	Rare	Low (L3)	1. Constructed wetlands with adequate capacity	Moderate	Rare	Low (L3)	Y		
DIO	No loss of service or environmental impact	Ingress of solids into the system causing blockages and additional wear and tear on equipment	1. Excessive sludge in septic tanks 2. Undersize septic tanks	Financial/Infrastructure	Minor	Likely	Medium (M13)	1. 5 yr desludging program 2. Pipe network flushing program	Minor	Unlikely	Low (L5)	Y		
DIO	No loss of service or environmental impact	Inability to repair damaged pipework due to obsolescence	1. Changes in standards	Financial/Infrastructure	Minor	Possible	Medium (M10)	1. Records of pipe sizes and locations	Minor	Possible	Medium (M10)	Y	Purchase adjustable gimbals, stock replacement parts	
DIO	No unauthorised access of Council property	Vandalism of infrastructure	1. Public gain access to aboveground CWMS infrastructure e.g. pump station	Financial/Infrastructure	Moderate	Unlikely	Medium (M8)	1. Monthly inspections	Moderate	Rare	Low (L3)	Y		
DIO	Compliance with legislation, regulation and license	Non-compliance	1. Failure to meet reporting timeframes 2. Failure to meet SA Health specifications e.g. emergency storage requirements	Financial/Infrastructure	Major	Possible	High (H17)		Major	Possible	High (H17)	N	BPS5 and BPS6 require additional emergency storage to be constructed (WGA) (2027 \$100,000 each)	
DIO	Retain staff and/or have sufficient handover to new staff	Loss of knowledge	1. Staff with knowledge of the systems leave the organisation due to retirement or other opportunities	People	Moderate	Possible	Medium (M11)	1. Maintain up-to-date operations manuals of each system 2. Maintain accurate records	Moderate	Possible	Medium (M11)	Y	Identify training for new employees or refresher training for current staff	
DIO	Condition of assets understood to enable future planning for maintenance and renewals	Condition of assets not understood or known	1. Poor renewal planning and budget not being spent in correct area due to lack of knowledge of assets. Could lead to widespread failure of the systems or significant financial impact as all constructed at the same time.	Financial/Infrastructure	Major	Possible	High (H17)	1. CCTV program	Moderate	Possible	Medium (M11)	Y	Develop CCTV program for CWMS networks	
DIO	All live property connections are being billed accordingly	Number and location of live property connections not fully understood	1. Possible loss of revenue impacting long term sustainability of the schemes	Financial/Infrastructure	Minor	Possible	Medium (M10)	1. CWMS schemes have been mapped and linked to properties through aerial photography	Minor	Unlikely	Low (L5)	Y	Review maps number of connections and reconcile with Synergy Soft billing records	
DIO	Long term sustainability of systems	System is not financially sustainable	1. Applicable fees and charges are not able to sustain and fund the systems	Financial/Infrastructure	Major	Possible	High (H17)	1. Life cycle cost analysis includes a risk allowance	Major	Unlikely	Medium (M9)	Y		

