BATHURST
REGIONAL COUNCIL

WATER RETICULATION NETWORK ASSET MANAGEMENT PLAN

Version 3.1
February 2021

Chifley Dam Spillway, August 2015

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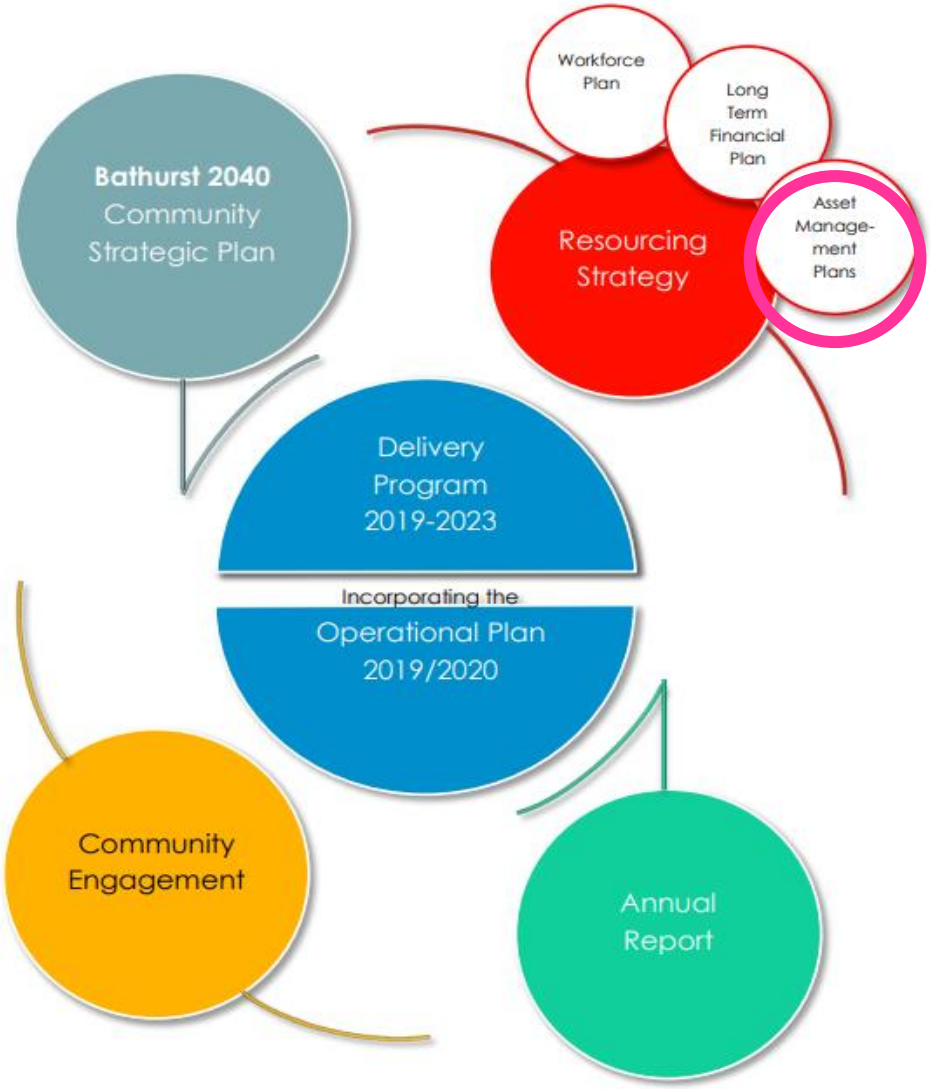
Integrated Planning and Reporting Framework



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ABBREVIATIONS

AAAC	Average annual asset consumption
AMP	Asset management plan
ARI	Average recurrence interval
CRC	Current replacement cost
DA	Depreciable amount
DoH	Department of Health
PPI	Producer Price Index
EF	Earthworks/formation
IRMP	Infrastructure risk management plan
LCC	Life Cycle cost
LCE	Life cycle expenditure
MMS	Maintenance management system
PCI	Pavement condition index
PPI	Producer Price Index
RTS	Rural Transfer Station
RV	Residual value
vph	Vehicles per hour

GLOSSARY

Annual service cost (ASC)
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 operating, maintenance, depreciation, finance/ opportunity and disposal costs, less revenue.

Asset class
Grouping of assets of a similar nature and use in an entity's operations (AASB 166.37).

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 management
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.

Assets
Future economic benefits controlled by the entity as a result of past transactions or other past events (AAS27.12). Property, plant and equipment including infrastructure and other assets (such as furniture and fittings) with benefits expected to last more than 12 months.

Average annual asset consumption (AAAC)*
The amount of a local government's asset base consumed during a year. This may be calculated by dividing the Depreciable Amount (DA) by the Useful Life and totalled for each and every asset OR by dividing the Fair Value (Depreciated Replacement Cost) by the Remaining Life and totalled for each and every asset in an asset category or class.

Brownfield asset values**
Asset (re)valuation values based on the cost to replace the asset including demolition and restoration costs.
Capital expansion expenditure

Expenditure that extends an existing asset, at the same standard as is currently enjoyed by residents, to a new group of users. It is discretional expenditure, which increases future operating, and maintenance costs, because it increases council's asset base, but may be associated with additional revenue from the new user group, e.g. extending a drainage or formed Building network, the provision of an oval or park in a new suburb for new residents.
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 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

Capital new expenditure
Expenditure which creates a new asset providing a new service to the community that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operating and maintenance expenditure.

Capital renewal expenditure
Expenditure on an existing asset, which returns the service potential or the life 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 has no impact on revenue, but may reduce future operating and maintenance expenditure if completed at the optimum time, e.g. resurfacing or re-sheeting a material part of a formed Building network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital upgrade expenditure
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 discretional and often does not result in additional revenue unless direct user charges apply. It will increase operating and maintenance expenditure in the future because of the increase in the council's asset base, e.g. widening the sealed area of an existing formed Building, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

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
An individual part of an asset which contributes to the composition of the whole and can be separated from or attached to an asset or a system.

Source: DVC 2006, Glossary
Note: Items shown * modified to use DA instead of CRC
Additional glossary items shown **

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, plus any costs necessary to place the asset into service. This includes one-off design and project management costs.

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.

Current replacement cost "As New" (CRC)
The current cost of replacing the original service potential of an existing asset, with a similar modern equivalent asset, i.e. the total cost of replacing an existing asset with an as NEW or similar asset expressed in current dollar values.

Cyclic Maintenance**
Replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, building roof replacement, 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.

Depreciable amount
The cost of an asset, or other amount substituted for its cost, less its residual value (AASB 116.6)

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.

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

Greenfield asset values **
Asset (re)valuation values based on the cost to initially acquire the asset.

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 of the entity or of another entity that contribute to meeting the public's need for access to major economic and social facilities and services, e.g. formed Buildings, 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 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 (AASB 140.5)

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

Life Cycle Cost **
The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises annual maintenance and asset consumption expense, represented by depreciation expense. 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 actual or planned annual maintenance and capital renewal expenditure incurred in providing the service in a particular year. Life Cycle Expenditure may be compared to Life Cycle Cost to give an initial indicator of life cycle sustainability.

Source: DVC 2006, Glossary
Note: Items shown * modified to use DA instead of CRC
Additional glossary items shown **

Loans / borrowings
Loans result in funds being received which are then repaid over a period of time with interest (an additional cost). Their primary benefit is in 'spreading the burden' of capital expenditure over time. Although loans enable works to be completed sooner, they are only ultimately cost effective where the capital works funded (generally renewals) result in operating and maintenance cost savings, which are greater than the cost of the loan (interest and charges).

Maintenance and renewal gap
Difference between estimated budgets and projected expenditures for maintenance and renewal of assets, totalled over a defined time (e.g. 5, 10 and 15 years).

Maintenance and renewal sustainability index
Ratio of estimated budget to projected expenditure for maintenance and renewal of assets over a defined time (e.g. 5, 10 and 15 years).

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
An item is material is its omission or misstatement could influence the economic decisions of users taken on the basis of the financial report. Materiality depends on the size and nature of the omission or misstatement judged in the surrounding circumstances.

Modern equivalent asset.
A structure similar to an existing structure and having the equivalent productive capacity, which could be built using modern materials, techniques and design. Replacement cost is the basis used to estimate the cost of constructing a modern equivalent asset.

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, e.g. parks and playgrounds, footpaths, formed Buildings and bridges, libraries, etc

Operating expenditure
Recurrent expenditure, which is continuously required excluding maintenance and depreciation, e.g. power, fuel, staff, plant equipment, on-costs and overheads.

Pavement management system
A systematic process for measuring and predicting the condition of formed Building pavements and wearing surfaces over time and recommending corrective actions.

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.

PMS Score
A measure of condition of a formed Building segment determined from a Pavement Management System.
Rate of annual asset consumption*
A measure of average annual consumption of assets (AAAC) expressed as a percentage of the depreciable amount (AAAC/DA). Depreciation may be used for AAAC.
Rate of annual asset renewal*
A measure of the rate at which assets are being renewed per annum expressed as a percentage of depreciable amount (capital renewal expenditure/DA).
Rate of annual asset upgrade*
A measure of the rate at which assets are being upgraded and expanded per annum expressed as a percentage of depreciable amount (capital upgrade/expansion expenditure/DA).

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

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 operating and maintenance expenditure.

Recurrent funding
Funding to pay for recurrent expenditure.

Rehabilitation
See capital renewal expenditure definition above.

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

Renewal
See capital renewal expenditure definition above.

Residual value
The net amount which an entity expects to obtain for an asset at the end of its useful life after deducting the expected costs of disposal.

Source: DVC 2006, Glossary
Note: Items shown * modified to use DA instead of CRC
Additional glossary items shown **

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, e.g. 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 capacity to provide goods and services in accordance with the entity's objectives, whether those objectives are the generation of net cash inflows or the provision of goods and services of a particular volume and quantity to the beneficiaries thereof.

Service potential remaining*
A measure of the remaining life of assets expressed as a percentage of economic life. It is also a measure of the percentage of the asset's potential to provide services that are still available for use in providing services (DRC/DA).

Strategic Management Plan (SA) **
Documents Council objectives for a specified period (3-5 yrs), the principle activities to achieve the objectives, the means by which that will be carried out, estimated income and expenditure, measures to assess performance and how rating policy relates to the Council's objectives and activities.

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. It is the same as the economic life.

Value in Use
The present value of estimated future cash flows expected to arise from the continuing use of an asset and from its disposal at the end of its useful life. 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 new cash flows, where if deprived of the asset its future economic benefits would be replaced.

Source: DVC 2006, Glossary
Note: Items shown * modified to use DA instead of CRC
Additional glossary items shown **

1. EXECUTIVE SUMMARY

What Council Provides

Council owns and maintains a filtered water reticulation network to ensure all users have access to water that are always within regulatory guidelines for drinking and other household and business uses. Further to this is the requirement to provide a network that is compliant for firefighting purposes. The following plan is in line with objectives; 1.4, 2.1, 3.1, 3.2, 3.3, 6.1, 6.4 and 6.6 within Council's adopted 2040 Community Strategic Plan.

The network[1] consists of:

Asset Category	Measure/No. of	Replacement $
Dams	2	$120,718,898
River Weir	1	-
Filtration Plant	1	$48,997,680
Reservoirs	25	$20,762,415
Pump Stations	13	$3,055,149
Building/Structures	44	$9,593,224
Pipes	504 km	$141,021,058
Flow Meters	23	*
Hydrants	3291	*
Valves	3285	*
Total		**$344,148,923**

* The value of these items is included in the value of the pipes they are fitted to.

