Asset Management Plan

WATER

2022

Adopted Date: 27/06/2022

Status: Current

Date adopted by Council	27/06/2022
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Related documents	Asset Management Policy Asset Management Strategy Asset Management Plans Delivery Program and Operational Plan Community Strategic Plan 2032 Integrated Planning and Reporting requirements
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

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 supplies water to residential, commercial and industrial customers in the towns of Aberdeen, Merriwa, Murrurundi, Scone and the village of Cassilis.

Upper Hunter Shire Council (Council) owns, operates and maintains water treatment plants, a dam, service reservoirs, trunk mains and reticulated water mains. The water infrastructure assets have a replacement value of $104,962,303 as at 30 June 2021.

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

- 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 water 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 Water Services AMP includes operations, maintenance, renewal and upgrade of existing assets.

The total amount of forecasted expenditure for the water services operations, maintenance and capital over the next ten years will be approximately $92.7 million (as shown in Figure 1) with annual forecasted expenditure varying between approximately $6.4 to $21.5 million per annum.

Forecasted operational expenditure for the ten-year cycle will be approximately $51.2 million, which equates to 55% of the total forecasted expenditure. The Levels of Service (LOS) capital expenditure is for increasing the service level delivered by the assets.

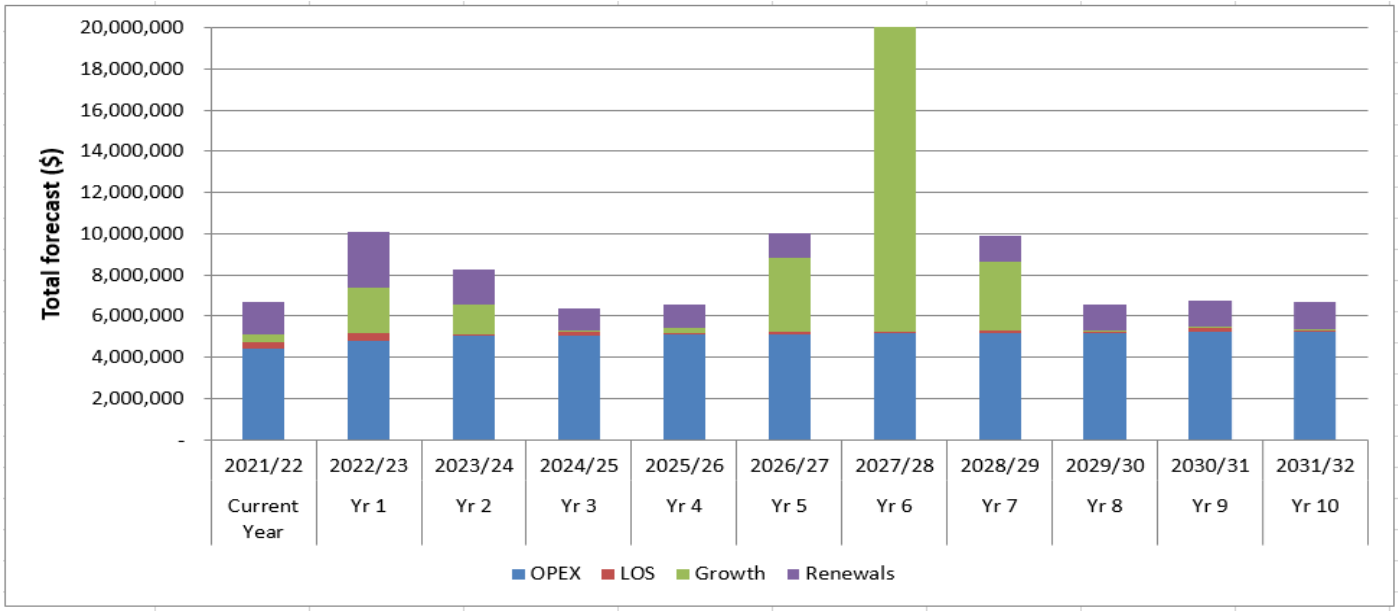


Figure 1: Summary of Water Services Total Expenditure Forecast

Note that expenditure forecasts (operational and capital) are based on the revised current year budget 2021/22 and the 2018/2019 to 2022/2023 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 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.

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 Water Services to meet the service levels in this plan
- Inspect the water infrastructure annually to ensure that they are performing and reassess their condition grading
- Plan any works to address the defects found from asset inspections
- Plan pipe renewals based on failure statistics
- Renewals planned within the ten year planning period have been identified to ensure that this is an acceptable backlog
- Investigate poor performing assets based on service failure and customer requests to ensure service continuity
- Maximise community benefits against costs.
- Develop options, costs and priorities for future asset management activities.
- Consult with the community to plan future services to match the community service needs with ability to pay for services.

1.4 What we cannot do

Whilst Council has received grant funding for and is financially committed to extending town water supply to the villages of Wingen, Parkville and Blandford there has been no financial provision for the following:

- Provision of town water supply to any other village in Council's Local Government area at this stage
- Provision of town water supply to any currently rural zoned land
- Provision of town water supply to areas outside the supply areas mapped in the Development Servicing Plans

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
- Impacts from unpredictable external forces, such as climate change and drought

We will endeavour to manage these risks by:

- Complete the actions identified in the Water Services AMP including LCMP; complete the resourcing levels for water services AM; complete the asset condition survey
- Complete the full revision of the Water 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
- Complete the Integrated Water Cycle Management (IWCM) Plan, inclusive of 30 year long term financial modelling for water and sewerage infrastructure
- Update our Drought Management and Emergency Response Plan.

1.6 The Next Steps

The actions resulting from the Water Services AMP are:

- Complete the currently underway comprehensive condition survey of all water assets including the water treatment plants, pump stations, reservoirs and pipelines
- Complete the major data cleansing of the water 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 water services asset inventory, collection of asset repair data and updating asset condition assessment records
- Undertake proactive and regular analysis of the water main break history as good industry practice
- Revise and improve the effectiveness of the current water renewal programs
- Develop an Emergency Response Plan for the critical water supply assets
- Start recording work history to asset lengths in CONFIRM to improvement renewal planning
- Complete a formal AM Maturity Assessment of the water supply activity
- Undertake 30 year financial modelling as part of the IWCM process

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 water needs. These assets include water treatment plants, pump stations, reservoirs and pressurised delivery pipes. This will ensure the community receives a quality water supply 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 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 water fees and charges to ensure that water services are financially sustainable. This means that any renewals funding gap can be addressed relatively easily. The renewals program needs to be more targeted going forward. It does however, have to form part of a sound business plan for the Water Fund as a standalone business activity.

Whilst Council does have a Strategic Business Plan for Water and Water 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 the financial modelling has been completed, Council will be able to set its long term pricing path for the Water 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 services we provide to ensure that the appropriate level of service can be provided to the community at the lowest possible cost.

