



Asset Management Plan – Wastewater



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1 Executive Summary

This Asset Management Plan (AMP) is part of a suite of Portfolio AMPs, which together sit under the Asset Management Strategy (AMS). It is to be read in conjunction with the AMS and Four Year Capital Works Program.

This AMP provides an overarching document of Council's management of, and investment in, the Water Asset Class over a 10-year planning period.

Council manages a water asset class of 551km of wastewater gravity mains and 98km of rising mains, plus other assets across a broad range of asset categories, worth a combined \$855M. The average condition of these structures is 1.4, which is defined as therefore being in 'good' condition.

The level of service that Council provides through this asset class can be described within the three categories of: Provision, Renewal, and Maintenance and Operations. What Council delivers through these levels of service are driven by consideration of: Risk Management, Community Satisfaction and Strategies and Masterplans. But is constrained by funding and availability of resourcing.

Review of the 2022 Community Satisfaction Survey shows that community satisfaction for the overall performance of the wastewater network has consistently been valued of high importance and high satisfaction by the community.

In accordance with these results, the Provision Level of Service details how the focus is to therefore to continue ensuring the resilience, performance and sustainability of the existing wastewater management network.

In order to provide an analysis of financial investment required across the planning period, calculation of forecast asset base growth must be completed. Asset base growth is calculated through consideration of the value of the asset class growing as result of new and upgrade projects, assets contributed through development, development contributions plans and indexation, as well as subtracting any known asset disposals. It is forecast that across the planning period the asset base will grow by \$485M.

Recommended financial investment for the Renewal Level of Service and Maintenance and Operations Level of Service is calculated at \$104M and \$123M respectively. These have been calculated through aligning renewals with annual depreciation, and ensuring maintenance and operational budgets increase in step with asset base growth.

The Long-Term Financial Plan is able to accommodate the required investment in asset renewal across the life of the plan, but it cannot accommodate the maintenance and operations investment due to the funding model for the Sewer Fund not being structured such that maintenance and operations funding increases in line with asset base growth.

This will therefore result in a lowering of levels of service and will prevent assets from reaching their desired useful life - which in turn increases renewal expenditure requirements. Future iterations of the Asset Management Plan will further investigate and identify potential solutions to this difficult situation.

Asset management is a journey of continuous improvement, and so the AMP concludes with a concise Improvement Plan detailing the asset management maturity tasks programmed for the years ahead.

2 Asset Systems & Structures

2.1 Asset Planning Framework

The Asset Management Planning Framework, as summarised in Figure 1, integrates into the wider IP&R Framework, and ensures Council performs the Asset Management functions of planning, coordinating, controlling, executing, monitoring, and improving the activities associated with managing its assets.

In accordance with the Integrated Planning & Reporting (IP&R) Framework, which all NSW Local Governments are subject to, Council is required to prepare a suite of strategic documents – one being the Resourcing Strategy. It is through the Resourcing Strategy that the Asset Management Framework of Council is defined and endorsed.

The Asset Management Framework has three primary components:

1. Asset Management (AM) Policy: defines Council's Asset Management objectives.
2. Asset Management Strategy (AMS): also known as a Strategic Asset Management Plan (SAMP), shows how Council will achieve the objectives of the AM Policy. It is a road map for the delivery of these asset management objectives in accordance with the principles set in the AM Policy. It is to be continually monitored and regularly reviewed, in alignment with the formulation of the Long-Term Financial Plan (LTFP) and the Delivery Program & Operational Plans adopted annually by Council.
3. Asset Management Plans (AMP): further explores the high-level summary contained in the AMS with a detailed analysis of inventory, risk, levels of service and sustainability undertaken. AMPs are developed for all major infrastructure asset classes, grouped by the type of function the assets serve – i.e., community assets or a specific business unit.
 - a. Community assets
 - i. Transport
 - ii. Stormwater
 - iii. Buildings & Aquatics
 - iv. Open Space & Recreation
 - v. Water
 - vi. Wastewater
 - b. Business units
 - i. Cemeteries
 - ii. Resource Recovery Centre
 - iii. Southern Regional Livestock Exchange

The AMPs are continually reviewed, to ensure long-term sustainability of the Council services they support. They are informed by community consultation and will be used as core inputs into the development of Council's Long Term Financial Plan.

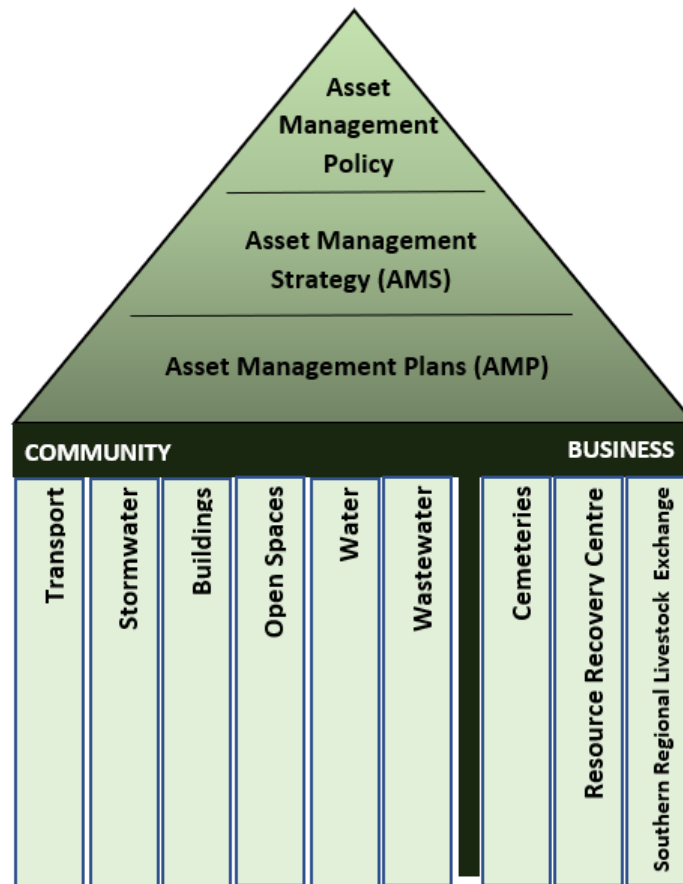


Figure 1: Asset management Planning Framework

2.2 Asset Planning Systems

Wingecarribee Shire Council utilises several databases and systems to deliver on asset planning requirements. These databases and systems are summarised in Table 1 below:

System / Database	Description / Purpose
Conquest	Asset register – inventory, condition & attributes
ArcGIS	Spatial data
Technology One – Finance	Budgeting, purchase orders, expenditure
Technology One – Enterprise Content Management (ECM)	Record keeping
Technology One – Customer Request Management (CRM)	Workflow management for customer requests
Pulse – Project Management	Scoping and project control for Capital Projects
Pavement Management System (PMS)	Road condition modelling software

Infoworks WS Pro & ICM	Water and wastewater modelling software
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Table 1 - Asset Planning Systems

It is however acknowledged that Council has embarked on a digital transformation journey, with Council executing a 10-year contract at the 19 October 2022 Council Meeting with Technology One. This contract will see all Technology One modules and additional options being made available to Council and them being progressively implemented across the organisation. A 10-year roadmap for the implementation of the Technology One suite is currently being developed.

This will generate asset planning outcomes through modernisation and integration of the works management asset register and strategic asset modules. This will enable Council to model asset conditions that will result from 10 year funding scenarios, which will in turn enable data driven decision-making to achieve financial sustainability.

2.3 Organisational Structure

Council has adopted a centralised approach to Asset Planning with all asset management and network planning functions being consolidated within the Assets Team. Management of operations and maintenance, as well as capital project delivery, are primarily distributed across the teams of Shire Presentation, Water Services and Project Delivery.

The below figures detail the structure of these teams within the Service & Project Delivery Directorate, the Assets Team, as well as that of the Water and Wastewater Team.

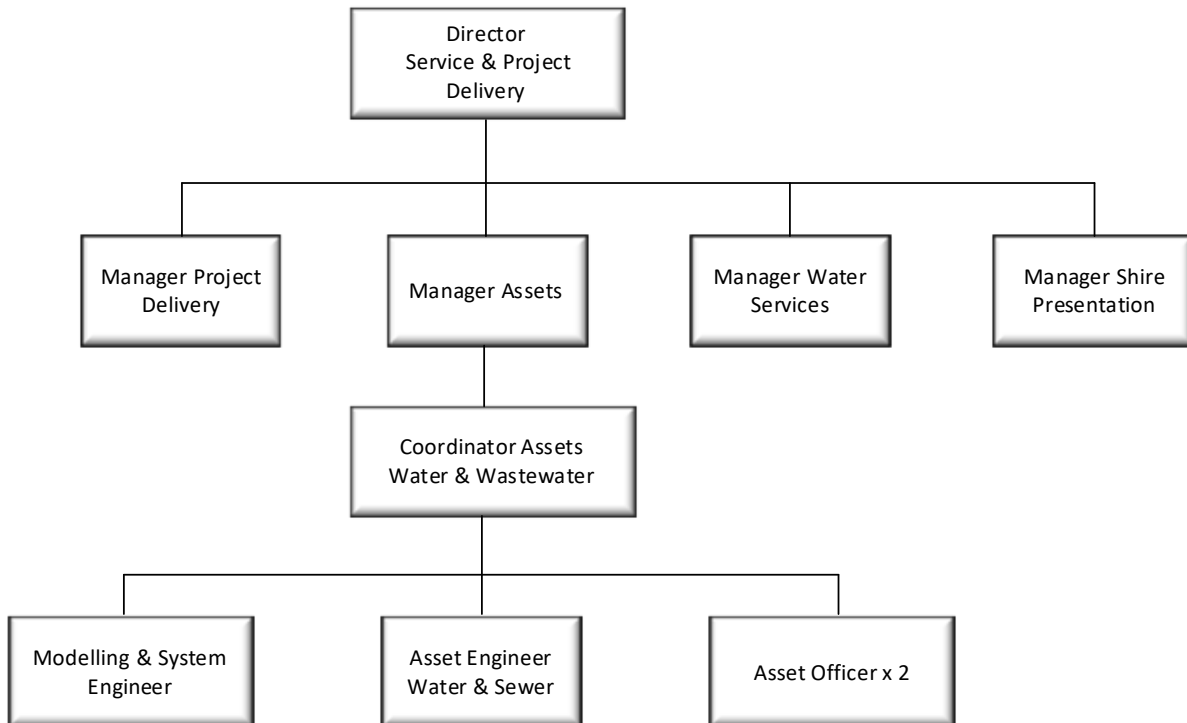


Figure 2: Service & Project Delivery Directorate



Asset Management Plan - Wastewater

3 Our Assets

3.1 Overall Inventory

The sewer infrastructure assets included in this plan have a total replacement value of \$855,220,666 and include the following major asset category:

Asset Category	Quantity/Length (Km)	Replacement Value (\$)
Sewer Pump Stations	77	\$40,711,489
Sewer Gravity Mains	551	\$542,246,768
Sewer Rising Mains	98	\$36,333,239
Sewer Vents	192	\$1,907,627
Sewer Valves	492	\$1,300,223
Sewer Access Chambers	11053	\$50,402,364
Sewer Service Lines	19285	\$86,267,157
Sewer Treatment works	6	\$95,900,281
Sewer Telemetry Systems	10	\$151,517
Total Replacement Cost		\$855,220,666

Table 2 - Asset Category Inventory

An asset hierarchy provides a framework for structuring data in an information system to assist in collection of data, reporting information and making decisions. The hierarchy includes the asset class and component used for asset planning and financial reporting and service level hierarchy used for service planning and delivery.