STAKEHOLDER DRIVERS		HAZARD			INHERENT RISK			EXISTING CONTROLS	RESIDUAL RISK			ACCEPT	RISK TREATMENT	
Stakeholder	Stakeholder Desired Outcome	Hazardous Event & Source of Hazardous Event	Description of Risk	Risk Category / Driver	Consequence	Likelihood	Inherent Risk Rating		Consequence	Likelihood	Current Risk Rating	Y or N	Further Treatment Plan (Additional Controls)	Comments
DIO	The CWMS has sufficient capacity to meet peak demands and future development	Development of the towns increases demand on the CWMS	1. CWMS does not have capacity to meet demands of development leading to poor treatment and/or spills to the environment and/or greater frequency of breakdowns as infrastructure is operating under constant heavy load outside design parameters	Financial/Infrastructure	Major	Possible	High (H17)	1. Capacity assessments completed in Keith and Bordertown that identify capacity limitations 2. SA Health seek approval from Council prior to increase in connections	Major	Unlikely	Medium (M9)	Y	Address capacity issues identified by WGA report	
DIO	All staff involved in the operation of the CWMS are appropriately trained	No or insufficient training of staff	1. Potential for increase in incidents both work place safety and operational due to poorly trained staff	People	Moderate	Likely	High (H19)	1. Maintain up-to-date operations manuals of each system 2. Maintain accurate records 3. Regular review during operations meetings	Moderate	Unlikely	Medium (M8)	Y		Updated manuals to be discussed in Operations Meetings
DIO	No spills or releases to the environment	Overflow of lagoon due to high influent volume as a result of stormwater inundation of the network and/or stormwater inundation of the lagoon	1. System capacity exceeded due to inflow and infiltration resulting in spills and environmental releases	Environment	Major	Likely	High (H20)	1. Monthly lagoon inspections 2. Keith top lagoon transfers water to bottom lagoon to increase capacity in top lagoon and evaporation 3. Sludge level monitoring in Keith and Bordertown lagoons 4. Capacity assessments	Major	Likely	High (H20)	N	Design (WGA) and implement solution to address high risk at Keith Lagoons (2026 \$2,000,000) Smoke testing to be undertaken in selected areas (Bordertown industrial estate)	Keith lagoons are most at risk of this risk occurring
DIO	No spills or releases to the environment	Seepage of untreated wastewater or biological substances from lagoons	1. Wastewater seeps from the lagoon base and walls and enters groundwater	Environment	Major	Certain	Extreme (E24)	1. Monthly lagoon inspections 2. Existing clay liner	Major	Certain	Extreme (E24)	N	Design (WGA) and implement solution to address high risk at Keith Lagoons (2026 \$2,000,000) Smoke testing to be undertaken in selected areas (Bordertown industrial estate)	
DIO	Ability to undertake maintenance in timely and cost effective manner	Sludge accumulation in lagoon	1. Sludge level in lagoon rises resulting in reduced capacity for treatment in lagoon and increased risk of overflowing	Environment	Major	Unlikely	Medium (M9)	1. Sludge level monitoring in lagoons at Bordertown and Keith	Minor	Unlikely	Low (L5)	Y	Implement sludge level monitoring and Wolseley lagoons	
DIO	No odour complaints	Odour released from lagoons	1. Long retention time in the network, high temperatures and turbulent flow can result in the wastewater releasing odorous gases and also going septic which increases the odours released	People	Minor	Unlikely	Low (L5)	1. No records of complaints	Insignificant	Rare	Low (L1)	Y		
DIO	Access to infrastructure for maintenance	No easement over underground infrastructure	1. Difficult to access underground infrastructure due to refusal by land owners or buildings / structures over infrastructure 2. Easement alignment may not cover infrastructure	Financial/Infrastructure	Moderate	Likely	High (H19)	1. Current SA Water Industry Act, Planning Code, internal processes of internal referrals for development approvals	Moderate	Unlikely	Medium (M8)	Y		Historic development may have resulted in issues but moving forward should not be the case

Stakeholder Drivers		Hazard			Inherent Risk			Existing Controls	Residual Risk			Accept	Risk Treatment	
Stakeholder	Stakeholder Desired Outcome	Hazardous Event & Source of Hazardous Event	Description of Risk	Risk Category / Driver	Consequence	Likelihood	Inherent Risk Rating		Consequence	Likelihood	Current Risk Rating	Y or N	Further Treatment Plan (Additional Controls)	Comments
DIO	No loss of service	Communication outage	1. Poor phone reception causes outages of the communication system	Service Delivery	Moderate	Possible	Medium (M11)	1. SCADA alarms if communication outage occurs 2. Onsite inspections if no communication from SCADA	Moderate	Unlikely	Medium (M8)	Y		
DIO	Safe work practices are followed when working on CWMS infrastructure	Asbestos baffles at Keith lagoons	1. Health and safety risk of undertaking any maintenance on or replacements of infrastructure containing asbestos 2. Exposure to asbestos due to poor condition non-friable material	People	Catastrophic	Possible	High (H18)	1. Locked gates 2. Fenced site 3. Difficult access 4. Contained within water	Moderate	Rare	Low (L3)	Y		Ensure that this is captured in asbestos register
DIO	Pump station sump does not seep to environment	Pump station sump walls fail and allow wastewater to seep into the environment	1. Wastewater seeps from the pump station sump floor and walls and enters groundwater	Financial/Infrastructure	Major	Possible	High (H17)	1. Annual inspections after annual pump out	Major	Unlikely	Medium (M9)	Y	KPS6 and BPS6 require relining of sumps (2026 \$100,000 each)	
DIO	24/7 Online monitoring of CWMS network	SCADA services are not available from contractor	1. Inability to monitor the CWMS pump stations online 24/7	Financial/Infrastructure	Major	Possible	High (H17)	1. Current annual agreement with SCADA provider	Major	Possible	High (H17)	N	Council's pump station switchboard components are aging and there is potential to look for alternative options for switchboard components	