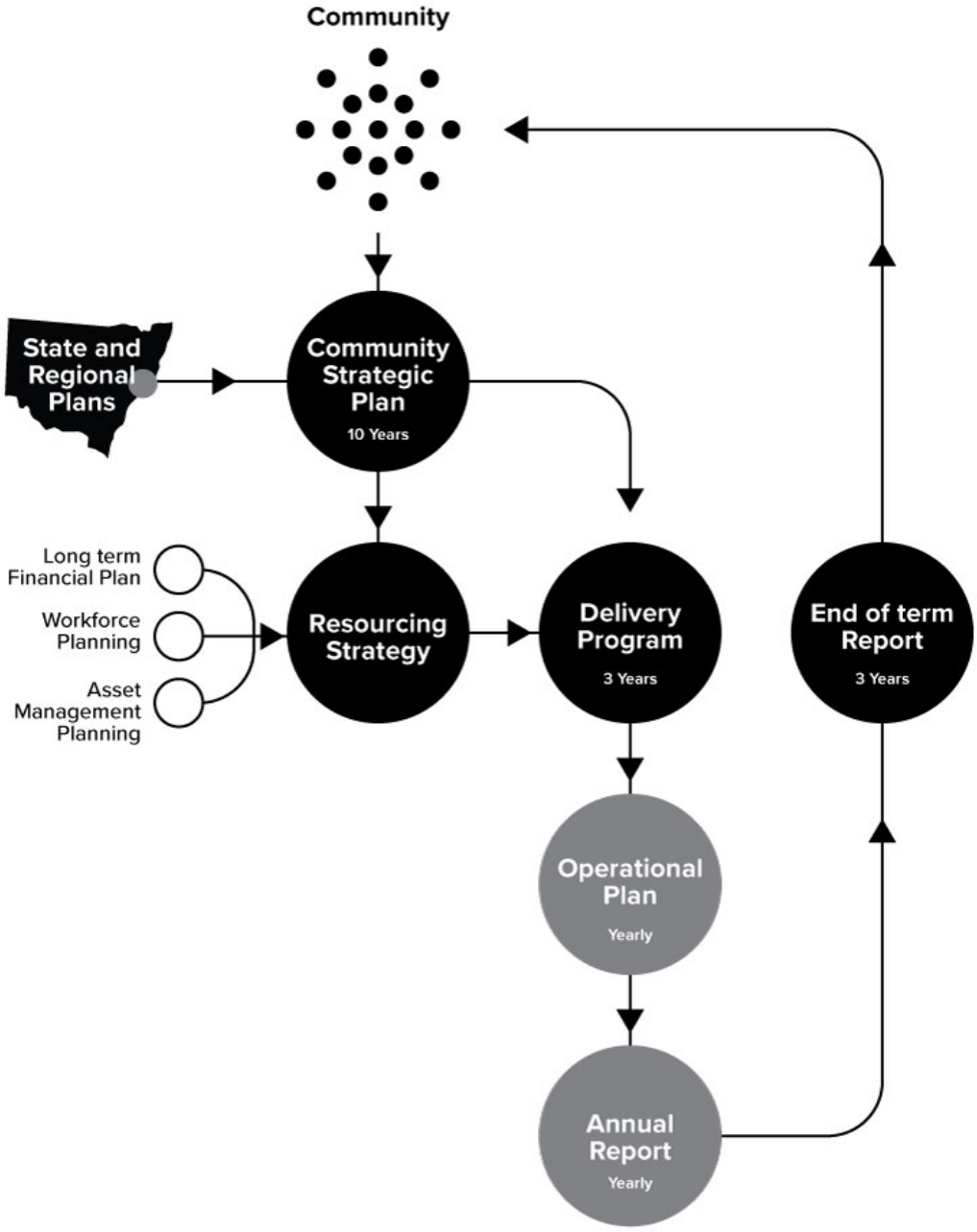
2 INTEGRATED PLANNING AND REPORTING FRAMEWORK

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

The Water 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 2018/2019-2022/23 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 a predominantly rural area and encompasses approximately 8,100 square kilometres. Council supplies water to residential, commercial and industrial customers in the towns of Aberdeen, Merriwa, Murrurundi, Scone and the village of Cassilis as shown in Figure 2.

Figure 2: Map of Upper Hunter Shire Towns

The primary purpose of the water services activity is to promote efficient water use and provide safe water for both household and business use including firefighting.

Council owns, operates and maintains water treatment plants, a dam, service reservoirs, trunk mains, and reticulated water mains. These assets are used to provide water 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 and the Office of Environment and Heritage (formerly the Department of Environment, Climate Change and Water). Refer to Sections 6 and 9 for water services asset details including asset valuation.

Our Stakeholders

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

Table 1: Key Stakeholders in Water 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 Waste 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
Local Businesses	As User of Council Assets Future of new commercial and community growth
Land 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
Federal Government Departments	Development of State and Federal strategies Provide financial assistance

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 Water 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 water services, Council's objective is to safely source, treat, store, transport and distribute potable water 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 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 the 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 Encourage and support community participation to care for our environment	By managing our water supply consumption through our demand management plan including universal water metering of all townships
		By monitoring and reporting on the energy performance of the water assets
		By sustainably managing the water supply abstraction from natural resources and compliance with consent conditions

COMMUNITY PRIORITY	STRATEGIC OBJECTIVES	HOW OBJECTIVES AND INITIATIVES ARE ADDRESSED IN AMP
Maintain and develop 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 water 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 water 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 water services provision

3.3 Key Issues

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

Table 3: Key Water Issues

KEY WATER ISSUES	AMP SECTION
Basic data needs improvement so fit for asset management purposes and is Council's most significant issue for water services	Section 8.1.2
Limited or dated asset condition information to make informed asset renewal decisions	Section 6.1.3
Limited resource capability to assist in making informed asset renewal decisions	Section 8.1.2
Limited and ad hoc resourcing for updating the asset inventory and GIS for sound water asset management planning	Section 8.1.2

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 water 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 Water 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 Water Services AMP is prepared under the direction of Council's vision, values, commitments and goals. 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: Water 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 water 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

Focus Areas	Objectives
	Provide a Capital Works Program which supplies system needs
Human Resources	Maintain a capable, motivated and skilled workforce
Environment	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 legislative requirements 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 Supply business & required for financial assistance towards capital infrastructure costs under the NSW Government's Country Towns Water & Sewerage 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 operate on a level playing field, with no advantage being gained over competing private business activities
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 water specific legislation which Council considers includes:

- Fire Brigades Regulation 2014
- State Emergency and Rescue Management Act 1989
- Environmental Planning and Assessment Act 1979
- Catchment Management Authorities Act 2003
- Public Health Act 2010
- Fluoridation of Public Works Supplies Act 1957
- Water Management Act 2000
- Water Act 2007 (Commonwealth)

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.

These 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 waterage 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 water 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 water plant) or a new service that did not exist previously (e.g. provide water services to a village).

At a high level, the water 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: Water Customer LOS

Key Service Attribute	Customer LOS
Safety – water quality	To provide safe and reliable water for household and business use in urban areas
Safety – water pressure and flow	Water pressure is appropriate for its intended use
Quality - reliability	To provide reliable water supply networks
Responsiveness	To provide prompt responses for service
Sustainable – Environmental Performance	To promote the efficient and sustainable use of water
Sustainable -Cost Effectiveness	Sustainably managing the water service network

4.6 Desired Levels of Service

Indications of desired levels of service are obtained from community consultation/engagement. The water 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.

Council have recently delivered a reliable water service for Murrurundi by constructing a pipeline from Scone to Murrurundi. This pipeline supplies water from Glenbawn Dam to Murrurundi. The pipeline will also service the villages of Parkville, Wingen and Blandford.

Council are also working to provide water to as many unconnected properties as practicable and have permitted dozens of rural properties along the length of the Scone to Murrurundi Pipeline to access the water via a revised Rural Water Supply arrangement.

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
- impacts from drought

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

Demand factor	Present position	Projection	Impact on services
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 Parkville, Wingen and Blandford have no water services. Grant funding for these three villages has just been secured. No financial analysis to determine its impact has been completed.	Pressure to provide water services to small villages will grow over time	This will have a significant financial impact on the Water Funds finances. Water 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

5.3 Water Forecasting

5.3.1 Demand for water services

The water consumption for the Shire was 1,770ML for 2020/21. The average annual residential water supplied for 2020/21 for the Shire was 205kl per property. This result is much higher than the 2019/20 statewide result (median) of 156.42kl per property for average annual residential water supplied. The result is lower than in previous years, due to Penalty water pricing progressively being introduced, and encouragement by other publicity and water management plans.

5.3.2 Water demand projection

Council has recently introduced a new water tariff to manage water demand better and reduce the median annual water residential consumption bill from 400kl to 330kl per house per annum. The tariff is a two tier block system and will be progressively phased in over three years.

The water demand is therefore expected to reduce by 15 to 20 per cent in the medium term.

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 new 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 water wastage. Further opportunities for demand management will be developed in future revisions of this AMP.

Table 10: Water Demand Management Plan

PROGRAM	DESCRIPTION
Strategy	Long term planning is instrumental to managing growth and demand requirements. Council's strategy for reducing water usage is the Water Demand Strategy (adopted in 2011). Council is currently working with Muswellbrook and Singleton Council's to explore joint water initiatives that benefit our shires.
Public education and awareness	Education and awareness encourage water reduction and compliance behaviour. It is recognised that Council's website needs to be enhanced to provide public education and information on reducing water use and finding leaks on private property.
Water tariff	Council must comply with the Best Practice Management of Water Supply and Sewerage Guidelines 2007. These guidelines require all Council's with over 4,000 connected properties to raise at least 75% of residential revenue from water usage charges and the remaining 25% from annual access charges. This will encourage water conservation, as the access charge decreases and the consumption charge increases. It will give residents greater choice over their water charges, allowing them to reduce their water bill by choosing to use less water.
Customer Action Request	The Council provides on-going operational and maintenance support to properties within the water supply areas of service. This helps reduce the number of leaks that are reported. Residents are able to complete the Customer Action Request form to enable Council to investigate the request.
Water metering	All the townships are fully metered. Universal metering is recognised internationally as tool for sound leakage management. It is also a fair and equitable method of users paying for their usage; similar to electricity usage.
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.