What does it Cost?

There are two key indicators of cost to provide the Drinking Water Reticulation Network service.

- The life cycle cost being the average cost over the life cycle of the asset, and
- The total maintenance and capital renewal expenditure required to deliver existing service levels in the next 10 years covered by Council's long-term financial plan.

The life cycle cost to provide the Water reticulation network is estimated at **$15,536 Million** per annum. Council's planned life cycle expenditure for year 1 of the asset management plan is **$14,787 Million** which gives a life cycle sustainability index of **0.95**[2], resulting in a shortfall of -$748,759 for year 1.

The total maintenance and capital renewal expenditure budgeted for the Water Supply network in the next 10 years is estimated at **$151,919 Million**.
This is an average of **$15,192 Million** per annum; giving a 10-year sustainability index of **0.97**, resulting in an anticipated funding shortfall of -$4,046 million over the medium term.

Plans for the Future

Council plans to operate and maintain the Water Supply Network to achieve the following strategic objectives:

1. Ensure assets are maintained to a safe and functional standard as set out in this AM Plan
2. Ensure that future expansion of the Water Supply Network is planned to appropriately cater for growth predictions for the LGA
3. Maximise an asset's economic life while minimising lifecycle expenditure
4. Maintain a high level of community satisfaction in the portfolio
5. Achieve compliance with the NSW Local Water Utility Best Practice Guidelines and other regulatory requirements.

Measuring our Performance

Quality
Water Supply Network assets will be maintained in a reasonably usable condition. Defects found or reported that are outside our service standard will be repaired. See the maintenance response service levels for details of defect prioritisation and response time.

Function
Our intent is that Water Supply Network assets are maintained in partnership with other levels of Government and stakeholders to ensure the uninterrupted supply of drinking water, community satisfaction is maintained, and that safety is not compromised.

Safety
Reported defects are recorded on the Confirm Customer Services (CCS) and sent to the appropriate manager/supervisor for assessment. Repairs are carried out in accordance CRMS timeframes and available funding.

Water quality will be maintained within NSW DPI Water / Health Department Guidelines.

The Next Steps

The actions resulting from this asset management plan are:

- Work towards an advanced asset management plan for the Water Filtration Plant
- Undertake Condition assessments on the parts of the supply network where samples are available (e.g. mains repair locations)
- Improve the date of construction or replacement information held in the asset register
- Make use of available financial data to produce accurate input to future budgets

[1] The detail of this plan only covers the piped reticulation network. A major component of the system is the Water Filtration Plant which due to its size and complexity is beyond the scope of this plan; and should be subject to a separate asset management plan. The filtration plant is included here for completeness of the valuation information.

[2] See Section 6.1.1, Sustainability of service delivery

2. INTRODUCTION

2.1 Background

This asset management plan is to demonstrate responsive management of water assets (and services provided from assets), compliance with regulatory requirements, and to communicate funding needed to provide the desired levels of service.
The asset management plan is to be read with the following associated planning documents:

- Bathurst Regional Council Delivery Plan 2019-2022
- Bathurst Regional Council Detailed Budget 2019-2022
- Bathurst Regional Council Guidelines for Engineering Works 2011
- Bathurst Regional Council Bathurst Region Urban Strategy 2008
- Bathurst Regional Council Strategic Business Plan for Water Supply & Sewerage Services 2009/10 (DLM Environmental Consultants Pty Ltd 2010)
- National Health and Medical Research Council Australian Drinking Water Guidelines 2011 – Updated August 2018 (Australian Government Publications, Canberra)
- NSW DPI Water Best Practice Management of Water Supply and Sewerage 2007 (NSW Government)

This asset management plan covers the following infrastructure assets:

Table 2.1. Assets covered by this Plan

Asset Category	Measure/No. of	Replacement Value $
Dams	2	120,718,898
River Weir	1	-
Filtration Plant	1	$48,997,680
Reservoirs	25	$20,762,415
Pump Stations	13	$3,055,149
Building/Structures	44	$9,593,224
Pipes	504 km	$141,021,058
Flow Meters	23	*
Hydrants	3291	*
Valves	3285	*
Total		**$344,148,423**

***** The value of these items is included in the value of the pipes they are fitted to.

Key stakeholders in the preparation and implementation of this asset management plan are:

Councillors	Formulate policy for the allocation of resources to maximise benefit to the community whilst minimising the Council's exposure to risk
The Council	To manage the implementation of policy in a timely and cost-effective manner. To ensure resources are effectively utilised
General Public	End users of the water product
Local Businesses and Industry	Many require water products for the operation of their business
Health care facilities	A clean and reliable water supply is essential to hospitals, clinics and home dialysis patients

2.2 Goals and Objectives of Asset Management

The Council exists to provide services to its community. Some of these services are provided by infrastructure assets. Council has acquired infrastructure assets by 'purchase', by contract, construction by council staff and by donation of assets constructed by developers and others to meet increased levels of service.

Council's goal in managing infrastructure assets is to meet the required level of service in the most cost-effective manner for present and future consumers. The key elements of infrastructure asset management are:

- Taking a life cycle approach using physical resources sustainably,
- Developing cost-effective management strategies for the long term and managing the risks associated with asset failures,
- Providing a defined level of service and monitoring performance,
- Understanding and meeting the demands of growth through demand management and infrastructure investment,
- Continuous improvement in asset management practices.[3]

This asset management plan is prepared under the direction of Council's vision, mission, goals and objectives.

Council's vision:
"Bathurst: A vibrant & innovative region that values our heritage, culture, diversity & strong economy."

Table 2.2. Council Goals and how these are addressed in this Plan

Community Strategic Plan Objective	How Objectives are addressed in AMP
1.4 Protect and improve the region's landscapes, views, vistas and open spaces.	Provide adequate levels of service of council's water network in line with Level of Service Tables in Section 3.
2.1 Support Local Business and Industry	
3.1 Protect and improve natural areas and ecosystems, including the Macquarie River and other waterways.	Meeting legislative compliance and level service requirements laid out by local, state government legislative and community feedback.
3.2 Protect the city's water supply	Minimise indiscriminative water usage, implement secure water management strategies from Local and State governments.
3.3 Minimise the city's environmental footprint, live more sustainably and use resources more wisely.	
6.1 Communicate and engage with the community, government and business groups on important matters affecting the Bathurst Region.	Communicate Water restriction usage suggestions, water network outages, upgrades and other works that will impact services for the community and council.
6.4 Meet legislative and compliance requirements.	• Water Management Act 2000 • Protection of the Environment Act 1997 • Local Government Act 1993
6.6 Manage our money and our assets to be sustainable now and into the future.	Enable proactive maintenance, capital renewal and upgrade practices by analysing current expenditure and projected expenditure requirements. Minimising un-planned funding and more targeted asset expenditure.

Kings Parade, Bathurst CBD

[3] IIMM 2018 Sec 1.1.3, p 1.3

2.3 Plan Framework

Key elements of the plan are:

- Levels of service – specifies the services and levels of service to be provided by council.
- Future demand – how this will impact on future service delivery and how this is to be met.
- Life cycle management – how Council will manage its existing and future assets to provide the required services.
- Financial summary – what funds are required to provide the required services.
- Asset management practices.
- Monitoring – how the plan will be monitored to ensure it is meeting Council's objectives.
- Asset management improvement plan.

A road map for preparing an asset management plan is shown on the next page.

2.4 Core and Advanced Asset Management

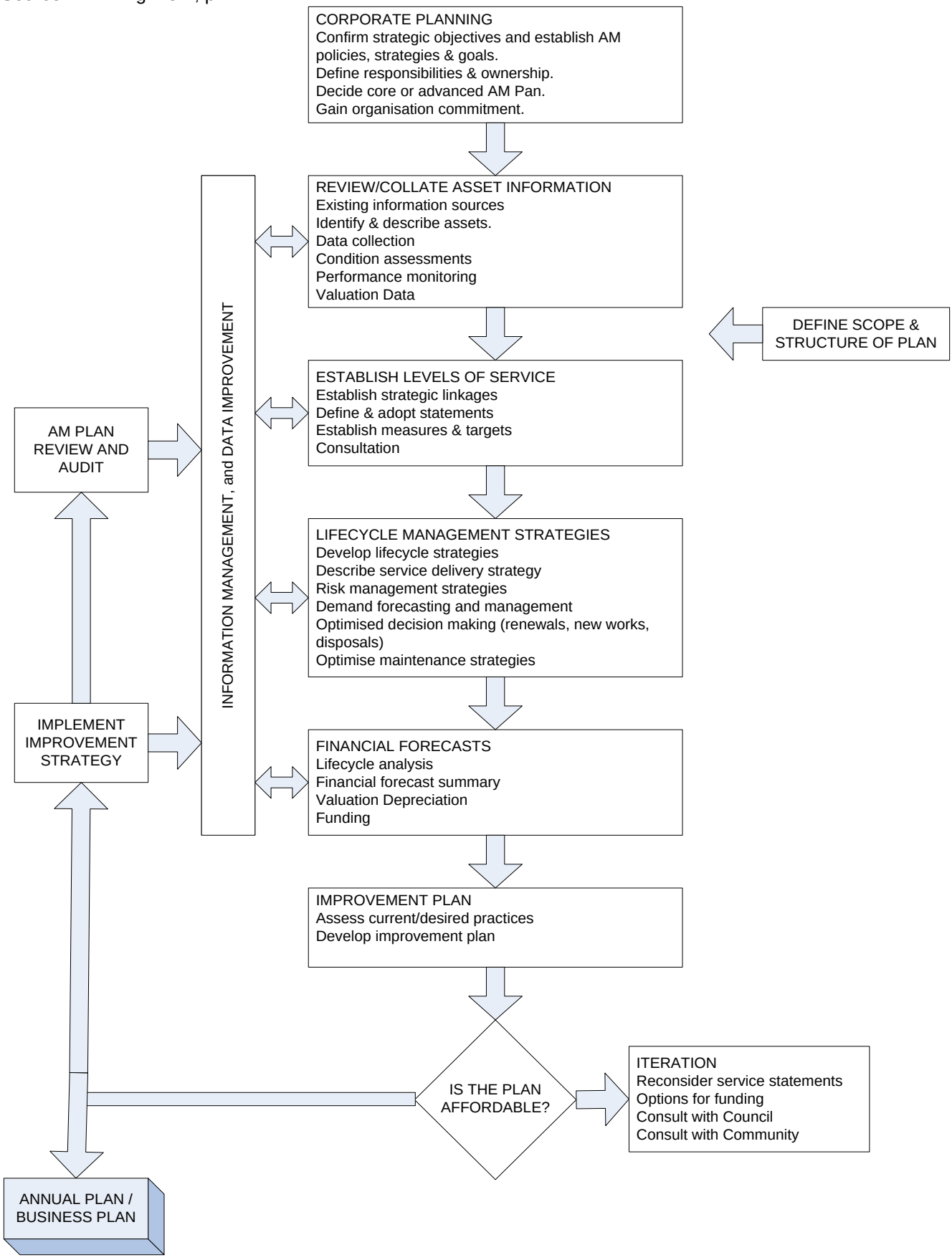
This asset management plan is prepared as a 'core' asset management plan in accordance with the International Infrastructure Management Manual. It is prepared to meet minimum legislative and organisational requirements for sustainable service delivery and long-term financial planning and reporting. Core asset management is a 'top down' approach where analysis is applied at the 'system' or 'network' level.

Future revisions of this asset management plan will hope to incorporate a review of the benefits of an 'advanced' plan offset the investment in systems and processes to provide better value for Council (see pp 14 NAMS Plus guidelines).

