Asset Management Plan

SEWER SERVICES

2022

Adopted Date:27/06/2022

Status: Current

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Responsible officer	Manager Strategic Assets
Department/Section	Strategic Assets
Category	Financial & Asset Management
Community Strategic Plan Priority	Maintaining and developing our infrastructure network to meet the ongoing needs of our population.
	SO 4.1 Provide for replacement, improvement and additional Community and open space infrastructure through investment, best practice and risk management. **SO 4.2** Provide inviting public spaces that are clean, green, properly maintained, well designed, encourage active participation, family friendly and accessible to all. **SO 4.3** Provide safe and reliable water and sewerage services to meet the demands of current and future generations. **SO 4.4** Maintain and upgrade the road network and bridges. **SO 4.5** Advocate and improve access to communication services.

Contents

1 EXECUTIVE SUMMARY 5
1.1 Context 5
1.2 What Does It Cost? 5
1.3 What We Will Do 6
1.4 What We Cannot Do 6
1.5 Managing the Risks 7
1.6 The Next Steps 7
1.7 Questions You May Have 7
2 INTEGRATED PLANNING AND REPORTING FRAMEWORK 8
3 INTRODUCTION 10
3.1 Background 10
3.2 Goals and Objectives of Asset Management 12
3.3 Key Issues 13
4 LEVELS OF SERVICE 14
4.1 Community Consultation 14
4.2 Customer Research and Expectations 14
4.3 Strategic and Corporate Goals 14
4.4 Legislative Requirements 15
4.5 Current Levels of Service 16
4.6 Desired Levels of Service 17
5 FUTURE DEMAND 17
5.1 The Shire's Growth 17
5.2 Demand Factors 17
5.3 Sewerage Forecasting 18
5.4 Demand Management Plan 19
5.5 Asset Programs to Meet Demand 19
5.6 Growth and Demand Assumptions 20
6 LIFECYCLE MANAGEMENT PLAN 20
6.1 Background Data 21
6.2 Infrastructure Risk Management Plan 25
6.3 Routine Operations and Maintenance Plan 26
6.4 Renewal/Replacement Plan 28
6.5 Creation/Acquisition/Upgrade Plan 31
6.6 Disposal Plan 32
7 FINANCIAL SUMMARY 33
7.1 Financial Projections 33
7.2 Capital Expenditure 37
7.3 Forecast Reliability and Confidence 37

8 PLAN IMPROVEMENT AND MONITORING 38
8.1 Status of Asset Management Practices 38
8.2 Accounting and Financial Systems 39
8.3 Action and Improvement Program 40
8.4 Monitoring and Review Procedures 41
8.5 Performance Measures 41
9 LATEST ASSET AND LOS INFORMATION 42
9.1 Sewerage Asset Summary 42
9.2 Service Level Summary 42
9.3 Infrastructure Asset Performance Indicators 44
10 REFERENCES 45
11 APPENDICES 46
Appendix A – Acronym Glossary 46
Appendix B – Projected 10 year Capital Renewal, Replacement and New Works Program 48
Appendix C – Operational Expenditure by Township 49
Appendix D – Forecast of Asset Ratios to Local Government Benchmarks 51
Appendix E – Sewerage Services Activity Risk Register 52
Appendix F – Glossary/Definitions 54

1 EXECUTIVE SUMMARY

1.1 Context

Upper Hunter Shire is located in the Hunter Region of NSW, approximately 250km north of Sydney. The Shire is predominantly rural and encompasses 8,100km2. The Upper Hunter Local Government Area is home to a diverse mix of businesses such as agriculture, thoroughbred horse studs, retail, light and heavy industry. Council provides sewerage services to residential, commercial and industrial customers in the four main towns of Aberdeen, Merriwa, Murrurundi and Scone.

Council owns, operates and maintains sewage treatment plants, pressure mains, gravity mains, pump stations and effluent reuse schemes. The sewerage infrastructure assets have a replacement value of $75,118,249 as at 30 June 2021.

The major issues impacting on the management of Council's sewerage services assets are:

- Higher legislative requirements for treatment plants and effluent reuse that is hard to meet with aging treatment infrastructure
- Limited or dated asset condition information to make informed asset renewal decisions
- Limited and ad hoc resourcing for updating the asset inventory and GIS for sound sewerage asset management planning
- Limited resource capability to assist in making informed asset renewal decisions
- Basic data currently recorded in Council's asset management system CONFIRM is not adequate for making good asset management decisions.

1.2 What Does It Cost?

The projected expenditure necessary to provide the services covered by this Sewerage Services Asset Management Plan (AMP) includes operations, maintenance, renewal and upgrade of existing assets.

The total amount of forecasted expenditure for sewerage services operations, maintenance and capital over the next ten years will be approximately $67.7 million (as shown in Figure 1) with annual forecasted expenditure varying between approximately $3.8 to $18.4 million per annum.

Forecasted operational expenditure (OPEX) for the ten year cycle will be approximately $36.2 million which equates to 54% of the total forecasted expenditure. The Levels of Service (LOS) capital expenditure is for increasing the service level delivered by the assets.

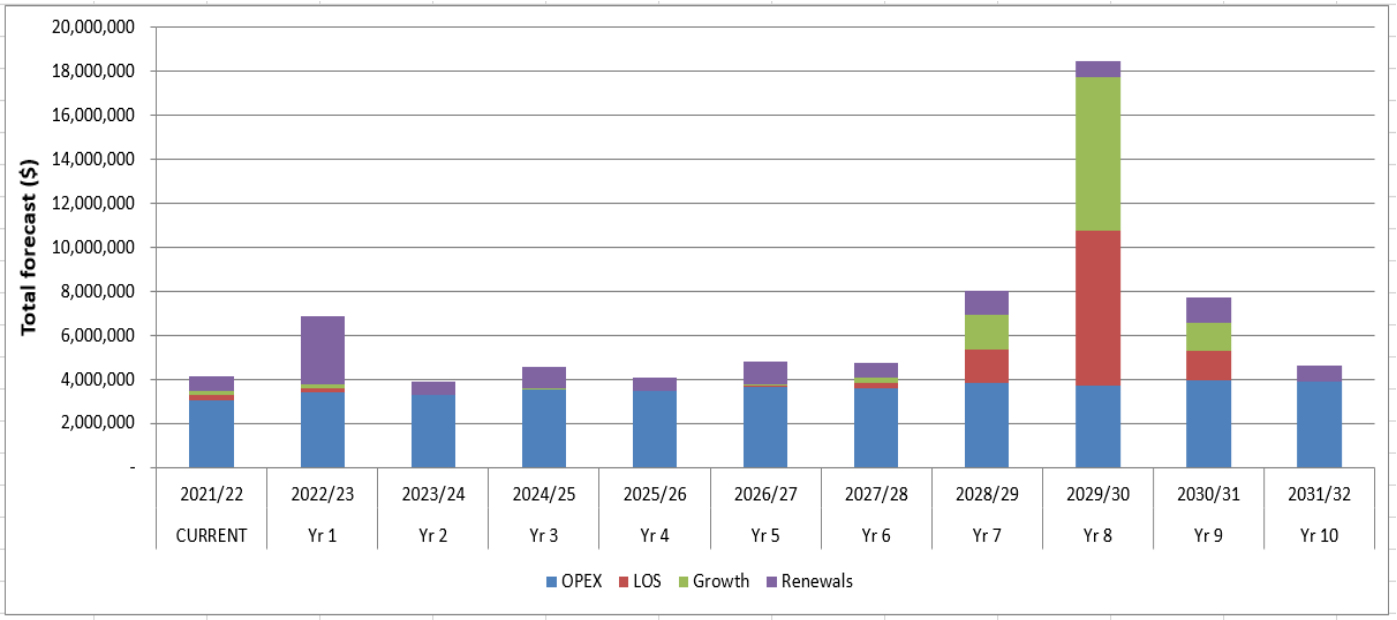


Figure 1. Summary of Sewer Services Total Expenditure Forecast

Note that expenditure forecasts (operational and capital) are based on the revised current year budget 2021/22 and the 2018/19 to 2022/23 Delivery Program and Operational Plan (DPOP).

Long term financial modelling over a 30 year period is planned to be undertaken to help in the setting of a long term price path for sewer charges that is financially sustainable. The improvements proposed for condition monitoring and establishing more accurate useful lives for the sewer system will be an input into that process also.

1.3 What We Will Do

Council seeks to manage infrastructure in the most cost effective way over the life of the asset.
This is done in a number of ways including the following:

- Operation, maintenance, renewal, upgrade and monitoring of Upper Hunter sewerage services to meet the service levels currently approved by Council and nominated in this plan.
- Inspect the sewer infrastructure annually to ensure that they are performing and reassess their condition grading.
- Continue the annual CCTV program for pipes.
- Plan any works to address the defects found from the inspections. Plan pipe renewals based on failure statistics and CCTV survey results.
- Renewals planned within the ten year planning period have been identified to ensure that this is an acceptable backlog.
- Continued and improved emphasis on Council's statutory license conditions and best practice management will be considered.
- Carry out smoke testing program to find information on the infiltration to the sewer system.
- Reduction of inflow and infiltration into existing infrastructure, particularly pipelines and manholes.
- Management of the ongoing environmental risks of operations.

1.4 What We Cannot Do

Council is planning to sewer Cassilis village, however there is currently no financial provision for sewering any additional villages including those that are likely to receive town water connections.

1.5 Managing the Risks

There are risks associated with providing the service and not being able to complete all identified activities and projects. We have identified major risks as:

- Poor or incomplete asset management practices including AMP, lifecycle management plans (LCMP) and asset condition assessments
- Overall asset life and condition is compromised due to maintenance and renewal programs not well targeted or limited in scope
- Financial implications with inaccurate asset valuation and long term planning including renewal forecasts.

We will endeavour to manage these risks by:

- Complete the actions identified in the Sewerage Services AMP including LCMP; complete the resourcing levels for sewer services AM; complete the asset condition survey
- Complete the full revision of the Sewerage Services AMP; complete the asset condition assessment program

Implement the asset management improvement program; continue with regular inspections and reporting on assets; start proactively analysing and reporting on data availability; start building core asset management capability; complete asset condition survey.

1.6 The Next Steps

The actions resulting from the Sewerage Services AMP are:

- Complete the comprehensive condition survey currently underway of all sewer assets including the sewer treatment plants, pump stations and pipelines.
- Complete the major data cleansing of the sewerage dataset so there is complete asset inventory of the asset classes including asset attributes including size and material type.
- Implement adequate resourcing and capability for updating the sewer services asset inventory, collection of asset repair data, and updating asset condition assessment records.
- Model the sewerage networks of the main townships to understand the network performance better.
- Undertake a proactive assessment of the pump station capacity.
- Revise and improve the effectiveness of the current sewer renewal programs. Develop an Emergency Response Plan for the critical sewer assets.
- Start recording work history to asset lengths in CONFIRM to improvement renewal planning
- Complete a formal AM Maturity Assessment of the sewerage services activity.

1.7 Questions You May Have

What is this plan about?

This AMP covers the infrastructure assets that serve the Upper Hunter Shire Council community's sewerage needs. These assets include sewage treatment plants, pump stations, gravity collection and transport mains and pressurised delivery pipes leading from pump stations to the sewage treatment plants. This will ensure the community receives a quality sewerage service.

What is an Asset Management Plan?

Asset management planning is a comprehensive process to ensure delivery of services from infrastructure is provided in a financially sustainable manner.

An AMP plan details information about infrastructure assets including actions required to provide an agreed level of service in the most cost effective manner. The plan defines the services to be provided, how the services are provided and what funds are required to provide the services.

What options do we have?

Unlike the General Fund of Council, Council is able to adjust sewer fees and charges to ensure that sewer services are financially sustainable. The renewals program needs to be more targeted going forward, it does however have to form part of a sound business plan for the Sewer Fund as a standalone business activity.

Whilst Council does have a Strategic Business Plan for Water and Sewerage Services, including a 30 year long term financial model, it was completed in 2011 and has become somewhat dated. There are several aspects of the plan which require reconsideration, including long term sustainability of current renewals expenditure levels.

Once this financial modelling has been completed, Council will be able to set its long term pricing path for the Sewer Fund with more confidence.

What can we do?

We can and will develop options, costs and priorities for future asset management activities. We will consult with the community to plan future services to match the community service needs with ability to pay for services. We will maximise community benefits against costs.

What can you do?

We will be pleased to consider your thoughts on the issues raised in this asset management plan and suggestions on how we may change or reduce the mix of sewerage services to ensure that the appropriate level of service can be provided to the community at the lowest possible cost.

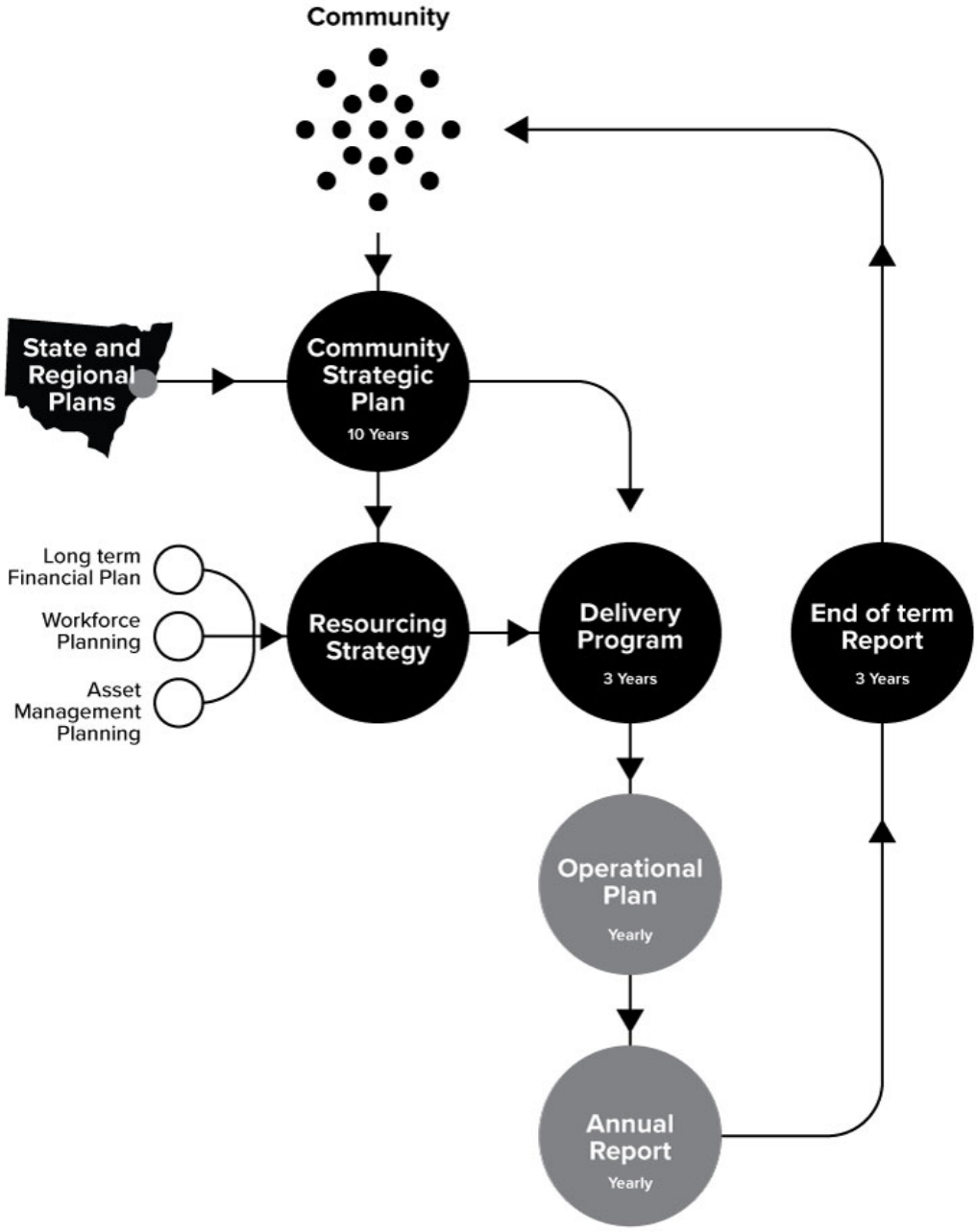
2 INTEGRATED PLANNING AND REPORTING FRAMEWORK

The Local Government Integrated Planning and Reporting (IP&R) Framework aims to ensure a more sustainable Local Government sector. The Local Government Act 1993 requires Council to work with the community to review the Community Strategic Plan and other documents within the Integrated Planning and Reporting Framework after the commencement of each four-year elected Council term.