Service Hierarchy	Service Level Objective
Pump Stations	Temporary storage and bulk transfers
Gravity Mains	Conveyance of wastewater
Rising Mains	Pressurised conveyance of wastewater
Valves	Operational control of the network
Vents	Removal of harmful gas build up from the network
Access Chambers	Point of entry for technical staff to carry out inspections and maintenance
Services Lines	Connecting sewer mains to individual properties
Treatment Works	Treatment of wastewater to protect the environment

Table 3 - Asset Category Description

Asset inventory is maintained and updated through three primary means:

- Recognition of constructed assets – both through Council delivered capital projects,

but also assets dedicated to Council through subdivision development.

- Ad-hoc Asset Inspections – inspections are regularly conducted in response to customer or internal requests, as well as part of project scoping phases.
- Scheduled Asset Inspections – all assets are to feature within a schedule of asset inspections. The frequency of inspection would be commensurate to the rate of degradation of the asset, as well as consequence of failure and cost of inspection.

The split of asset amounts across these asset categories is provided in Figure 5 below.

Assets are valued in accordance with the Detailed revaluations of asset classes are undertaken in accordance with Australian Accounting Standards and so a comprehensive revaluation of each asset class is undertaken at a minimum every five years. Outside of the comprehensive revaluation years, fair value assessments are to be undertaken on an annual basis for all asset classes. If the assessment identifies that a material change has occurred, the corresponding asset classes will be indexed with an industry accepted index.

A comprehensive valuation for wastewater was performed in the financial year 2021/22. Next comprehensive valuation was scheduled for 2026/27.

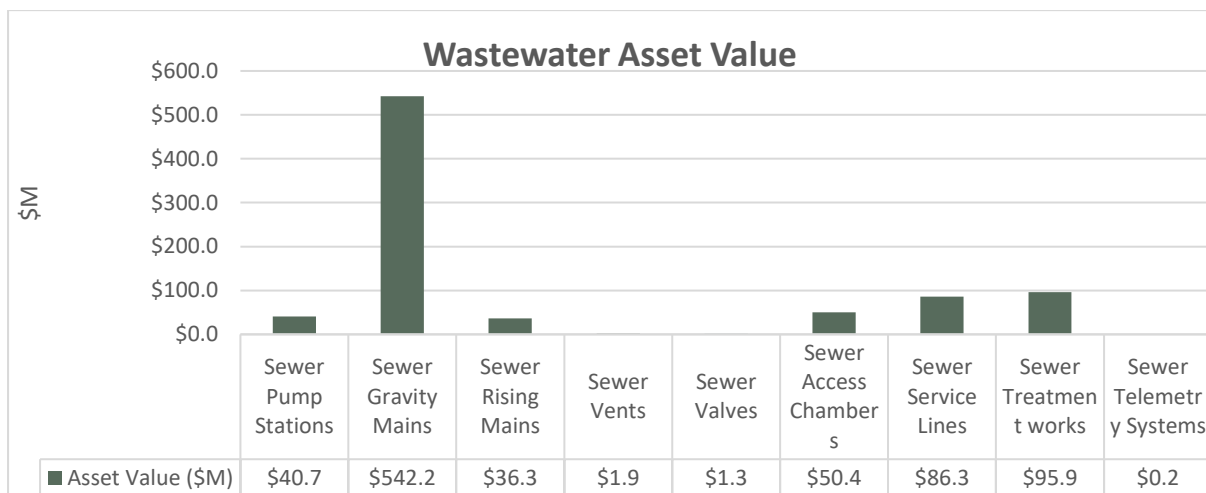


Figure 3 - Asset Category Value

3.2 Overall Condition

Asset conditions are assessed as part of comprehensive network inspections, conducted on a rolling program. These assessments are undertaken in accordance with the relevant Practice Notes issued by the Institute of Public Works Engineering Australasia. The condition rating scale is 1-5:

1. As new / excellent
2. Good / satisfactory
3. Fair / tolerable
4. Poor / intolerable
5. Very poor / reconstruction required.

With a vast network of underground wastewater assets, obtaining good condition data is often difficult and expensive. The Council makes use of ad-hoc condition assessments of its underground assets during works that expose those assets. For example, during routine maintenance, excavating for new service connections or during emergency

repairs, information such as pipe diameter, condition, wall thickness, consequence of failure and location should be recorded and entered the asset register for future reference.

Desktop method of condition assessments is carried out by analysing the asset inventory data such as age, material, useful life, failures, risk and criticality.

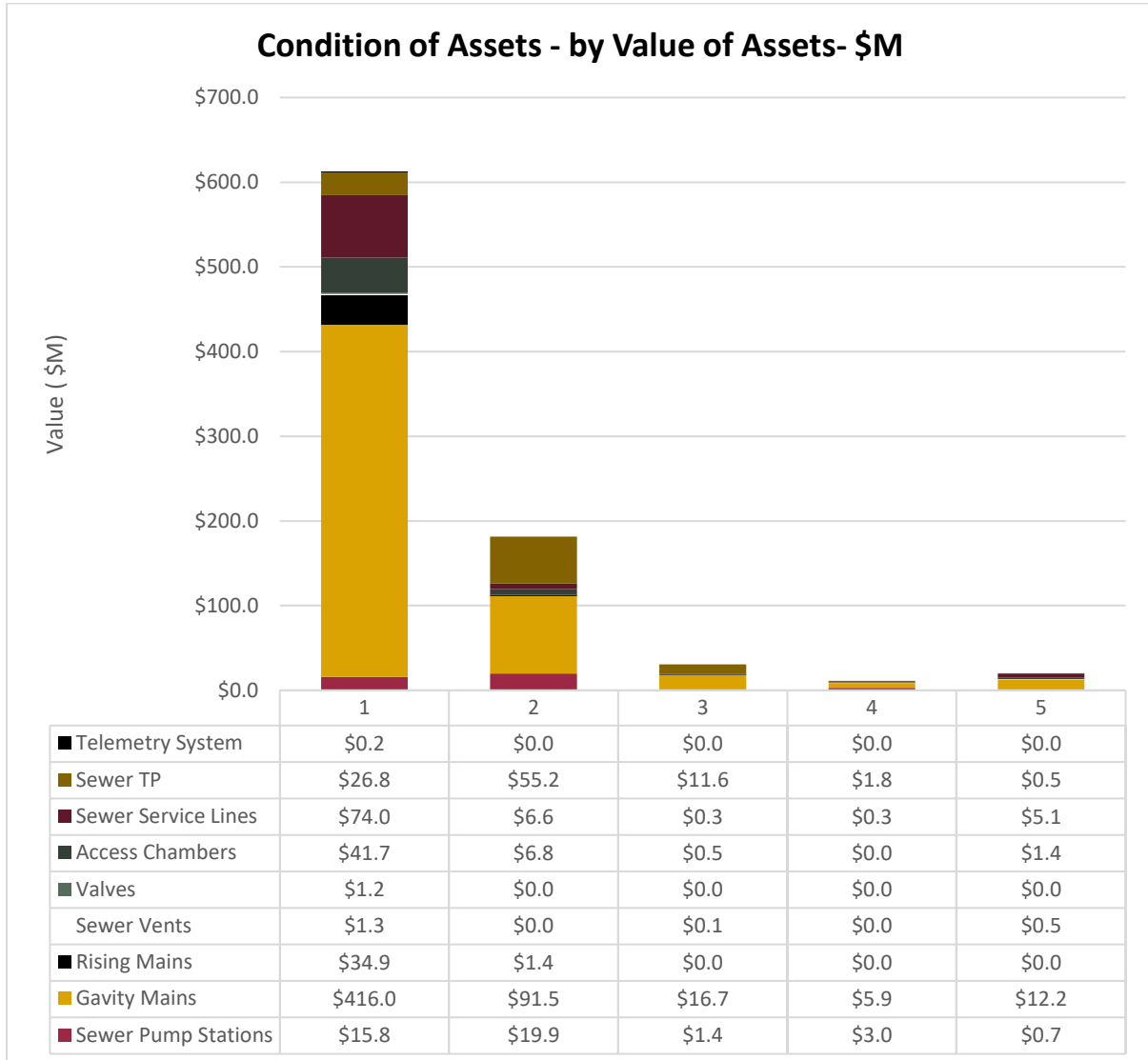


Figure 4: Condition by Value of Wastewater Assets

The overall average condition of Council's wastewater assets is good / satisfactory.

Average condition rating for wastewater assets is 1.43.

However it is acknowledged that this condition rating may be overly optimistic and is further explored in Section 3.3.1.

3.3 Asset Category Inventory

3.3.1 Wastewater mains

Council manages a wastewater pipe network of 649 kilometres – of which 551 kilometres are gravity mains and 98 kilometres are rising mains (aka pressure mains). This network of water pipes is comprised of many different material types with UPVC accounting for 54% of the network.