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 funded by Section 64 contribution plans and 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 the 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 Water 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 Council plans to manage and operate the water supply assets at the agreed levels of service defined in Section 4 while optimising life cycle costs. The water supply 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 water supply areas and the general water services provided are detailed in Table 11 below. Water services is the provision of clean water to dwellings and commercial premises in these water supply areas by network reticulation. This helps ensure availability of safe water for drinking and cleaning purposes to maintain public health, and the provision of water for firefighting to assist public safety. In addition, we promote efficient water use and ensure that appropriate water demand management practices are implemented.

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

TOWNSHIP	WATER SERVICES	FIRE FIGHTING STANDARDS PROVIDED	METERED
Scone	X	X	X
Aberdeen	X	X	X
Merriwa	X	X	x
Murrurundi	X	X	x
Cassilis	X		x
Gundy			
Moonan Flat			
Wingen			
Parkville			
Blandford			

Council provides water services to a population of approximately 9,118 (4,514 assessments) in the towns or villages of Scone/Aberdeen, Merriwa/Cassilis and Murrurundi. All connections are metered as part of our demand management program and providing a sustainable water service.

Council has received grant funding for, and is financially committed to extending town water supply to the villages of Wingen, Parkville and Blandford. However, at this point in time there has been no financial provision of town water supply to any other village in Council's Local Government Area.

6.1 Background Data

6.1.1 Physical parameters

The summary of the water asset classes covered by this AMP are shown in Table 12. The most recent information available for the quantities and total values are detailed in Section 10.

Table 12: Water asset classes

WATER ASSET CLASS	DESCRIPTION
Bores and wells	5 bores constructed in 1970s and 1980s.
Reservoirs	Most reservoirs are reinforced concrete and in good condition.
Treatment plants	Merriwa has a filtration plant and other plants are chlorination only.
Connections and meters	Most water meters are less than 10 years old.
Other infrastructure including pump stations	See section 10.1 for number of pump stations.
Pipes and valves	See section 10.1 for length of transfer, trunk and reticulation water mains.
Dams	Murrurundi Dam has 150 ML capacity

The age profile of the water assets recorded in Council's Asset Register is variable. The initial water infrastructure for the Merriwa (1957) and Murrurundi (1935) townships were installed in the same year. This means that many of the assets will theoretically fail in the same period. The history of these two townships is an important consideration for renewal planning.

6.1.2 Water Scheme Summary

Table 13 provides a high level summary of the Shire's water 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	SOURCE	TREATMENT	CAPACITY (ML PER DAY)	POPULATION
Aberdeen/ Scone	Hunter River via Glenbawn Dam (State Government owned and controlled, 750 Gigalitres capacity)	Chlorination only	20	Scone – 4,680 Aberdeen – 1,800
Cassilis	Ground water (though 2 bores)	Chlorination only	0.6	100

SCHEME	SOURCE	TREATMENT	CAPACITY (ML PER DAY)	POPULATION
Merriwa	Ground water (through 3 artesian and sub-artesian bores)	Bore water aeration followed by direct filtration and chlorination	1.5	950
Murrurundl	Pages River via Murrurundi Dam (150 Megalitres capacity, owned by Council) or Glenbawn Supply via Scone reservoirs	Membrane Plant (Litree WTP) & Chlorination. Chemical pre dosing undertaken when required. Chlorination only (when Glenbawn Supply is in operation)	1.0	805

6.1.3 Asset capacity and performance

Network Performance

Council's services are generally provided to meet design standards. Locations where deficiencies in service performance are known are detailed in Table 14 including water quality issues.

Table 14: Known Service Performance Deficiencies

LOCATION	SERVICE DEFICIENCY
Murrurundi	Litree Membrane WTP operation is not reliable
Scone	One pocket of low water pressure in an elevated area of eastern Scone
Aberdeen	One pocket of low water pressure in an elevated area close to reservoir
Merriwa	Sections of town cannot supply desired fire flows
All Water Supply Areas	Relatively high water main break frequency, and difficulty of achieving main isolation with stop valves
Merriwa and Murrurundi	Small sections of the towns edge are not connected to full town water services, including fire hydrant availability
Scone/Aberdeen/Cassilis	Water treatment does not include filtration systems, or equivalent when feeding from Glenbawn supply.

There have been water source reliability issues at the Murrurundi dam resulting in not enough water availability for town water supply. This is being addressed with the Scone to Murrurundi pipeline project. There is now an alternative source of water to Murrurundi township when the supply from Murrurundi dam is insufficient. A new 1.65ML capacity reservoir in Murrurundi has improved the storage capacity in the Murrurundi system.

The service deficiencies listed in Table 14 were identified from routine inspections and 2014/15 DPI Water Benchmarking Report. Graphs from this report showing the various areas where Council's Water services are under/over performing in terms of NSW Best Practice principles are included in Appendix G of this plan. Overall, Council is generally performing adequately within its peer group (serving 3,001 to 10,000 properties).

Network performance results include:

- 27 incidences of unplanned interruptions per 1,000 properties compared to statewide median of 24 and ranked 4 out 5 in its peer group (where 5 is bottom 20%)

- 30 water main breaks per 100km of pipeline compared to statewide median of 9 and ranked 4 out 5 in its peer group.
- The current leakage management consists of the following activities:
- Measurement and reporting of real losses (leakage)
- Universal metering (i.e. all connections are metered)
- All Council buildings and facilities such as parks irrigation are metered
- Meters are read quarterly
- Reported leaks are responded to in timely manner.
- There have been issues recently with illegal water connection in new developments. This is being addressed through public reporting and identification with the routine meter reading cycles.

Leakage management program improvements identified through this AMP development and included in the AM improvement program are:

- Record break history against the asset in the asset register
- Proactive analysis of the water main break history
- Investigate bulk or district meters for understanding leakage in the network better.

Council is required to ensure the provision of water for firefighting to assist public safety. The water supply activity is responsible for ensuring sufficient access to water availability to fight fires when required. The existing spacing of fire hydrants and water pressure meets the Fire Brigades Regulations 2014.

The Scone water supply network has been modelled to understand the network performance better. There are no plans to model the other towns at this point in time.

Network Capacity

The capacity of the Shire's water supply schemes are summarised in Table 13.

The total capacity of the service reservoirs is summarised in Table 15. This shows that Upper Hunter Shire is generally well set up in terms of storage and exceeds the minimum of one day maximum demand which is considered the appropriate capacity standard. Note that Murrurundi is in need of additional storage capacity to meet the one day minimum demand expected of 1.5Ml over the next 20 years. Current one day maximum demand is 1.1 Ml.

Table 15: Service reservoir capacity summary (as at June 2021)

TOWN OR AREA	DESCRIPTION	CAPACITY (Mega Litres)	COMMENTS	DAYS STORAGE
Raw water from supply dam	Brushy Hill	0.55	Balance tank only, on supply pipeline Glenbawn Dam to Scone	Not applicable
Scone	Main reservoirs	11.3	Three reservoirs on same site	Over 1 day max demands, usually 2 days
	Elevated reservoir	2		
	Satur	2.0	Supplies rural residential mainly, different pressure zone	
Aberdeen	Reservoir 1	1.6	All on one site	1.5 days max demand, normally 3
	Reservoir 2	0.74	All on one site	
	Reservoir 3	2.457	All on one site	
	High Tower	0.0634	Elevated tank on reservoir site	

TOWN OR AREA	DESCRIPTION	CAPACITY (Mega Litres)	COMMENTS	DAYS STORAGE
Murrurundi	Main reservoir	1.65	The new 1.65ML capacity reservoir is in operation. One of the older reservoirs (0.25ML) kept offline as emergency reservoir.	Over 2 days, normal demands
Merriwa	Main reservoirs	3.5	Two reservoirs in use, 2.0 and 1.5 ML	Over 2 days normal demands
Cassilis	Reservoir 1, 2, 3 & 4	0.04	Four reservoirs. Each 0.1ML totalling 0.4ML	3 days

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) and inspection of the above ground facilities.

The asset condition of the mechanical, electrical and civil assets for pump stations and treatment plants were assessed in 2016. The pipeline condition recorded in Council's asset management system (AMS) was based on a first pass desk top based assessment.

A comprehensive survey of the water assets including the pipelines, water treatment plants and pump stations is well underway and will be an ongoing project to increase accuracy and data regarding this asset class. 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 water assets – visual every five years
- Water pipelines – 5% visual inspection every year.