Councils need to take a long term view and consider social, economic and environmental aspects and the needs of the current and future generations when making decisions. This underpins the Integrated, Planning and Reporting Framework. The importance of Civic Leadership and accountability and transparency in decision making should also underpin the Plan.

All NSW Councils are required to develop a Community Strategic Plan along with a Delivery Program (4 years) and Operational Plan (1 year). The CSP 2032 and its strategic objectives provide a foundation for our Delivery Program and Operational Plan. The Delivery Program and Operational Plan detail how each service addresses the CSP 2032 objectives, ongoing activities, priority projects and the strategies supporting this work.

These documents are informed by a Resourcing Strategy that is made up of a Long Term Financial Plan, Asset Management Plans and Workforce Management Plan. In order to achieve the integration envisaged by the IP&R Framework, there is an alignment between the CSP 2032, Delivery Program, Operational Plan and the other key documents. This is identified on the Upper Hunter Shire Integrated Planning and Reporting Framework.


Community
State and Regional Plans
Community Strategic Plan
10 Years
Long term Financial Plan
Workforce Planning
Asset Management Planning
Resourcing Strategy
Delivery Program
3 Years
End of term Report
3 Years
Operational Plan
Yearly
Annual Report
Yearly

3 INTRODUCTION

3.1 Background

About this Plan

The Sewerage Services AMP is to demonstrate responsive management of assets (and services provided from assets), compliance with regulatory requirements and to communicate funding needed to provide the required levels of service over a 10 year planning period.

The Sewerage Services AMP follows the format for AM Plans recommended in the International Infrastructure Management Manual (IIMM).

The Sewerage Services AMP is to be read with Upper Hunter Shire Council's Asset Management Policy, Asset Management Strategy and the following associated planning documents:

- Upper Hunter Shire Council Strategic Business Plan for Water Supply & Sewerage Services (2010/11)
- NSW Best-Practice Management of Water Supply and Sewerage Guidelines
- Integrated Water Cycle Management Plan Evaluation Study (2010)
- 2017-18 NSW Benchmarking Report, Department of Primary Industries (DPI) Water
- Delivery Program 2018/19-2022/23 and Operational Plan 2022/2023
- Community Strategic Plan 2032
- Upper Hunter Shire Council Drought Management and Emergency Response Plan (April 2014)

Scope of Services

Upper Hunter Shire is located in the Hunter Region of NSW, approximately 250km north of Sydney. The Shire is predominantly rural and encompasses 8,100km2. Council provides sewerage services to residential, commercial and industrial customers in the towns of Aberdeen, Merriwa, Murrurundi and Scone as shown in Figure 2.

Figure 2: Map of Upper Hunter Shire Towns

The primary purpose of the sewerage services activity is to collect, treat and dispose of sewage efficiently ensuring public and environmental health.

Council owns, operates and maintains sewage treatment plants, pressure mains, gravity mains, pump stations and effluent reuse schemes. These assets are used to provide sewerage services to the Upper Hunter Shire community in accordance with the guidelines and regulations set down by the DPI Water (formerly NSW Office of Water), NSW Health the Office of Environment and Heritage (formerly the Department of Environment, Climate Change and Water). Refer to Sections 6 and 9 for sewerage services assets detail including asset valuation.

Our Stakeholders

Key stakeholders interested in sewerage services assets are shown in Table 1.

Table 1: Key Stakeholders in Sewerage Services Assets

Key Stakeholder	Area of Interest and Role in AMP
Councillors	Represent needs of community/stakeholders
	Allocate resources to meet the organisation's objectives in providing services while managing risks
	Ensure organisation is financially sustainable
	Set policy
General Manager	Provide leadership and community engagement
Senior Management Group	Development of overall strategy
Director Infrastructure Services	Oversee development of strategies and liaison with all relevant parties
Water and Sewer Program Area	Owner of this plan and responsible for assets covered by this plan.
Strategic Assets Program Area	Owner of Asset Management Policies and Strategies
W&S Asset Management Steering Group	Consultation Approving body of Councils Water and Sewer Asset Management Strategies
Local Residents	Users of Council Assets and Services
	Interested in safe and sustainable sewer services
Local Businesses	As User of Council Assets and the future of new commercial and community growth
Existing industrial and commercial customers	They expect reliable sewerage services to continue their business operation uninterrupted and at least cost
Visitors to the Shire	They expect prompt and reliable sewerage services
Developers	Users of Council's infrastructure and services
	Build infrastructure and hand over to Council ownership
NSW Department of Health	Has oversight of treatment plant water quality, through Regulations of the NSW Public Health Act, 1991.
NSW State Government	Provides financial assistance for new infrastructure
	Sets and monitors overall performance of Council in providing Water Services

Key Stakeholder	Area of Interest and Role in AMP
Neighbouring Councils (including Muswellbrook and Singleton)	Interested in exploring joint water initiatives that benefit all shires
Environmental groups	Interested in improvement to the natural environment and overflow reduction initiatives

3.2 Goals and Objectives of Asset Management

Upper Hunter Shire Council exists to provide services to its community. Some of these services are provided by infrastructure assets. We have acquired infrastructure assets by 'purchase', by contract, construction by our staff and by donation of assets constructed by developers and others to meet increased levels of service.

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

- Providing a defined level of service and monitoring performance.
- Managing the impact of growth through demand management and infrastructure investment.
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service.
- Identifying, assessing and appropriately controlling risks associated with asset failure.
- Having a long-term financial plan which identifies required, affordable expenditure and how it will be financed.
- Continuous improvement in asset management practices.

This Sewerage Services AMP is prepared under the direction of Council's Vision, Charter and Corporate Values contained within Council's:

- Asset Management Policy
- Asset Management Strategy
- Community Strategic Plan 2032

With specific regard to sewerage services, Council's objective is to safely collect, transport and treat sewage in a way that best serves the current needs of the community and the demands of increased growth within the Regulations and Guidelines set down by both Federal and State authorities.

Council's goal is to achieve this in an efficient, cost effective manner and to return all treated products back into the ecosystem in such a way as to maximise all available resources while remaining ecologically sustainable and to investigate the future delivery of services to areas outside the town boundaries.

Council's vision is:

"A quality rural lifestyle in a vibrant, caring and sustainable community"

Our commitment to the Community

- We will deliver high quality, innovative, consistent and responsive services to the community.
- We respect the rights of everyone to be treated fairly.
- We will keep our community informed about Council services and financial position.
- We will continually strive to improve our services to the community and encourage community engagement.
- We will deliver increased effort in the protection of the environment.

Council's relevant community strategic objectives (as stated in the Community Strategic Plan 2032) and how these are addressed in this AMP are outlined in Table 2.

Table 2: Organisation objectives and how these are addressed in this Plan

COMMUNITY PRIORITY	STRATEGIC OBJECTIVES	HOW OBJECTIVES AND INITIATIVES ARE ADDRESSED IN AMP
Ensure the ongoing protection of our environment and natural resources	Advocate for, facilitate and support programs that protect and sustain our diverse environment for future generations	By managing our wastewater discharge through our demand management plan including effluent reuse schemes where appropriate
		By monitoring and reporting on the energy performance of the sewer assets
		By balancing the provision of sewerage services with environmental protection through sound network operations and maintenance.
Maintaining and developing our infrastructure network to meet the ongoing needs of our population	Provide safe and reliable water and sewerage services to meet the demands of current and future generations	By providing for the cost effective development, upgrade, renewal and maintenance of sewerage service assets in the Shire, and by ensuring that they are effectively managed to deliver the required services
		By proactively surveying the asset condition of our sewerage network we will understand and make long term plans for a sustainable infrastructure
		By measuring the achievement of our service levels to our communities to ensure adequate sewerage services provision

3.3 Key Issues

The sewerage services activity has the following key issues. The section(s) of the AMP that address these issues have also been highlighted.

Table 3: Key Sewerage Issues

KEY SEWERAGE ISSUES	AMP SECTION
Basic data needs improvement so fit for asset management purposes and is Council's most significant issue for sewer services	Section 8.1.2
Higher legislative requirements for treatment plants and effluent reuse	Section 6.1.2
Limited or dated asset condition information to make informed asset renewal decisions	Section 6.1.3
Limited and ad hoc resourcing for updating the asset inventory and GIS for sound sewerage asset management planning	Section 8.1.2
The long term sustainability of sewerage services needs review including the impact on rates and return on assets to ensure the service including renewals are sustainable	Section 7.1

4 LEVELS OF SERVICE

Levels of service relate to outcomes the customer receives in terms of quality, quantity, responsiveness and performance as it is provided by the asset utilised by Council to provide the service. To achieve and maintain acceptable levels of service for Council's sewer system, a system of setting, recording and reviewing service levels achieved with the assistance of Community input is required. Future iterations of this plan will involve further and more detailed community consultation in this regard. The levels of service have been reviewed as part of the AMP development. They support Council's strategic goals and are based on user expectations, statutory and state standard requirements.

4.1 Community Consultation

Future revisions of the Sewerage Services AMP will incorporate community consultation on service levels and costs of providing the service. This will assist the Council and the community in matching the level of service needed by the community, service risks and consequences with the community's ability and willingness to pay for the service.

4.2 Customer Research and Expectations

In a broader attempt to assess the priorities and service expectations of our wider community, across all areas of performance, Council has commissioned detailed surveys through the company Micromex Research Consultants. They undertook extensive telephone surveys in 2009, 2013, 2015 and 2017.

This survey concentrated on establishing the community's assessment of the importance of, and their satisfaction with, a number of services (52 in total) including water and sewerage services. A scale of 1 to 5 was used in all rating questions where 1 was the lowest importance or satisfaction, and 5 was the highest importance or satisfaction.

Separately, comprehensive community surveys were undertaken in 2010, 2013, 2015 and 2017 using a mix of phone and face to face surveys. The results for water and sewer services combined are summarised in Table 4 and show that the performance gap is reducing.

Table 4: Survey results for Water and Sewer Services

YEAR	IMPORTANCE	SATISFACTION	PERFORMANCE GAP
2010	4.45	3.41	1.04
2013	4.52	3.78	0.74
2015	4.39	3.81	0.58
2017	4.39	4.16	0.23

Source: Community Research, Micromex Research (November 2017)

4.3 Strategic and Corporate Goals

The Sewerage Services AMP is prepared under the direction of Council's vision, mission, goals and objectives. It is intended to expand on the strategies defined in Council's Publication "Community Strategic Plan 2032" and its "Strategic Business Plan". Table 5 shows the areas of focus and key objectives as per the Strategic Business Plan.

The Council will exercise its duty of care to ensure public safety in accordance with the infrastructure risk management plan prepared in conjunction with this AMP. Management of infrastructure risks is covered in Section 7.2

Table 5. Sewer Supply Business Objectives

Focus Areas	Objectives
Customer Service	Meet Levels of Service to which customers have agreed and can afford
	Establish affordable service areas and solutions
	informed and be responsive to its needs
	Community consulted and considered on all major expenditure decisions
Financial Management	Evaluate options to achieve capital and maintenance programs with affordable rates and relatively low levels of reserves
	Set up the sewer fund as an independent business
	Promote and assist establishment of industry and developers in the Upper Hunter Shire Council area
Asset Management	Ensure reliable, secure and cost effective service using latest technology
	Ensure the system provides levels of service agreed
	Provide a Capital Works Program which supplies system needs
Human Resources	Maintain a capable, motivated and skilled workforce
Environment	Manage the system to prevent adverse environmental impacts
	Promote and assist establishment of industry and developers in the Upper Hunter Shire Council area.

4.4 Legislative Requirements

Council has to adhere to many Australian and State legislation and State regulations which are noted in Table 6.

Table 6: Legislative Requirements

Legislation	Requirement
Local Government Act, 1993 and Local Government (General) Regulation 2005	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.
NSW Best-Practice Management of Water Supply and Sewerage Framework	Compliance is a pre-requisite for dividends paid from the surplus of the Water and Sewer business units & required for financial assistance towards capital infrastructure costs under the NSW Government's Safe and Secure Water Program.
Protection of Environment Operations (POEO) Act, 1997	Under the POEO Act, it is an offence for the operator of any facility to cause pollution, including odour.
Waste Avoidance and Recovery (WARR) Act 2001	Establishes the need to avoid/minimise waste, increase resource use efficiency/reduce natural resource consumption, and minimise environmental impact through ecologically sustainable development and sustainable waste management systems.
Water Industry Competition Act, 2006	Ensure Council's business activities on a level playing field, with no advantage being gained over competing private business activities.

Legislation	Requirement
Environmental and Penalties Act 1989	Details Council's environmental responsibilities and the penalties to be applied if these are not met
O H & S Act and Regulations	Council must ensure a safe workplace for all its employees and the public
Independent Pricing and Regulatory Tribunal Act 1992	Ensure fair prices are set and trading activity meets minimum standards and guidelines

Other sewerage specific legislation which Council considers includes:

- Work Health and Safety (WHS) Act and Regulations in relation to chemical hazard classification. State Emergency and Rescue Management Act 1989.
- Environmental Planning and Assessment Act 1979.
- Public Health Act 2010.

4.5 Current Levels of Service

We have defined service levels in two terms.

Community Levels of Service

This measures how the community receives the service and whether the organisation is providing community value.

Community levels of service measures used in the AMP are:

- Quality How good is the service?
- Function Does it meet users' needs?
- Capacity/Utilisation Is the service over or under used?

Technical Levels of Service

Supporting the community service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities that the organisation undertakes to best achieve the desired community outcomes and demonstrate effective organisational performance.

Technical service measures are linked to annual budgets covering:

- Operations – the regular activities to provide services such as treated sewerage to meet legislative requirements and environmental outcomes.
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition (e.g. clearing sewer blockages, pump and electrical repairs at treatment plants and pump stations)
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. judicious pipeline replacement and repairs to service lines)
- Upgrade – the activities to provide a higher level of service (e.g. replacing a pipeline with a larger size, improve the treatment capability of a sewer plant) or a new service that did not exist previously (e.g. provide sewer services to a village).

At a high level, the sewerage service levels are summaries in Table 7. The full levels of service (LOS) table including performance measures and targets are detailed in Section 9.2.