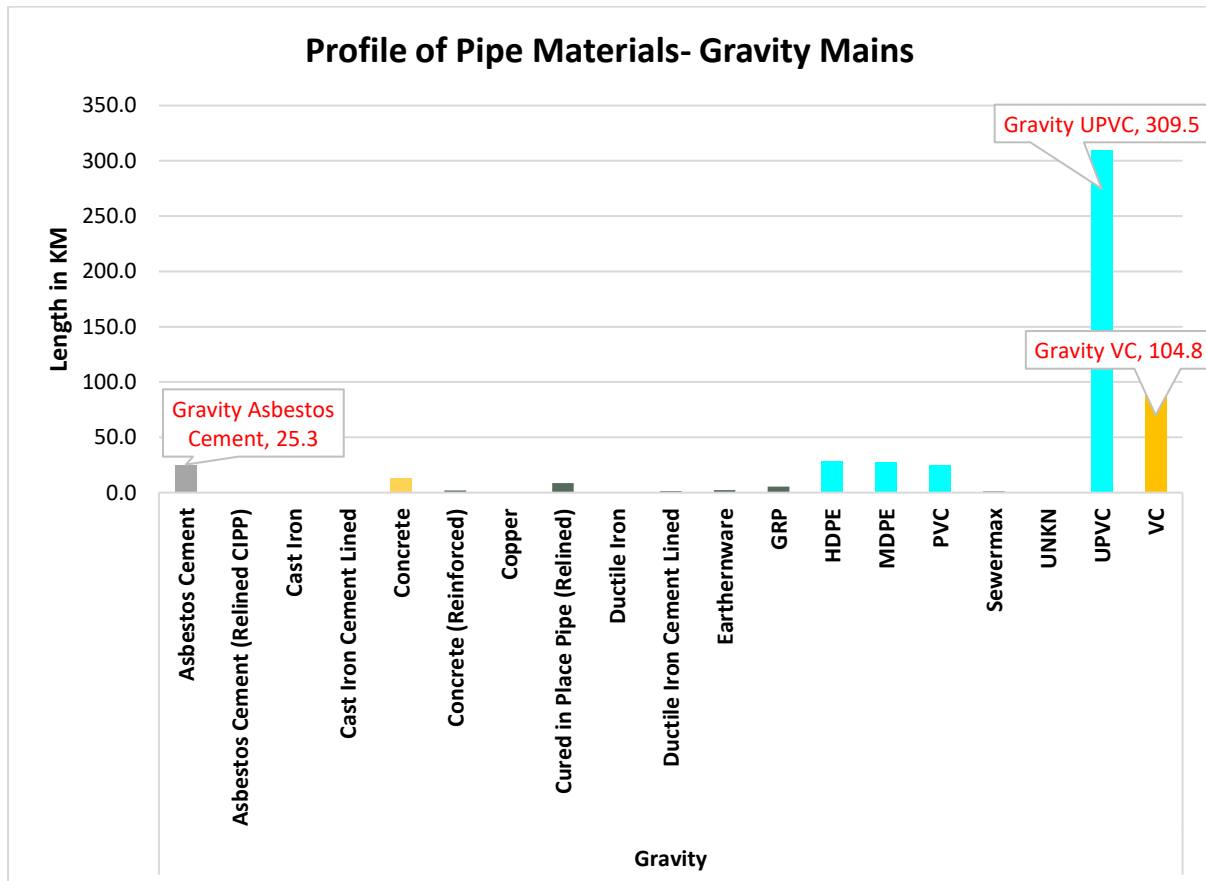


Figure 5 - Gravity Mains material

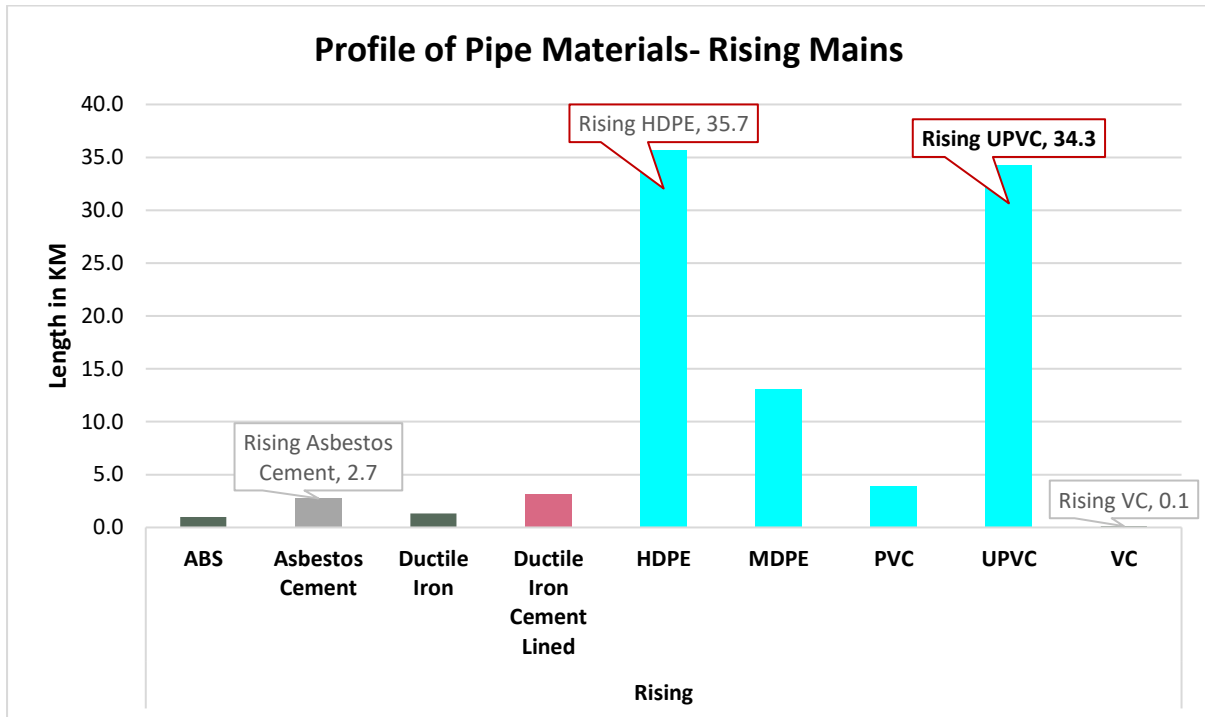


Figure 6 - Rising Mains Material

At network level, condition ratings are therefore estimated based upon construction age, useful life and an accepted deterioration curve. It is however acknowledged that Council has limited detailed condition CCTV data on these underground pipes, but this will change in the coming years with a CCTV inspection target of 5% of the network per year.

The figure below displays the current spread of condition values across the wastewater main network, with 93% of the network currently recorded as being of Condition 1, ie As New / Excellent condition.

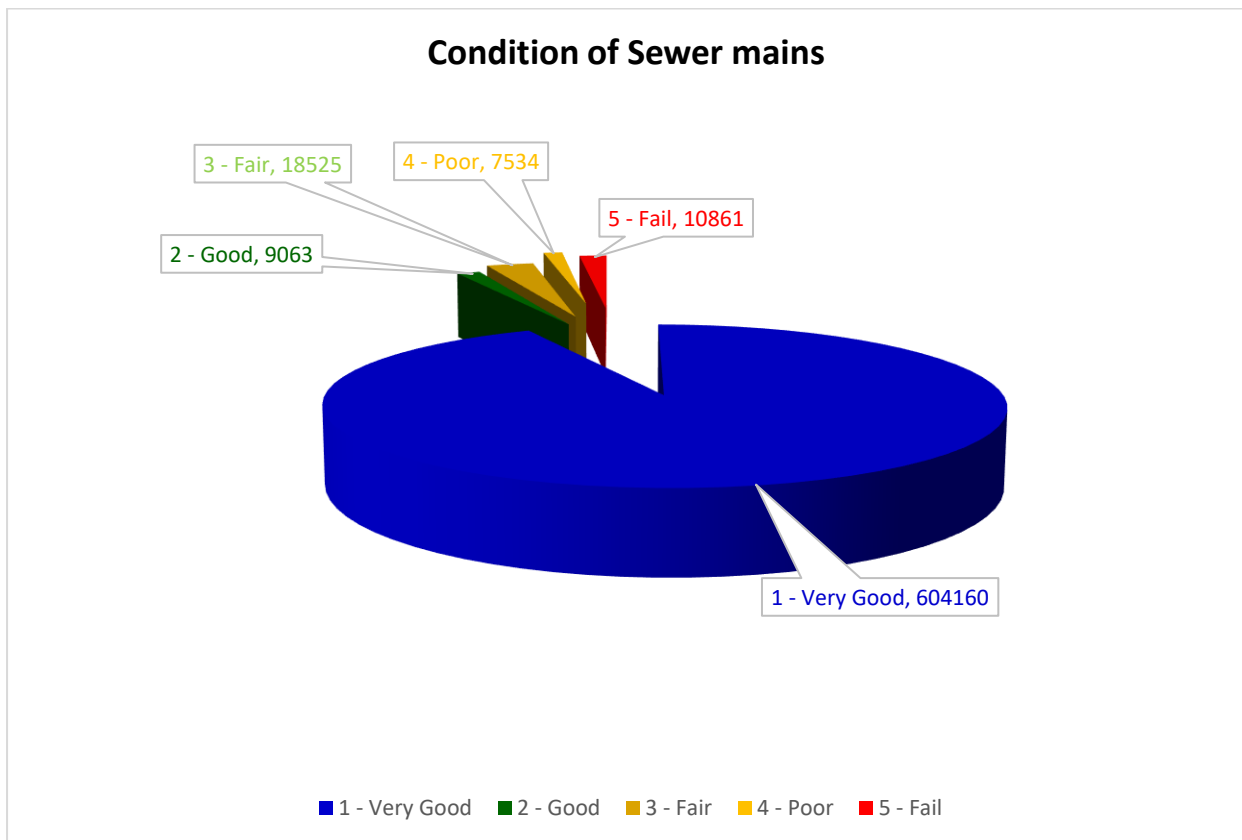


Figure 7 - Wastewater Main Condition

This unfortunately does not appear to align with the wastewater main age data, from which it would be expected that a more even distribution of asset condition ratings would be applied. A reapplication of age based condition rating for the wastewater main network is therefore identified as a future improvement within the Improvement Plan of Section 8.

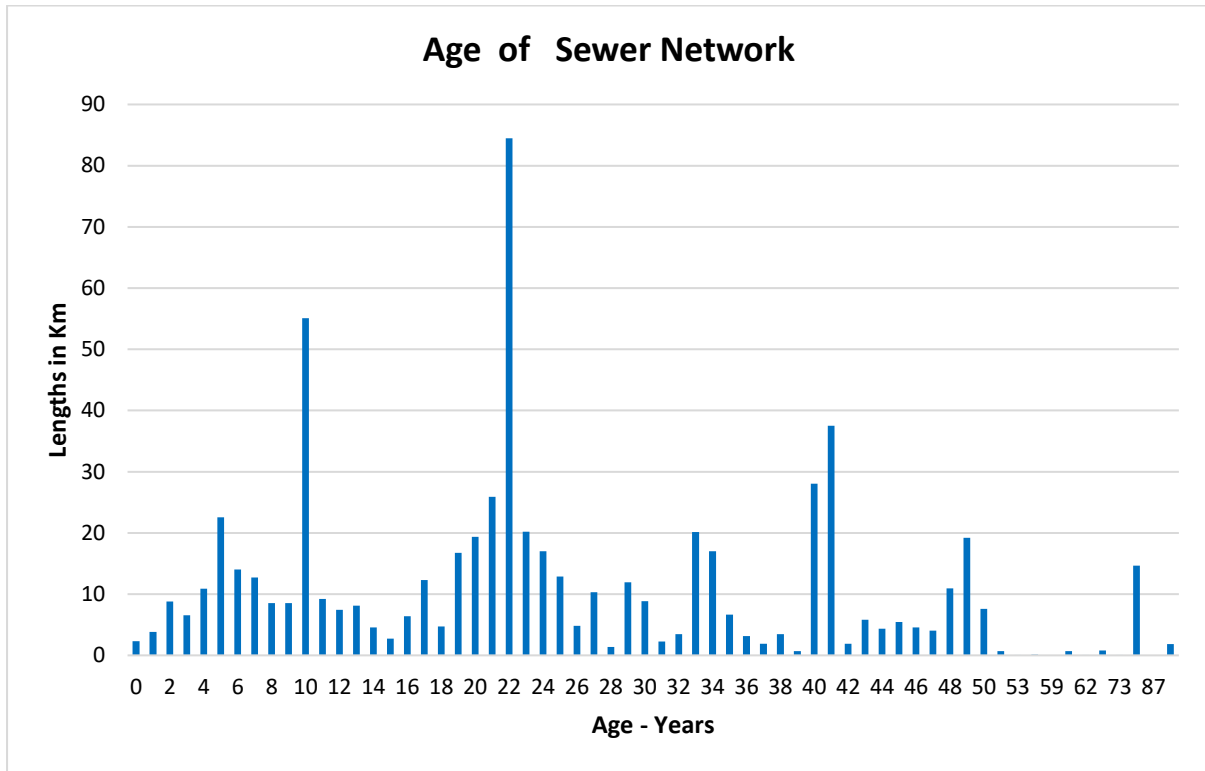


Figure 8 - Wastewater mains age

3.3.2 Access Chambers

The wastewater network of the Wingecarribee Shire has over 11,000 access chambers – which can be broadly grouped into three types: lamphole, maintenance shaft and manhole.