The criticality and complex nature of the Water Filtration Plant warrants development of a separate Asset Management Plan at least at the Core level.

Construction of Reservoir No.34 in 2018, Limekilns Road

Road Map for preparing an Asset Management Plan
Source: IIMM Fig 1.5.1, p 1.11



3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

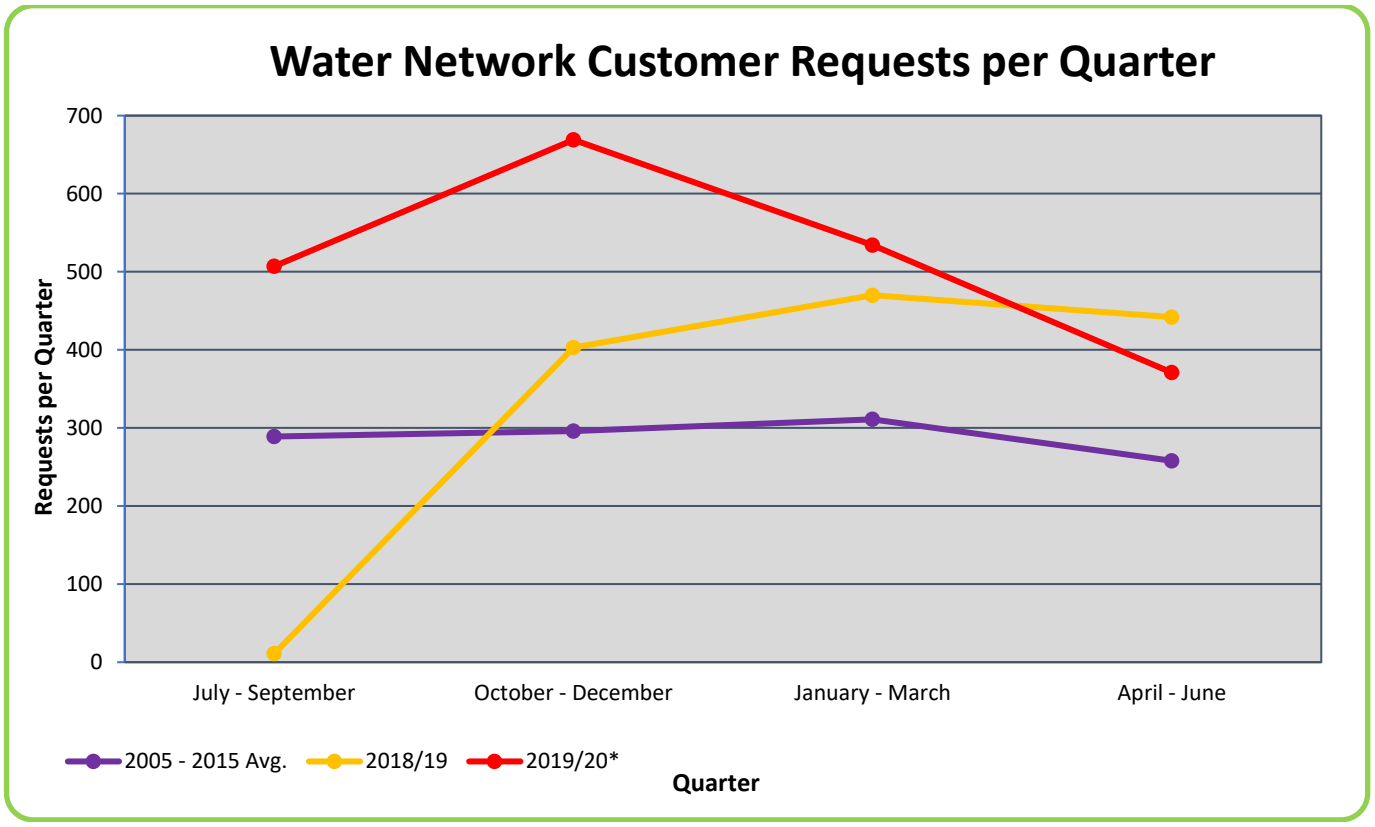
The Council undertakes community surveys on a 2-yearly basis to gauge community expectations and satisfaction with the services Council provides. A series of questions are put to a broad cross section of the community including residents from rural and urban areas each year. Using the data from the Community Survey helps council gauge the community's perception of how it's meeting objectives; 1.4, 2.1, 3.1, 3.2, 3.3, 6.1, 6.4 and 6.6 within Council's adopted 2040 Community Strategic Plan.

In the 2018 Community Survey, residents were asked to rate the over importance and satisfaction they consider the water network is to them. They were asked to rate them on a scale of 1 to 5. 1 being not at all important and 5 being very important.

Overall, the public rated the water network as being 4.67 out of 5 in importance. In terms of saitisfaction, they rated the water network as being 3.61 out of 5.

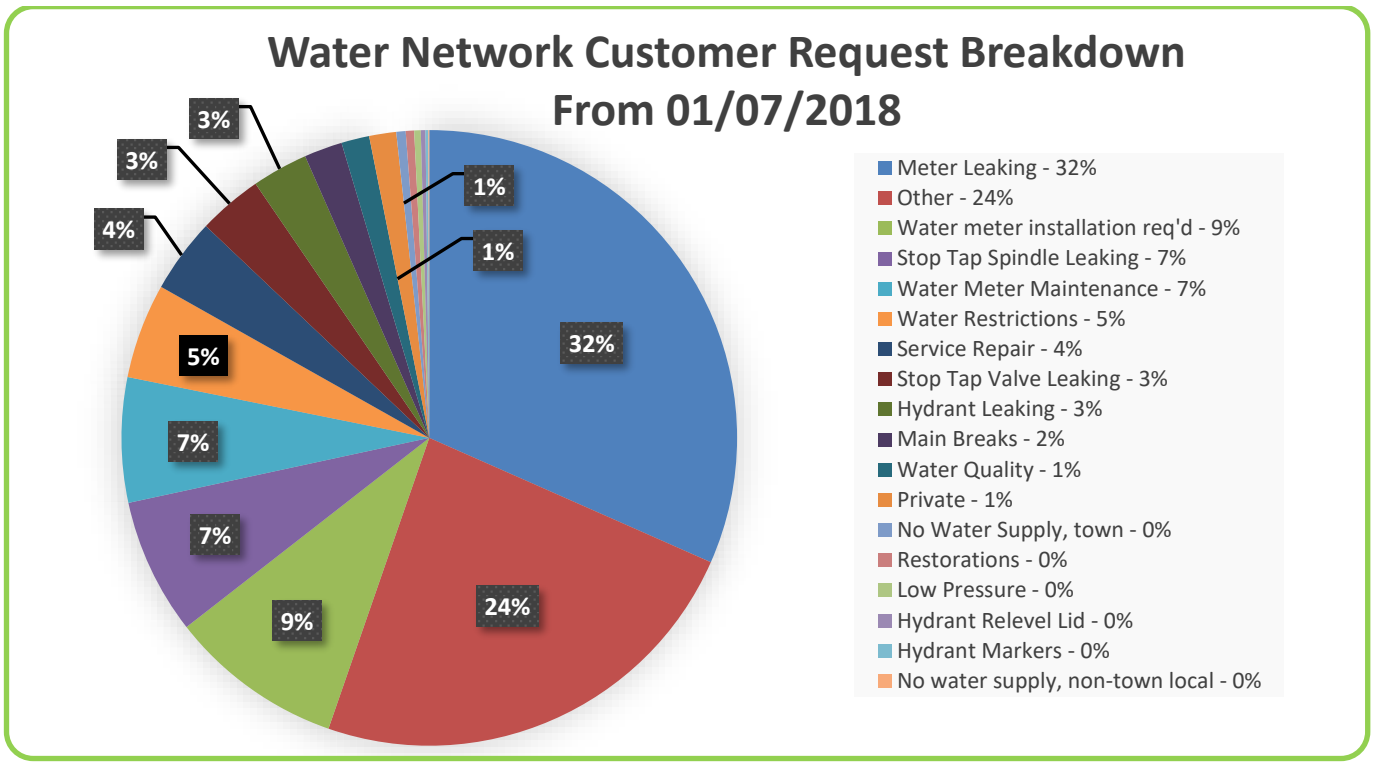
In addition to the key findings of the community survey council continues to use the measure of the network performance from Customer Requests (see fig 3.1a and 3.1b).

Fig 3.1a Customer Requests for Water Network



The above graph shows customer requests relating to council's water network have trended between 100-200 requests above the 2005-2015 average from January to September 2019. As of July 2018, council has adopted a new customer service system Confirm Customer Services (CCS). Data for previous financial years has proven inaccurate to represent the number of requests council has received and due to this a 10-year average from 2005-2015 requests has been used as a baseline to compare recent financial years.
As of 14/10/2019 council implemented Level 4 Extreme Water Restrictions, as a part of this council created a hotline service (6333 1683) and a water restriction email (waterrestrictions@bathurst.nsw.gov.au) for community concerns and frequently asked questions. This service may affect the number of requests being recorded in the CCS.

Fig 3.1b Customer request category breakdown



Data shown in the above graph has been compiled from council's Confirm Customer Service (CCS) and the percentage of each category of water requests made by customers. 45% of all requests are due to leaking water from the water network in some nature. Most events are isolated and inconsistent, further assessment of areas that continually experience water leaking and or main breaks will be flagged in table 5.1.2 as an area of deficiency.

Water Pump Station No.17 – Constructed 2018, Limekilns Road

3.2 Legislative Requirements

Council has to meet many legislative requirements including Australian and State legislation and State regulations. These include:

Table 3.2. Legislative Requirements

Legislation	Requirement
Local Government Act 1993	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. Details Council's role as custodian and trustee of public assets, and its associated responsibility to effectively account for and manage these assets.
Civil Liabilities Act 2002	Sets out the provisions that give protection from civil liability and the responsibilities of Council and public alike.
Environmental Planning and Assessment Act 1979	The proper management, development and conservation of natural resources, including agricultural land, natural areas, forests, minerals, water, the city, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment.
Protection of the Environment Operations Act 1997	To protect, restore and enhance the quality of the environment having regard to the need to maintain ecologically sustainable development.
Water Management Act 2000	Legislates the sustainable and integrated management of water sources for NSW.
Public Health Act 1991 – Part 2B	Dictates the provision of safe drinking water
Australian Drinking Water Guidelines 2004	Provides a minimum standard in many areas including formed Building design, signage, provision of handrails, etc.
BRC Drought Contingency and Water Supply Emergency Management Plan	Outlines Council's response to continued drought conditions and a drop-in water supply to critical levels.
BRC Strategic Business Plan for Water Supply & Sewerage Services 2009/10	Sets Council's performance measurement criteria and the levels of service to the customer
Work Health & Safety Act 2011	To secure and promote the health, safety and welfare of people at work.

Water Pump Station No.17 Pump Arrangement – Constructed 2018, Limekilns Road

3.3 Current Levels of Service

Council has defined service levels in two terms.

Community Levels of Service relate to how the community receives the service in terms of safety, quality, quantity, reliability, responsiveness, cost/efficiency and legislative compliance.

Supporting the community service levels are operational or technical measures of performance developed to ensure that the minimum community levels of service are met. These technical measures relate to service criteria such as:

Service Criteria	Technical measures may relate to
Quality	The cleanliness of the water supply – especially the presence /absence of manganese in the water supply
Quantity	Period or periods of time for which water supply pressure is not sufficient
Availability	Period or periods of time for which water supply or sufficient water supply is not available.
Safety	The levels of pathogenic organisms in the water supply

A general level of service statement covering target service levels provides a starting point for the development of specific service levels.