Table 7: Sewerage Customer Level of Service

Key Service Attribute	Customer LOS
Safety – public health	To provide adequate sewerage services for household and business use in currently serviced urban communities
Quality - reliability	To provide reliable sewerage networks
Responsiveness	To provide prompt responses for service
Sustainable – Environmental Performance	To promote sewerage services that do not negatively impact on public health or the natural environment in line with legislative requirements
Sustainable -Cost Effectiveness	Sustainably managing the sewerage service network

4.6 Desired Levels of Service

Indications of desired levels of service are obtained from community consultation/engagement. The sewer asset management planning process includes the development of scenarios to assist in planning future levels of service that are financially sustainable, and provide what the community wants at an affordable price.

While Council could eventually extend Sewerage Services to a number of its currently unserviced villages, external funding assistance would be required to make this financially possible, and the long term need and costs of doing so would need to be established. For Sewerage Services, this process is undertaken during reviews of the Strategic Business Plan, which includes detailed and long term financial modelling of options for service extensions.

5 FUTURE DEMAND

5.1 The Shire's Growth

The total population of Upper Hunter Shire as reported by the 2016 Census was 14,350. Population projections for the Shire, as published by the NSW Department of Planning and Infrastructure, are shown in Table 8 reflecting an average annual growth rate of -0.50 % pa.

Table 8: Population Projections for Upper Hunter Shire

Population	2016 Census	2021	2026	2031	2036	2041	Total Change	Annual % Change
UHSC	14,350	14,200	13,950	13,600	13,200	12,700	-1,650	-0.50%

Source: Population Estimates & Projections for Local Areas NSW; NSW Planning & Infrastructure, 2019

5.2 Demand Factors

The key factors that directly impact the demand for open space infrastructure are:

- population growth demographic
- changes residential development
- extension of services to towns and villages

Demand factor trends and impacts on service delivery are summarised in Table 9.

Table 9: Demand Factors

Demand factor	Present position	Projection	Impact on services
Population	Upper Hunter Shire Council's population in 2016 was 14,350	Upper Hunter Shire Council's population is predicted to decline over the next 10 years.	Negative growth rate will have a small decrease in demand
Demographics	28.6% of the Shire's population is aged between 15 – 39 years. This is lower than the national average of 35.5% and can be attributed to fewer job opportunities and lack of higher educational institutions in the area	The percentage of the population in this age group is expected to remain static or increase slightly.	Insignificant
Housing occupancy ratios	There has been a long term trend to lower ratios over 20 plus years. Currently about 2.7 people per household	Whilst this has had a marked effect on housing demand in the past, it has stabilised somewhat with the trend towards young people staying at home much longer than in the past	Insignificant
Extension of services to new village areas	A number of villages such as Cassilis have no sewer services. No current financial commitments made to extend services but an assessment including feasibility and resources is well advanced.	Pressure to provide sewer services to small villages will grow over time	This will have a significant financial impact on the Sewer Funds finances. Sewer charges overall will have to rise to meet larger capital and operational costs.
Residential development	Low growth rate reflects demand for residential development	Future growth rate is likely due to the proximity to the coal mining industry	Small increase in demand on services

Unless there is a decision made to extend sewer services to other urban areas within the shire, it is expected there will be only minimal increases in the number of connections nominated (4,563 in total) at the same time as the average occupancy ratio in housing rises somewhat.

5.3 Sewerage Forecasting

5.3.1 Demand for sewerage services

The volume of sewage collected per property for 2020/21 was 220 kL per property. This result is similar to the 2019/20 statewide median of 225 kL volume of sewage collected per property.

5.3.2 Sewerage demand projections

The wastewater volumes are expected to remain similar to historical trends with only minor increases for population increases based on census data for the period of this AMP.

5.4 Demand Management Plan

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 include non-asset solutions, insuring against risks and managing failures.

Non-asset solutions focus on providing the required service without the need for the organisation to own the assets and management actions including reducing demand for the service, reducing the level of service (allowing some assets to deteriorate beyond current service levels) or educating customers to accept appropriate asset failures. Examples of non-asset solutions include approvals for ratepayers to use grey water reuse systems.

Opportunities identified to date for demand management are shown in Table 10. Through this multifaceted approach, we can reduce environmental impacts and reduce wastewater discharge and demand for wastewater services. Further opportunities for demand management will be developed in future revisions of this AMP.

Table 10: Current Sewerage Demand Management Plan

PROGRAM	DESCRIPTION
Strategy	Long term planning is instrumental to managing growth and demand requirements. The AMP is Council's key document for outlining its methodology of reducing wastewater discharge. Wastewater demand is directly linked to water supply demand. Universal water metering also impacts on reduced wastewater demand. Council is currently working with Muswellbrook and Singleton Council's to explore joint sewerage initiatives that benefit our shires.
Public education and awareness	Education and awareness encourages wastewater reduction and compliance behaviour. It is recognised that Council's website needs to be enhanced to provide public education and information on wastewater treatment facilities. Education is important so that residents and businesses understand their role and responsibility for managing their wastewater demand in a sustainable manner.
Consumer behaviour changes	All new buildings in the NSW are required to meet the Building Sustainability Index (BASIX) for new water and energy appliances as part of the development application process. This is an effective tool to change consumer behaviour to reduce water consumption and help achieve long term environmental outcomes.
Customer Action Request	The Council provides on-going operational and maintenance support to properties within the sewerage areas of service. Residents are able to complete the Customer Action Request form to enable Council to investigate the request.
Pricing	Wastewater rates are structured to promote users to minimise wastewater discharge.
Inflow and infiltration (I/I)	I/I is an issue that contributes costs to Council's operational expenses. The reduction of I/I is an important item that is an on-going operational programme. Council currently has no formal I/I programme.

5.5 Asset Programs to Meet Demand

The new assets required to meet growth will either be acquired free of cost from land developments (in most cases) or constructed by the Council or its nominated contractor. Those new assets constructed by Council or its

nominated contractor will be funded from a number of sources including Section 64 Plan contributions, operational reserves, financing loans or a combination of these sources.

The cumulative value of new contributed and constructed asset values have not been considered in any detail in this plan, as the historical and expected growth rates for Council have not been particularly high, and would not be considered to have any significant impact in the 10 year horizon of this plan.

Acquiring these new assets will commit the organisation to fund ongoing operations, maintenance and renewal costs for the period that the service provided from the assets is required. These future costs will be more accurately identified, and options considered, as part of the revision of the planning document, "Upper Hunter Shire Council – 30 Year Financial Plan for Water Supply and Sewerage Services. In particular, there will be full financial provision for maintenance and renewal costs of these new assets in the revised financial plan. This information will be incorporated in future versions of the Sewerage Services AMP.

5.6 Growth and Demand Assumptions

The key growth and demand assumptions are as follows:

- Population projections are based on Population Estimates and Projections for Local Areas NSW; NSW Planning and Infrastructure, 2019.
- Projections have been based on historic census data and it has been assumed that the trends that have been observed will continue.

6 LIFECYCLE MANAGEMENT PLAN

Overview

The lifecycle management plan details how the organisation plans to manage and operate the assets at the agreed levels of service defined in Section 4 while optimising life cycle costs. The sewerage assets and facilities are maintained and developed in a way that is fit for purpose and sustainable over time and consistent across the Shire.

Council's key asset management principle is meeting the service levels and managing risk while minimising whole-of-life costs. It is important that asset lifecycle costs are considered in decision making as they are typically several times greater than the initial development costs.

Network Overview

Details of Council's sewerage areas and the general services provided are detailed in Table 11 below. Sewerage services promote the safe discharge of wastewater into the natural environment with the objectives of reducing the amount of wastewater discharged and practising responsible resource efficiency.

Table 11. Breakdown of Sewer Services provided in the Upper Hunter Shire Council area

TOWNSHIP	SEWER SERVICES
Scone	X
Aberdeen	X
Merriwa	X
Murrurundi	X
Cassilis	Planned for future
Gundy	
Moonan Flat	
Wingen	

TOWNSHIP	SEWER SERVICES
Parkville	
Blandford	

Council provides sewerage services to a population of approximately 9,118 (4,563 assessments), in the towns or villages of Scone, Aberdeen, Merriwa and Murrurundi.

6.1 Background Data

6.1.1 Physical parameters

The summary of the sewerage assets covered by this asset management plan are shown in Table 12. The most recent information available for the quantities and total values are detailed in Section 10.

Table 12. Sewerage asset classes

SEWERAGE ASSET CLASS
Pump stations
Other infrastructure
Pipes
Treatment works
Manholes

The age profile of the sewerage assets recorded in Council's Asset Register is variable. The initial sewerage infrastructure for the Merriwa and Murrurundi townships were installed in the same year (i.e. 1970 and 1979 respectively). This means that the assets will theoretically fail in the same period. The initial sewerage infrastructure for Aberdeen was 1982/83 with vitrified clay pipes. There are concerns with their durability. About 70% of Scone's initial sewerage infrastructure was installed in the period 1938 to 1940. The history of townships is important for renewal planning.

The asset information in CONFIRM is variable in completeness and accuracy. Council is undertaking a major data cleansing exercise to improve it and this is recognised as a very high priority improvement task. At this point in time the sewer dataset is not sufficiently robust to provide an accurate breakdown of material type and sizes for sound asset management planning.

6.1.2 Sewerage Scheme Summary

Table 13 provides a high level summary of the Shire's sewerage schemes in terms of populations served, treatment type, disposal method and key issues related to each township's network.

Table 13: Township Scheme Summaries

SCHEME	POPULATION	CAPACITY (EQUIVALENT PERSONS OR EP)	TREATMENT TYPE	DISPOSAL METHOD	KEY ISSUES
Aberdeen	1,800	4,000 EP	Intermittent extended aeration plant Includes effluent reuse scheme	Approved discharge to a watercourse	

SCHEME	POPULATION	CAPACITY (EQUIVALENT PERSONS OR EP)	TREATMENT TYPE	DISPOSAL METHOD	KEY ISSUES
Merriwa	950	1,600 EP	Trickling Filter Plant	Approved discharge to a watercourse	Old plant; Effluent quality accepted by EPA but may not in future
Murrurundi	805	1,000 EP	Intermittent Extended Aeration Plant Includes effluent reuse scheme	Approved discharge to a watercourse	Wet weather discharges are close to the hydraulic capacity of the Treatment Plant
				Approval granted to implement some effluent reuse	
Scone	4,680	7,000 EP	Part trickling filter, part intermittent extended aeration plant	Effluent reuse for large customers	Effluent quality acceptable to EPA is currently under review;
			Includes effluent reuse scheme	Approved discharge to a watercourse when not reuse	Includes industrial loadings which is under review

6.1.3 Asset capacity and performance

Network performance

The organisation's services are generally provided to meet design standards where these are available. Locations where deficiencies in service performance are known are detailed in Table 14.

Table 14: Known Service Performance Deficiencies

Location	Service Deficiency
Scone, Aberdeen, Murrurundi and Merriwa Sewer Treatment Plants	Reuse of Biosolids
	Increased flows during wet weather conditions due to house stormwater drainage connections to sewer
Scone Sewer Treatment Plant	Low treated effluent quality from trickling Filters
Merriwa Sewer Treatment Plant	Low treated effluent quality from trickling Filters
Merriwa and Murrurundi	Small sections of the towns are not connected to sewer services

The service deficiencies listed in Table 14 were identified from routine maintenance inspections and 2018/19 DPI Water Benchmarking Report. NSW Water Utility performance data is publically available on the DPIE website at;

https://www.industry.nsw.gov.au/water/water-utilities/lwu-performance-monitoring-data

Overall, Council is generally performing adequately within its peer group (servicing 4,001 to 10,000 properties). Network performance results include:

- 45% of all effluent recycled compared with statewide median of 16%.
- 21 complaints per 1000 properties, ranked 7 out of 20 in its peer group.
- 19 sewer main breaks and chokes per 100km of pipeline compared to statewide median of 38 and ranked 8 out of 20 in its peer group.

Council's sewerage networks are designed to protect public health. The sewerage systems are designed so in most emergency situations, wastewater will safely overflow to the environment and will not back up in pipes and flow into streets or people's homes. However, overflows of wastewater on to private or public property can occasionally occur for a number of reasons. These reasons may include blockages from fats, oils and grease, tree root intrusion, power interruption and excessive stormwater volumes. Upper Hunter generally does not have dry weather overflow network problem. There are no known major wet weather issues from the sewerage networks.

Some sewer pump stations are known to be at capacity. Pump stations serving problem catchments are generally redesigned and upgraded such as the Satur catchment (which has been fully upgraded in relation to capacity). Assessment of all pump station capacities is currently being undertaken.

Meeting the EPA license requirements for Sewer Treatment Plants is becoming increasing difficult and costly for the small rural population of the Upper Hunter Shire. Utilities in NSW are being strongly encouraged to achieve 100% effluent reuse. The effluent quality acceptable to the EPA for Scone Sewer Treatment Plant is currently under review and a key issue for Council.

Only the Scone Sewer Treatment Plant receives industrial loadings. The plant capacity versus the industrial loadings is currently under review. There is an established process for trade waste monitoring to identify new customers through the building consent process. A Council Trade Waste Officer is shared with Singleton Council and Muswellbrook Shire Council.

The sewerage networks have not been modelled to understand the network performance better to date. This is being undertaken currently.

Network capacity

The treatment plant capacity for each scheme is summarised in Table 13.

The sewer reticulation network can experience capacity pressure during large rain events. This is largely due to older infrastructure that is due for renewal. The majority of this infrastructure is located under hardscape surfaces which increases the difficulty of renewing that asset. Inflow and infiltration may attribute to some areas. Older infrastructure and ground movement may cause joints and pipes to become unaligned. There are no known major inflow and infiltration (I/I) issues in the townships.

6.1.4 Asset condition

Condition surveys

Asset condition is an important determinant for Council's asset renewal planning. Condition is monitored through failure statistics, selected dig up and inspect (rare), CCTV inspection of sewer lines and inspection of the above ground facilities.

A comprehensive survey of the sewer assets including the pipelines, treatment plants and pump stations was completed in 2016. The survey is using the industry accepted 1 to 5 condition grading rating in accordance with the 2015 IIMM.

The frequency of condition assessments will depend on a number of factors including the age, life, risk and criticality of the asset. In taking these factors into account and the current revaluation cycle for assets Council has determined a condition inspection frequency for each asset class. The following inspection frequency has been adopted for each asset class for future condition surveys:

- Above ground sewer assets – visual every five years
- Sewer pipelines:
    i. 5% visual inspection every year
    ii. 10% CCTV every two years.

Condition assessment

A desktop assessment of asset condition for the purposes of developing this AMP has been completed using the following method:

- Percentage design life remaining calculated by CONFIRM Construction plans not yet updated in MapInfo
- Review of recent CCTV pipeline records
- 2016 survey information for the complex assets
- Operator knowledge on a township and asset category basis.

This high level assessment of asset condition is summarised in Table 15. Note that the percentages are based on replacement costs.