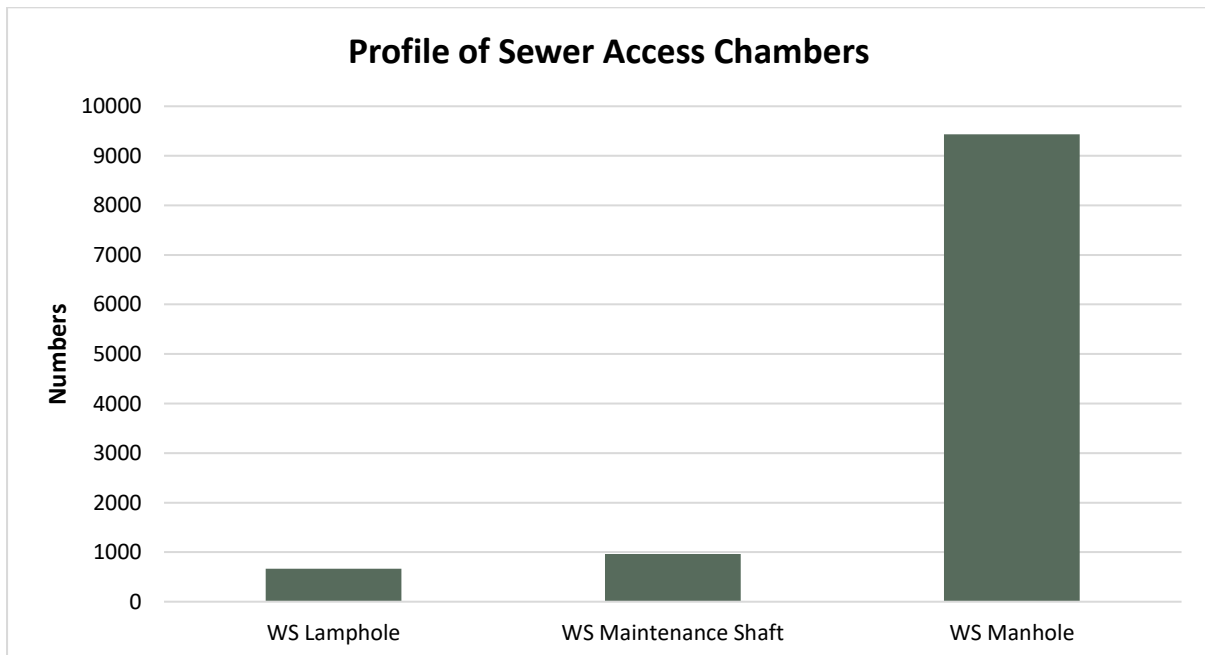


Figure 9 - Access Chamber Types

3.3.3 Wastewater Valves

The wastewater network of the Wingecarribee Shire has just under 500 valves – which can be broadly grouped into four types: air valve, non-return valve, scour valve and stop valve.

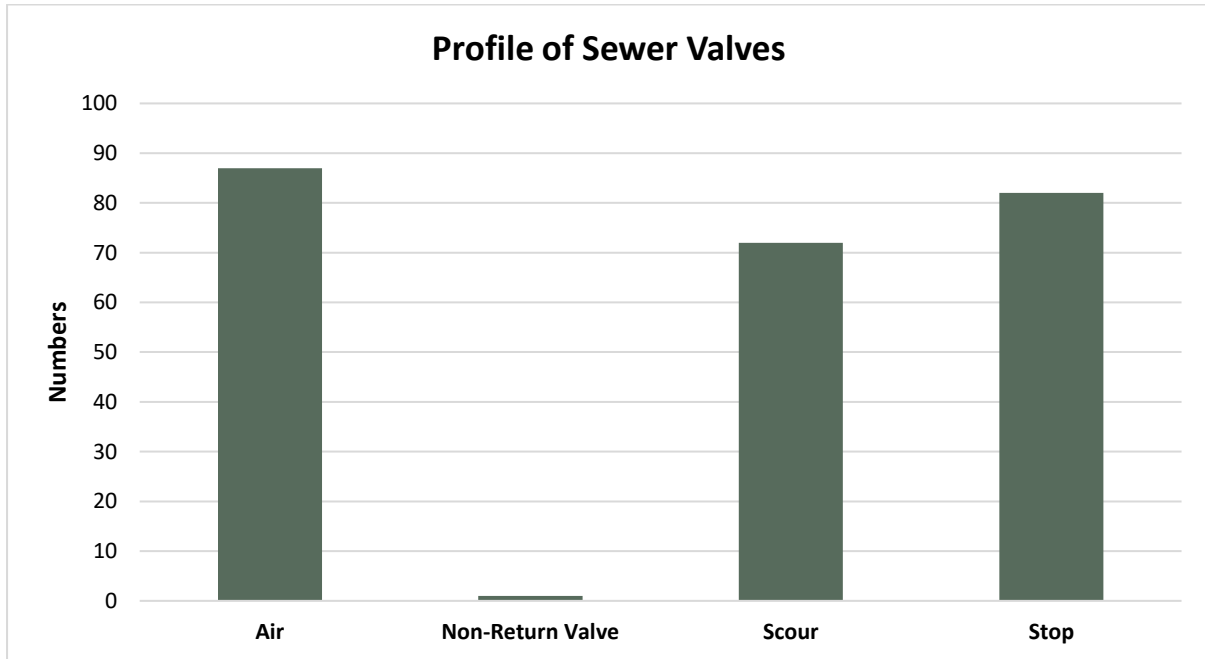


Figure 10 - Wastewater Valves Types

4 Drivers of Level of Service

Levels of Service (LoS) are comprised of four components: provision, renewal, maintenance, and operations. Each LoS is constrained by funding & resource availability, however the fundamental drivers of LoS can be identified in three categories:

- Risk Management
- Community Satisfaction
- Strategies & Masterplans

4.1 Risk Management

Risk is the effect of uncertainty on Council's ability to achieve its objectives. Risk Management is the process of systematically identifying, monitoring, treating, and reporting these risks.

A Risk Assessments has been completed for the asset class, covering generic hazards that are typical across the entire asset network and consideration of Critical Assets.

4.1.1 Critical Assets

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

Table 6.1 Critical Assets

Critical Asset(s)	Failure Mode	Impact
Pump Stations	Electrical fault, blockages, insufficient capacity	Inspection program, emergency generator points, and pump out points
Gravity Mains	Pipe failure, blockage	CCTV inspection and cleaning program
Rising Mains	Pipe failure	Inspection program
Valves	Seal failure	Inspection program
Vents	Cracking	Inspection program
Access Chambers	Blockage, cracking	Inspection program, cleaning
Services Lines	Pipe failure, blockage	Inspection program, root cutting
Treatment Works	Mechanical/electrical fault, biological failure	Inspection and preventative maintenance program

Table 4: Critical Assets

4.1.2 Risk Assessment Framework

The below risk matrix categories the risk that Council is exposed to, depending on the consequence, and the likelihood the risk.

Risk (R) Matrix	Consequence (C)
------------------------	------------------------

		Severe	Major	Moderate	Minor	Insignificant
Likelihood (L)	Almost Certain	Extreme	Extreme	High	High	Moderate
	Likely	Extreme	Extreme	High	Moderate	Moderate
	Possible	Extreme	High	Moderate	Moderate	Low
	Unlikely	High	High	Moderate	Low	Insignificant
	Rare	High	Moderate	Low	Insignificant	Insignificant

Table 5 - Risk Assessment Framework

4.1.3 Risk Assessment

Hazard	Risk	Inherent Risk	Treatment			Residual Risk			Implementation Status	Responsibility	Level of Service
		C	L	R	C	L	R				
Operation of Sewer Treatment Plants fail to meet licence conditions	Environmental impact and EPA fines	MAJ	POS	H	Ensure sewage treatment plants are either of sufficient treatment capacity or upgrade works are programmed to ensure that they will be	MIN	POS	M	Current	Assets	Provision
Loss of Electricity Power Supply	Sewer Treatment Plants stop operating	MOD	POS	M	Liaise with Integral Energy on notification requirements, Investigate the provisions for standby generators and or dual feeds. Auto mode operations are available for diversion to storm ponds.	INS	POS	L	Current	Assets	Operations
Mechanical failure of sewer pump stations	Sewer pump stations stop operating	MOD	LIK	H	Implement preventative maintenance program	MOD	POS	M	Current	Water Services	Operations
					Ensure adequate spare parts are stored at Depot				Current	Water Services	Operations
					Upgrade SCADA system to improve control.				Future	Water Services	Operations
High levels of inflow and infiltration into sewer reticulation network	Capacity of reticulation network prematurely exceeded	MOD	POS	M	Complete flow gauging and calibration of reticulation models	INS	POS	L	Current	Assets	Operations
					Implement smoke testing and house to house inspections within the reticulation on a rolling program.				Future	Water Services	Operations
					Ensure upgrade works identified in containment modelling are included in capital works program and delivered.				Current	Assets	Operations

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Hazard	Risk	Inherent Risk	Treatment			Residual Risk			Implementation Status	Responsibility	Level of Service
		C	L	R	C	L	R				
Poor quality assets dedicated through subdivision	Levels of service not meet and increased financial burden	MOD	POS	M	Review council's design and construction standards for Wastewater services.	MOD	POS	M	Current	Assets	Provision
					Ensure adequate hold points exist for quality inspections and testing (and are applied both internally and externally).						

Table 6: Risk assessment

4.2 Community Satisfaction

Council’s community satisfaction survey is undertaken biennially and tracks Council’s performance in service delivery, identifies priority areas and evaluates community attitudes towards customer services, communication and Council as an organisation.