General Level of Service Statement for water reticulation network:

The water reticulation network will be maintained to a level that allows the reliable, safe delivery of water supply to those connected to the network in line with appropriate guidelines.
This includes (but is not limited to) the management of:

- occupational health and safety issues,
- issues of general public safety and public liability,
- defects affecting short- and long-term structural integrity of the network,
- defects affecting the availability of supply to users.

Council's current service levels are detailed in Table 3.3.

Table 3.3. Current Service Levels

COMMUNITY LEVELS OF SERVICE

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
Quality	Water supplied is clean	Number of complaints relating to water quality	<300 pa	**41 (2019/20)**
Quantity	Water is available	Period of time where the water service is unavailable	<1 Day per year to any one residence due to line maintenance	**<1 Day***
	Customers receive 24 hours' notice for planned service disruptions Bathurst water supply has sufficient volume for unrestricted supply	Number of complaints relating to planned service interruptions	<10 per Event	**Unknown***
		Level of water restrictions in effect	< No Restrictions in Place	**Level 4 Extreme**
		Organisational measure of number customer requests relating to Water Restrictions		**93 (2019)**
Safety	Water supply is fit to drink	Reported cases of Water-borne illness	0	**0**
	Water supply is fit for washing purposes	Reported cases of reactions to water.	0	**0 (2019)**

* Current performance measurement criteria listed as **unknown** are included as they are service level indicators in the Strategic Business Plan for Water and Sewerage, 1995. Although currently unknown, improved data collection will allow reporting on these criteria in the future.

TECHNICAL LEVELS OF SERVICE

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
Quality	Compliance with the Australian Drinking Water Guidelines	Independent testing of water	**99% compliance with the guidelines**	**99%***
	Reduction in manganese concentrations to below colouration levels	Testing of filtered water for manganese concentrations	**<0.01 mg/L**	**<0.1mg/L**
		Organisational Measure of Maintenance and Operations Budget Expenditure	**Desired Budget (Over 10yrs)** **Avg. $9,591,436 p.a.**	**2019/20 Budget** **Avg. $8,476,240 p.a.**
Quantity	Filtered water supply pressure is sufficient for peak demands	Measurement of mains pressure	**Pressure between 15m and 90m head of water whilst supplying 6l/min**	**Unknown***
	Filtered water supply flow is sufficient for peak demands	Average peak flow to households	**Peak instantaneous demand of 4kL/ET/day**	**Unknown***
Availability	Length of time water restrictions are imposed	Time restrictions are in place	**Restrictions in place >5% of the time**	**Level 4 Extreme**
Safety	Water supply is clean	Compliance with the 2004 drinking water guidelines	**100% compliance with the drinking water guidelines**	**100%***
Condition	Majority of Water Assets are in reasonable condition	Water Network Age	**Age of Asset are not exceeding Useful Life (80yrs)**	**11% >80yrs**
		Organisational Measure of Water Network Average Age		**38yrs**
		Organisational Measure of Water Network Condition	**Network Condition** **75% Excellent/Good** **10% Poor/Bad**	**Network Condition** **82% Excellent/Good** **3% Pool/Bad**

* Current performance measurement criteria listed as **unknown** are included as they are service level indicators in the Strategic Business Plan for Water and Sewerage, 1995. Although currently unknown, improved data collection will allow reporting on these criteria in the future.

Bathurst Water Filtration Plant, Waterworks lane

4. FUTURE DEMAND

4.1 Demand Drivers

Drivers affecting demand include population change, changes in demographics, seasonal factors, vehicle ownership rates, consumer preferences and expectations, technological changes, economic factors, agricultural practices, environmental awareness, etc.

A hydraulic model of the water network has been constructed and calibrated to identify areas in the reticulation network where future development may place pressure demands on the existing system.

Demand factors influencing water supply management include population increase, the increasing use of irrigation of gardens and lawns in private dwellings, the increasing popularity of swimming pools in private dwellings and the increase in water saving initiatives such as water tank installation.

4.2 Demand Forecast

The present position and projections for demand drivers that may impact future service delivery and utilisation of assets were identified and are documented in Table 4.3.
The major factor affecting demand on the Council's infrastructure is population growth.

Table 4.2. Demand Drivers, Projections and Impact on Services

Demand factor	Present position	Projection	Impact on services
Population	42,389 (2016 census)	52,500 (2031)	Increased population means increased infrastructure and more demand on current water supply and pre-existing assets within Council's Water Supply Network.
Demographic	22.2% of population >60 yrs in 2016 26.9% of population <20 yrs in 2016	26.1% of population >60 yrs in 2031 25.6% of population <20 yrs in 2031	
Water Restrictions	Ben Chifley Dam 42% (5th November 2019)	<10% (July 2020)	Not enough water to supply a basic level of service to Council's water reticulation network. Requiring other measure which may impact existing infrastructure to meet levels of service.
BASIX/Other Regulation Requirements	All new houses and renovations of houses over $50,000 are required to meet BASIX requirements		Future Regulations may impose stricter controls.
Technological changes	Water efficient appliances are widely accepted as the norm		Increasingly efficient appliances.
Technological changes	Water efficient irrigation systems being installed		Landscaping plant selection, along with other water sensitive design criteria reducing network demand.
Growing awareness of environmental factors	Grey water re-use:		Increasing use of recycled water in domestic and commercial situations.

4.3 Demand Management Plan

Demand for new services will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand and demand management. Demand management practices include non-asset solutions, insuring against risks and managing failures.

Non-asset solutions focus on providing the required service without the need for the organisation to own the assets and management actions including reducing demand for the service, reducing the level of service (allowing some assets to deteriorate beyond current service levels) or educating customers to accept appropriate asset failures[4]. Examples of non-asset solutions include providing services from existing infrastructure such as aquatic centres and libraries that may be in another community area or public toilets provided in commercial premises.

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

Table 4.3. Demand Management Plan Summary

Service Activity	Demand Management Plan
Domestic water use	Council initiatives to replace older style shower heads with 9L/minute units and to encourage the installation of other water efficient appliances.
Domestic water use	Unit pricing for water is increasing in line with the NSW state government recommendations to apply a more prohibitive user pays system. At least 75% of residential revenue generated through usage charges
Rainwater collection	Subsidy system for the installation of rainwater collection tanks. BASIX requirements dictate the installation of water tanks in new residential developments.
Water restrictions	Restrictions on water use as per Council's Drought Contingency and Water Supply Emergency Management Plan.
Outdoor domestic use	A system of watering termed the 'Odds and Evens System' limits the watering of domestic gardens on the water supply to watering on every second day, enforceable at Level 3 Restrictions. Increasing restrictions are documented in Council's Drought Management Plan

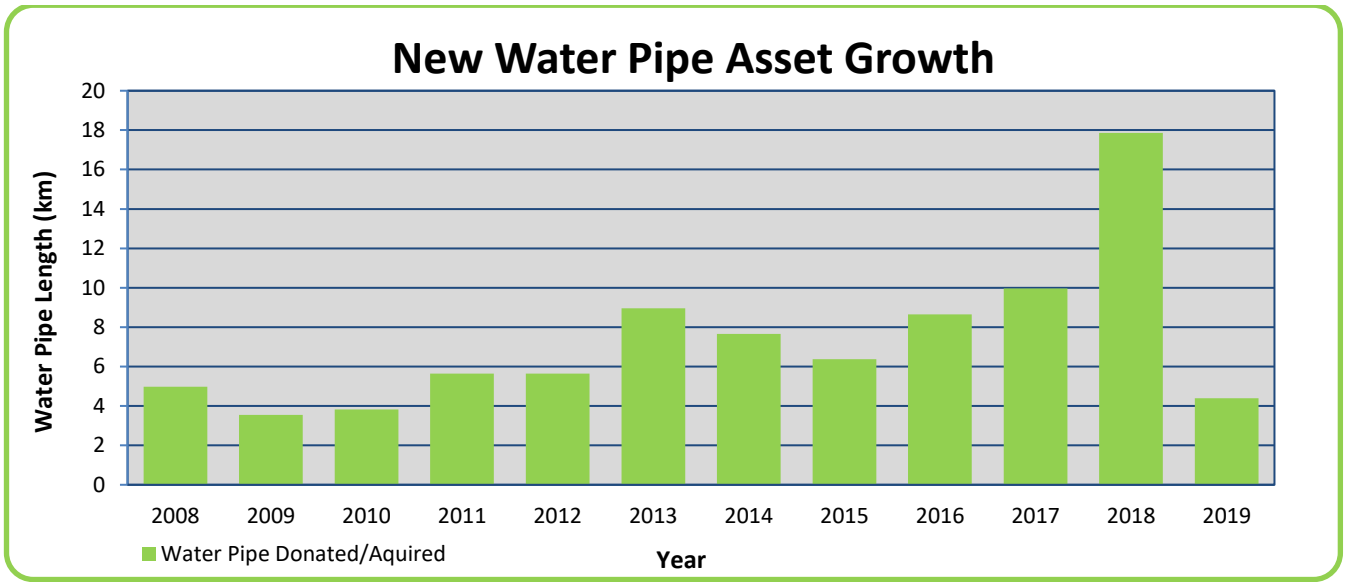
Winburndale Dam 2017 - Winburndale Dam Road, Napoleon Reef

4.4 New Assets from Growth

The new assets required to meet growth will be acquired from land developments and constructed by Council. The new asset values, summarised are the reticulation pipe lengths only. New valves, hydrants and fittings are required proportionally to the new length of network added. Other assets such as pump stations and reservoirs will be installed as necessary and are not considered.

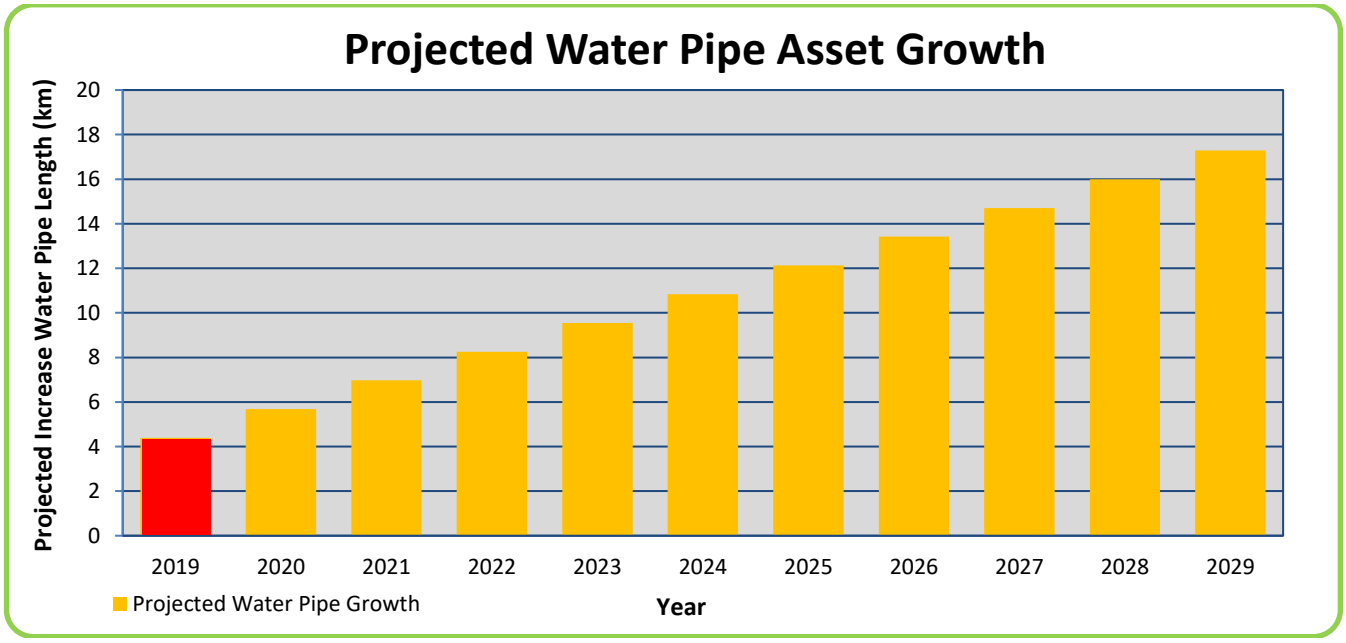
These network length growth trends are summarised in Fig 4.4 and 4.4.1

Fig 4.4. New Assets from Growth past 10 years (by length)



The above graph shows the largest increase of 17.9km in 2018 and smallest increase of 3.6km in 2009.
The Water Network over the last 10 years has increased on average by 1.3km p.a. The large increases shown in 2017 and 2018 are as a result of an increase of subdivision development and the Greater Western Highway upgrade project.