Table 15: Assessed sewerage asset condition summary

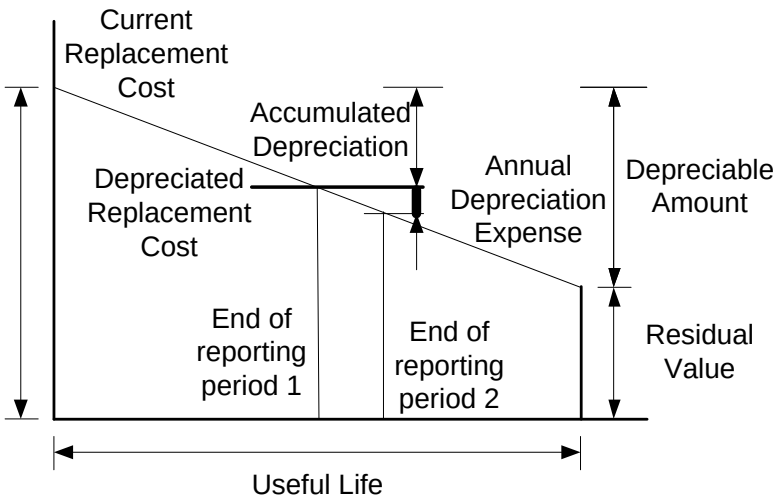
SEWERAGE ASSET CLASS	SUB ASSET CLASS	ASSET CONDITION GRADE				
		1	2	3	4	5
Treatment plants	Civil		85%	15%		
	Electrical		50%	50%		
	Mechanical		50%	50%		
Pump Stations	Civil			65%	35%	
	Electrical		50%		50%	
	Mechanical			50%	50%	
Pipes			15%	67%	11%	7%
Sewer Electronic Equipment				70%	30%	
Sewer Storage Dam		100%				
Sewer effluent pre treatment				100%		
Sewer buildings			100%			
Sewer effluent retic mains			100%			
Sewer Plant and Equipment			100%			

6.1.5 Asset valuations

The value of the sewerage assets recorded in the asset register as at June 2021 is shown below (excluding land). The full asset value by asset classes is detailed in Section 9.

The value of the sewer assets recorded in the asset register is revalued annually. Whilst it is normally adjusted for inflation costs across all asset classes, it is subject to a major revaluation every five years. The major revaluation considers suitability of design useful lives and changes them if necessary. It also uses the sewerage industry data to estimate replacement costs and correct current replacement costs used in the asset register where necessary.

- Current Replacement Cost $75,118,249
- Accumulated Depreciation $37,341,474
- Written Down Value $37,776,775



Useful lives were last reviewed in June 2016. Key assumptions made in preparing the valuations were:

- Industry standard design lives are used for all asset classes
- NSW Reference rates used for most assets replacement cost estimate

There are no major changes from previous valuations.

6.2 Infrastructure Risk Management Plan

Asset risks have been identified for the sewerage services activity using the NAMS risk management framework including the likelihood and consequence tables. The full activity risk register is detailed in Appendix E.

Table 16 shows the very high and high risks identified (top 3 only shown), the current controls and additional controls through mitigation strategies which will be implemented to result in the mitigated risk rating.

The activity review as part of the Sewerage Services AMP development identified ten risks in total with the following highest risks.

Table 16: Very High and High Risks and Treatment Plans

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *	Treatment Costs
Water and sewerage infrastructural groups	Poor or incomplete asset management practices including AMP, lifecycle management plans (LCMP) and asset condition assessments	Very high	Complete the actions identified in the Sewerage AMP including LCMP	High	Staff time
			Complete the resourcing levels for sewer services AM		External consultant for AMPs development
			Complete the asset condition survey		
Water and sewerage	Overall asset life and condition is compromised due to	High	Complete the full revision of the 2020 Sewerage Services AMPs	Medium	Staff time

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *	Treatment Costs
infrastructural groups	maintenance and renewal programs not well targeted or limited in scope		Complete the asset condition assessment program		External consultant for AMPs development and condition surveys as required
Water and sewerage infrastructural groups	Financial implications with inaccurate asset valuation and long term planning including renewal forecasts	High	Implement the asset management improvement program	Medium	Staff time
			Continue with regular inspections and reporting on assets		
			Start proactively analysing and reporting on data availability		
			Start building core asset management capability		
			Complete asset condition survey		

Note that the residual risk is the risk remaining after the selected risk treatment plan is operational.

There are unusual events or natural disasters that require more special attention than responding to normal faults, and cause operational strategies to change to a different mode. These strategies aim to minimise the disruption to services from events such as key staff absences, critical asset failures or widespread disasters.

Emergency management deals with the response to severe events. The Upper Hunter Shire Council participates in the Upper Hunter Water Utility Alliance with Muswellbrook Shire and Singleton Councils for emergency management and other initiatives.

Sewerage services manages non-civil defence emergency events using an incident escalation process, structures, communication and reporting lines that may change as an incident escalates.

6.3 Routine Operations and Maintenance Plan

Operations include regular activities to provide services at the agreed service levels such as responding to service faults and removing blockages.

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again.

6.3.1 Operations and Maintenance Plan

Operations activities affect service levels including quality and function through such things as treatment plant operations to meet environmental standards, speed of response to household sewer blockages, reliability of pump station operations, etc.

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, e.g. pump seal replacements, sewer main blockage clearing and repair. Maintenance may be classified into reactive, planned and specific maintenance work activities.

Reactive maintenance is unplanned repair work carried out in response to service requests and management/supervisory directions.

Planned maintenance is repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown experience, prioritising, scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

Specific maintenance is replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including pump replacements, repainting of metal work and mechanicals at Sewer Plants, replacing failed electrical switchboards, etc. This work often falls below the capital/maintenance threshold but may require a specific budget allocation.

The estimated past maintenance expenditure split up is shown in Table 17. Planned maintenance work is currently 25% of total maintenance expenditure. The planned maintenance is mainly for treatment plants and pump stations. This split is expected to remain in future years.

Table 17: Maintenance Expenditure Trends

MAINTENANCE EXPENDITURE	
PLANNED AND SPECIFIC	**UNPLANNED**
25%	75%

Prioritisation of reactive maintenance is undertaken by Council staff using experience and judgement. Maintenance expenditure levels are considered to be adequate to meet current service levels at this point in time. The actual maintenance was $851,000 for 2020/21.

There are occasions when initial reactive maintenance is undertaken, but lack of staffing resources result in a failure to return with timely preventative maintenance. An example of this is the reactive unblocking of sewer lines by Councils jetting equipment, without follow up maintenance such as heavy duty root cutting and clean out, or a minor dig up repair. The result is a re-occurrence of the initial sewer blockage.

6.3.2 Operations and Maintenance Strategies

The organisation will operate and maintain assets to provide the defined level of service to approved budgets in the most cost-efficient manner. The operation and maintenance activities include:

- Scheduling operations activities to deliver the defined level of service in the most efficient manner,
- Maintain a current infrastructure risk register for assets. Present service risks associated with providing services from infrastructure assets and reporting Very High and High risks and residual risks after treatment to management and Council (Under Development)
- Review current and required skills base and implement workforce training and development to meet required operations and maintenance needs,
- Review asset utilisation to identify underutilised assets and appropriate remedies, and over utilised assets and customer demand management options,

- Maintain a current hierarchy of critical assets and required operations and maintenance activities (Under development),
- Review management of operations and maintenance activities to ensure Council is obtaining best value for resources used.
- Operate and maintain the SCADA system to ensure the complex assets such as the sewer treatment plants are compliant and to ensure continuous operations Regular audits of the sewer treatment plants at asset component level by Council's operator to ensure continuous operations
- Wastewater flushing to ensure a high standard of wastewater discharge
- Trade waste monitoring to ensure the sewerage network, the treatment system, the environment, staff and the public are not harmed.

6.3.3 Critical Assets

Critical assets are those assets which have a high consequence of failure but not necessarily a high likelihood of failure. By identifying critical assets and critical failure modes, organisations can target and refine investigative activities, maintenance plans and capital expenditure plans at the appropriate time.

A high level criticality assessment was completed in 2015 for Council's infrastructural asset groups including sewerage services. Different asset elements were assessed as high, medium or low criticality rating and are detailed in Table 18. The next step is to identify and rank the critical assets using this methodology across the asset inventory.

Table 18: Critical Sewerage Assets

SEWERAGE ASSET ELEMENT	HIGH	MEDIUM	LOW
Rising main	Yes		
Material	Clay	Concrete/PVC	
Flood zone		Yes	
Waterway	Line runs parallel to waterway	Line runs perpendicular to waterway	
Reticulation size	>300mm diameter	200-300 diameter	150mm diameter
Pump stations	Yes		
Backup pump and power	No		
Catchment	Large	Medium	Small

6.3.4 Summary of future operations and maintenance expenditures

Future operations and maintenance expenditure is trend in line with the projections developed and identified in the Long Term Financial Model for Sewer.

6.4 Renewal/Replacement Plan

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original or lesser required service potential. Work over and above restoring an asset to original service potential is upgrade/expansion or new works expenditure.

6.4.1 Renewal plan

Assets requiring renewal/replacement are identified from one of three methods provided in the 'Expenditure Template'.

- Method 1 uses Asset Register data to project the renewal costs using acquisition year and useful life to determine the renewal year, or
- Method 2 uses capital renewal expenditure projections from external condition modelling systems (such as CCTV assessment, rating and prediction systems), or
- Method 3 uses a combination of average network renewals plus defect repairs in the Renewal Plan and Valuations sections of the Financial Modelling of Water and Sewerage Businesses – February 2011, and Upper Hunter Shire Council Special Schedule Number 7 – Condition of Public Works – 2013. Condition assessment for large single assets will be used as another input from 2017/18 budget onwards.

Method 3 was used for this Sewerage Services AMP.

The useful lives of assets used to develop projected asset renewal expenditures are shown in Table 19. They are as recommended for use in current Water Industry by DPIE Water publications. At the next full revaluation of Council's sewer assets, some specific asset types will have a useful life assigned which is slightly different to the above, based on local experience and knowledge. For instance, relined sewer pipes will have assigned a useful life of 50 years.

Table 19: Useful Lives of Assets

ASSET (SUB) CATEGORY	USEFUL LIFE (YEARS)
Mains	70
Treatment Plant- Civil	80
Treatment Plant- Electrical	25
Treatment Plant - Mechanical	20
Treatment Plant -Telemetry	10
Pump Station - Civil	80
Pump Station - Electrical	25
Pump Station - Mechanical	20
Telemetry and process control works	10

The sewer renewal programme is based on asset needs and considers the following:

- Overflow history
- Asset age
- Asset condition
- Criticality
- Risk based approach

Further improvements are required to refine the programme.

An important tool being used by Council to assist in identification of future rehabilitation programs is sewer mains jetting, cleaning and CCTV inspection surveys.

6.4.2 Renewal and Replacement Strategies

Council will plan capital renewal and replacement projects to meet level of service objectives and minimise infrastructure service risks by:

- Planning and scheduling renewal projects to deliver the defined level of service in the most efficient manner
- Undertaking project scoping for all capital renewal and replacement projects to identify:
  the service delivery 'deficiency', present risk and optimum time for renewal/replacement,

the project objectives to rectify the deficiency,
the range of options, estimated capital and life cycle costs for each options that could address the service deficiency,
evaluate the options against evaluation criteria adopted by Council,
select the best option to be included in capital renewal programs,

- Using 'low cost' renewal methods (cost of renewal is less than replacement) wherever possible
- Maintain a current infrastructure risk register for assets and service risks associated with providing services from infrastructure assets and reporting Very High and High risks and residual risks after treatment to management and Council
- Review current and required skills base and implement workforce training and development to meet required construction and renewal needs
- Maintain a current hierarchy of critical assets and capital renewal treatments and timings required
- Review management of capital renewal and replacement activities to ensure Council is obtaining best value for resources used.

Renewal ranking criteria

Asset renewal and replacement is typically undertaken to ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate (e.g. replacing a sewer main which is prone to blockages due to broken pipework in places).

It is possible to get some indication of capital renewal and replacement priorities by identifying assets or asset groups that:

- Have a high consequence of failure,
- Have a high utilisation and subsequent impact on users would be greatest,
- The total value represents the greatest net value to the organisation,
- Have the highest average age relative to their expected lives,
- Are identified in the AM Plan as key cost factors,
- Have high operational or maintenance costs, and
- Where replacement with modern equivalent assets would yield material savings.

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in table 20.

Table 20: Renewal and Replacement Priority Ranking Criteria

CRITERIA	WEIGHTING
Unacceptable failure statistics	50
Design Life Reached	20
Does not meet modern day design standards	20
High consequence of failure	10
Total	100%

Renewal and replacement standards

Renewal work is carried out in accordance with the following Standards and Specifications.

- AS 3500
- Council's adopted standards for design and construction of Water Supply and Sewerage Works
- Hunter Water Design Standards (based on WSAA standards)

- Public Works Design Manuals from the State Government Public Works Electrical and Mechanical standards as appropriate

6.4.3 Summary of Future Renewal and Replacement Expenditure

Projected future renewal and replacement expenditures are forecast to increase over time as the asset stock predominantly built in the 1930s, 1940s and 1950s reaches the end of its useful service life.

The projected capital renewal and replacement program is shown in Section 7 Financial Summary. The program is based on the following factors:

- Sewerage reticulation is replaced when problematic materials (including clay pipe) fail frequently indicating that the asset is in very poor condition
- Sewerage reticulation is replaced when there is unacceptable structural integrity based on CCTV surveys
- Specialised equipment replaced based on age such as pump overhauls
- Replacement of critical sewerage assets including rising mains

Deferred renewal and replacement, i.e. those assets identified for renewal and/or replacement and not scheduled in capital works programs are to be included in the risk analysis process in the risk management plan.

There are a number of renewal programs with regular annual budget allocations as follows:

- Sewer Relining. A detailed list of pipe with condition ratings of 4 or 5, has been developed, based on failure statistics. After CCTV survey is undertaken, the pipes will be prioritised for either, relining, dig up repairs, or complete replacement. It is expected, and budgets proposed, will allow 12 kilometres of these pipes to be relined or replaced completely over the next five years.
- Provision has been made to select one sewer pump station per year, and to undertake renewals of electrical, mechanical and telemetry equipment.
- The 2016 condition assessment of the electrical and mechanical assets forms the basis of renewals.

6.5 Creation/Acquisition/Upgrade Plan

New works are those works that create a new asset that did not previously exist, or works which upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost to the organisation from land development.

6.5.1 Selection Criteria

Non growth new assets and upgrade/expansion of existing assets are identified from various sources such as councillor or community requests, proposals identified by strategic plans or partnerships with other organisations. Candidate proposals are inspected to verify need and to develop a preliminary renewal estimate. Verified proposals are ranked by priority and available funds and scheduled in future works programmes. The priority ranking criteria is detailed below.

Table 21: New Assets Priority Ranking Criteria

CRITERIA	WEIGHTING
Identified deficiency to adopted levels of Service	50
External standards have changed	30
Community wishing improved sewerage service	20
Total	100%

New assets required to accommodate growth will normally be identified as a result of Technical Servicing Plans which are prepared to assist in the planning of new development areas, as well as setting up Section 64 Developer Contribution Schemes.

The major additional matter to be considered for the above studies, is to undertake growth projections and analysis of the life cycle costs of alternative assets which could provide the service generated by the new development area when it is fully completed and utilised.

6.5.2 Capital Investment Strategies

The organisation will plan capital upgrade and new projects to meet level of service objectives by:

- Planning and scheduling capital upgrade and new projects to deliver the defined level of service in the most efficient manner
- Undertake project scoping for all capital upgrade/new projects to identify:
  - the service delivery 'deficiency', present risk and required timeline for delivery of the upgrade/new asset
  - the project objectives to rectify the deficiency including value management for major projects
  - the range of options, estimated capital and life cycle costs for each option that could address the service deficiency
  - management of risks associated with alternative options
  - evaluate the options against evaluation criteria adopted by Council
  - select the best option to be included in capital upgrade/new programs
- Review current and required skills base and implement training and development to meet required construction and project management needs
- Review capital project management activities being undertaken to ensure Council is obtaining best value for resources used

Council's new works program consists of projects to address discharge standards, health and safety and meeting demand including:

- New main extensions
- Pump station upgrades for capacity and installing telemetry
- New sewer treatment plant at Scone
- Provision of sewer services to Cassilis
- Realignment of rising sewer mains
- Installation of mag flow meters at pump stations

Standards and specifications for new assets and for upgrade/expansion of existing assets are the same as those for renewal shown in Section 6.4.2.