The objectives of the community satisfaction survey process are to:

- Measure the importance of, and satisfaction with, services and facilities provided by Council
- Compare levels of satisfaction for Council’s services and facilities with similar councils
- Assist Council in identifying service priorities for the community
- Evaluate Council’s customer services and communication

The survey covers facilities and services provided by Council identifying both importance and satisfaction on a 5-point scale, with 1 = low and 5 = high.

The most recent community survey was conducted in 2022, with the results of the prior years also provided for comparison. The following table contains the items relevant to this asset management plan.

	Importance			Satisfaction			2022 Performance gap
	2019	2021	2022	2019	2021	2022	
Overall sewerage system performance (chokes, overflows, odour)	4.54	4.61	4.47	4.13	4.14	3.96	10%

Table 7: Comparison of Importance and Satisfaction over 2019, 2021 and 2022.

In the table above, the 2022 Performance Gap is the difference between community importance and community satisfaction.

Overall performance of the wastewater management network has consistently been valued of high importance by the community. And the results also show that community satisfaction with this matter is consistently high. Although result from the 2022 survey do show a decline in satisfaction, it is still a high satisfaction rating and so the focus is therefore primarily on maintaining existing service provision.

4.3 Strategies & Masterplans

The third driver of Levels of Service can be broadly grouped as Strategies and Masterplans. Council prepares strategies and masterplans across all asset classes to ensure that network planning, implementation and maintenance is being conducted in a wholistic, considered and effective manner.

A non-exhaustive list of strategies and masterplans that impact the levels of service for the asset base of the Shire is provided in Table 8.

Strategies /Masterplans	Asset Category	Level of Service Influenced	
Integrated Water Cycle Management (IWCM) Strategy	Pump Stations Gravity Mains	Provisional	Planning for Sewer Treatment and network

	<p>Rising Mains Valves Vents Access Chambers Services Lines Treatment Works</p>		<p>capacity improvements to meet future demands. Planning for the extension of sewer services for new developments and subdivisions</p>
<p>Bowral/Mittagong/Moss Vale Wastewater Masterplans</p>	<p>Pump Stations Gravity Mains Rising Mains Valves Vents Access Chambers Services Lines Treatment Works Valves & Hydrants</p>	<p>Provisional</p>	<p>Planning for Sewer Treatment and network capacity improvements to meet future demands in 2051. Planning for the extension of sewer services for new developments and subdivisions Mitigating the sewer overflow risks in existing network</p>
<p>Asbestos Management Strategy</p>	<p>Gravity Mains Rising Mains</p>	<p>Maintenance & Operations</p>	<p>Ensuring a healthy and safe environment for the community in handling asbestos in sewer assets.</p>

Table 8: Strategic plans and Masterplans driving the Level of Service.

5 Levels of Service

Levels of Service (LoS) are comprised of three components: provision, renewal, and maintenance & operations. These three components are best understood in isolation, but an adjustment to one level of service results in changes to others, so they must be considered together.

5.1 Provision Level of Service

The Provision LoS concerning to what standard or ideal Council will endeavour to provide the assets and its function to the community. This LoS will primarily influence decisions around Council's provision to new infrastructure, or in the upgrade of existing infrastructure which fails to meet the provision benchmarks set.

Council's current provision of wastewater assets is worth a combined \$855.2M and provides services for 20,151 dwellings.

Extent of Wastewater Management Schemes

Council will not pursue any extension of the wastewater management schemes to areas currently not serviced.

The focus is on ensuring the resilience, performance and sustainability of the existing wastewater management networks.

Wastewater Management Schemes and New Developments

The Provision LoS for new subdivisions & development is that which is stipulated in the documents which govern it, namely Council's:

- Local Environmental Plan
- Local Housing Strategy
- Local Strategic Planning Statement
- Development Control Plans
- Engineering Design and Construction Specifications
- Developer Contribution & Servicing Plans
- Water and Wastewater Modelling Design Standards

Performance of Wastewater Management Schemes

Council has adopted the performance standards for the Wastewater Management network as detailed within the Modelling Design Standards – which are available on the Council website.

These standards provide a design criteria for:

- Loading rates
- Minimum Pipe Diameters
- Wet weather containment
- Pumping station specifications

A suite of wastewater reticulation masterplans is currently in delivery to outline the program of works required across the existing wastewater schemes to ensure these performance standards can be met.

Performance of Wastewater Treatment Plants

Council maintains a portfolio of six wastewater treatment plants across the Shire. The provision level of service for these facilities is such that each site can operate within licensing conditions and that they are of adequate capacity to accommodate project demand of 2051.

The following table provides a basic capacity analysis of the wastewater treatment plants:

Wastewater Treatment Plant	Current Design Capacity (EP)	Sufficient Capacity to 2051	Planned Upgrade
Berrima	2,000	Yes	
Robertson	2,000	Yes	
Bundanoon	5,400	Yes	
Moss Vale	9,000	No	20,000 – Forecast completion June 2026
Mittagong	14,000	No	20,000 – Forecast completion June 2028*
Bowral	14,600	No	21,000 – Forecast completion December 2025

Table 9 - Summary of Wastewater Treatment Plants

*Note: Delivery of Mittagong Wastewater Treatment Plant Upgrade is contingent upon receipt of grant funding support.

5.2 Renewal Level of Service

The Renewal LoS defines how often Council intends to replace existing assets with a Modern Engineering Equivalent Replacement Asset (MEERA), including disposal of the existing asset.

This renewal frequency is termed 'useful life' and adjusting this value has significant implications for annual depreciation, with asset useful being a direct factor in its calculation. Annual investment in the capital renewal of assets should ideally equate to the value of annual depreciation. Although asset degradation and failure will not follow a straight line across financial years, failure to maintain asset renewal at the rate of annual depreciation will result in an overwhelming volume of renewal works in later years.

Adjustments to asset useful like also has impacts on required maintenance and operations expenditures. Shorter useful lives generally result in less required maintenance, all other factors being equal and vice versa.

The below table includes the asset renewal lives for assets in the Wastewater Asset Class. These useful lives are currently stored in the Conquest Asset Management System

Asset Category	Useful life (Years)
Pump Stations	3 - 80
Manholes / Maintenance Shafts	70
Residential Pump Stations	10 - 60
Treatment Plants	3 - 80
Service Lines	30 - 60

Vents	70
Valves	40
Rising Mains	50 - 100
Gravity Main	30 - 100

Table 10: Wastewater Asset Useful Lives.

The intent is therefore that assets will be renewed prior to exceeding their designated useful life. However, renewal works will also be based on asset condition. When an asset is found to be of Condition 4 or 5 it will then be programmed for renewal within the Capital Works program.

The following charts provide a comparison of asset category and their respective useful life.