Condition assessment

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

- Age and remaining life (based on design life)
- Construction plans not yet updated in MapInfo
- 2016 survey information for the complex assets
- Operator knowledge on a township and asset category basis.

Network materials

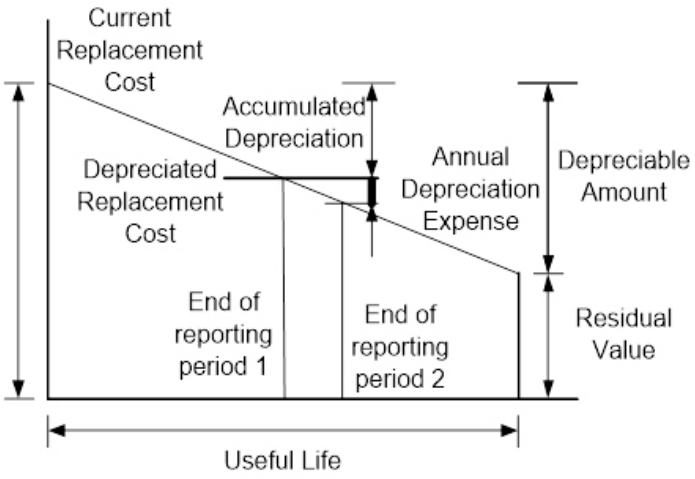
It is known from operational knowledge that the earlier PVC pipelines installed in the 1980s are known to be brittle and sometimes there are deformations where the tapping band connects to the main pipeline. These are replaced when the break history is unacceptable in terms of water outages for customers.

There are a large number of asbestos cement water mains in the 50 to 60 years of service range. These may start to fail in large numbers and may create a renewal backlog not currently planned for. It is difficult to predict as external inspections are costly and not particularly effective. The analysis of water main breakage history is accepted by industry as the best predictor and this has been identified as an improvement task.

6.1.5 Asset valuations

The value of the water 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.

- Current Replacement Cost $104,962,303
- Accumulated Depreciation $ 40,692,570
- Written Down Value $ 64,269,733



The value of the water 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 water industry data to estimate replacement costs and correct current replacement costs used in the asset register where necessary.

Useful lives were last reviewed in June 2017 and will be reviewed in 2021/22 prior to the major asset revaluation planned for 2022/23. 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 were no major changes from previous valuations.

6.2 Infrastructure Risk Management Plan

Asset risks have been identified for the water 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 17 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 Water Services AMP development identified ten risks in total with the following highest risks.

Table 17: 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	Very high	Complete the actions identified in the Water AMP including LCMP	High	Staff time External consultant for AMPs development
			Complete the resourcing levels for water services AM		

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *	Treatment Costs
	condition assessments		Complete the asset condition survey		
Water and sewerage infrastructural groups	Overall asset life and condition is compromised due to maintenance and renewal programs not well targeted or limited in scope	High	Complete the full revision of the Water Services AMPs	Medium	Staff time External consultant for AMPs development and condition surveys as required
			Complete the asset condition assessment program		
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 and Singleton Councils for emergency management and other initiatives.

Water services manages non-civil defence emergency events using an incident escalation process, structures, communication and reporting lines that may change as an incident escalates. The key plan for water supply emergency response planning is:

- Drought Management and Emergency Response Plan (April 2014).

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 locating leaks.

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 Australian Drinking Water Guidelines, environmental standards, speed of response to household water service failures, 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, eg. pump seal replacements and water main repairs. 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 water 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 18. 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 18: 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 in certain classes of water assets such as mechanical and electrical work are not considered to be fully adequate to meet current service levels in the long term.

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 repair to a leaking hydrant or valve, without follow up maintenance such as programming replacement of leaking and faulty stop valves and hydrants.

Planned maintenance work is currently 25% of total maintenance expenditure. A target of 50% is considered an appropriate goal to balance cost with short term loss of service by Council's water customers.

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.
- Continue with the current leakage management program
- Operate and maintain the SCADA system to ensure the complex assets such as the treatment plants are compliant for water quality and to ensure continuous operations
- Read the customer meters on quarterly basis for billing purposes, identification of any failed meters and high consumptions for individual properties
- Inspect the water reservoirs as part of the water risk assessment program on two yearly basis
- Regular audits of the water treatment plants at asset component level by Council's operator to ensure continuous operations

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.

Operations and maintenances activities may be targeted to mitigate critical assets failure and maintain service levels. These activities may include increased inspection frequency, higher maintenance intervention levels, etc.

A high level criticality assessment was completed in 2015 for Council's infrastructural asset groups including water services. Different water asset elements were assessed as high, medium or low criticality rating and are detailed in Table 19. The next step is to identify and rank the critical assets using this methodology across the asset inventory.

Table 19: Critical Assets and Service Level Objectives

WATER ASSET ELEMENT	HIGH	MEDIUM	LOW
Water Treatment Plants	Yes		
Supply dam	Yes		
Reservoirs	Yes		
Water bores		Yes	
Service	Emergency Service/Hospital/Patient Care	Commercial/Industrial	Residential
Reticulation	Supply Service	Trunk Network	Residential Reticulation
Dead ends			Yes
Pump stations	Glenbawn Dam Pump Station		Other pump stations

6.3.4 Summary of future operations and maintenance expenditures

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

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 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 Water Services AMP.

The useful lives of assets used to develop projected asset renewal expenditures are shown in Table 20. They are as recommended for use in current Water Industry by DPI Water publications. At the next full revaluation of Council's water 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, asbestos cement pipelines will have a revised life applied, based on dig up and assessment tests.

Table 20: Useful Lives of Assets

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

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

- Break history Asset age
- Asset condition Criticality

- Coordination with other programs such as roading
- Levels of service failure such as firefighting
- Risk based approach

Further improvements are required to refine the programme

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 water main which has a history of breaks due to cracks developing in pipe work 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 21.

Table 21: Renewal and Replacement Priority Ranking Criteria

CRITERIA	WEIGHTING
Unacceptable failure statistics	50
Design Life Reached	20

CRITERIA	WEIGHTING
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, and service failure due to problematic materials such as brittle PVC installed in the 1980s.

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

- Water meters replaced based on age on a 10 year cycle for domestic meters replaced when ten years old and commercial meters replaced earlier than ten years based on consumption
- Water mains are replaced when water outages due to break history is unacceptable for customers
- Water mains are replaced when problematic materials (including PVC, AC and galvanised iron) fail frequently indicating that the asset is in very poor condition
- Specialised equipment replaced based on age such as pump overhauls
- Valve and hydrant replacements based on worn out components and high leakage
- Major repairs of reservoirs for serviceability such as repainting.

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:

- Water Meter Replacement. These are being replaced on a continuous 10 year cycle, in order to ensure maximum revenue from usage charges are obtained.
- Increased provision has been made to undertake renewals and heavy maintenance on all borehole equipment and pumps for Merriwa and Cassilis as a continuing program.
- Provision has been made for an annual program to replace completely, galvanised water services crossing roads and streets. These pipe types are nearing their useful life and can fail frequently once in poor condition affecting service continuity to customers as well as leakage under road pavements.
- 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 22: New Assets Priority Ranking Criteria

CRITERIA	WEIGHTING
Identified deficiency to adopted levels of Service	50
External standards have changed	30
Community wishing improved water 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,
  - and evaluate the options against evaluation criteria adopted by Council, and
  - 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 drinking water standards, health and safety and meeting demand including:

- New water main extensions
- New water treatment plants at Scone/Aberdeen
- New specialised equipment at treatment plants including chlorination systems, SCADA, chlorine analyser, fluoridation equipment and low level alarms
- Bore land purchases
- Village reticulation

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.

Council does not have any current intention to sell, retire, or decommission any of its major water supply assets during the next ten year period. This will be reviewed with the next update of this plan.

Assets or asset components from water sources, treatment plants, pumping stations, reservoirs and filter 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 2018/2019-2022/2023 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 the water services operations, maintenance and capital over the next ten years will be approximately $92.7 million (as shown in Figure 1) with annual forecasted expenditure varying between approximately $6.4 to $21.5 million per annum.

This expenditure is divided into two main categories being:

- Capital Expenditure (CAPEX), which is approximately $41.5 million or 45% of total expenditure and Operational Expenditure (OPEX), which is approximately $51.2 million or 55% 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 $1.3 million or 3% of total capital expenditure.
- Renewal, which replaces the assets as new. This equates to approximately $14.2 million or 34.3% of total capital expenditure.