6.5.3 Summary of Future Upgrade/New Assets Expenditure

The projected upgrade/new capital works program is shown in Section 7 Financial Summary. The new works program makes up the majority of the capital program.

6.6 Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. These costs are generally included as part of the capital project. There is only one asset identified for possible decommissioning and disposal as shown in Table 22, together with estimated annual savings from not having to fund operations and maintenance of the asset.

Table 22: Asset identified for possible decommissioning

TOGAR	COMMENTS	ANNUAL SAVINGS IF DECOMMISSIONED
Temporary pump station below Retirement Village Murrurundi	May not be needed if a short gravity main extension is completed to nearby reticulation	The saving is the annual power and maintenance costs.

Assets or asset components from treatment plants and pumping stations are often replaced as part of business as usual operations. The assets being replaced are assessed and either left in the ground (pipes), recycled, dumped or repurposed.

7 FINANCIAL SUMMARY

This section contains the financial requirements resulting from all the information presented in the previous sections of this asset management plan. The financial projections will be improved as further information becomes available on desired levels of service and current and projected future asset performance.

Note that expenditure forecasts (operational and capital) are based on the Delivery Program 2018/19-2022/23 and Operational Plan 2022/2023.

Long term financial modelling over a 30 year period is planned to be undertaken to help in the setting of a long term price path for water charges that is financially sustainable. The improvements proposed for condition monitoring and establishing more accurate useful lives for the water system will be an input into that process also.

7.1 Financial Projections

7.1.1 Financial Summary Overview

The total amount of forecasted expenditure for sewerage services operations, maintenance and capital over the next ten years will be approximately $67.7 million (as shown in Figure 4 and Table 23) with annual forecasted expenditure varying between approximately $3.8 to $18.4 million per annum.

This expenditure is divided into two main categories being:

- Capital Expenditure (CAPEX), which is approximately $31.4 million or 46% of total expenditure and Operational Expenditure (OPEX), which is approximately $36.2 million or 54% of total expenditure.

The CAPEX is further separated into three main subcategories being:

- Level of Service (LOS), which increases the service level delivered by the assets. This accounts for approximately $10.3 million or 33% of total capital expenditure.
- Renewal, which replaces the assets as new. This equates to approximately $10.4 million or 33% of total capital expenditure.
- Growth, refers to the expansion of the existing asset network. This accounts for approximately $10.7 million or 34% of total capital expenditure.

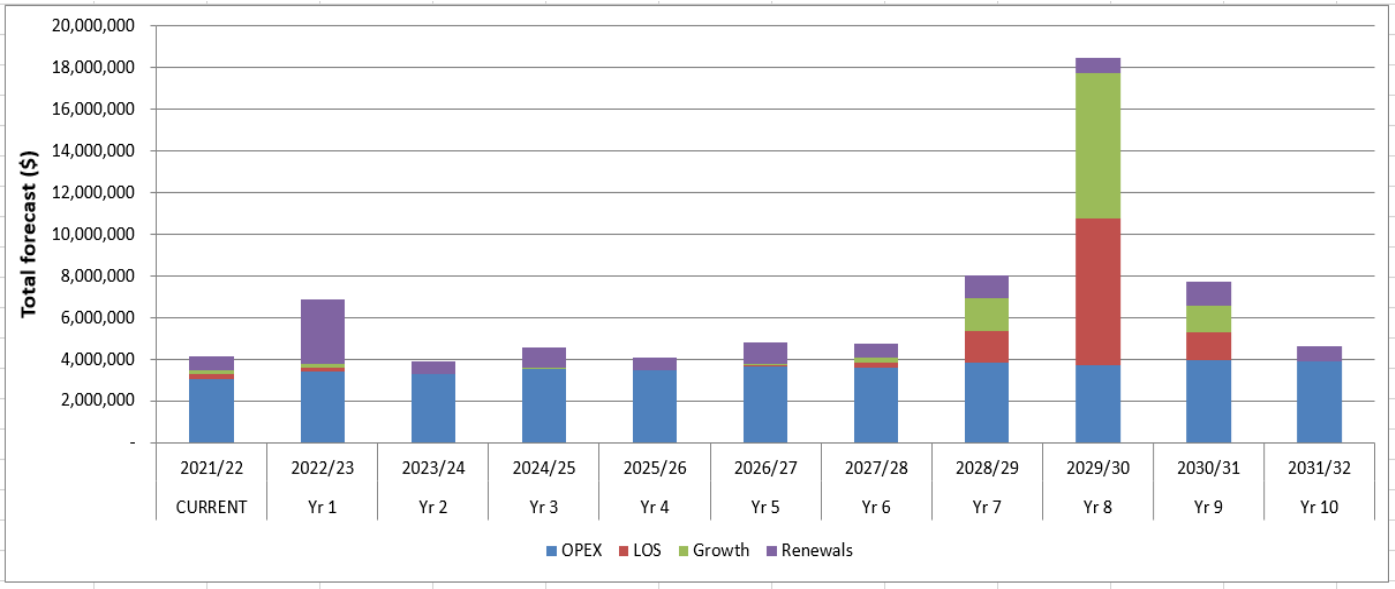


Figure 4. Summary of Sewerage Services Total Expenditure Forecast

Table 23: Summary of Sewer Total Expenditure Forecast

SEWERAGE SERVICES SUMMARY	CURRENT 2021/22	Yr 1 2022/23	Yr 2 2023/24	Yr 3 2024/25	Yr 4 2025/26	Yr 5 2026/27	Yr 6 2027/28	Yr 7 2028/29	Yr 8 2029/30	Yr 9 2030/31	Yr 10 2031/32	10 YEAR TOTAL
OPEX	3,020,173	3,374,924	3,291,365	3,515,026	3,449,634	3,669,171	3,580,339	3,813,175	3,717,727	3,964,039	3,862,146	36,237,546
LOS	274,200	212,449	-	30,000	-	37,500	250,000	1,545,000	7,000,000	1,300,000	-	10,374,949
Growth	161,700	198,247	-	30,000	-	37,500	250,000	1,545,000	7,000,000	1,300,000	-	10,360,747
Renewals	699,850	3,096,092	573,850	969,074	637,150	1,027,668	658,370	1,106,758	700,336	1,156,610	763,084	10,688,992
TOTAL	**4,155,923**	**6,881,712**	**3,865,215**	**4,544,100**	**4,086,784**	**4,771,839**	**4,738,709**	**8,009,933**	**18,418,063**	**7,720,649**	**4,625,230**	**67,662,234**

7.1.2 Operational Expenditure Summary

The recommended ten year operational expenditure forecast is shown in Table 24 with $36.2 million forecast over the next ten years. This shows that depreciation is 25% of the total operations expenditure, followed by administration overheads at 22%. The operational expenditure by township is detailed in Appendix C.

Table 24: Summary of Sewerage Services Operational Expenditure

SEWER OPEX SUMMARY	CURRENT 2021/22	Yr 1 2022/23	Yr 2 2023/24	Yr 3 2024/25	Yr 4 2025/26	Yr 5 2026/27	Yr 6 2027/28	Yr 7 2028/29	Yr 8 2029/30	Yr 9 2030/31	Yr 10 2031/32	10 YEAR TOTAL
OPERATING EXPENDITURE												
DIRECT ASSET COSTS												
Engineering and Supervision	350,500	419,153	482,274	498,459	514,980	527,933	541,214	554,828	568,785	583,095	597,764	5,288,485
Sewer Other	4,700	2,000	2,060	2,117	2,170	2,224	2,279	2,336	2,395	2,455	2,516	22,552
Trade Waste	5,000	5,530	5,696	5,852	5,998	6,149	6,303	6,460	6,621	6,787	6,957	62,353
Sewer Mains	177,000	196,280	202,673	209,089	215,518	221,032	226,688	232,490	238,440	244,544	250,803	2,237,557
Pumping Stations	164,600	215,985	222,865	229,656	236,340	242,337	248,487	254,793	261,260	267,891	274,690	2,454,304
Sewer Treatment	667,500	723,776	747,171	770,447	793,555	813,643	834,242	855,362	877,019	899,226	921,996	8,236,437
Sewer Other	1,400	1,800	1,854	1,904	1,952	2,002	2,052	2,102	2,155	2,209	2,264	20,294
Sewer – CCTV Works	81,500	208,500	-	145,000	-	155,000	-	165,000	-	175,000	-	848,500
Private Works	4,000	12,700	13,114	13,530	13,950	14,311	14,681	15,060	15,450	15,850	16,260	144,906
INDIRECT ASSET COSTS												
Depreciation	913,826	890,406	890,406	890,406	890,406	890,406	890,406	890,406	890,406	890,406	890,406	8,904,060

Corporate Admin Overheads	650,147	698,794	723,252	748,566	774,765	794,134	813,987	834,338	855,196	876,576	898,490	8,018,098
TOTAL	**3,020,173**	**3,374,924**	**3,291,365**	**3,515,026**	**3,449,634**	**3,669,171**	**3,580,339**	**3,813,175**	**3,717,727**	**3,964,039**	**3,862,146**	**36,237,546**

7.2 Capital Expenditure

There is a total of $31.4 million for capital expenditure for the next ten years as shown in Table 23. It is estimated that 34% of the capital expenditure is for renewals and total annual renewals are approximately $1 million per annum. The sewer renewals are mainly for full mains replacements, sewer relining, pump stations and sewer treatment plant.

- It is estimated that 33% of the capital expenditure is for new works LOS, mainly for:
- Pump station mag flow meters
- Scone Sewage Treatment Plant Upgrade
- New Sewer System at Cassilis
- New main extensions throughout the Shire

The full capital expenditure program is detailed in Appendix B.

7.3 Forecast Reliability and Confidence

The expenditure and valuations projections in the Sewerage Services AMP are based on best available data. Currency and accuracy of data is critical to effective asset and financial management. Data confidence is classified on a 5 level scale in accordance with Table 25.

Table 25: Data Confidence Grading System

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

The estimated confidence level for and reliability of data used in Sewerage AMP is shown in Table 26.

Table 26 Data Confidence Assessment for Data used in AMP

DATA	CONFIDENCE ASSESSMENT	COMMENT
Demand drivers	C	Work done on this during 30 year financial modelling in 2011, but more required
Growth projections	C	Multiple scenarios developed and considered during 30 year financial modelling
Operations expenditures	B	Current levels generally known and recorded, scenarios considering additional resourcing need to be developed
Maintenance expenditures	B	Generally known but maintenance history not recorded at asset ID level. Need to start recording work history to asset lengths in CONFIRM to improved renewal planning.
Projected Renewal exps.		
Asset values	B	Asset revaluation completed in June 2015. Major revaluation scheduled for every five years and due 2022/23.
Asset useful lives	B	Useful lives were last reviewed in June 2016.
Condition modelling	E	There has been limited condition information collected and therefore no modelling undertaken to date.
Network renewals	C	Generally sound renewal programs based on operational knowledge and identified defects.
Defect repairs	C	
Upgrade/New expenditures	B	Based on specific studies and/or designs.
Disposal expenditures	C	Generally as part of a capital project or at asset component level for complex assets. Disposal costs are generally included as part of the capital project.

The overall data confidence for the Sewerage AMP has been assessed as an uncertain.

8 PLAN IMPROVEMENT AND MONITORING

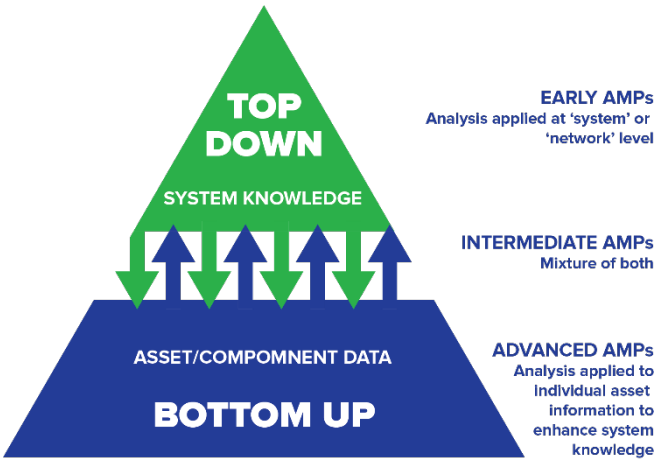
8.1 Status of Asset Management Practices

Asset Management Commitment

Through the initiatives presented in this section, Council is committed to appropriate asset management practices. This practice is being developed in line with the IPWEA NAMS practice as presented the suite of asset management publications including the 2015 IIMM. Council is committed to delivering the most appropriate levels of service balanced with affordability and good industry practice.

Core and Advanced Asset Management

This plan is prepared as a 'core' AMP over a 10 year planning period in accordance with the 2015 IIMM. It is prepared to meet minimum legislative and organisational requirements for sustainable service delivery and long term financial planning and reporting. Core asset management is a 'top down' approach where analysis is applied at the 'system' or 'network' level as shown in Figure 66.



Future revisions of this AMP will move towards 'intermediate' asset management using a 'bottom up' approach for gathering asset information for individual assets to support the optimisation of activities and programs to meet agreed service levels.

8.2 Accounting and Financial Systems

Council uses the Authority suite for its financial / accounting systems. Responsibility for the financial system lies with the Finance Manager and the Director Corporate Services. Council currently has a maintenance/capital threshold.

Council manages and is responsible for all of the accounting, budgeting and financial aspects of all of its assets. The primary issue for the financial systems section is to:

- Ensure that asset valuations are conducted regularly
- Valuations match what is out in the field
- Ensure that updates to the system are regularly undertaken

Accountabilities for financial systems

Under the Local Government Act 1993 the Finance Section of Upper Hunter Shire Council must meet reporting requirements. These include quarterly budget reviews with all Asset Management Plan sections within the Council. They also must provide an annual report outlining the year's achievements, in terms of meeting its objectives and performance targets as it had set out. This document also outlines the amount of expenditure required to meet the standards set in the asset plans, the amount of annual maintenance required to keep the assets at the level of service specified, and Upper Hunter Shire Council's maintenance program for the year in relation to the work carried out.

Accounting standards and regulations

To effectively account for the sewerage assets of Upper Hunter Shire Council, the Finance Section must meet statutory and regulatory reporting protocols. These protocols are addressed in the Local Government Act 1993.

Capital/maintenance threshold

Replacement or enhancement works over $5,000 are capitalised.

Required changes to accounting financial systems arising from this AMP

Areas that need to be investigated include establishing an integrated work orders system for Sewer Assets. This will allow for a thorough costing of the planned, cyclic and reactive maintenance tasks in the Sewer system. This process is well advanced for other sections of Council, and now needs to be extended to the Sewer System.

8.2.3 Asset Registers and Management Systems

Currently CONFIRM is used, supplemented by spreadsheets and Content Manager documentation. There is a need to obtain more sophisticated reports from CONFIRM, and also to increase the skills and training of a

number of Council officers who either presently, or could in future, use the CONFIM system. Currently, there is no link between asset management systems and accounting systems. In order for this Asset Management Plan to grow in maturity and improve in accuracy it is vital that integration of asset register systems and financial systems be achieved.

Required changes to asset management system arising from this AMP

- Condition monitoring and obsolescence to be accounted for and recorded.
- The link between the financial plan, asset plan and the works order system will be addressed in the future.
- Establish recording systems where reactive maintenance can be measured in terms of frequency and scope of work undertaken.
- For CONFIRM, improve the provision for, and records contained, in the large single point assets, such as Treatment Plants, Reservoirs and Pump Stations.