Fig 4.4.1 Projected Asset Growth



The above projected Water pipe network length has been determined from the average increase over the past 10yrs and project the water network to increase 12.8km by 2029. Acquisition/Donation of these future assets will commit council to fund ongoing operations and maintenance costs for the period that the service provided from the assets is required.

5. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how Council plans to manage and operate the assets at the agreed levels of service (defined in section 3) while optimising life cycle costs.

5.1 Background Data

Ben Chifley Dam, 2017 – Chifley Dam Road, The Lagoon

5.1.1 Physical parameters

The assets covered by this asset management plan:

Asset Category	Measure
Dams	2
River Weir	1
Filtration Plant	1
Building/Structures	44
Pump Stations	13
Reservoirs	25
Water Pipes	504km
Flow Meters	23
Hydrants	3291*
Valves	3285*

*Denotes the asset category value is incorporated into Water Pipes value with parameters laid out in the NSW Department of Local Government, 1999 Local Government Asset Accounting Manual - Update 4 NSW DLG, Nowra

Table 5.1.1a Water Pipe Network Breakdown

Pipe Material	Raw Water Reticulation (m)	Potable Reticulation (m)	Potable Trunk Main (m)	Grand Total (m)
Asbestos Cement	8,481	132,897	34,065	**175,443**
Cast Iron	9,126	33,765	4,221	**47,114**
Cast Iron, Concrete-Lined	5,266	2,720	760	**8,746**
Ductile Iron	2,154	32,987	13,751	**48,892**
Ductile Iron, CL Thin Wall	-	530	-	**530**
Ductile Iron, Concrete-Lined	5,758	144,625	31,420	**181,803**
Polypropylene	1,545	5,217	-	**6,762**
PVC	458	5,114	-	**5,573**
Steel	50	-	281	**330**
uPVC	1,199	9,629	-	**10,828**
Other	17,045	25	-	**17,070**
Not Assessed (Unavailable)	-	319	150	**468**
Grand Total	**51,621**	**367,828**	**84,647**	**504,096**

Table 5.1.1b Water Pipe Diameter Breakdown

Pipe Diameter (mm)	Length (m)	% of Network	Pipe Diameter (mm)	Length (m)	% of Network
25	4,546	0.90%	250	24,173	4.80%
50	2,341	0.46%	300	57,567	11.42%
80	859	0.17%	375	12,303	2.44%
100	252,237	50.04%	450	11,239	2.23%
150	86,848	17.23%	600	7,841	1.56%
200	44,142	8.76%	**Grand Total**	**504,096**	**100.00%**

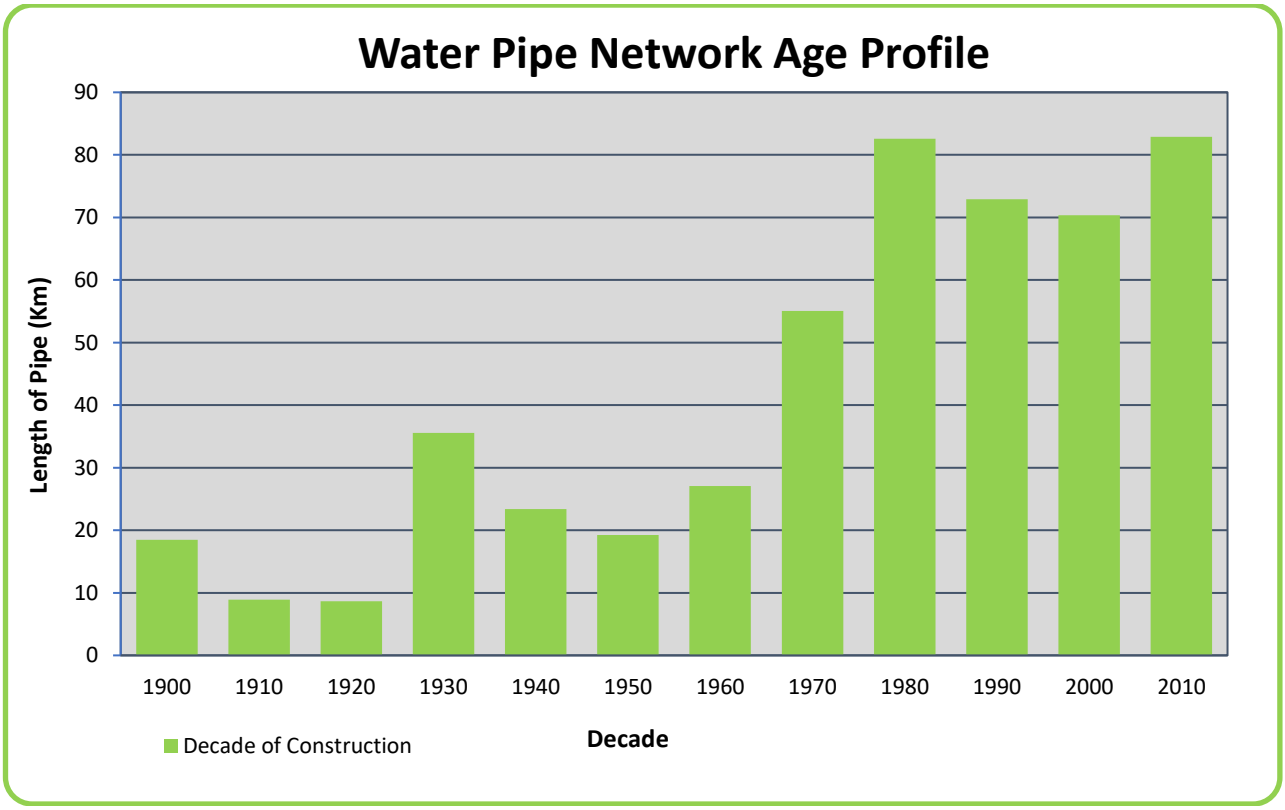
System age and reliability

The network of water reticulation pipes dates back to 1886 when Bathurst became the first NSW inland town to commission a water supply system. There are areas within town that are still serviced by the original lead jointed cast iron pipes.

The current network is a mixture of old cast iron and asbestos cement pipes and more modern ductile iron (often lined with concrete) and new plastic type pipes. As breakages occur in the network's older pipes they are replaced with modern equivalents.

New pipes laid for new subdivisions and developments will be of cement lined ductile iron or uPVC pipe as per the Engineering guidelines. Council has no reliable way of predicting breakages in the network, however the Council's Water section map main breakages to identify areas of compromised pipe network.

Fig 5.1.1c Water Pipe Network Age Profile



The above graph shows >70% of council's Water network has been installed in the last 40yrs with the largest number of renewal/upgrade works occurring in the 1980's & 2000's. Installation dates used to compile the graph are through combination of; Works As Executed plans, Information from council staff and in some cases estimations from deposit plan dates.

5.1.2 Asset capacity and performance

Council's services are generally provided to meet design standards where these are available. Locations where deficiencies in service performance are known are detailed in Table 5.1.2.

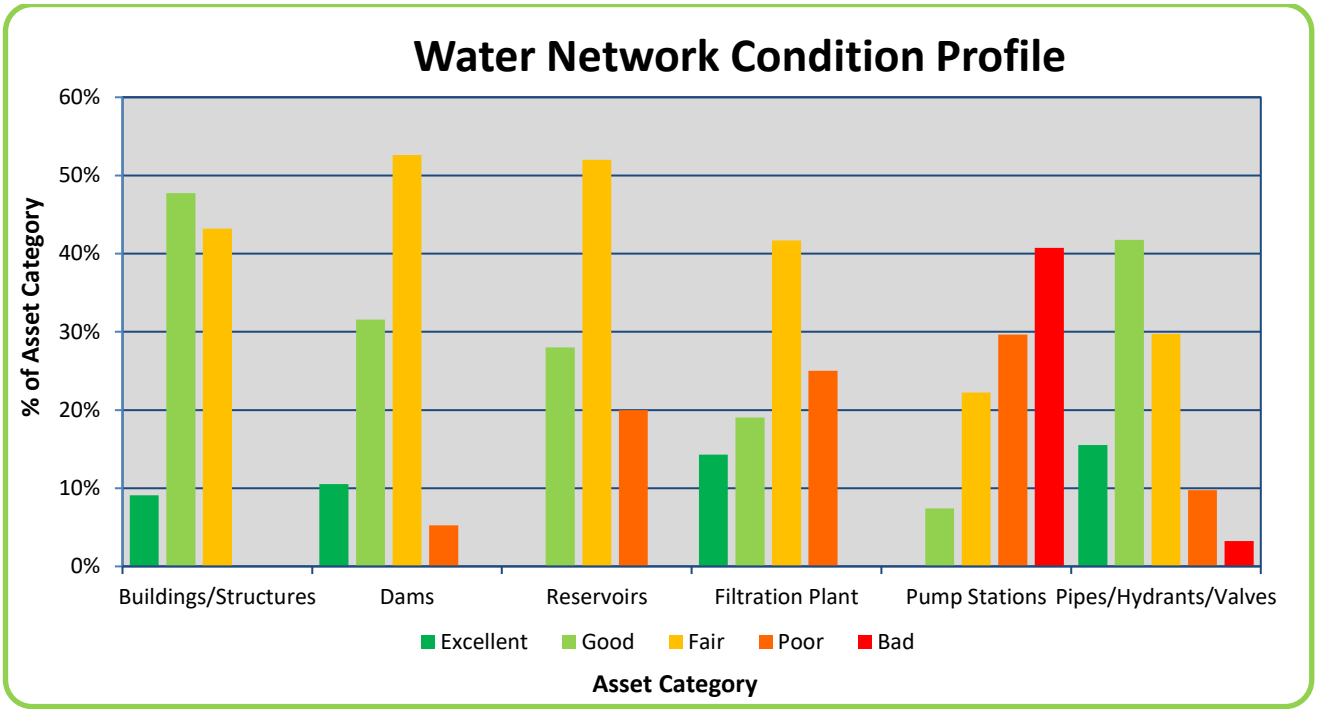
Table 5.1.2. Known Service Performance Deficiencies

Service Deficiency
Low Water Level – 39.6% (19th November 2019) – Extreme Level 4 Water Restrictions in affect
+20% Irrigation Allowance (NSW Government Restriction) – As of 1st November 2019

5.1.3 Asset condition

The condition profile of the sub-surface parts of the sewer network is difficult to ascertain. In lieu of condition information the age of the pipe network (see table below) will be used to estimate the condition.