- Growth, refers to the expansion of the existing asset network. This accounts for approximately $26 million or 62.7% of total capital expenditure.

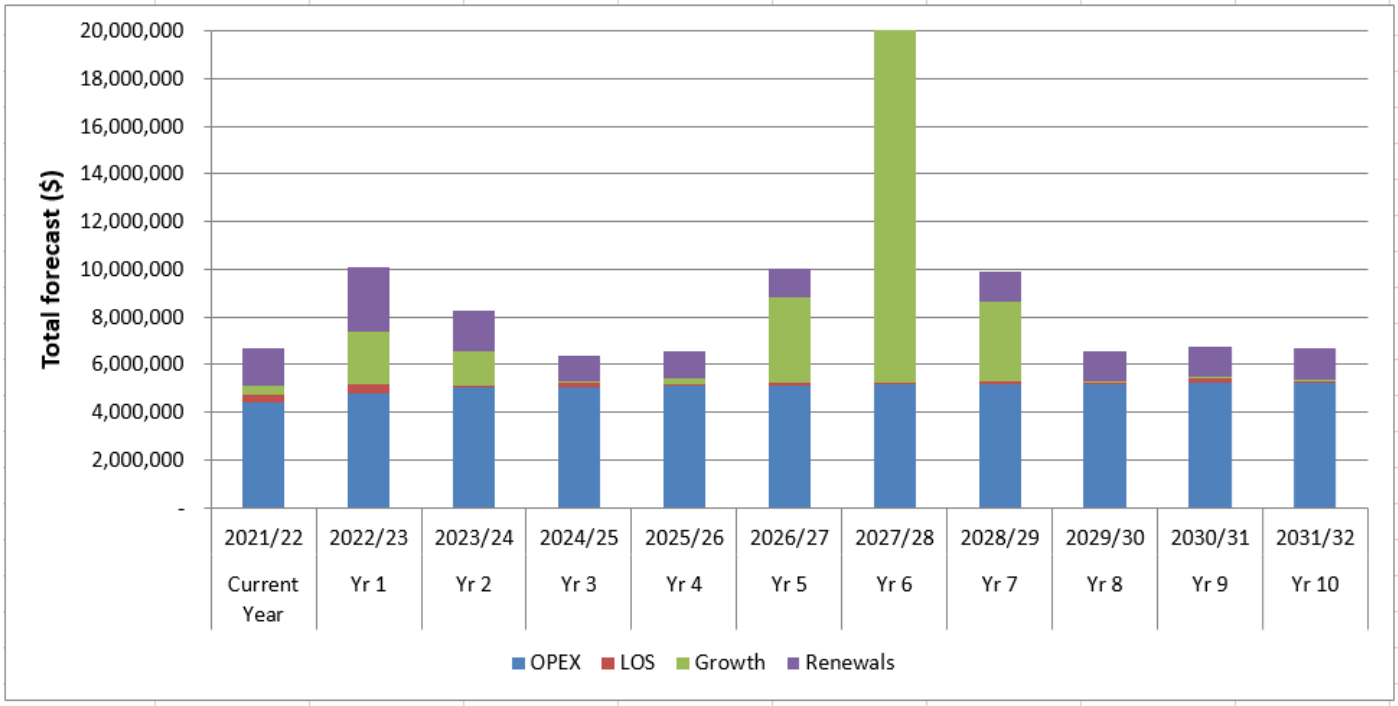


Figure 4: Summary of Water Total Expenditure Forecast

Table 23: Summary of Water Total Expenditure Forecast

WATER SERVICES SUMMARY	CURRENT	YR 1	YR 2	YR 3	YR 4	YR 5	YR 6	YR 7	YR 8	YR 9	YR 10	10 YEAR TOTAL
	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	
OPEX	4,438,110	4,819,207	5,041,625	5,077,489	5,113,238	5,135,759	5,158,916	5,180,268	5,202,585	5,224,776	5,246,551	51,200,410
LOS	310,650	351,096	50,000	159,000	50,000	133,000	90,000	137,000	50,000	191,000	50,000	1,261,096
Growth	359,650	2,197,000	1,450,000	50,000	250,000	3,550,000	15,050,000	3,350,000	50,000	50,000	50,000	26,047,000
Renewals	1,603,463	2,719,929	1,728,271	1,108,250	1,155,168	1,177,504	1,216,072	1,234,878	1,277,928	1,296,225	1,337,781	14,252,006
TOTAL	**6,711,873**	**10,087,232**	**8,269,896**	**6,394,739**	**6,568,406**	**9,996,263**	**21,514,988**	**9,902,146**	**6,580,513**	**6,762,001**	**6,684,332**	**92,760,512**

7.1.2 Operational expenditure summary

The recommended ten year operational expenditure forecast is shown in Table 24 with $51.2 million forecast over the next ten years. This shows that depreciation is 47.43% of the total operations expenditure, followed by administration overheads at 47.40%. The operational expenditure by township is detailed in Appendix C.

Table 24: Summary of Water Services Operational Expenditure

WATER OPEX SUMMARY	CURRENT	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	10 YEAR TOTAL
	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	
OPERATING EXPENDITURE												
DIRECT ASSET COSTS												
Administration	87,100	52,900	50,550	50,936	51,307	51,661	52,025	52,397	52,778	53,170	53,571	521,295
Engineering and Supervision	485,400	469,400	532,429	534,326	536,244	537,800	539,395	541,031	542,708	544,427	546,190	5,323,950
Dams and Weirs	85,500	48,600	50,188	51,783	53,382	54,744	56,141	57,574	59,043	60,550	62,095	554,100
Mains	364,400	434,600	500,432	501,770	503,115	504,264	505,442	506,651	507,891	509,162	510,467	4,983,794
Reservoirs	136,900	167,600	190,490	191,894	193,309	194,515	195,753	197,022	198,324	199,661	201,031	1,929,599
Pumping Stations	495,600	524,800	522,875	525,796	528,652	531,314	534,045	536,846	539,719	542,667	545,690	5,332,404
Water Treatment	286,800	367,500	391,684	393,981	396,287	398,245	400,253	402,313	404,426	406,593	408,815	3,970,097
Water Other	131,500	119,900	143,617	143,691	143,759	143,830	143,902	143,976	144,052	144,130	144,210	1,415,063
Private Works	-	100	100	100	100	100	100	100	100	100	100	1,000
Rainwater Tank Rebates	36,500	31,100	38,312	38,730	39,154	39,672	40,202	40,747	41,305	41,876	42,464	393,562
Water Awareness Campaign	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	20,000
INDIRECT ASSET COSTS												
Depreciation	1,059,390	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551	12,645,510
Loan interest	236,958	222,794	205,487	189,124	171,278	152,436	133,189	111,069	88,823	65,327	40,265	1,379,792
Corporate Admin Overheads	1,018,562	1,101,362	1,139,910	1,179,807	1,221,100	1,251,627	1,282,918	1,314,991	1,347,865	1,381,562	1,416,102	12,637,244
TOTAL	**4,438,110**	**4,819,207**	**5,041,625**	**5,077,489**	**5,113,238**	**5,135,759**	**5,158,916**	**5,180,268**	**5,202,585**	**5,224,776**	**5,246,551**	**51,200,410**

7.2 Capital Expenditure

There is a total of $41.5 million for capital expenditure for the next ten years as shown in Table 23. Total annual renewals fluctuate between years with a ten year average of $1.4 million.

The full capital expenditure program is detailed in Appendix B.

7.3 Forecast Reliability and Confidence

The expenditure and valuations projections in the Water 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%

CONFIDENCE GRADE	DESCRIPTION
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 Water Services 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	A	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 2017. Major revaluation scheduled for every five years and due 2022/23.
Asset useful lives	B	Useful lives were last reviewed in June 2016 and will be reviewed in 2021/22 prior to the major asset revaluation planned for 2022/23.
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.

Over all data sources, the data confidence is assessed as an uncertain confidence level for data used in the preparation of this AMP.