The process for updating CONFIRM is currently ad hoc and under resourced. Asset updates are mainly undertaken for audit reporting purposes rather than for long term asset management planning. A sound and complete asset inventory is essential for Council to manage sewer services sustainably. This is recognised as a very high improvement task.

8.3 Action and Improvement Program

Key improvement programmes and associated projects have been developed through a review of the gaps in developing this draft AMP and the issues identified. The three year improvement programme is summarised in Table 27.

Table 27: Improvement Plan Summary Programme

AM IMPROVEMENT AREA	ACTION	INDICATIVE TIMEFRAME	PRIORITY	RESPONSIBILITY
Asset data	Complete the currently underway comprehensive condition survey of all sewer assets including the sewer treatment plants, pump stations and pipelines	Ongoing	High	Manager Water and Sewer
	Complete the major data cleansing of the sewerage dataset so there is complete asset inventory of the asset classes including asset attributes including size and material type	Ongoing	Very High	Manager Water and Sewer, Manager Strategic Assets and Manager Information Services
Asset valuation	Review the currently used asset useful lives prior to the major asset revaluation in 2022/23	2021/22	High	Manager Water and Sewer, Manager Strategic Assets
Asset capability	Implement adequate resourcing and capability for updating the water services asset inventory, collection of asset repair data, and updating asset condition assessment records	Ongoing	Very High	Manager Water and Sewer, Manager Strategic Assets and Manager Information Services
Asset performance	Model the sewerage networks of the main townships to understand the network performance better	2021/22	Medium	Manager Water and Sewer

AM IMPROVEMENT AREA	ACTION	INDICATIVE TIMEFRAME	PRIORITY	RESPONSIBILITY
	Undertake a proactive assessment of the pump station capacity	2021/22	Medium	Manager Water and Sewer
Renewal planning	Revise and improve the effectiveness of the current sewer renewal program	2021/22	High	Manager Water and Sewer
Risk management	Develop an Emergency Response Plan for the critical sewer asset	2021/22	High	Manager Water and Sewer
Systems Improvements	Start recording work history to asset lengths in CONFIRM to improvement renewal planning	2021/22	High	Manager Water and Sewer, Manager Strategic Assets and Manager Information Services
AM Practices	Complete a formal AM Maturity Assessment of the sewerage activity	2021/22	High	Manager Water and Sewer

8.4 Monitoring and Review Procedures

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

The AMP will be updated annually to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values incorporated into the Council's long term financial plan.

The AM Plan has a life of four years (Council election cycle) and is due for complete revision and updating within one year of each Council election.

8.5 Performance Measures

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the organisation's long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and organisational structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the organisation's Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0, provided an accurate profile of useful lives remaining for all sewer assets has been established

9 LATEST ASSET AND LOS INFORMATION

9.1 Sewerage Asset Summary

A summary of the Shire's sewerage asset class values is below as at 30 June 2021 from Council's CONFIRM Asset Register.

Table 28: Value of sewerage asset classes

SEWERAGE ASSET CLASS	CURRENT REPLACEMENT VALUE ($)	ACCUMULATED DEPRECIATION ($)	WRITTEN DOWN VALUE (WDV) ($)
Pump Stations	6,796,485	3,048,339	3,748,146
Other Infrastructure	2,414,851	989,881	1,424,970
Pipes	47,373,986	22,865,801	24,508,185
Treatment Works	18,356,724	10,326,741	8,029,983
Plant & Equipment	116,250	103,518	12,732
Sewer Buildings	59,953	7,194	52,759
TOTAL	**75,118,249**	**37,341,474**	**37,776,775**

Note that the asset quantities are still unreliable until the data cleansing of the asset inventory is completed. The 2021 asset valuation was based on bulk data at township level. This has been identified as a high priority improvement task.

From the latest assessment of the asset inventory, the sewerage system consists of:

- 4 sewerage treatment plants
- 15 pump stations
- 11km of pressure mains
- 151km of gravity mains

9.2 Service Level Summary

The levels of service and performance measures for sewerage services are summarised in Table 29.

Table 29: Sewerage Services Level and Performance Measure Summary

KEY SERVICE ATTRIBUTE	CUSTOMER LOS	PERFORMANCE MEASURE	PERFORMANCE MEASURE TYPE	LOS PERFORMANCE FOR 2020/21	CURRENT YEAR 2021/22 TARGET
Safety – public health	To provide adequate sewerage services for household and business use in currently	Percentage achievement for number of category 1 failures due to rainfall and deficient capacity per year of no more than 10	Technical	Met	90%

KEY SERVICE ATTRIBUTE	CUSTOMER LOS	PERFORMANCE MEASURE	PERFORMANCE MEASURE TYPE	LOS PERFORMANCE FOR 2020/21	CURRENT YEAR 2021/22 TARGET
	serviced urban communities	Percentage achievement for number of category 2 failures due to pump or other breakdown include power failure per year of no more than 4	Technical	Met	90%
		Percentage achievement for number of category 3 failures due to blockages per year of 200 (or less)	Technical	Met	90%
		Total number of customer complaints regarding sewerage services	Customer	Met	<100
Quality - reliability	To provide reliable sewerage networks	Percentage of sewerage services network in satisfactory condition (condition grades 1,2 or 3) (for pipelines only)	Technical	82%	90%
Compliance with Customer Charter	Provide prompt response to service requests	Percentage achievement for responding to personal/ oral customer complaint within 1 working day	Customer	90%	90%
		Percentage achievement for responding to written customer complaint within 10 working day	Customer	80%	95%

KEY SERVICE ATTRIBUTE	CUSTOMER LOS	PERFORMANCE MEASURE	PERFORMANCE MEASURE TYPE	LOS PERFORMANCE FOR 2020/21	CURRENT YEAR 2021/22 TARGET
Sustainable – Environmental performance	To provide sewerage services that do not negatively impact on public health or the natural environment in line with legislative requirements	Meet licence limits and statutory requirements (100th percentile) with maximum number of samples per year (for BOD and SS in license).	Technical	93%	100%
Sustainable – Cost Effectiveness	Sustainably managing the sewerage service network	Sewer renewals expenditure compared against water industry peers, using the water industry annual reports to DPIE Water meet or exceed median expenditure level (Band 3)	Technical	Met Band 3	Band 3 or better

9.3 Infrastructure Asset Performance Indicators

The asset performance indicators are summarised in Table 30. The ten year asset ratio forecasts based on three year rolling averages are detailed in Appendix D.

Table 30: Asset performance indicators

RATIO	PURPOSE	2020/21	BENCHMARKS	ACHIEVED	COMMENT
Infrastructure Renewals Ratio	To assess the proportion spent on infrastructure renewals vs infrastructure deterioration	37.40%	>100%	No	Sewer assets are ageing with a significant investment and focus on renewals required.

RATIO	PURPOSE	2020/21	BENCHMARKS	ACHIEVED	COMMENT
Infrastructure Backlog Ratio (estimated cost to bring the assets to a satisfactory condition/ value of assets)	To assess the infrastructure backlog against the total value of council's infrastructure	2.51%	<2%	No	Sewer assets are ageing with over 70% of infrastructure in Condition 3 or higher. Significant capital expenditure with a focus on renewals is required.
Asset Maintenance Ratio	To assess the actual vs required annual maintenance expenditure	154.17%	>100%	Yes	With a large percentage of assets in Condition 3 or higher this will lead to an increase in maintenance expenditure which is currently underfunded throughout the next 10 year period.
Capital Expenditure Ratio (assessed as annual capital expenditure/ annual depreciation)	To assess the extent to which council is expanding its asset base through capital expenditure (on both new assets and through replacement of existing assets)	0.91	>1.1	No	Capital expenditure planned over the next ten year average is favourable to benchmarks

10 REFERENCES

IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australia, Sydney, **www.ipwea.org.au/namsplus**.

IPWEA, 2009, 'Australian Infrastructure Financial Management Guidelines', Institute of Public Works Engineering Australia, Sydney, **www.ipwea.org.au/AIFMG**.

IPWEA, 2015, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australia, Sydney, **www.ipwea.org.au/IIMM** (Refer to Section 3.1 for relevant Council's documents in relation to this AMP)

11 APPENDICES

- Appendix A Acronym Glossary
- Appendix B Projected 10 Year Capital Renewal, Replacement and New Works Program
- Appendix C Operational Expenditure by Township
- Appendix D Forecast of Asset Ratios to Local Government benchmarks
- Appendix E Sewerage Services Activity Risk Register
- Appendix F Glossary/Definitions

Appendix A – Acronym Glossary

Acronym	Definition
AAAC	Average annual asset consumption
AM	Asset management
AMP	Asset management plan
AMS	Asset management system
BASIX	Building Sustainability Index
CRC	Current replacement cost

Acronym	Definition
CRM	Customer Request Management system
DA	Depreciable amount
DRC	Depreciated replacement cost
DPI	Department of Primary Industries Water
DPOP	Delivery Program and Operational Plan
EF	Earthworks/formation
IIMM	International Infrastructure Management Manual
IWCM	Integrated Water Cycle Management Plan
LCMP	Lifecycle Management Plan
LOS	Levels of Service
LTFP	Long term financial plan
MMS	Maintenance management system
POEO	Protection of Environment Operations Act
RV	Residual value
WARR	Waste Avoidance and Recovery Act
WDV	Written Down Value

Appendix B – Projected 10 year Capital Renewal, Replacement and New Works Program

PROJECT DESCRIPTION	Type of Works			COST OF RENEWALS	TOTALS	Current Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	TOTAL 10 YEARS
	Improved LOS	Growth	Renewals			2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	
SEWER CAPITAL PROJECTS																	
MERRIWA SEWERAGE																	
1162. Mwa -Sewer Relining	0%	0%	100%	689,609	689,609	100,000	199,609	-	115,000	-	120,000	-	125,000	-	130,000	-	689,609
4465. Mwa -Manhole replace/improvement	0%	0%	100%	120,000	120,000	-	60,000	-	-	20,000	-	-	20,000	-	-	20,000	120,000
4466. Mwa - STP Renewals	0%	0%	100%	763,197	763,197	15,000	268,197	45,000	47,500	50,000	52,500	55,000	57,500	60,000	62,500	65,000	763,197
4468. Mwa - Main Renewals/Replacements	0%	0%	100%	566,708	566,708	30,000	50,000	51,550	53,058	54,518	55,908	57,334	58,797	60,296	61,835	63,412	566,708
4572. Cassilis Sewer Scheme	100%	0%	0%	-	60,000	155,500	60,000	-	-	-	-	-	-	-	-		60,000
5328. Mwa - Recycled Water Scheme	100%	0%	0%	-	33,200	-	33,200	-	-	-	-	-	-	-	-		33,200
5379. Mwa - STP Cleaning Polishing Ponds	0%	0%	100%	1,299,697	1,299,697	-	1,299,697	-	-	-	-	-	-	-	-		1,299,697
MURRURUNDI SEWERAGE																	
3017. Mdi - STP Renewals	0%	0%	100%	253,000	253,000	20,000	20,000	21,000	23,000	24,000	25,000	26,000	27,000	28,000	29,000	30,000	253,000
4423. Mdi - Main Renewals/Replacement	0%	0%	100%	568,173	568,173	10,000	50,000	51,575	53,129	54,658	56,065	57,509	58,990	60,510	62,069	63,668	568,173
4469. Mdi - Manhole Renewals & Replacements	0%	0%	100%	112,756	112,756	17,000	10,000	10,300	10,583	10,848	11,119	11,397	11,682	11,974	12,273	12,580	112,756
4536. Mdi - Sewer Relining	50%	50%	0%	-	425,000	100,000	100,000	-	60,000	-	75,000	-	90,000	-	100,000	-	425,000
5512. Mdi Sewer Extension	50%	50%	0%	-	-	36,400	-	-	-	-	-	-	-	-	-		-
SCONE/ABERDEEN SEWERAGE																	
3016. Scn - STP Renewals	0%	0%	100%	568,173	568,173	25,000	50,000	51,575	53,129	54,658	56,065	57,509	58,990	60,510	62,069	63,668	568,173
4400. Abn - STP Renewals	0%	0%	100%	284,819	284,819	25,000	25,000	25,800	26,600	27,399	28,111	28,842	29,592	30,362	31,151	31,962	284,819
4473. Scn/Abn - Sewer Relining	0%	0%	100%	1,503,589	1,503,589	400,000	513,589	-	230,000	-	240,000	-	250,000	-	270,000	-	1,503,589
4475. Scn - Manhole Replacements/Improvements	0%	0%	100%	250,500	250,500	-	125,000		28,000		30,000		32,500		35,000		250,500
4476. Scn/Abn - Mains Renewals/Replacements	0%	0%	100%	2,790,000	2,790,000	15,000	180,000	250,000	260,000	270,000	280,000	290,000	300,000	310,000	320,000	330,000	2,790,000
4480. Scn - Moobi Rd SPS Upgrade Pump Station	50%	50%	0%	-	20,000	-	20,000	-	-	-	-	-	-	-	-		20,000
4489. Scn - New STP	50%	50%	0%	-	20,000,000	-	-	-	-	-	-	500,000	3,000,000	14,000,000	2,500,000		20,000,000
4794. IWCM	30%	70%	0%	-	197,496	70,000	197,496	-	-	-	-	-	-	-	-		197,496
4858. Scn/Abn - SPS Renewals	0%	0%	100%	738,771	738,771	40,000	65,000	67,050	69,075	71,069	72,900	74,779	76,707	78,684	80,713	82,794	738,771
5232. Telemetry Upgrade Scone Airport SPS7	0%	0%	100%	180,000	180,000	-	180,000	-	-	-	-	-	-	-	-		180,000
5394. Aberdeen Rock Flume	50%	50%	0%	-	-	59,000	-	-	-	-	-	-	-	-	-		-
5400. Airpark Pump Station	0%	100%	0%	-	-	15,000	-	-	-	-	-	-	-	-	-	-	-
5469. Scone STP Access Road Reseal	0%	0%	100%	-	-	2,850	-	-	-	-	-	-	-	-	-	-	-

TOTAL CAPITAL WORKS EXPENDITURE PROPOSED FOR TEN YEAR PERIOD						1,135,750	3,506,788	573,850	1,029,074	637,150	1,102,668	1,158,370	4,196,758	14,700,336	3,756,610	763,084	31,424,688
TOTAL RENEWALS ONLY EXPENDITURE PROPOSED FOR TEN YEAR PERIOD				10,688,992													