Fig 5.1.3. Asset Condition Profile

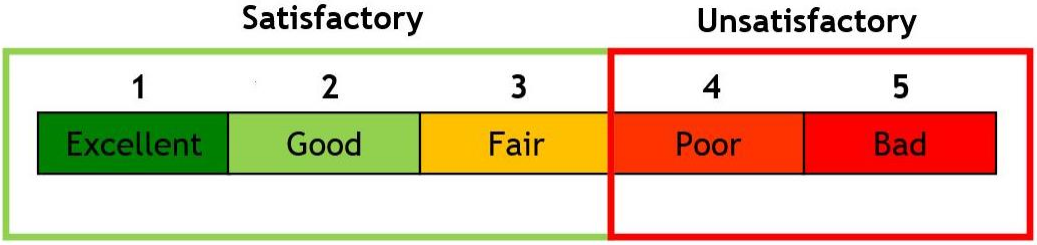


Condition rating will be measured using a 1 – 5 rating system as broadly outlined below.
This will be on the overall condition of the item and not of any individual components.

Condition Rating		Description	Useful Life % Remaining
1	**Excellent**	Sound condition.	**100-90%**
2	**Good**	Minor deterioration.	**80-70%**
3	**Fair**	Functionally sound, deterioration beginning to impact on asset integrity.	**60-40%**
4	**Poor**	Significant defects, marked deterioration.	**30-10%**
5	**Bad**	Near Failure.	**<10%**

Average age of network components is 38yrs

The condition ratings and data used above are the same used in Council's Special Schedule 7 in the Annual Financial Statements.



5.1.4 Asset Valuations

The current replacement cost to replace all of council's water network as of **30/06/2019** is **$344,148 million**. The depreciation replacement cost, the accumulated depreciation shown as the cost of the water network consumed/expired is **$222,489 million**. Meaning the water network has depreciated by **$121,659 million** or **$334,001p.a**.

The total **2019/20** maintenance/operations and capital renewal/upgrade budget is **$53,643 million**. The capital renewal budget represents **1.9%** or **$1,009 million** of the overall budget and capital upgrade/expansion comprises of **29.8%** or **$15,979 million** of the overall budget. The remaining **68.3%** or **$36,655 million** is allocated for maintenance and operations.

5.2 Risk Management Plan

An assessment of risks associated with service delivery from infrastructure assets has identified critical risks to Council. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks.

Critical risks, being those assessed as 'Very High' - requiring immediate corrective action and 'High' – requiring prioritised corrective action identified in the infrastructure risk management plan are summarised in Table 5.2.

Table 5.2. Critical Risks and Treatment Plans

Asset Risk	What can Happen	Risk Rating	Risk Treatment Plan
Main break	Aging infrastructure is susceptible to pressure fluctuations. Breakages can cause interruption to critical supply	VERY HIGH	Council maintains a 24-hour water maintenance crew to minimise the time required to fix critical water network problems
	Damaged caused by nearby excavations can cause interruption to critical supply	VERY HIGH	Where possible excavation works are only performed with prior clearance from the Council. Major excavation works will be carried out with guidance of a Council officer.
Low hydrant pressure	At certain times throughout the day the minimum required hydrant pressure may not be available in certain areas	HIGH	Council has commissioned a comprehensive study to identify areas within the water supply network that may not be apply to supply minimum hydrant pressures.
Very low-quality water supply	Sediment, particularly manganese dioxide can become suspended due to turbulence and can reduce quality to a level that is not safe for consumption	VERY HIGH	Council maintains a 24-hour water maintenance crew to minimise the time required to fix critical water network problems. Clean water can be delivered in the form of 20l plastic containers.

Winburndale Dam Wall, Windburndale Dam Road View

5.3 Routine Maintenance Plan

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.

5.3.1 Maintenance plan

Maintenance includes reactive, planned and cyclic maintenance work activities.

Reactive maintenance is unplanned repair work carried out in response to service requests and management/supervisory directions. Reactive water supply network maintenance consists primarily of:

- Repair to water main breaks.
- Flushing of mains to reduce manganese sediments.
- Repairs to water meters.
- Any emergency repairs to infrastructure other than the pipe network.

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.
Planned water supply network maintenance consists of:

- Regular inspection and servicing of water supply pumps.
- Regular inspection and maintenance of hydrants.

Cyclic maintenance is repetitive maintenance performed without specific programming.
This can include:

- Painting of some buildings.
- Painting of the water reservoirs.
- Cleaning of pump stations.
- Maintenance of emergency equipment.

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

5.3.2 Standards and specifications

Maintenance will be carried out in accordance with the following Standards and Specification:

Building Codes of Australia where appropriate and to the satisfaction of the Council's Building Maintenance Supervisor in areas not covered by the building codes

- NSW Code of Practice for Plumbing and Drainage 2011
- Bathurst Regional Council 2011 *Guidelines for engineering works,* Bathurst Regional Council

5.3.3 Summary of future maintenance expenditures

The average minimum expenditure on maintenance required will be current expenditure plus inflation variations. However, with additional assets to maintain added over time this will not be sufficient.

Future maintenance expenditure is forecast to trend in line with the value of the current asset stock as shown in Fig 6. Note that all costs are shown in current 2019-dollar values.

Table 1: Summary of inspection results and conditional assessment for the eastern Forest Elbow Reservoir tank

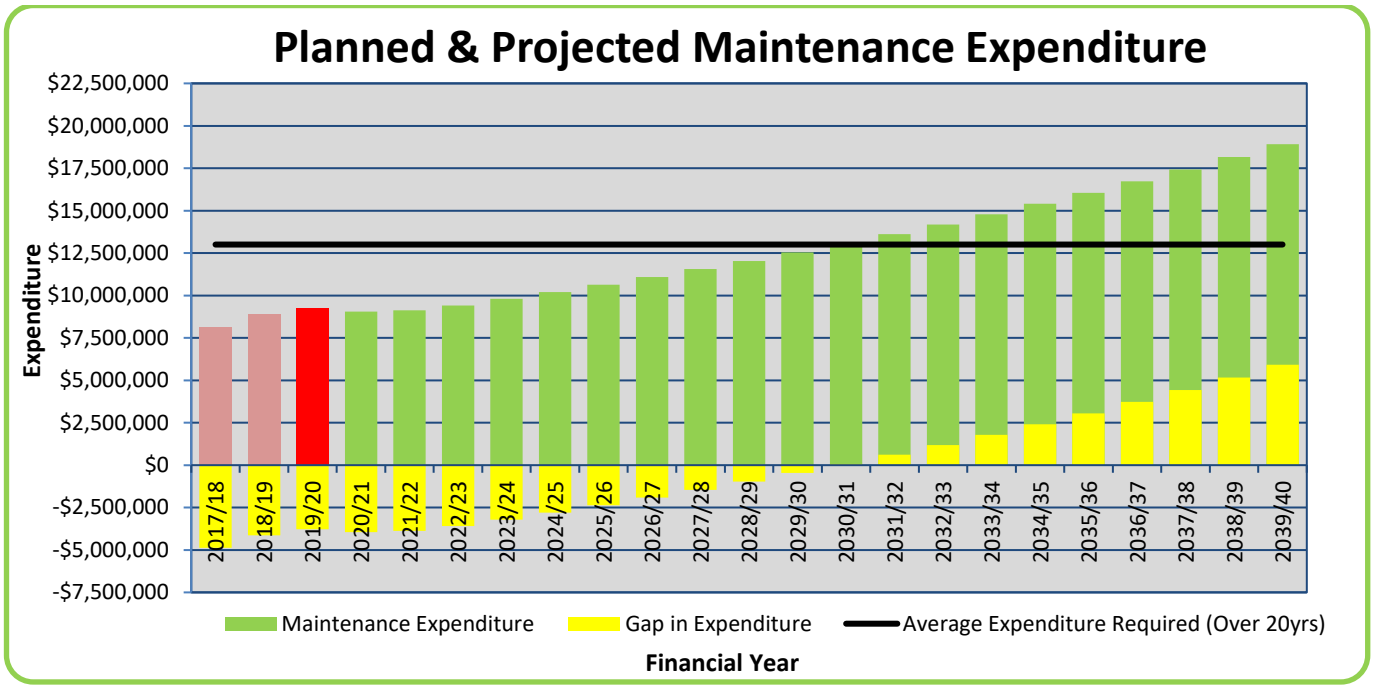
Item	Condition	Image
Overall asset WSAA condition grade	Poor Substantial short-term rehabilitation required to ensure asset remains safe and serviceable. Undertake an immediate risk assessment and respond to items identified. Rehabilitation required within 2 years.	

Forest Elbow Reservoir – 2016 Inspection

5.3.4 Summary of future maintenance expenditures

Future maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Fig 5.3.4. Deferred maintenance i.e. works that are identified for maintenance and unable to be funded are to be included in the risk assessment process in the infrastructure risk management plan.

Fig 5.3.4 Planned and Projected Maintenance Expenditure



The above graph shows;

- Maintenance & Operating expenditure from 2017/18 to 2039/40 FY (Projected)
- The Average maintenance expenditure required to meet asset renewals over 20yrs.
- 2019/20 Maintenance & Operating Budget from 2023/24 has been extrapolated with a 4.2% PPI factor Over 20yrs.

Water Network Current Position;

- Total Maintenance & Operating Expenditure (required over 20yrs) = **$273,043,053**
- Average Maintenance & Operating Expenditure (required over 20yrs) = **$13,002,050 p.a.**
- Average Gap in Expenditure = -$391,591 p.a.
- Increase in Expenditure from 2019/20 to 2039/40 = **$9,694,278**
- 2019/20 Budget Maintenance & Operating = **$9,204,044 Avg. p.a.**

Top of Reservoir 34, Limekilns Road Kelso

5.4 Renewal/Replacement Plan

Renewal 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 service potential. Work over and above restoring an asset to original service potential is upgrade/expansion or new works expenditure.

5.4.1 Renewal Plan

Council does not currently have a long-term renewal plan for water reticulation assets. To improve the decision-making process and develop a comprehensive renewal program, more thorough data capture is required.
There is no specific long-term plan or budgetary allocation for periodic renewal or replacement of assets. Rather, assets requiring renewal or replacement are identified during the compilation of the following year's management plan.
Candidate proposals are inspected to verify accuracy of remaining life estimate and to develop a preliminary renewal estimate. Verified proposals are ranked by priority and available funds and scheduled in future works programmes. Table 5.4.1 outlines a basic scoring system that may be used in future to prioritise renewal candidate proposals.