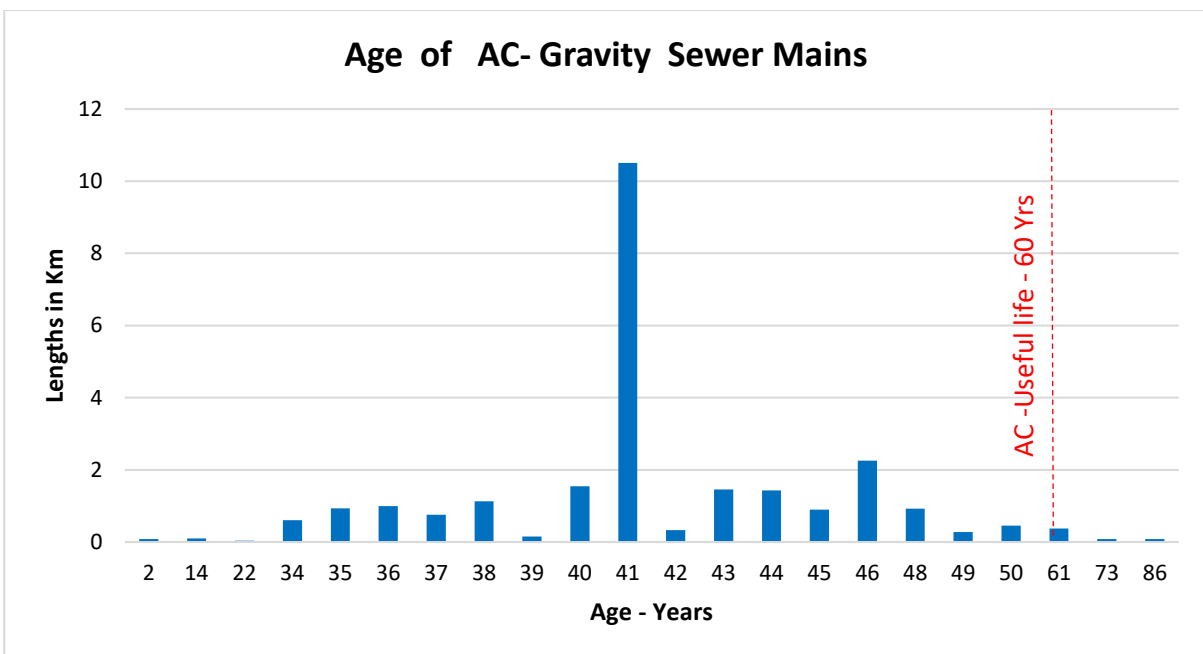


Figure 11 - Analysis of Useful Life for AC Gravity Mains

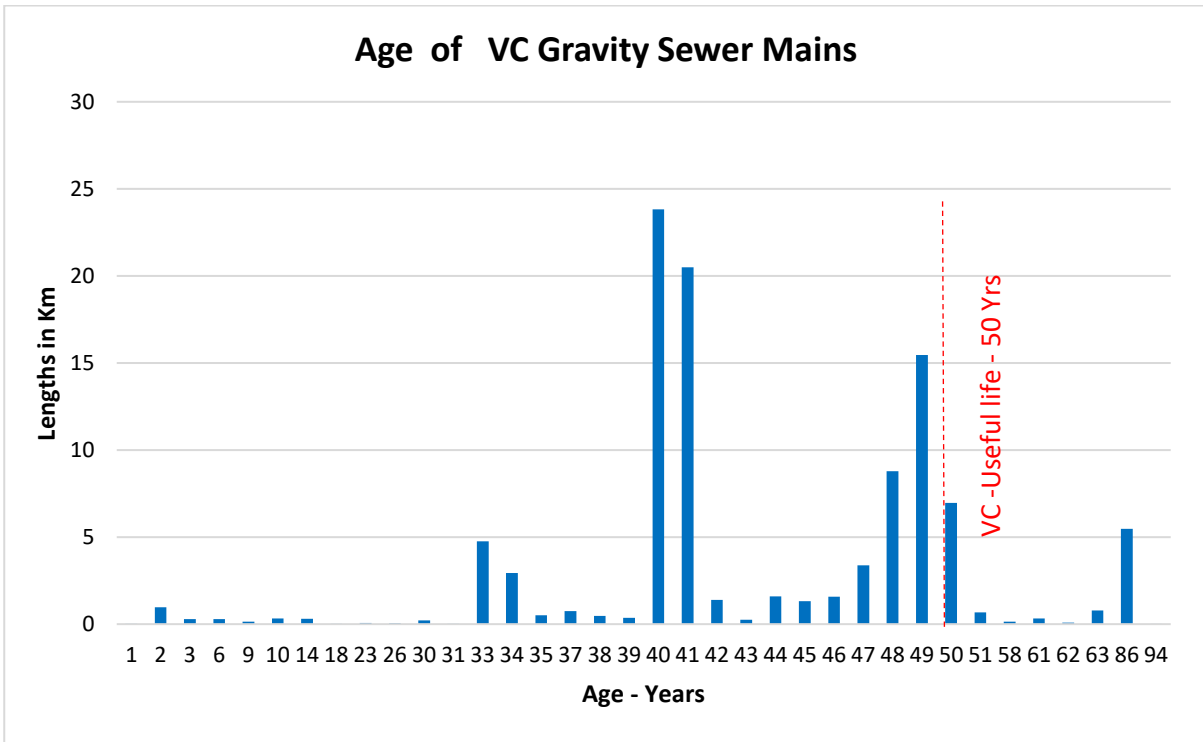


Figure 12 - Analysis of Useful Life for VC gravity mains

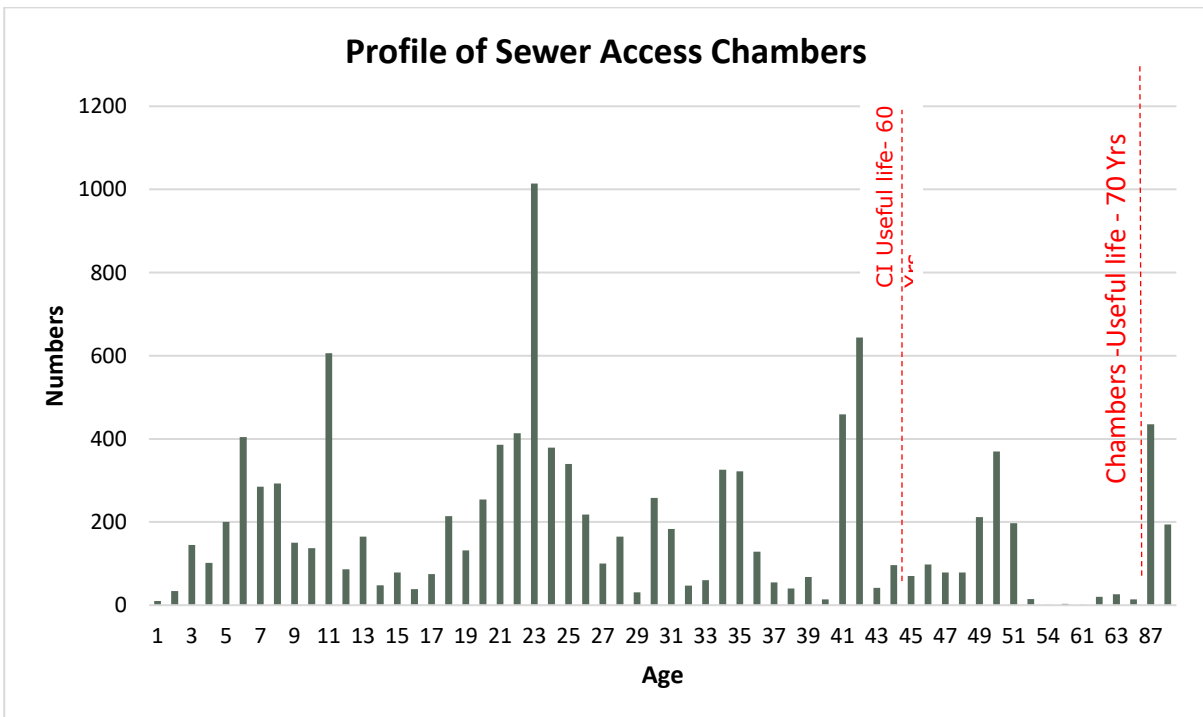


Figure 13 - Analysis of Useful Life for Access Chambers

5.3 Maintenance & Operations Level of Service

Maintenance and operation activities are completed in both a proactive and reactive fashion across the asset network. Many operational activities by their nature are more readily able to be scheduled and completed in a timely & controlled way. Maintenance activities are more difficult to deliver in scheduled fashion, with mature systems and full resourcing required to do so.

Maintenance and operations level of service will be provided under two categories: inspections and maintenance.

5.3.1 Inspections

Asset condition assessments involve periodically monitoring assets and utilizing the collected inspection data to determine their condition. Analysis of this data may reveal the need for preventative maintenance to ensure that assets meet their expected useful life or require replacement if they have reached the end of their lifespan.

- **Sewer Treatment Plants and Sewer Pumpstations**
Visual and ad hoc specialised inspection of all assets, components and sub-components undertaken by suitable qualified consultants/contractors in conjunction with operations staff. These inspections are performed in every two years.
- **Sewer Mains**
Desktop method is performed to analyse the inventory data of underground assets. This analysis is conducted annually and based on asset Age, material type, burst history, risk and criticality.
Additionally, CCTV inspections and smoke testing are undertaken by contractors and operations staff annually based on the risk and criticality. Follows the WSAA Conduit Inspection Reporting Code and uses Wincan VX software.
- **Access Chambers**
Desktop method data analysis of asset inventory. Age and material type analysis, burst history, risk and criticality analysis- Annually.
Desk top method, visual and CCTV inspections are undertaken annually, by contractors and operations staff. Follows the WSAA Conduit Inspection Reporting Code and uses Wincan VX software annually based on their criticality.
- **Vents**
Desktop method, visual inspection, and testing of reticulation assets by way of opportunistic methods are performed annually.

The condition assessment of aboveground treatment plant and pump station assets is carried out every 5 years during the asset revaluation process.

5.3.2 Maintenance

Maintenance concerning the essential activities required to keep existing assets functioning to their design capacity and performance. This LoS will combine activities which are either proactive (i.e. scheduled, cyclical activities) that are carried out before service delivery is compromised, or reactive which are carried out after service delivery is compromised due to wear, malfunction or breakage.

The operation concern to the day-to-day activities that are required to ensure the asset is kept in a functional state so that it can provide its service delivery to community. Operational

activities are often active processes of utilising an asset which will consume resources such as manpower, energy, chemicals and materials.

Activities are completed in both a proactive and reactive fashion across the asset network. Many operational activities by their nature are more readily able to be scheduled and completed in a timely & controlled way. Maintenance activities are more difficult to deliver in scheduled fashion, with mature systems and full resourcing required to do so.

Asset Class	Annual Maintenance & Operations Budget
Reticulation Network	\$2,305,720
Treatment - Berrima	\$379,419
Treatment - Bowral	\$1,181,845
Treatment - Bundanoon	\$597,359
Treatment - General	\$879,803
Treatment - Mittagong	\$1,444,781
Treatment - Moss Vale	\$1,255,945
Treatment - Robertson	\$658,318
Total	\$8,044,871
<i>Annual Maintenance as % of Asset Value</i>	<i>1.02%</i>

Figure 14 - Asset Class Maintenance Budget

6 Asset Base Growth

Council's asset base will expand over the next 10 years through committed and expected new & upgrade expenditure, assets contributed by development through conditions of consent, and the Developer Contributions & Servicing Plans. This growth can be decreased through asset disposals; however, no significant disposals are currently committed.

In this analysis, all future asset values, as well as planned and recommended expenditures, assume indexation rate of 3.0% per annum.

6.1 New & Upgraded Assets and Developer Contribution

The new and upgrade asset projects category covers those projects resourced by Council or grant funding that involve existing assets being enhanced or new assets being constructed.

An important funding source for new infrastructure are Development Contributions collected under Section 64. These contributions fund a significant proportion, though not all, of the infrastructure required by new development.

Council currently primarily levies contributions through the following Plans:

- Southern Highlands Innovation Park (SHIP) Plan
- Water & Sewer Development Servicing Plan

The Integrated Water Cycle Management Plan (IWCM) provides guidance as to the expenditure of the overall Sewer Fund and Section 64 contributions and forms the starting point for the 2024/25 to 2027/28 Capital Works Program.

The following table provides a summary of the new/upgrade components of projects within the 2024/25 to 2027/28 Capital Works Program and the works program within the IWCM has been used for the remaining years of the planning period.

Financial Year	Project Name	New/ Upgrade Component
2024/25	STP asset renewal or upgrades	\$200,000
2024/25	Sewer private works - extensions & connections	\$75,000
2024/25	Bowral STP Upgrade	\$10,576,665
2024/25	Moss Vale STP Upgrade	\$13,725,000
2024/25	Mittagong STP Upgrade	\$200,000
2024/25	SPS-AM3 Pikkat Drive Upgrade (construction)	\$400,000
2025/26	Bowral STP Upgrade	\$5,500,000
2025/26	Moss Vale STP Upgrade	\$13,725,000
2025/26	Mittagong STP Upgrade	\$10,000,000
2025/26	Master plan project 1	\$1,500,000
2025/26	Master plan project 2	\$175,000
2025/26	Sewer private works - extensions & connections	\$75,000
2025/26	SPS-AM3 pump station upgrade (Pikkat Drive)	\$3,045,546
2025/26	STP solar installation	\$150,000

2026/27	Moss Vale STP Upgrade	\$5,500,000
2026/27	Mittagong STP Upgrade	\$9,775,000
2026/27	Master plan project 2	\$1,500,000
2026/27	Master plan project 3	\$175,000
2026/27	Sewer private works - extensions & connections	\$75,000
2026/27	STP solar installation	\$350,000
2027/28	Mittagong STP Upgrade	\$5,000,000
2027/28	Master plan project 3	\$1,500,000
2027/28	Master plan project 4	\$175,000
2027/28	Sewer private works - extensions & connections	\$75,000
2027/28	STP solar installation	\$250,000
2028/29	Integrated Water Cycle Management Plan	\$2,185,000
2029/30	Integrated Water Cycle Management Plan	\$1,335,000
2030/31	Integrated Water Cycle Management Plan	\$1,365,000
2031/32	Integrated Water Cycle Management Plan	\$2,335,000
2032/33	Integrated Water Cycle Management Plan	\$12,935,000
2033/34	Integrated Water Cycle Management Plan	\$12,935,000

Table 11: New and Upgraded Assets

6.2 Assets Contributed by Development through Conditions of Consent

As development occurs, particularly within the new living areas identified within the Wingecarribee Local Housing Strategy, it is intended that infrastructure be provided at a rate consistent with the Provision LoS in existing parts of the Wingecarribee Local Government Area.

With the Wingecarribee Local Housing Strategy setting an objective of a 50:50 split of infill and greenfield development, it is therefore forecast that annual asset base growth from greenfield development will be 50% of the annual population growth.