Appendix C – Operational Expenditure by Township

MERRIWA/CASSILIS SEWERAGE	CURRENT 2021/22	Yr 1 2022/23	Yr 2 2023/24	Yr 3 2024/25	Yr 4 2025/26	Yr 5 2026/27	Yr 6 2027/28	Yr 7 2028/29	Yr 8 2029/30	Yr 9 2030/31	Yr 10 2031/32	10 YEAR TOTAL
OPERATING EXPENDITURE												
DIRECT ASSET COSTS												
Engineering and Supervision	30,500	30,500	31,563	32,662	33,800	34,650	35,522	36,416	37,332	38,272	39,235	349,952
Sewer Other	400	-	-	-	-	-	-	-	-	-	-	-
Trade Waste	1,000	1,500	1,545	1,587	1,627	1,668	1,710	1,752	1,796	1,841	1,887	16,913
Sewer Mains	21,000	27,530	28,426	29,316	30,199	30,954	31,728	32,521	33,334	34,168	35,022	313,198
Pumping Stations	43,600	46,150	47,665	49,184	50,705	51,986	53,300	54,647	56,028	57,444	58,896	526,005
Sewer Treatment	125,500	130,571	135,043	139,638	144,358	148,008	151,750	155,587	159,522	163,556	167,692	1,495,725
Sewer Other	1,000	1,500	1,545	1,587	1,627	1,668	1,710	1,752	1,796	1,841	1,887	16,913
Sewer – CCTV Works	20,000	24,500	-	30,000	-	32,500	-	35,000	-	37,500	-	159,500
INDIRECT ASSET COSTS												
Depreciation	151,986	151,986	151,986	151,986	151,986	151,986	151,986	151,986	151,986	151,986	151,986	1,519,860
Corporate Admin Overheads	100,535	110,140	113,995	117,985	122,114	125,167	128,296	131,504	134,791	138,161	141,615	1,263,768
TOTAL	**495,521**	**524,377**	**511,768**	**553,945**	**536,416**	**578,587**	**556,002**	**601,165**	**576,585**	**624,769**	**598,220**	**5,661,834**

MURRURUNDI SEWERAGE	CURRENT 2021/22	Yr 1 2022/23	Yr 2 2023/24	Yr 3 2024/25	Yr 4 2025/26	Yr 5 2026/27	Yr 6 2027/28	Yr 7 2028/29	Yr 8 2029/30	Yr 9 2030/31	Yr 10 2031/32	10 YEAR TOTAL
OPERATING EXPENDITURE												
DIRECT ASSET COSTS												
Engineering and Supervision	46,500	48,030	49,696	51,416	53,191	54,529	55,901	57,307	58,749	60,227	61,742	550,788
Trade Waster	1,000	1,030	1,061	1,090	1,117	1,145	1,174	1,203	1,233	1,264	1,296	11,613
Sewer Mains	17,000	19,500	20,140	20,790	21,448	22,006	22,579	23,167	23,770	24,389	25,024	222,813
Pumping Stations	26,000	27,335	28,190	29,023	29,832	30,586	31,359	32,152	32,965	33,798	34,652	309,892
Sewer Treatment	88,300	94,605	97,678	100,749	103,814	106,453	109,160	111,935	114,781	117,700	120,693	1,077,568

Sewer Other	400	300	309	317	325	334	342	350	359	368	377	3,381
Sewer – CCTV Works	20,000	24,000	-	30,000	-	32,500	-	35,000	-	37,500	-	159,000
INDIRECT ASSET COSTS												
Depreciation	151,986	151,986	151,986	151,986	151,986	151,986	151,986	151,986	151,986	151,986	151,986	1,519,860
Corporate Admin Overheads	100,535	110,140	113,995	117,985	122,114	125,167	128,296	131,504	134,791	138,161	141,615	1,263,768
TOTAL	**451,721**	**476,926**	**463,055**	**503,356**	**483,827**	**524,706**	**500,797**	**544,604**	**518,634**	**565,393**	**537,385**	**5,118,683**

SCONE/ABERDEEN SEWERAGE	**CURRENT 2021/22**	**Yr 1 2022/23**	**Yr 2 2023/24**	**Yr 3 2024/25**	**Yr 4 2025/26**	**Yr 5 2026/27**	**Yr 6 2027/28**	**Yr 7 2028/29**	**Yr 8 2029/30**	**Yr 9 2030/31**	**Yr 10 2031/32**	**10 YEAR TOTAL**
OPERATING EXPENDITURE												
DIRECT ASSET COSTS												
Engineering & Supervision	273,500	340,623	401,015	414,381	427,989	438,754	449,791	461,105	472,704	484,596	496,787	4,387,745
Sewer Other	4,300	2,000	2,060	2,117	2,170	2,224	2,279	2,336	2,395	2,455	2,516	22,552
Trade Waste	3,000	3,000	3,090	3,175	3,254	3,336	3,419	3,505	3,592	3,682	3,774	33,827
Sewer Mains	139,000	149,250	154,107	158,983	163,871	168,072	172,381	176,802	181,336	185,987	190,757	1,701,546
Pumping Stations	95,000	142,500	147,010	151,449	155,803	159,765	163,828	167,994	172,267	176,649	181,142	1,618,407
Sewer Treatment	453,700	498,600	514,450	530,060	545,383	559,182	573,332	587,840	602,716	617,970	633,611	5,663,144
Sewer - CCTV Works	41,500	160,000	-	85,000	-	90,000	-	95,000	-	100,000	-	530,000
Private Works	4,000	12,700	13,114	13,530	13,950	14,311	14,681	15,060	15,450	15,850	16,260	144,906
INDIRECT ASSET COSTS												
Depreciation	609,854	586,434	586,434	586,434	586,434	586,434	586,434	586,434	586,434	586,434	586,434	5,864,340
Corporate Admin Overheads	449,077	478,514	495,262	512,596	530,537	543,800	557,395	571,330	585,614	600,254	615,260	5,490,562
TOTAL	**2,072,931**	**2,373,621**	**2,316,542**	**2,457,725**	**2,429,391**	**2,565,878**	**2,523,540**	**2,667,406**	**2,622,508**	**2,773,877**	**2,726,541**	**25,457,029**

Appendix D – Forecast of Asset Ratios to Local Government Benchmarks

		2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32
		Current Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
INFRASTRUCTURE RENEWAL												
Asset Renewals		699,850	3,096,092	573,850	969,074	637,150	1,027,668	658,370	1,106,758	700,336	1,156,610	763,084
Depreciation Expense		913,826	890,406	890,406	890,406	890,406	890,406	890,406	890,406	890,406	890,406	890,406
INFRASTRUCTURE BACKLOG												
Estimated Cost to bring back to Satisfactory		6,755,212	6,741,392	6,728,016	6,714,993	6,701,558	6,687,433	6,674,245	6,660,859	6,647,818	6,635,468	6,620,143
Closing Value of Assets		37,998,699	40,615,081	40,298,525	40,437,193	40,183,937	40,396,199	40,664,163	43,702,551	57,512,481	60,378,685	60,251,363
ASSET MAINTENANCE												
Asset Maintenance Expense		833,500	941,561	971,890	1,002,007	1,031,847	1,057,982	1,084,781	1,112,257	1,140,434	1,169,326	1,198,950
Required Asset Maintenance		1,180,063	1,177,631	1,175,359	1,173,016	1,170,674	1,168,266	1,165,813	1,163,445	1,161,224	1,159,017	1,156,592
CAPITAL EXPENDITURE												
Annual Capital Expenditure		1,135,750	3,506,788	573,850	1,029,074	637,150	1,102,668	1,158,370	4,196,758	14,700,336	3,756,610	763,084
Annual Depreciation Expense		913,826	890,406	890,406	890,406	890,406	890,406	890,406	890,406	890,406	890,406	890,406
SS7 Data												
Gross Replacement Cost (GRC)		77,017,587	81,260,746	82,562,480	84,316,836	85,675,758	87,497,481	89,371,262	94,279,683	109,681,866	114,109,518	115,534,789
% Infrastructure Condition 4 and above		11.10%	10.50%	10.31%	10.08%	9.90%	9.67%	9.45%	8.94%	7.67%	7.36%	7.25%
% Infrastructure Condition 3 and above		76.61%	72.46%	71.18%	69.56%	68.32%	66.76%	65.23%	61.71%	52.94%	50.79%	50.05%
RATIOS BASED ON 3YR AVERAGE	**Benchmark**											
Infrastructure Renewal	100%	58.54%	151.30%	162.17%	173.67%	81.61%	98.60%	86.97%	96.30%	98.08%	101.70%	104.64%
Infrastructure Backlog	2%	7.63%	12.41%	17.01%	16.63%	16.66%	16.61%	16.55%	16.20%	14.63%	13.16%	11.97%
Asset Maintenance	1.00	104.11%	90.25%	77.75%	82.68%	85.41%	88.04%	90.58%	91.83%	94.34%	96.92%	99.58%
Capital Expenditure	1.10	1.04	2.00	1.94	1.91	0.84	1.04	1.08	1.99	5.94	6.69	6.57
ACTUAL RATIO MEETING BENCHMARK												
Infrastructure Renewal		✗	✓	✓	✓	✗	✗	✗	✗	✗	✓	✓
Infrastructure Backlog		✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Asset Maintenance		✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Capital Expenditure		✗	✓	✓	✓	✗	✗	✗	✓	✓	✓	✓

Appendix E – Sewerage Services Activity Risk Register

RISK IDENTIFICATION							RISK ANALYSIS					RISK TREATMENT						
RISK NO.	ASSET AT RISK	WHAT CAN HAPPEN?	WHEN CAN IT OCCUR?	POSSIBLE CAUSE	EXISTING CONTROLS	IS RISK CREDIBLE?	LIKELIHOOD	CONSEQUENCES	RISK RATING	ACTION REQUIRED	IS RISK ACCEPTABLE?	TREATMENT OPTION(S)	RESIDUAL RISK	RISK TREATMENT PLAN	ACTIONS	RESPONSIBILITY	RESOURCES	BUDGET
1	Sewerage infrastructural groups	Poor or incomplete asset management practices including AMP, lifecycle management plans (LCMP) and asset condition assessments	Anytime now	"Lack of knowledge; Poor record keeping; Resourcing issues"	The Sewerage Services AMP contain LCMPs consistent with good industry practice; comprehensive asset condition survey underway	Yes	Almost certain	Major	Very High	Immediate corrective action	No	"Survey for asset groups with missing inventory data; Develop AM improvement plan; Develop staff AM capability; Review appropriate resourcing levels for AM"	High	"Complete the actions identified in the Sewerage Services AMP including LCMP; Complete asset condition survey; Manager Water and Sewer and Manager Strategic Assets to review appropriate resourcing levels for Sewerage services AM"	"Complete the actions identified in the Sewerage Services AMP including LCMP; Complete the resourcing levels for Sewer services AM; Complete asset condition survey "	Manager Water and Sewer, Manager Strategic Assets, Manager Information Services	"Staff time; External consultant for AMP development"	To be confirmed
2	Sewerage infrastructural groups	Overall asset life and condition is compromised due to maintenance and renewal programs not well targeted or limited in scope	Anytime in the future	"Limited condition assessments to date; Limited funding for maintenance and renewals at asset component level"	"The Sewerage Services AMP will identify the required levels of investment to maintain asset condition; Potential implications of funding shortfalls to be identified in the AMP"	Yes	Almost certain	Moderate	High	Prioritised action required	No	"Review asset condition assessment program including frequency and asset value and risk; Ongoing review of investment needs related to asset condition; Provision of adequate budget to maintain and renew at asset component level"	Medium	"Complete the full revision of the Sewerage Services AMP; Complete the asset condition assessment program "	"Complete the full revision of the Sewerage Services AMP; Complete the asset condition assessment program "	Manager Water and Sewer	"Staff time; External consultant for AMP development and condition surveys as required"	To be confirmed
3	Sewerage infrastructural groups	Unexpected failure of critical assets	Within 2-3 years	Incomplete knowledge of condition and remaining life of critical infrastructure, insufficient renewal and maintenance funding	"Routine inspections of assets by field staff; Potential implications of funding shortfalls to be identified in this AMP"	Yes	Possible	Moderate	High	Prioritised action required	No	"Start monitoring the condition of all critical assets; Review inspection frequencies to align with criticality; Identify funding needs to maintain levels of service"	Medium	Complete the condition assessment of the critical assets	Complete asset condition assessment of critical assets	Manager Water and Sewer	Staff time and external contractors for condition survey	To be confirmed
4	Sewerage infrastructural groups	Financial implications with inaccurate asset valuation and long term planning including renewal forecasts	Within 2-3 years	Asset information including condition and performance data not available or inaccurate (including donated assets)	"Asset management improvement program developed with 2016 AMP; Regular inspections and reporting by O & M teams on assets; Comprehensive asset condition survey underway"	Yes	Likely	Major	High	Prioritised action required	No	"Data availability proactively analysed and reported on; AM data exchange process for donated assets and Council's capex projects; Asset data audits; AM tools; Build core AM capability"	Medium	"Implement the AM improvement program developed with AMP; Continue with regular inspections and reporting by O & M team on assets; Start proactively analysing and reporting on data availability; Start building core AM capability."	"Implement the AM improvement program; Continue with regular inspections and reporting on assets; Start proactively analysing and reporting on data availability; Start building core AM capability; Complete asset condition survey."	Manager Water and Sewer, Manager Strategic Assets, Manager Information Services	Staff time	To be confirmed

Appendix E – Sewerage Services Activity Risk Register (cont)

RISK IDENTIFICATION							RISK ANALYSIS					RISK TREATMENT						
RISK NO.	ASSET AT RISK	WHAT CAN HAPPEN?	WHEN CAN IT OCCUR?	POSSIBLE CAUSE	EXISTING CONTROLS	IS RISK CREDIBLE?	LIKELIHOOD	CONSEQUENCES	RISK RATING	ACTION REQUIRED	IS RISK ACCEPTABLE?	TREATMENT OPTION(S)	RESIDUAL RISK	RISK TREATMENT PLAN	ACTIONS	RESPONSIBILITY	RESOURCES	BUDGET
6	Sewerage infrastructural group	Major spill to environment at the treatment plants	Within 2-3 years	"Failure of critical treatment plant electrical, mechanical or structural asset component or third party damage; Limited on site storage to mitigate impacts of these events"	"Response planning; SCADA; Routine inspections of assets by operators; Potential implications of funding shortfalls to be identified in this AMP; Condition monitoring of all treatment plants"	Yes	Possible	Moderate	High	Prioritised action required	No	"Review inspection frequencies to align with criticality; Identify funding needs to maintain levels of service; Targeted renewal program; Greater on site pond storage where practical"	Medium	"Review inspection frequencies to align with criticality; Identify funding needs to maintain levels of service; Greater on site pond storage where practical"	"Review inspection frequencies to align with criticality; Identify funding needs to maintain levels of service; Greater on site pond storage where practical"	Manager Water and Sewer	Staff time and external consultant for pond design	Capital budget for pond storage
7	Sewerage infrastructural group	Wastewater overflows, contamination of adjacent properties, receiving waters, illnesses, near misses, injury at pump stations	Within 1 year	Failure of critical treatment plant electrical, mechanical or structural asset component or third party damage	"Response planning; Routine inspections of assets by O & M operations; Potential implications of funding shortfalls to be identified in this AMP; Condition monitoring of all pump stations"	Yes	Likely	Moderate	High	Prioritised action required	No	"Review redundancy options - standby pumps and wet well over-capacity; Review inspection frequencies to align with criticality; Identify funding needs to maintain levels of service; Targeted renewal programme"	Medium	"Review inspection frequencies to align with criticality; Identify funding needs to maintain levels of service"	"Review inspection frequencies to align with criticality; Identify funding needs to maintain levels of service"	Manager Water and Sewer	Staff time	To be confirmed
8	Sewerage infrastructural group	Public safety compromised, such as, person falling into wastewater manhole or pump station causing injury or death.	Within 5 years	Wastewater manhole or pump station lid left off by contractor staff	"Contract Quality Plan and Work Procedures; Urgent priority to respond to request; Good processes for dealing with open manholes"	Yes	Possible	Major	High	Prioritised action required	No	Reinforce health and safety requirements and consequences.	High	"Continue to reinforce health and safety requirements and consequences; Continue with good responsiveness levels of service"	"Continue to reinforce health and safety requirements and consequences; Continue with good responsiveness levels of service"	Manager Water and Sewer	Staff time	To be confirmed
9	Sewerage infrastructural group	Higher legislative requirements for treatment plants and effluent reuse	Anytime now	Regulator requiring higher levels of service regardless of costs and benefits	"Working with neighbouring councils to negotiate with regulator; Separate studies on benefits and costs"	Yes	Possible	Moderate	High	Prioritised action required	No	"Continue to work with neighbouring councils to negotiate with regulator; Continue with separate studies on benefits and costs as required"	High	"Continue to working with neighbouring councils to negotiate with regulator; Continue with separate studies on benefits and costs as required"	"Continue to work with neighbouring councils to negotiate with regulator; Continue with separate studies on benefits and costs as required"	Manager Water and Sewer	Staff time and external consultant for studies	To be confirmed

Appendix F – Glossary/Definitions

Annual service cost (ASC)

i. Reporting actual cost

The annual (accrual) cost of providing a service including operations, maintenance, depreciation, finance/opportunity and disposal costs less revenue.

ii. For investment analysis and budgeting

An estimate of the cost that would be tendered, per annum, if tenders were called for the supply of a service to a performance specification for a fixed term. The Annual Service Cost includes operations, maintenance, depreciation, finance/ opportunity and disposal costs, less revenue.