Table 5.4.1 Renewal Priority Ranking Criteria

Criteria	Weighting
Condition of asset	40%
Purpose of asset	20%
Population serviced by asset	20%
Projected capital cost	10%
Proximity to similar assets	10%
Total	**100%**

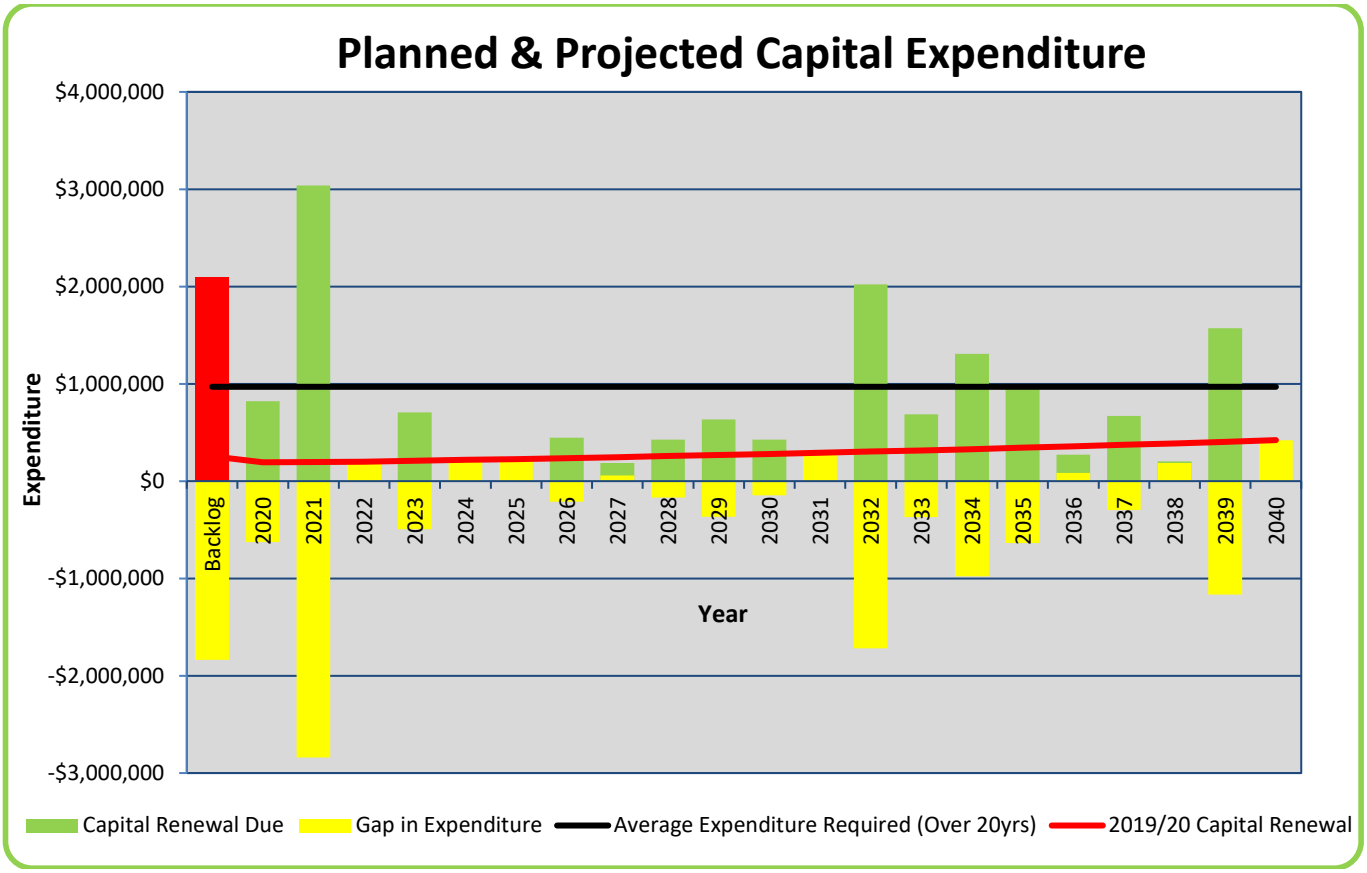
Renewal will be undertaken using 'low-cost' renewal methods where practical. The aim of 'low-cost' renewals is to restore the service potential or future economic benefits of the asset by renewing the assets at a cost less than replacement cost.

5.4.2 Renewal Standards

- NSW Code of Practice for Plumbing and Drainage 2011.
- Bathurst Regional Council 2011 *Guidelines for engineering works,* Bathurst Regional Council.

Inside Clear Tank, Water Filtration Plant

Fig 5.4.3. Projected Capital Renewal Expenditure



The above graph shows;

- Water assets and the years that they will reach the end of its useful life and will require renewal/upgrade.
- The Backlog of Asset Renewals from previous years and are overdue for renewal.
- The Average renewal expenditure required to meet asset renewals over 20yrs.
- 2019/20 Capital Renewal Budget and from 2023 has been extrapolated with a 4.2% PPI factor over 20yrs.

Water Network Current Position;

- Total Renewal Expenditure (required over 20yrs) = **$14,392,159**
- Backlogged Asset Renewals = **$2,090,980**
- Average Renewal Expenditure (required over 20yrs) = **$969,596**
- Average Gap in Expenditure = -$462,030

Windburndale Dam Wall, Eastern End

5.5 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 Council from land development. These assets from growth are considered in Section 4.4.

New water supply network assets are broadly added to the asset register in direct proportion to population growth, though often just ahead of the growth 'curve'. This is due to the infrastructure needing to be in place for a new development area before new housing and other infrastructure is built.

5.5.1 Selection criteria

New water reticulation assets are constructed as new growth dictates. Reticulation system assets include pipes, valves, hydrants, meters and pump stations where required. When a required upgrade has been identified usual practice is to duplicate the service rather than replacing it. Upgrades to the water system are, therefore generally regarded as new assets.

Compliance with agreed levels of service will dictate much of the upgrade work required to the filtered reticulation network.

5.5.2 Standards and specifications

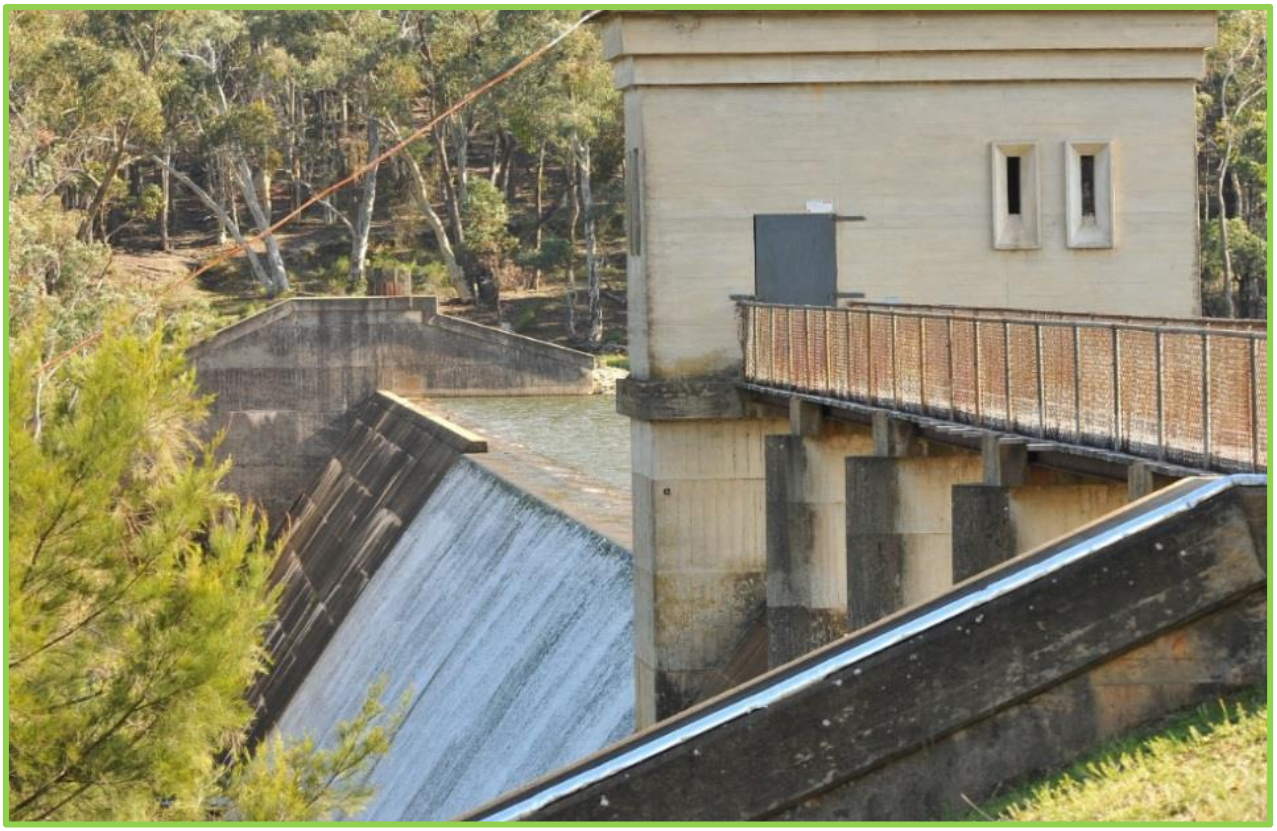
New work is carried out in accordance with the Bathurst Regional Council's engineering guidelines and appropriate Australian Standards.

5.5.3 Summary of future upgrade/new assets expenditure

In order to better understand expenditure patterns, Fig 6.1 (pg.30) shows the current and projected expenditure for council's water network.

5.6 Disposal Plan

There are no current plans for asset disposal from the water supply network portfolio.
Council will dispose of an asset when it becomes uneconomical to maintain or replace. If pipes are left in the ground, they are usually sealed at the connections and abandoned.



Windburndale Dam, Dam Wall and Spillway

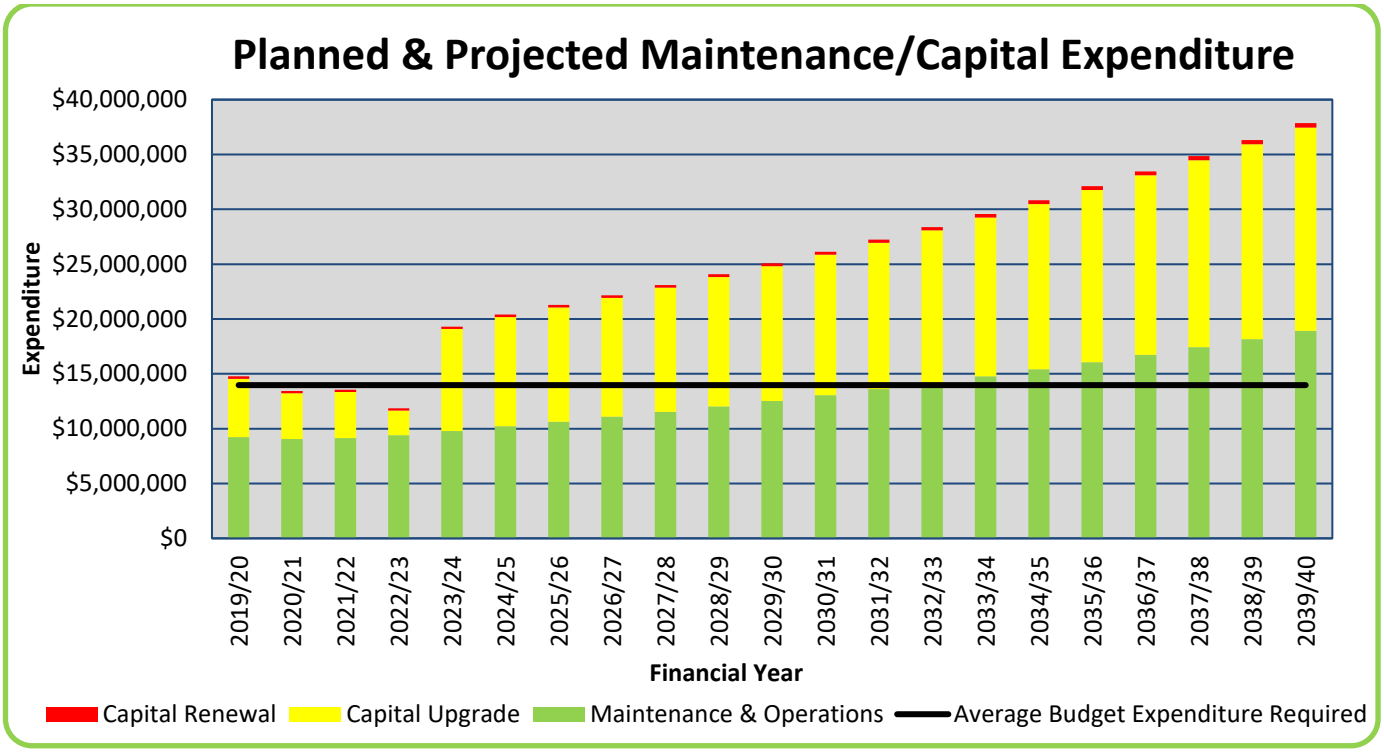
6. FINANCIAL SUMMARY

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.