Appendix B Capital Budget Projection Summary by Lifecycle Activity

Table B1 – Capital Budget Project Summary by Lifecycle Activity

Year	Acquisition & Upgrade	Renewal	Location	Description
2026		\$400,000	Bordertown Network	Upgrade gravity main between Venn Avenue and BPS4 to 225 mm diameter or install new gravity main of 150 mm diameter along Venn Avenue, Ramsey Terrace, and South Avenue to divert wastewater upstream of Venn Avenue.
	\$170,000		Bordertown Network	Stage 1 Ramsey Terrace residential development
	\$500,000		Bordertown Network	Industrial Estate Development
	\$20,000		BPS2	Install safety barriers to protect PS
		\$25,000	BPS4	Increase capacity - additional new pump or upgrade of existing pumps size
	\$200,000		KPS11	New pump station for Keith Industrial Estate Development
	\$300,000		Keith Network	Keith Industrial Estate development
	\$2,000,000		Keith Lagoons	New lagoon or irrigation solution to address capacity issues and also refurbishment of existing lagoon
2027	\$164,000		Bordertown Network	Stage 2 Ramsey Terrace residential development
	\$146,000		Bordertown Network	Stage 3 Ramsey Terrace residential development
	\$200,000		Keith Network	Bennet Street residential development
		\$25,000	BPS3	Increase capacity - additional new pump or upgrade of existing pumps size
	\$100,000	\$25,000	BPS5	Increase capacity - additional new pump or upgrade of existing pumps size Addition of emergency storage capacity as per WGA report

Year	Acquisition & Upgrade	Renewal	Location	Description
2028		\$25,000	BPS1	Increase capacity - additional new pump or upgrade of existing pumps size
		\$8,000	BPS4	Renewal of vent/filter
	\$100,000	\$100,000	BPS6	Relining of pump station sump Addition of emergency storage capacity as per WGA report
		\$100,000	KPS6	Relining of pump station sump
		\$8,000	WPS1	Renewal of vent/filter
2029		\$30,000	KPS1	Shed renewal
2030		\$490,000	Bordertown Network	Bordertown BPS4 rising main, investigate options for upgrade to 150 mm or 200 mm diameter from current 125 mm diameter.
		\$490,000	Keith Network	Replace DN150 KPS1 rising main with correct pipe class
		\$100,000	BPS7	Relining of pump station sump
		\$30,000	MPS1	Shed renewal
2031		\$20,000	BPS2	Electrical componentry renewal
		\$120,000	BPS5	Relining of pump station sump Electrical componentry renewal
			Bordertown Network	Upgrade of rising main from BPS6 to BPS5 to increase capacity
		\$20,000	KPS3	Electrical componentry renewal
		\$20,000	KPS5	Electrical componentry renewal
		\$20,000	KPS6	Electrical componentry renewal
		\$30,000	WPS1	Shed renewal
2032		\$20,000	BPS3	Electrical componentry renewal
		\$20,000	BPS4	Electrical componentry renewal
		\$20,000	KPS1	Electrical componentry renewal

Year	Acquisition & Upgrade	Renewal	Location	Description
2033		\$20,000	BPS1	Electrical componentry renewal
		\$20,000	BPS7	Electrical componentry renewal
		\$20,000	KPS4	Electrical componentry renewal
		\$20,000	KPS7	Electrical componentry renewal
		\$20,000	KPS8	Electrical componentry renewal
		\$20,000	MPS1	Electrical componentry renewal
2034		\$20,000	BPS6	Electrical componentry renewal
		\$20,000	BPS8	Electrical componentry renewal
		\$20,000	KPS2	Electrical componentry renewal
		\$20,000	KPS9	Electrical componentry renewal
		\$20,000	KPS10	Electrical componentry renewal
		\$20,000	WPS1	Electrical componentry renewal
2035		\$30,000	BPS3	Shed renewal
2036		\$30,000	BPS4	Shed renewal