8 PLAN IMPROVEMENT AND MONITORING

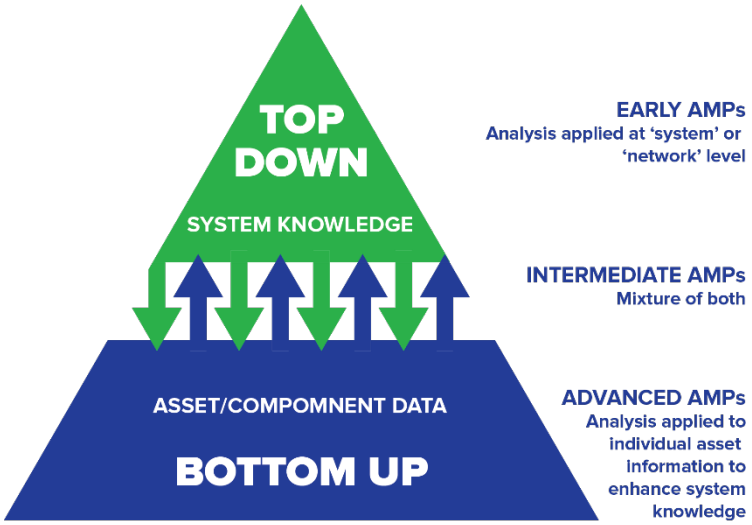
8.1 Status of Asset Management Practices

Asset Management Commitment

Through the initiatives presented in this section, Council is committed to appropriate asset management practices. This practice is being developed in being developed in line with the IPWEA NAMS practice as presented in 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 5.



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 Corporate Services Director. 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 water 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 Water Assets. This will allow for a thorough costing of the planned, cyclic and reactive maintenance tasks in the Water system. This process is well advanced for other sections of Council, and now needs to be extended to the Water System.

The break history is currently only recorded on Customer Request Management (CRM) system and not CONFIRM so the water main failure analysis is difficult to undertake. This is recognized as a high priority to enable a sound water renewal program to be developed.

8.2.1 Asset registers and management systems

Currently CONFIRM is used, supplemented by spread sheets 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 water 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 water assets including the water treatment plants, pump stations, reservoirs and pipelines	Ongoing	High	Manager Water and Sewer
	Complete the major data cleansing of the water 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
Renewal planning	Undertake proactive and regular analysis of the water main break history as good industry practice	2021/22	High	Manager Water and Sewer
	Revise and improve the effectiveness of the current water renewal program			
Risk management	Develop an Emergency Response Plan for the critical water assets	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 water activity	Ongoing	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 water assets has been established

9 LATEST ASSET AND LOS INFORMATION

9.1 Water asset summary

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

Table 28: Value of water asset classes

WATER ASSET CLASS	CURRENT REPLACEMENT VALUE ($)	ACCUMULATED DEPRECIATION ($)	WRITTEN DOWN VALUE (WDV) ($)
Bores/Wells	1,640,752	719,283	921,469
Reservoirs	13,935,588	4,856,788	9,078,800
Treatment Plants	13,297,853	9,806,978	3,490,875
Pump Stations	5,099,976	1,158,914	3,941,062
Other infrastructure	841,561	509,003	332,558
Pipes	70,146,573	23,641,604	46,504,969
TOTAL	**104,962,303**	**40,692,570**	**64,269,733**

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 water supply system consists of:

- 1 dam
- 16 service reservoirs
- 6 bores and 4 wells
- 10 pump stations
- 86.5km of transfer and trunk water mains 200km of reticulated water mains.

9.2 Service Level Summary

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

Table 29: Water 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 - meets water quality guidelines	To provide safe and reliable water for household and business use in urban areas	Compliance with the total coliforms in 95% of samples	Technical	Met	0 CFU/100ml
		Compliance with maximum coliforms in any sample	Technical	Met	10CFU/100ml
		Compliance with E.coli in any sample	Technical	Met	0 CFU/100ml
Safety - water pressure and flow	Water pressure is appropriate for its intended use	Percentage of total number of properties serviced compliant with the Building Code of Australia and NSW Fire Brigade requirements (for all residential, commercial and industrial areas)	Technical	95%	100%
		Percentage of total number of properties serviced with the desirable minimum pressure of 12 metres head, during normal supply network conditions, while delivering 6 L/min	Customer	95%	95%
		Percentage of total number of properties serviced with the desirable maximum pressure of 90 metres head, during normal supply network conditions	Customer	95%	95%
Quality - reliability	To provide reliable water supply networks	Percentage achievement for maximum duration of unplanned interruptions to customers of no more than 12 hours	Customer	Not recorded	95%

KEY SERVICE ATTRIBUTE	CUSTOMER LOS	PERFORMANCE MEASURE	PERFORMANCE MEASURE TYPE	LOS PERFORMANCE FOR 2020/21	CURRENT YEAR 2021/22 TARGET
		Percentage achievement for maximum number of unplanned interruptions to customers per year (i.e. frequency) of no more than 3	Customer	Not recorded	95%
		Percentage of water services network in satisfactory condition (condition grades 1,2 or 3) (for pipes and valves only)	Technical	89%	90%
Compliance with customer charter	To provide prompt responses for service	Percentage for connection time for a new service in serviced areas within 15 days	Customer	Not recorded	95%
		Percentage achievement for notice given to domestic customers within 24 hours of a planned shutdown	Customer	95%	95%
		Percentage achievement for notice given to commercial customers within 24 hours of a planned shutdown	Customer	100%	95%
		Percentage achievement for notice given to major industrial customers within 7 days of a planned shutdown	Customer	100%	90%
		Percentage achievement for time to have staff onsite to commence rectification after notification of problem during working hours of 2 hours	Customer	Not recorded	90%

KEY SERVICE ATTRIBUTE	CUSTOMER LOS	PERFORMANCE MEASURE	PERFORMANCE MEASURE TYPE	LOS PERFORMANCE FOR 2020/21	CURRENT YEAR 2021/22 TARGET
		Percentage achievement for time to have staff onsite to commence rectification after notification of problem during out of working hours of 4 hours	Customer	Not recorded	90%
		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%
		Percentage achievement for providing a domestic individual connection to water supply in serviced area within 21 working days	Customer	Not recorded	90%
Sustainable - Environmental performance	To promote the efficient and sustainable use of water	Full compliance for implementing restrictions with Council's Drought Management Plan and as required by the NSW Office of Water	Technical	100%	100%
Sustainable - Cost Effectiveness	Sustainably managing the water service network	Water renewals expenditure compared against water industry peers, using the water industry annual reports to DPI 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	55.9%	>100%	No	Water assets are ageing and significant investment and focus on renewals is required
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	2.06%	<2%	No	Water assets are ageing with over 50% 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	128%	>100%	Yes	With a large percentage of assets moving into Condition 3 and higher this will lead to an increase in maintenance expenditure which is currently underfunded throughout the 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)	2.61%	>1.1	Yes	This is considerably high due to expansion of network and village reticulation.