Reviewing the rate of contributed assets across 2021/22 and 2022/23, it is observed that the value of contributed assets is equivalent to 30% of this forecast population growth from greenfield development. Which is understood to be the result of assets contributed through this method generally being of a non-major nature. (eg sewer pipelines will be contributed through a development, but not another sewage treatment plant).

Financial Year	Population	Population Growth (from previous year)	Forecast Asset Base Growth
2023/24	53,700	0.9%	0.16%
2024/25	54,270	1.1%	0.16%
2025/26	54,913	1.2%	0.16%
2026/27	55,521	1.1%	0.16%

2027/28	56,145	1.1%	0.17%
2028/29	56,789	1.1%	0.17%
2029/30	57,439	1.1%	0.16%
2030/31	58,101	1.2%	0.16%
2031/32	58,762	1.1%	0.16%
2032/33	59,425	1.1%	0.18%

Table 12 - Forecast.ID Population Growth

6.3 Asset Disposals

Asset disposals entail the removal of an existing asset without replacing it with a similar asset. No such disposals are identified within the planning period.

6.4 Asset Indexation

Indexation rate of 3.0% p.a has been applied across the 10-year forecast period. This aligns with the indexation rate adoption in the LTFP. The same rate has been adopted in this AMP to ensure that lifecycle costs and associated budgets are comparable in future financial years.

6.5 Asset Base Growth

Total asset base growth is comprised these components:

- Asset upgrades
- Assets contributed by development through conditions of consent.
- Development Contributions
- Subtracting asset disposals
- Indexation

Figures 11 and 12 shows this forecast asset base growth of \$485M over 10 years, with the majority of the growth attributed to indexation.

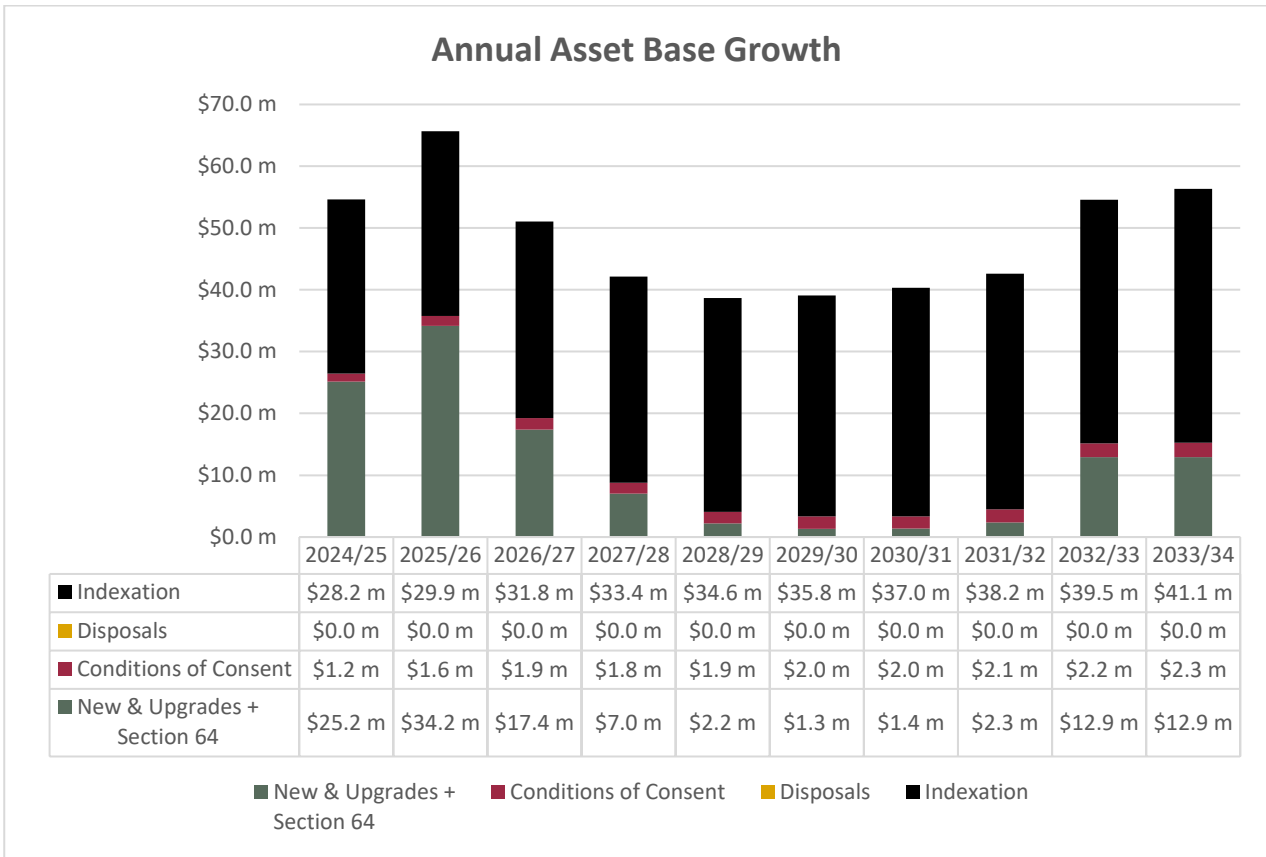


Figure 15: Annual Asset Base Growth – Factors

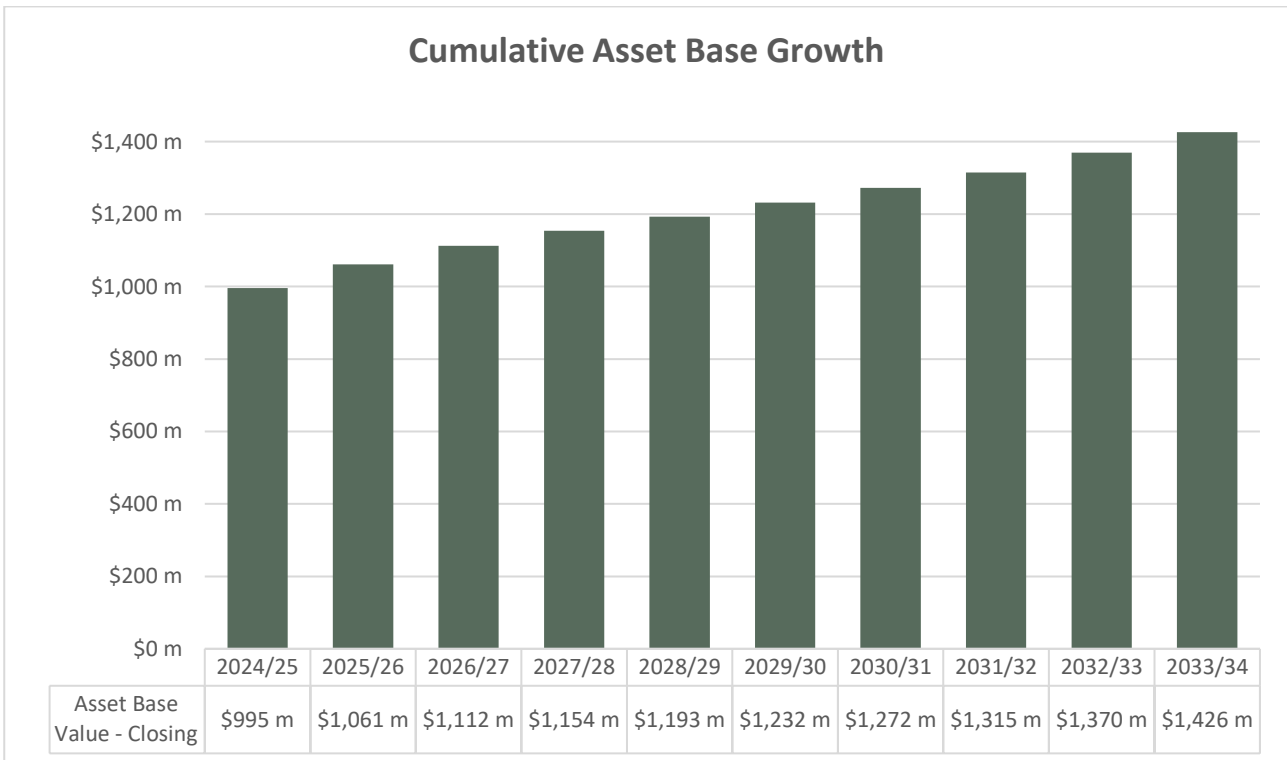


Figure 16: Cumulative Asset Base Growth

7 Financial Lifecycle Forecast

The Council assets described in Section 3, with the asset base growth forecast in Section 6, require resourcing across their lifecycle in order to achieve the LoS contained in Section 5.

The two main components are renewal expenditure, and maintenance and operations expenditure, which sum together to give the recommended overall expenditure on Council assets over the next 10 years.

7.1 Renewal Forecast

To ensure that satisfactory condition is maintained across the asset base and the Infrastructure Backlog Ratio benchmark is achieved, capital renewal works should be undertaken when assets reach the end of their useful lives. These capital renewal works involve disposing of the existing asset and constructing the MEERA.

However, if the expiry of useful lives or asset conditions are solely relied upon to inform these recommended renewals, annual budgets fluctuate significantly, which creates difficulties from a resourcing perspective. Rather, it is better practice to average out the recommended renewal expenditure in order to reduce annual fluctuations. When future Delivery Programs are prepared, actual allocations to each asset class may vary depending upon the scale of individual projects.

The required renewal expenditure across the 10-year period is therefore forecast to be \$104M.

Figure 9 shows the renewal budget featured in the Capital Works Program and Long Term Financial Plan, as well as the required renewal expenditure to align with asset depreciation. The Capital Works Program and Long Term Financial Plan currently accommodates \$102M of wastewater asset renewal.