Asset

A resource controlled by an entity as a result of past events and from which future economic benefits are expected to flow to the entity. Infrastructure assets are a sub-class of property, plant and equipment which are non-current assets with a life greater than 12 months and enable services to be provided.

Asset category

Sub-group of assets within a class hierarchy for financial reporting and management purposes.

Asset class

A group of assets having a similar nature or function in the operations of an entity, and which, for purposes of disclosure, is shown as a single item without supplementary disclosure.

Asset condition assessment

The process of continuous or periodic inspection, assessment, measurement and interpretation of the resultant data to indicate the condition of a specific asset so as to determine the need for some preventative or remedial action.

Asset hierarchy

A framework for segmenting an asset base into appropriate classifications. The asset hierarchy can be based on asset function or asset type or a combination of the two.

Asset management (AM)

The combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost effective manner.

Asset renewal funding ratio

The ratio of the net present value of asset renewal funding accommodated over a 10 year period in a long term financial plan relative to the net present value of projected capital renewal expenditures identified in an asset management plan for the same period [AIFMG Financial Sustainability Indicator No 8].

Average annual asset consumption (AAAC)*

The amount of an organisation's asset base consumed during a reporting period (generally a year). This may be calculated by dividing the depreciable amount by the useful life (or total future economic benefits/service potential) and totalled for each and every asset OR by dividing the carrying amount (depreciated replacement cost) by the remaining useful life (or remaining future economic benefits/service potential) and totalled for each and every asset in an asset category or class.

Borrowings

A borrowing or loan is a contractual obligation of the borrowing entity to deliver cash or another financial asset to the lending entity over a specified period of time or at a specified point in time, to cover both the initial capital provided and the cost of the interest incurred for providing this capital. A borrowing or loan provides the means for the borrowing entity to finance outlays (typically physical assets) when it has insufficient funds of its own to do so, and for the lending entity to make a financial return, normally in the form of interest revenue, on the funding provided.

Capital expenditure

Relatively large (material) expenditure, which has benefits, expected to last for more than 12 months. Capital expenditure includes renewal, expansion and upgrade. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital expenditure - expansion

Expenditure that extends the capacity of an existing asset to provide benefits, at the same standard as is currently enjoyed by existing beneficiaries, to a new group of users. It is discretionary expenditure, which

increases future operations and maintenance costs, because it increases the organisation's asset base, but may be associated with additional revenue from the new user group, eg. extending a drainage or road network, the provision of an oval or park in a new suburb for new residents.

Capital expenditure - new
Expenditure which creates a new asset providing a new service/output that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operations and maintenance expenditure.

Capital expenditure - renewal
Expenditure on an existing asset or on replacing an existing asset, which returns the service capability of the asset up to that which it had originally. It is periodically required expenditure, relatively large (material) in value compared with the value of the components or sub-components of the asset being renewed. As it reinstates existing service potential, it generally has no impact on revenue, but may reduce future operations and maintenance expenditure if completed at the optimum time, eg. resurfacing or resheeting a material part of a road network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval.

Capital expenditure - upgrade
Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretionary and often does not result in additional revenue unless direct user charges apply. It will increase operations and maintenance expenditure in the future because of the increase in the organisation's asset base, eg. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility.

Capital funding
Funding to pay for capital expenditure.

Capital grants
Monies received generally tied to the specific projects for which they are granted, which are often upgrade and/or expansion or new investment proposals.

Capital investment expenditure
See capital expenditure definition

Capitalisation threshold
The value of expenditure on non-current assets above which the expenditure is recognised as capital expenditure and below which the expenditure is charged as an expense in the year of acquisition.

Carrying amount
The amount at which an asset is recognised after deducting any accumulated depreciation / amortisation and accumulated impairment losses thereon.

Class of assets
See asset class definition

Component
Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk or criticality.

Core asset management
Asset management which relies primarily on the use of an asset register, maintenance management systems, job resource management, inventory control, condition assessment, simple risk assessment and defined levels of service, in order to establish alternative treatment options and long-term cashflow predictions. Priorities are usually established on the basis of financial return gained by carrying out the work (rather than detailed risk analysis and optimised decision- making).

Cost of an asset
The amount of cash or cash equivalents paid or the fair value of the consideration given to acquire an asset at the time of its acquisition or construction, including any costs necessary to place the asset into service. This includes one-off design and project management costs.

Critical assets
Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation.

Critical assets have a lower threshold for action than non-critical assets.

Current replacement cost (CRC)
The cost the entity would incur to acquire the asset on the reporting date. The cost is measured by reference to the lowest cost at which the gross future economic benefits could be obtained in the normal course of business or the minimum it would cost, to replace the existing asset with a technologically modern equivalent new asset (not a second hand one) with the same economic benefits (gross service potential) allowing for any differences in the quantity and quality of output and in operating costs.

Deferred maintenance
The shortfall in rehabilitation work undertaken relative to that required to maintain the service potential of an asset.

Depreciable amount
The cost of an asset, or other amount substituted for its cost, less its residual value.

Depreciated replacement cost (DRC)
The current replacement cost (CRC) of an asset less, where applicable, accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired future economic benefits of the asset.

Depreciation / amortisation
The systematic allocation of the depreciable amount (service potential) of an asset over its useful life.

Economic life
See useful life definition.

Expenditure
The spending of money on goods and services. Expenditure includes recurrent and capital outlays.

Fair value
The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties, in an arms length transaction.

Financing gap
A financing gap exists whenever an entity has insufficient capacity to finance asset renewal and other expenditure necessary to be able to appropriately maintain the range and level of services its existing asset stock was originally designed and intended to deliver. The service capability of the existing asset stock should be determined assuming no additional operating revenue, productivity improvements, or net financial liabilities above levels currently planned or projected. A current financing gap means service levels have already or are currently falling. A projected financing gap if not addressed will result in a future diminution of existing service levels.

Heritage asset
An asset with historic, artistic, scientific, technological, geographical or environmental qualities that is held and maintained principally for its contribution to knowledge and culture and this purpose is central to the objectives of the entity holding it.

Impairment Loss
The amount by which the carrying amount of an asset exceeds its recoverable amount.

Infrastructure assets
Physical assets that contribute to meeting the needs of organisations or the need for access to major economic and social facilities and services, eg. roads, drainage, footpaths and cycleways. These are typically large, interconnected networks or portfolios of composite assets. The components of these assets may be separately maintained, renewed or replaced individually so that the required level and standard of service from the network of assets is continuously sustained. Generally the components and hence the assets have long lives. They are fixed in place and are often have no separate market value.

Investment property
Property held to earn rentals or for capital appreciation or both, rather than for:

(a) use in the production or supply of goods or services or for administrative purposes; or

(b) sale in the ordinary course of business.

Key performance indicator
A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Performance indicators commonly relate to statutory limits, safety,

responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction.

Level of service

The defined service quality for a particular service/activity against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental impact, acceptability and cost.

Life Cycle Cost *

i. Total LCC The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.

ii. Average LCC The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises average operations, maintenance expenditure plus asset consumption expense, represented by depreciation expense projected over 10 years. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.

Life Cycle Expenditure

The Life Cycle Expenditure (LCE) is the average operations, maintenance and capital renewal expenditure accommodated in the long term financial plan over 10 years. Life Cycle Expenditure may be compared to average Life Cycle Cost to give an initial indicator of affordability of projected service levels when considered with asset age profiles.

Loans / borrowings

See borrowings.

Maintenance

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, eg road patching but excluding rehabilitation or renewal. It is operating expenditure required to ensure that the asset reaches its expected useful life.

- **Planned maintenance**

Repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown criteria/experience, prioritising scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

- **Reactive maintenance**

Unplanned repair work that is carried out in response to service requests and management/ supervisory directions.

- **Specific maintenance**

Maintenance work to repair components or replace sub-components that needs to be identified as a specific maintenance item in the maintenance budget.

- **Unplanned maintenance**

Corrective work required in the short-term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.

Maintenance expenditure *

Recurrent expenditure, which is periodically or regularly required as part of the anticipated schedule of works required to ensure that the asset achieves its useful life and provides the required level of service. It is expenditure, which was anticipated in determining the asset's useful life.

Materiality

The notion of materiality guides the margin of error acceptable, the degree of precision required and the extent of the disclosure required when preparing general purpose financial reports. Information is material if its omission, misstatement or non-disclosure has the potential, individually or collectively, to influence the economic decisions of users taken on the basis of the financial report or affect the discharge of accountability by the management or governing body of the entity.

Modern equivalent asset

Assets that replicate what is in existence with the most cost-effective asset performing the same level of service. It is the most cost efficient, currently

available asset which will provide the same stream of services as the existing asset is capable of producing. It allows for technology changes and, improvements and efficiencies in production and installation techniques

Net present value (NPV)
The value to the organisation of the cash flows associated with an asset, liability, activity or event calculated using a discount rate to reflect the time value of money. It is the net amount of discounted total cash inflows after deducting the value of the discounted total cash outflows arising from eg the continued use and subsequent disposal of the asset after deducting the value of the discounted total cash outflows.

Non-revenue generating investments
Investments for the provision of goods and services to sustain or improve services to the community that are not expected to generate any savings or revenue to the Council, eg. parks and playgrounds, footpaths, roads and bridges, libraries, etc.

Operations
Regular activities to provide services such as public health, safety and amenity, eg street sweeping, grass mowing and street lighting.

Operating expenditure
Recurrent expenditure, which is continuously required to provide a service. In common use the term typically includes, eg power, fuel, staff, plant equipment, on-costs and overheads but excludes maintenance and depreciation. Maintenance and depreciation is on the other hand included in operating expenses.

Operating expense
The gross outflow of economic benefits, being cash and non cash items, during the period arising in the course of ordinary activities of an entity when those outflows result in decreases in equity, other than decreases relating to distributions to equity participants.

Operating expenses
Recurrent expenses continuously required to provide a service, including power, fuel, staff, plant equipment, maintenance, depreciation, on-costs and overheads.

Operations, maintenance and renewal financing ratio
Ratio of estimated budget to projected expenditure for operations, maintenance and renewal of assets over a defined time (eg 5, 10 and 15 years).

Operations, maintenance and renewal gap
Difference between budgeted expenditures in a long term financial plan (or estimated future budgets in absence of a long term financial plan) and projected expenditures for operations, maintenance and renewal of assets to achieve/maintain specified service levels, totalled over a defined time (e.g. 5, 10 and 15 years).

Pavement management system (PMS)
A systematic process for measuring and predicting the condition of road pavements and wearing surfaces over time and recommending corrective actions.

PMS Score
A measure of condition of a road segment determined from a Pavement Management System.

Rate of annual asset consumption *
The ratio of annual asset consumption relative to the depreciable amount of the assets. It measures the amount of the consumable parts of assets that are consumed in a period (depreciation) expressed as a percentage of the depreciable amount.

Rate of annual asset renewal *
The ratio of asset renewal and replacement expenditure relative to depreciable amount for a period. It measures whether assets are being replaced at the rate they are wearing out with capital renewal expenditure expressed as a percentage of depreciable amount (capital renewal expenditure/DA).

Rate of annual asset upgrade/new *
A measure of the rate at which assets are being upgraded and expanded per annum with capital upgrade/new expenditure expressed as a percentage of depreciable amount (capital upgrade/expansion expenditure/DA).

Recoverable amount
The higher of an asset's fair value, less costs to sell and its value in use.

Recurrent expenditure
Relatively small (immaterial) expenditure or that which has benefits expected to last less than 12 months. Recurrent expenditure includes operations and maintenance expenditure.

Recurrent funding
Funding to pay for recurrent expenditure.

Rehabilitation
See capital renewal expenditure definition above.

Remaining useful life
The time remaining until an asset ceases to provide the required service level or economic usefulness. Age plus remaining useful life is useful life.

Renewal
See capital renewal expenditure definition above.

Residual value
The estimated amount that an entity would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

Revenue generating investments
Investments for the provision of goods and services to sustain or improve services to the community that are expected to generate some savings or revenue to offset operating costs, eg public halls and theatres, childcare centres, sporting and recreation facilities, tourist information centres, etc.

Risk management
The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.

Section or segment
A self-contained part or piece of an infrastructure asset.

Service potential
The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset. A measure of service potential is used in the not-for-profit sector/public sector to value assets, particularly those not producing a cash flow.

Service potential remaining
A measure of the future economic benefits remaining in assets. It may be expressed in dollar values (Fair Value) or as a percentage of total anticipated future economic benefits. It is also a measure of the percentage of the asset's potential to provide services that is still available for use in providing services (Depreciated Replacement Cost/Depreciable Amount).

Specific Maintenance
Replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, replacement of air conditioning equipment, etc. This work generally falls below the capital/ maintenance threshold and needs to be identified in a specific maintenance budget allocation.

Strategic Longer-Term Plan
A plan covering the term of office of councillors (4 years minimum) reflecting the needs of the community for the foreseeable future. It brings together the detailed requirements in the Council's longer-term plans such as the asset management plan and the long-term financial plan. The plan is prepared in consultation with the community and details where the Council is at that point in time, where it wants to go, how it is going to get there, mechanisms for monitoring the achievement of the outcomes and how the plan will be resourced.

Sub-component
Smaller individual parts that make up a component part.

Useful life
Either:

i. the period over which an asset is expected to be available for use by an entity, or
ii. the number of production or similar units expected to be obtained from the asset by the entity.

It is estimated or expected time between placing the asset into service and removing it from service, or the estimated period of time over which the

future economic benefits embodied in a depreciable asset, are expected to be consumed by the Council.

Value in Use

The present value of future cash flows expected to be derived from an asset or cash generating unit. It is deemed to be depreciated replacement cost (DRC) for those assets whose future economic benefits are not primarily dependent on the asset's ability to generate net cash inflows, where the entity would, if deprived of the asset, replace its remaining future economic benefits.

Version History

Rev No	Date	Revision Details	Author	Reviewer	Approver
1	May 2011	Initial draft	JB/GD	JB	JB
2	February 2013	Update asset inventory and financial data	JB/GD	JB	JB
3	March 2017	Update asset inventory and financial data	JB	JB	JB
4	April 2019	Update asset inventory and financial data	JB	JB	JB
5	June 2020	Update asset inventory and financial data	JB	JB	JB
6	June 2021	Update asset inventory and financial data	JB/KW	JB	JB
7	April 2022	Update asset inventory and financial data	JB/KW	JB	JB