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 Water 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
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	
WATER CAPITAL PROJECTS																	
MERRIWA/CASSILIS WATER																	
2014. Mwa - Main Renewals/Replacements	0%	0%	100%	1,282,000	1,282,000	227,300	333,000	370,000	62,750	65,500	68,250	71,000	73,750	76,500	79,250	82,000	1,282,000
2025. Mwa - Meter Replacements	0%	0%	100%	101,892	101,892	2,500	9,000	9,278	9,547	9,805	10,053	10,307	10,568	10,835	11,109	11,390	101,892
4677. Mwa - Treatment Plant Minor Renewals	0%	0%	100%	510,331	510,331	5,000	45,000	46,400	47,767	49,094	50,349	51,636	52,956	54,309	55,698	57,122	510,331
4678. Mwa/Cass - Minor Reservoir Repairs	0%	0%	100%	339,441	339,441	5,000	30,000	30,920	31,807	32,655	33,482	34,331	35,201	36,093	37,007	37,945	339,441
4689. Cass - Treatment Plant SCADA	0%	0%	100%	-	-	31,000	-	-	-	-	-	-	-	-	-	-	-
5332. Mwa - Reservoir Cleaning & Inspections	100%	0%	0%	-	23,100		23,100	-	-	-	-	-	-	-	-	-	23,100
5398. Mwa - New Mains/Main Extensions	0%	0%	100%	85,866	85,866	354,275	85,866	-	-	-	-	-	-	-	-	-	85,866
MURRURUNDI WATER																	
2022. Scn/Mdi Pipeline	30%	70%	0%	-	65,000	100,000	65,000	-	-	-	-	-	-	-	-	-	65,000
2026. Mdi - Meter Replacements	0%	0%	100%	102,553	102,553	3,500	9,000	9,288	9,575	9,863	10,120	10,384	10,656	10,934	11,220	11,513	102,553
2071. Village Reticulation	0%	100%	0%	-	-	5,000	-	-	-	-	-	-	-	-	-	-	-
4498. Reservoir repairs/replacement	0%	0%	100%	80,000	80,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	80,000
5397. Mdi - Main Renewals/Replacements	0%	0%	100%	1,634,981	1,634,981	274,225	150,000	150,860	153,777	156,753	160,547	164,435	168,421	172,507	176,694	180,987	1,634,981
5811. Mdi - Dam Safety Inspection	100%	0%	0%	-	-	15,000	-	-	-	-	-	-	-	-	-	-	-
SCONE/ABERDEEN WATER																	
1105. Scn/Abn - Minor Reservoir Repairs	0%	0%	100%	227,164	227,164	10,000	20,000	20,625	21,240	21,843	22,408	22,988	23,583	24,194	24,820	25,463	227,164
2027. Scn/Abn - Meter Replacements	0%	0%	100%	624,552	624,552	20,000	55,000	56,725	58,421	60,082	61,625	63,208	64,831	66,497	68,205	69,958	624,552
2028. UV & Chlorination	0%	100%	0%	-	-	70,000	-	-	-	-	-	-	-	-	-	-	-
2030. Scone WTP	0%	100%	0%	-	22,000,000	20,000	-	-	-	200,000	3,500,000	15,000,000	3,300,000	-	-	-	22,000,000
4181. Telemetry Upgrade	0%	0%	100%	255,000	255,000	-	255,000	-	-	-	-	-	-	-	-	-	255,000
4219. Scn/Abn - Main Renewals/ Replacements	0%	0%	100%	7,751,000	7,751,000	502,663	925,000	975,000	661,500	688,000	707,500	724,000	740,500	760,000	776,500	793,000	7,751,000
4672. Abn - Replace High Tower Tank & Platform	0%	0%	100%	269,813	269,813	25,000	269,813	-	-	-	-	-	-	-	-	-	269,813
4687. Abn - Raw Water Pump Station Upgrade	0%	0%	100%	377,250	377,250	70,000	377,250	-	-	-	-	-	-	-	-	-	377,250
4757. Scn Valve & Hydrant Replacement	0%	0%	100%	234,663	234,663	10,000	20,500	21,175	21,866	22,573	23,170	23,783	24,412	25,059	25,722	26,403	234,663
4761. Scn/Abn Water Treatment Upgrades	0%	0%	100%	-	-	55,000	-	-	-	-	-	-	-	-	-	-	-
4794. IWCM	100%	0%	0%	-	197,496	80,000	197,496	-	-	-	-	-	-	-	-	-	197,496
4939. Scn/Abn - New Mains/Main Extensions	50%	50%	0%	-	-	299,300	-	-	-	-	-	-	-	-	-	-	-
4941. Scn/Abn - Flouridation	0%	100%	0%	-	50,000	-	50,000	-	-	-	-	-	-	-	-	-	50,000

5330. Scn/Abn - Reservoir Cleaning & Inspect	100%	0%	0%	-	215,000	-	41,000	-	42,000	-	43,000	-	44,000	-	45,000	-	215,000
5331. Scn/Abn - Drought Management Plan	100%	0%	0%	-	70,000	36,000	70,000	-	-	-	-	-	-	-	-	-	70,000
5376. Scn - Middlebrook Rd Water Supply	0%	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5406. STM Rural Water Connections	0%	100%	0%	-	24,000	45,000	24,000	-	-	-	-	-	-	-	-	-	24,000
5510. Scn - Moobi Rd Water Booster Pump Station	0%	50%	50%	127,500	255,000	-	255,000	-	-	-	-	-	-	-	-	-	255,000
TOTAL CAPITAL WORKS EXPENDITURE PROPOSED FOR TEN YEAR PERIOD						**2,273,763**	**5,268,025**	**3,228,271**	**1,317,250**	**1,455,168**	**4,860,504**	**16,356,072**	**4,721,878**	**1,377,928**	**1,537,225**	**1,437,781**	**41,560,102**
TOTAL RENEWALS ONLY EXPENDITURE PROPOSED FOR TEN YEAR PERIOD				**14,252,006**													

Appendix C – Operational Expenditure by Township

MERRIWA/CASSILIS WATER	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												
Administration	5,500	4,900	5,047	5,186	5,315	5,448	5,585	5,724	5,867	6,014	6,164	55,250

Engineering and Supervision	49,000	43,800	60,054	60,054	60,054	60,054	60,054	60,054	60,054	60,054	60,054	584,286
Mains	95,000	118,000	135,900	135,900	135,900	135,900	135,900	135,900	135,900	135,900	135,900	1,341,100
Reservoirs	52,000	63,400	63,400	63,400	63,400	63,400	63,400	63,400	63,400	63,400	63,400	634,000
Pumping Stations	69,100	62,200	52,200	52,200	52,200	52,200	52,200	52,200	52,200	52,200	52,200	532,000
Water Treatment	104,300	112,700	120,900	120,900	120,900	120,900	120,900	120,900	120,900	120,900	120,900	1,200,800
Water Other	6,000	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	64,000
Private Works	8,000	10,500	17,646	17,999	18,359	18,818	19,288	19,771	20,265	20,771	21,291	184,708
INDIRECT ASSET COSTS												
Depreciation	244,372	244,372	244,372	244,372	244,372	244,372	244,372	244,372	244,372	244,372	244,372	2,443,720
Corporate Admin Overheads	107,334	117,200	121,302	125,548	129,942	133,190	136,520	139,933	143,431	147,017	150,693	1,344,776
TOTAL	**740,606**	**753,284**	**763,247**	**773,497**	**786,298**	**799,507**	**813,141**	**826,899**	**838,852**	**853,520**	**868,749**	**8,076,994**

MURRURUNDI WATER	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												
Administration	9,300	8,000	8,253	8,500	8,742	8,963	9,190	9,423	9,661	9,906	10,157	90,795
Engineering and Supervision	50,100	56,100	57,975	59,872	61,790	63,346	64,941	66,577	68,254	69,973	71,736	640,564
Dams and Weirs	85,500	48,600	50,188	51,783	53,382	54,744	56,141	57,574	59,043	60,550	62,095	554,100
Mains	35,300	40,800	42,132	43,470	44,815	45,964	47,142	48,351	49,591	50,862	52,167	465,294
Reservoirs	26,800	42,500	43,890	45,294	46,709	47,915	49,153	50,422	51,724	53,061	54,431	485,099
Pumping Stations	33,700	95,000	97,975	100,896	103,752	106,414	109,145	111,946	114,819	117,767	120,790	1,078,504
Water Treatment	59,000	69,800	72,084	74,381	76,687	78,645	80,653	82,713	84,826	86,993	89,215	795,997
Water Other	2,600	2,600	2,678	2,752	2,820	2,891	2,963	3,037	3,113	3,191	3,271	29,316
Emergency Water Cartage	0	100	100	100	100	100	100	100	100	100	100	1,000
Private Works	1,500	2,100	2,166	2,231	2,295	2,354	2,414	2,476	2,540	2,605	2,673	23,854
INDIRECT ASSET COSTS												

Depreciation	212,498	212,498	212,498	212,498	212,498	212,498	212,498	212,498	212,498	212,498	212,498	2,124,980
Loan interest	53,552	51,216	48,827	46,382	43,881	41,323	38,706	36,028	33,289	30,488	27,621	397,761
Corporate Admin Overheads	107,334	117,200	121,302	125,548	129,942	133,190	136,520	139,933	143,431	147,017	150,693	1,344,776
TOTAL	**677,184**	**746,514**	**760,068**	**773,707**	**787,413**	**798,347**	**809,566**	**821,078**	**832,889**	**845,011**	**857,447**	**8,032,040**