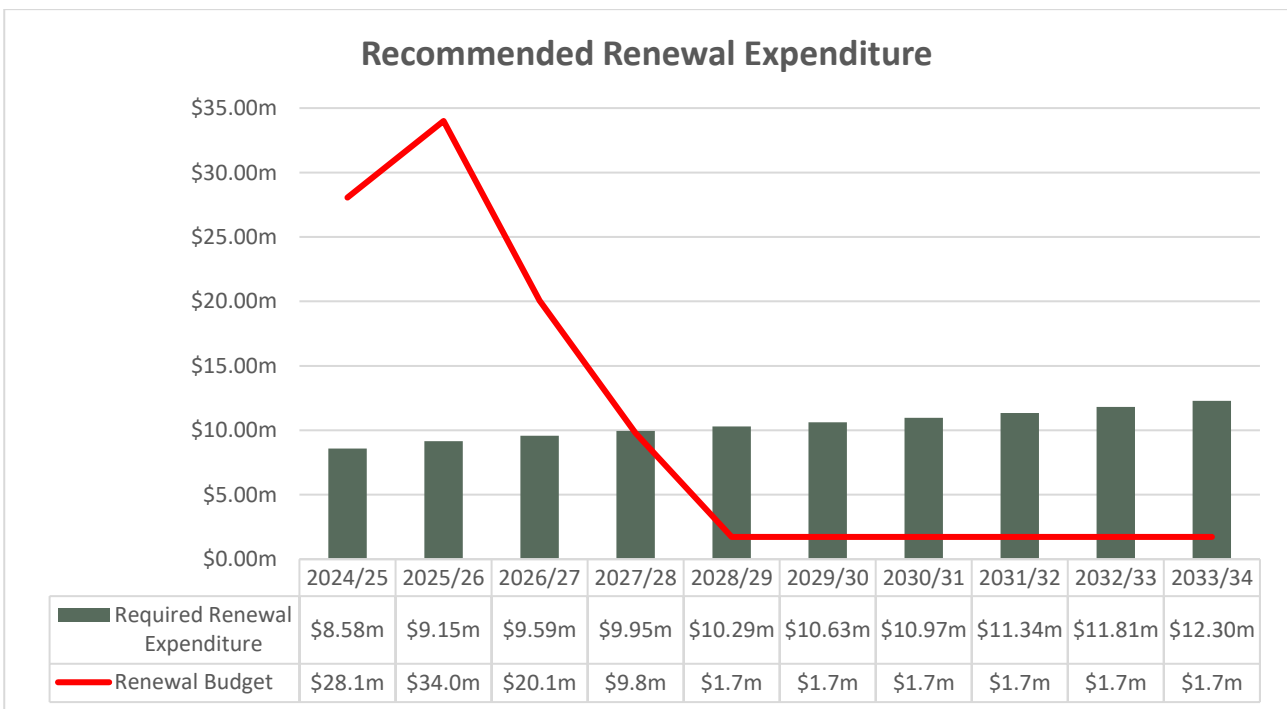


Figure 17: Recommended Renewal Expenditure, measured in millions of dollars.

7.2 Maintenance & Operations Forecast

To sustain the current Maintenance and Operations Level of Service whilst accommodating a growing asset base, annual maintenance & operations budget increases are required. The required maintenance and operations expenditure across the 10-year period is therefore forecast to be \$123M.

The Long Term Financial Plan is unfortunately not able to accommodate the entirety of this desired maintenance and operations budget. This is largely as result of the funding model for the Sewer Fund not being structured such that maintenance and operations funding increases in line with asset base growth.

This will therefore be a key parameter included within an update of the Sewer Fund model in 2024/25.

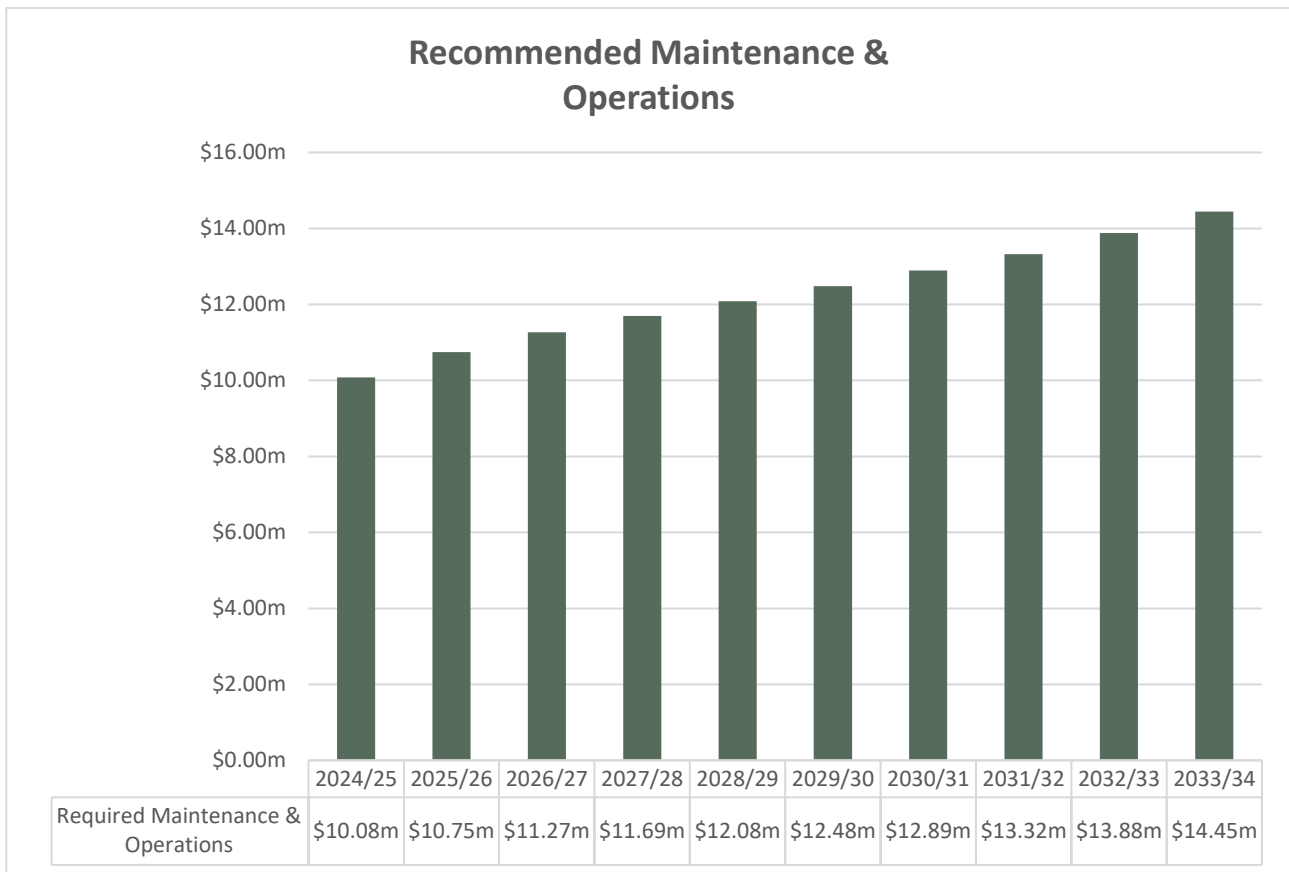


Figure 18 Recommended Maintenance & Operations.

7.3 Overall Forecast

The recommended overall expenditure is a combination of the new, upgrades & developer contributions from Section 6 and the recommended renewal, maintenance & operations expenditure from Section 7. Resulting in an overall recommended expenditure of \$344M over 10 years as depicted in Figure 15.

It is however acknowledged that the full extent of this recommended expenditure cannot be accommodated within the Long Term Financial Plan. Future iterations of the Asset Management Plan will further investigate and identify potential solutions.

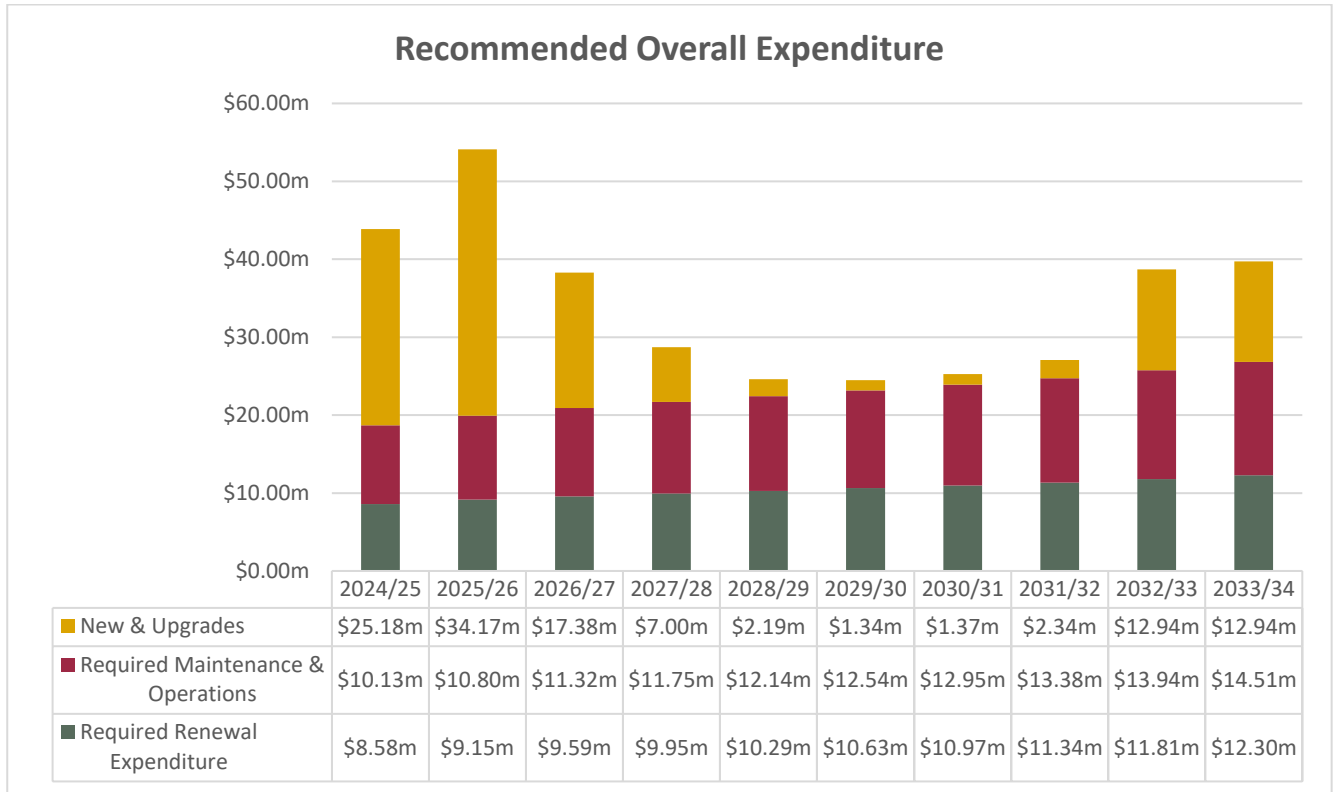


Figure 19: Recommended Overall Expenditure, measured in millions of dollars.

8 Improvement Plan

Asset Planning is a journey of continuous improvement with there always being opportunities to further improve the accuracy of asset data, better understand community needs & expectations and more efficiently meet the service needs of the Shire. The below items are specific improvements that can be made to this document as well as the operation of Council.

No	Task	Responsibility	Timeline
1	Review construction year data and subsequent age based condition calculations	Assets	2024/25
2	Review and update Sewer Fund model	Assets	2024/25
3	Implement Technology One Strategic Assets Module	Assets	2024/25
4	Flow gauging and calibration of Mittagong Wastewater Reticulation Masterplan	Assets	2025/26
5	Update valuation methodology of assets from modrates to unit rates	Assets	2025/26
6	Comprehensive Valuation	Assets	2026/27
7	Formalise documentation of inspection and maintenance works.	Assets	2025/26

Table 13: Improvement Plan