SCONE/ABERDEEN WATER	**CURRENT**	**Yr 1**	**Yr 2**	**Yr 3**	**Yr 4**	**Yr 5**	**Yr 6**	**Yr 7**	**Yr 8**	**Yr 9**	**Yr 10**	**10 YEAR TOTAL**
	2021/22	**2022/23**	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**2028/29**	**2029/30**	**2030/31**	**2031/32**	
OPERATING EXPENDITURE												
DIRECT ASSET COSTS												
Administration	72,300	73,696	75,119	76,571	78,408	80,290	82,218	84,194	86,219	88,293	90,500	815,508
Engineering and Supervision	386,300	393,726	401,298	409,017	418,779	428,780	439,027	449,525	460,281	471,300	483,083	4,354,817
Mains	11,500	11,500	11,500	11,500	11,500	11,500	11,500	11,500	11,500	11,500	11,788	115,288
Reservoirs	234,100	238,382	242,746	247,193	252,754	258,449	264,279	270,249	276,362	282,622	289,687	2,622,723
Pumping Stations	58,100	59,202	60,325	61,471	62,915	64,394	65,909	67,461	69,051	70,680	72,447	653,857
Water Treatment	392,800	400,376	408,101	415,977	425,944	436,155	446,618	457,337	468,321	479,574	491,563	4,429,966
Water Other	123,500	125,920	128,388	130,905	134,100	137,374	140,730	144,169	147,692	151,304	155,086	1,395,668
Private Works	122,900	125,318	127,784	130,299	133,494	136,769	140,126	143,565	147,090	150,702	154,470	1,389,617
Rainwater Tank Rebates	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	20,000
Water Awareness Campaign	12,000	12,210	12,424	12,642	12,911	13,187	13,470	13,759	14,055	14,357	14,716	133,731
INDIRECT ASSET COSTS												
Depreciation	602,520	602,520	602,520	602,520	602,520	602,520	602,520	602,520	602,520	602,520	602,520	6,025,200
Loan interest	183,405	171,578	156,660	142,742	127,397	111,113	94,483	75,041	55,534	34,839	12,644	982,031
Corporate Admin Overheads	803,894	839,492	856,127	873,779	894,661	916,764	940,142	962,509	969,361	994,511	1,019,374	9,266,720
TOTAL	**3,005,319**	**3,055,920**	**3,084,992**	**3,116,615**	**3,157,383**	**3,199,296**	**3,243,022**	**3,283,830**	**3,309,986**	**3,354,202**	**3,399,878**	**32,205,124**

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		1,603,463	2,719,929	1,728,271	1,108,250	1,155,168	1,177,504	1,216,072	1,234,878	1,277,928	1,296,225	1,337,781
Depreciation Expense		1,059,390	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551
INFRASTRUCTURE BACKLOG												
Estimated Cost to bring back to Satisfactory		5,698,269	5,688,064	5,675,793	5,663,288	5,652,051	5,641,660	5,629,956	5,619,764	5,608,455	5,598,135	5,585,761
Closing Value of Assets		65,484,106	69,487,580	71,451,300	71,503,999	71,694,616	75,290,569	90,382,090	93,839,417	90,495,467	94,112,091	90,668,697
ASSET MAINTENANCE												
Asset Maintenance Expense		1,082,400	1,175,600	1,263,985	1,271,243	1,278,458	1,284,837	1,291,381	1,298,093	1,304,977	1,312,040	1,319,283
Required Asset Maintenance		854,740	853,210	851,310	849,493	847,869	846,314	844,567	842,888	841,268	839,720	837,784
CAPITAL EXPENDITURE												
Annual Capital Expenditure		2,273,763	5,268,025	3,228,271	1,317,250	1,455,168	4,860,504	16,356,072	4,721,878	1,377,928	1,537,225	1,437,781
Annual Depreciation Expense		1,059,390	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551	1,264,551
SS7 Data												
Gross Replacement Cost (GRC)		108,085,531	114,401,936	118,665,954	121,010,423	123,488,121	129,366,200	146,728,090	152,421,064	154,758,701	157,250,960	159,638,790
% Infrastructure Condition 4 and above		13.18%	12.43%	11.96%	11.70%	11.44%	10.90%	9.59%	9.22%	9.06%	8.90%	8.75%
% Infrastructure Condition 3 and above		39.54%	37.29%	35.87%	35.10%	34.33%	32.71%	28.78%	27.65%	27.18%	26.70%	26.24%
RATIOS BASED ON 3YR AVERAGE	**Benchmark**											
Infrastructure Renewal	100%	101.67%	145.21%	168.64%	146.47%	105.22%	90.70%	93.54%	95.65%	98.29%	100.41%	103.12%
Infrastructure Backlog	2%	4.29%	6.38%	8.27%	8.01%	7.92%	7.76%	7.13%	6.51%	6.14%	6.04%	6.10%
Asset Maintenance	1.00	1.32	1.31	1.38	1.45	1.50	1.51	1.52	1.53	1.54	1.55	1.56
Capital Expenditure	1.10	5.76	3.05	3.00	2.59	1.58	2.01	5.98	6.84	5.92	2.01	1.15
ACTUAL RATIO MEETING BENCHMARK												
Infrastructure Renewal		✓	✓	✓	✓	✓	✗	✗	✗	✗	✓	✓
Infrastructure Backlog		✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Asset Maintenance		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Capital Expenditure		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Appendix E – Water 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	Water 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 Water 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 Water Services AMP including LCMP; Complete asset condition survey; Water and Waste Manager and Manager Strategic Assets to review appropriate resourcing levels for water services AM"	"Complete the actions identified in the Water Services AMP including LCMP; Complete the resourcing levels for water services AM; Complete asset condition survey"	Manager Water and Sewer, Manager Strategic Assets and Manager Information Services	"Staff time; External consultant for AMP development"	To be confirmed
2	Water 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 Water 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 Water Services AMP; Complete the asset condition assessment program "	"Complete the full revision of the Water 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	Water 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	Water infrastructural group	Reduced availability of water supply to the community from the water supply reticulation	Within 5 years	"Climate change; Drought"	"Instigate drought management plan; Communication on Council's website"	Yes	Possible	Moderate	High	Prioritised action required	No	"Increase water storage; Start proactive leak detection management; Investigate alternative water sources"	Medium	Develop and implement proactive leakage programme	Develop and implement proactive leak detection program	Manager Water and Sewer	Staff time and external contractors for leak detection programme	To be confirmed
5	Water 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 and Manager Information Services	Staff time	To be confirmed

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
7	Water infrastructural group	"Damage to environment; Lost water resource"	Within 5 years	Water overflows from reservoirs	"SCADA for monitoring; Regular reservoir inspections by operators; External risk assessments every 2 years "	Yes	Possible	Minor	Medium	Planned action required	No	"Develop an overflow risk management assessment and action plan; Increase risk assessment frequencies"	Low	Develop an overflow risk management assessment and action plan	Develop an overflow risk management assessment and action plan	Manager Water and Sewer	Staff time	To be confirmed
8	Water infrastructural group	Unreliable water source for Murrurundi water users	Anytime now	Less than acceptable supply available	"Monitoring of demand; Started the Murrurundi Water Augmentation Project Operational Response Plans including trucking water from Scone"	No	Likely	Minor	Medium	Planned action required	No	"Continue with monitoring of demand; Implement the Murrurundi Water Augmentation Project; Continue with operational solutions "	Medium	"Continue with operational solutions; Implement the Murrurundi Water Augmentation Project; "	"Continue with operational solutions; Implement the Murrurundi Water Augmentation Project"	Manager Water and Sewer	Staff time	To be confirmed
9	Water infrastructural group	Inefficient management of water reticulation assets and lost revenue	Within 2-3 years	"High leakage from system; Illegal connections to the public water supply system"	"Reactive leak detection program; All customer water connections are metered; All Council facilities are metered; Renewal program in place based on known defects; Public reporting of theft in new subdivisions; Meters are read quarterly."	Yes	Likely	Moderate	High	Prioritised action required	No	"Proactive leak detection program; Implement targeted renewal program based on new asset condition information"	Medium	"Proactive leak detection program; Implement targeted renewal program based on new asset condition information"	"Proactive leak detection program; Implement targeted renewal program based on new asset condition information"	Manager Water and Sewer	Staff time and external contractor for leak detection	To be confirmed
10	Water infrastructural group	Reduced availability of water supply to the community from the water supply reticulation	Within 2-3 years	Failure of critical pipeline (asset failure or third party damage)	"O & M contractor responds to request for service; Response plans; Renewal programme"	Yes	Possible	Minor	Medium	Planned action required	No	"Planned condition monitoring programme; Maintenance history analysis and targeted renewal programmes; Review telemetry system effectiveness"	Medium	"Complete the planned condition monitoring programme; Start analysing maintenance history and develop targeted renewal programmes"	"Complete the planned condition monitoring programme; Start analysing maintenance history and develop targeted renewal program."	Manager Water and Sewer	Staff time	To be confirmed

Appendix F – Glossary/Definitions

Annual service cost (ASC)

1) Reporting actual cost

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

2) 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 *

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

2. **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:

(a) the period over which an asset is expected to be available for use by an entity, or

(b) 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.

Source: IPWEA, 2009, Glossary

Version History

Rev No	Date	Revision Details	Author	Reviewer	Approver
1	April 2014	Initial draft	B Carter	P Turri	A Fletcher
2	June 2020	Update asset inventory and financial data	GNS	JB	JB
3	June 2021	Update asset inventory and financial data	KW	JB	JB
4	April 2022	Update asset inventory and financial data	KW	JB	JB