6.1 Financial Statements and Projections

The financial projections are shown in Fig 6.1 for planned operating (operations and maintenance) and capital expenditure (renewal and upgrade/expansion/new assets).

Fig 6.1. Planned Operating and Capital Expenditure



The above graph shows;

- Maintenance, Operating, Capital Renewal & Upgrade expenditure from 2019/20 to 2039/40 FY (Projected)
- The Average Maintenance, Operating, Capital Renewal & Upgrade expenditure over 20yrs.
- 2019/20 Maintenance, Operating, Capital Renewal & Upgrade Budget from 2023/24 has been extrapolated with a 4.2% PPI factor over 20yrs.

Water Network Current Position;

- Total Maintenance, Operating, Capital Renewal & Upgrade Expenditure (required over 20yrs) = **$273,043,053**
- Average Expenditure (required over 20yrs) = **$13,971,647**
- 2019/20 Budget = **$9,204,044 Avg p.a.**

Windburndale Dam Wall, Western End

6.1.1 Sustainability of service delivery

There are two key indicators for financial sustainability that have been considered in the analysis of the services provided by this asset category, these being long term life cycle costs and medium-term costs over the 10-year financial planning period.

Long term - Life Cycle Cost

Life cycle costs (or whole of life costs) are the average costs that are required to sustain the service levels over the longest asset life. Life cycle costs include maintenance and asset consumption (depreciation expense). The annual average life cycle cost for the services covered in this asset management plan is **$15,536 million.**

Life cycle costs can be compared to life cycle expenditure to give an indicator of sustainability in service provision. Life cycle expenditure includes maintenance plus capital renewal expenditure. Life cycle expenditure will vary depending on the timing of asset renewals. The life cycle expenditure at the start of the plan is **$14,787 million**, resulting in a funding shortfall of -$748,759 for year 1.

A gap between life cycle costs and life cycle expenditure gives an indication as to whether present consumers are paying their share of the assets, they are consuming each year. The purpose of this asset management plan is to identify levels of service that the community needs and can afford and develop the necessary long-term financial plans to provide the service in a sustainable manner.
The life cycle sustainability index is **0.95.**

Medium term – 10-year financial planning period
This asset management plan identifies the estimated maintenance and capital expenditures required to provide an agreed level of service to the community over a 10-year period for input into a 10-year financial plan and funding plan to provide the service in a sustainable manner.

This may be compared to existing or planned expenditures in the 10-year period to identify any gap. In a core asset management plan, a gap is generally due to increasing asset renewals.

Providing services in a sustainable manner will require matching of projected asset renewals to meet agreed service levels with planned capital works programs and available revenue.
A gap between projected asset renewals, planned asset renewals and funding indicates that further work is required to manage required service levels and funding to eliminate any funding gap.

Council's long-term financial plan covers the first 10 years of the 20-year planning period. The total maintenance and capital renewal expenditure projected over the 10 years is **$151,919 million**.
This is an average expenditure of **$15,192 million p.a**. Estimated maintenance and capital renewal expenditure in year 1 is **$14,787 million**. The 10-year sustainability index is **0.97**, resulting in an anticipated funding shortfall of -$4,046 million over the medium term.

A sustainability index of 1.0 means sufficient expenditure is budgeted to meet life cycle costs. Less than 1.0 predicts a life cycle cost funding gap.

Ben Chifley Dam, August 2019

6.2 Funding Strategy

Ideally Council would maintain the water filtered reticulation network at condition 1 or 2. Subterranean pipe networks are difficult and expensive to inspect. Any information on the pipe condition gained through inspection will not necessarily be definitive. The balance between providing a reliable service and ensuring that the network is funded and maintained to a level that provides long term service is the responsibility of the Council's water engineers. The input from the water customers is minimal.

The council funds all work to the water reticulation service through water tariffs applied to all urban residential and industrial lots connected to the reticulation system. The structure of rates payable is reviewed each year and published in the annual management plan. The fee structure for water services is moving toward a system with the major component being the usage charge and a smaller flat fee for the provision of the service, based on the size of the service.

The current levels of funding are proving adequate in the short and medium term. An increase in the funds available for asset renewal in the long term should be considered.

6.3 Valuation Forecasts

Asset values are forecast to increase as additional assets are added to the asset stock from construction and acquisition by Council.

The depreciated replacement cost (current replacement cost less accumulated depreciation) will vary over the forecast period depending on the rates of addition of new assets, disposal of old assets and consumption and renewal of existing assets.

6.4 Key Assumptions made in Financial Forecasts

This section details the key assumptions made in presenting the information contained in this asset management plan and in preparing forecasts of required operating and capital expenditure and asset values, depreciation expense and carrying amount estimates. It is presented to enable readers to gain an understanding of the levels of confidence in the data behind the financial forecasts.

Key assumptions made in this asset management plan are:

- Useful life and value of assets are calculated using the *2014 Reference Rates Manual for Valuation of Water Supply, Sewerage and Stormwater Assets* published by the Urban Water branch of the NSW DPI Water in 2015 as a revision of the previous 2003 publication. Updates on rate changes are published annually to keep valuations current, with the update issued in 2019 used for the valuations in this Asset Management Plan.
- Annualised PPI of 4.2% for the 2023/24 and beyond. Given the unpredictability in overall economic performance actual PPI may be significantly different from this figure.
- Depreciation is calculated on a straight-line method.
- Revaluation of entire portfolio is every 5 years as directed by NSW Office of Local Government, with major components such as Dams and Treatment Plants valued by the NSW Department of Public works and other network assets using Reference Rates <Manual (see above).
-

Accuracy of future financial forecasts may be improved in future revisions of this asset management plan by the following actions.

- Development of condition-based depreciation method that satisfies accounting standards
- Collection of condition data through an asset survey (technology for which is just becoming available)

Ben Chifley Dam Wall, August 2019

7. ASSET MANAGEMENT PRACTICES

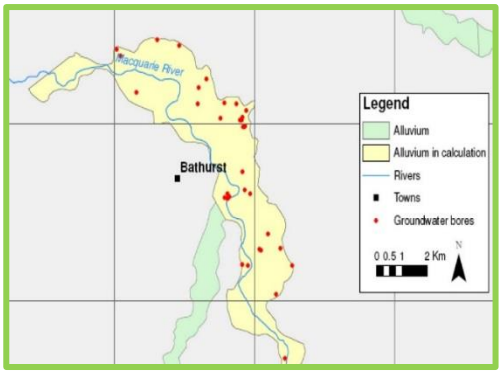
7.1 Accounting/Financial Systems

Council currently uses Civica Authority as the primary corporate finance system.

Administrator: IT manager and Assets system administrator.

Relevant accounting standards are:

- AAS 27 “Financial Reporting by Local Governments”
- AASB 136 Impairment of Assets
- AASB 1021 Depreciation of Non-Current Assets
- AASB 1041 Accounting for the reduction of Non-Current Assets
- AAS 1015 Accounting for acquisition of assets



Exert from Bathurst Climate Change and Water Security Plan

7.2 Asset Management Systems

Council uses CONFIRM asset management software. The current version in use by BRC is 19.00e.AM.12665.
CONFIRM team:

Team leader:	Administration Engineer
Administrator:	Asset systems administrator
Data entry:	3 x Asset Technicians
Field inspections:	Asset Inspector

Confirm consists of:

- A comprehensive asset register;
- Condition rating option for appropriate assets;
- Data Management, with reporting procedure to present inventory and assessment information;
- Asset Accounting, AAS27 reporting capability and life cycle costing
- MapInfo GIS system linked to CONFIRM.

As a result of this plan it is intended to improve the Asset management system by:

- Undertaking a condition survey of the portfolio,
- Linking of Confirm to Financial Software to gain more accurate costs of works.

7.3 Information Flow Requirements and Processes

The key information flows *into* this asset management plan are:

- The asset register data on size, age, value, remaining life of the network;
- The unit rates for categories of work/material;
- The adopted service levels;
- Projections of various factors affecting future demand for services;
- Correlations between maintenance and renewal, including decay models;
- Data on new assets acquired by council.

The key information flows *from* this asset management plan are:

- The assumed Works Program and trends;
- The resulting budget, valuation and depreciation projections;
- The useful life analysis.

These will impact the Long-Term Financial Plan, Strategic Business Plan, annual budget and departmental business plans and budgets. The current communication between financial and asset systems is limited to manually entering the relevant data.

8. CONCLUSION

8.1 Current position statement

The provision of water is one of council's principal activities. Council provides a water filtered reticulation network to the urban area. This also includes the villages of Raglan, Eglinton and Perthville.

The water supply network currently consists of **504km of pipes**, over **3285 valves**, **3291 hydrants**, **13 pump stations**, and **25 reservoirs**.

The Bathurst water supply dates back to 1886. There are possibly some original pipes still in use in the network, making them at least 130 years old. Approximately **13%** of the pipe network has been assessed as in poor or bad condition, based on the age of the pipes.

The current replacement cost is **$344,148 million**. The annual depreciation expense is **$334,001 p.a.** Assets were last revalued in line with DLG requirements as at 30 June 2019, with a valuation increment each financial year since.

The current 2019/20 maintenance and operational budget is an average of **$9,204 million p.a.**

The budget for maintenance and repair is currently forecast by adding an additional amount of 4.2% PPI added to the previous year's budget. As the reticulation assets age and the network expands to meet the growth in areas of Bathurst, the expenditure required to meet maintenance needs will increase at a rate higher than the extra for PPI. If the current level of maintenance is not increased in line with the increasing maintenance requirements of the filtered reticulation network more supply interruptions and a generally lower level of service could be reasonably expected.

Long term and **Medium-term** sustainability indices are **0.95** and **0.97.** Both numbers indicate sufficient maintenance, operating, renewal and upgrade funding (refer to Figures 5.3.4 and 5.4.3).

The current renewal/upgrade budget for 2019/20 is **$5,557 million.**

The water reticulation network assets have varied useful lives. The Reference Rates manual gives a useful life of water pipes of **80 years.** In reality the individual assets within the pipe network have different life expectancies dependant on the material of their construction, the pressure in the pipe and the ground the pipe is laid in Although the final assessment on capital renewal of building assets will be based on the criteria in 5.4.1, asset age is still the best indicator available to predict the future expenditure required to replace building assets that have deteriorated to a point where it is no longer serviceable.

The information contained within the asset management plan sets a benchmark for the water filtered reticulation network at the close of the 2019 calendar year. By continuing to collect information on the condition of the network and closely monitoring the expenditure on maintenance and renewal of the network the performance of the Council's filtered water reticulation strategies can be measured, reported on and improved in the future.

Winburndale Dam Aerial Map – 2016 Inspection

9. PLAN IMPROVEMENT AND MONITORING

9.1 Performance Measures

- The degree to which the required cash flows identified in this asset management plan are incorporated into council's long-term financial plan and Strategic Management 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 asset management improvement plan generated from this asset management plan is shown in Table 9.2.

9.2 Monitoring and Review Procedures

This asset management plan will be reviewed during annual budget preparation and amended to recognise any changes in service levels and/or resources available to provide those services as a result of the budget decision process.

The Plan has a life of 4 years and is due for revision and updating within 2 years of each Council election.

Table 9.2 Improvement Plan

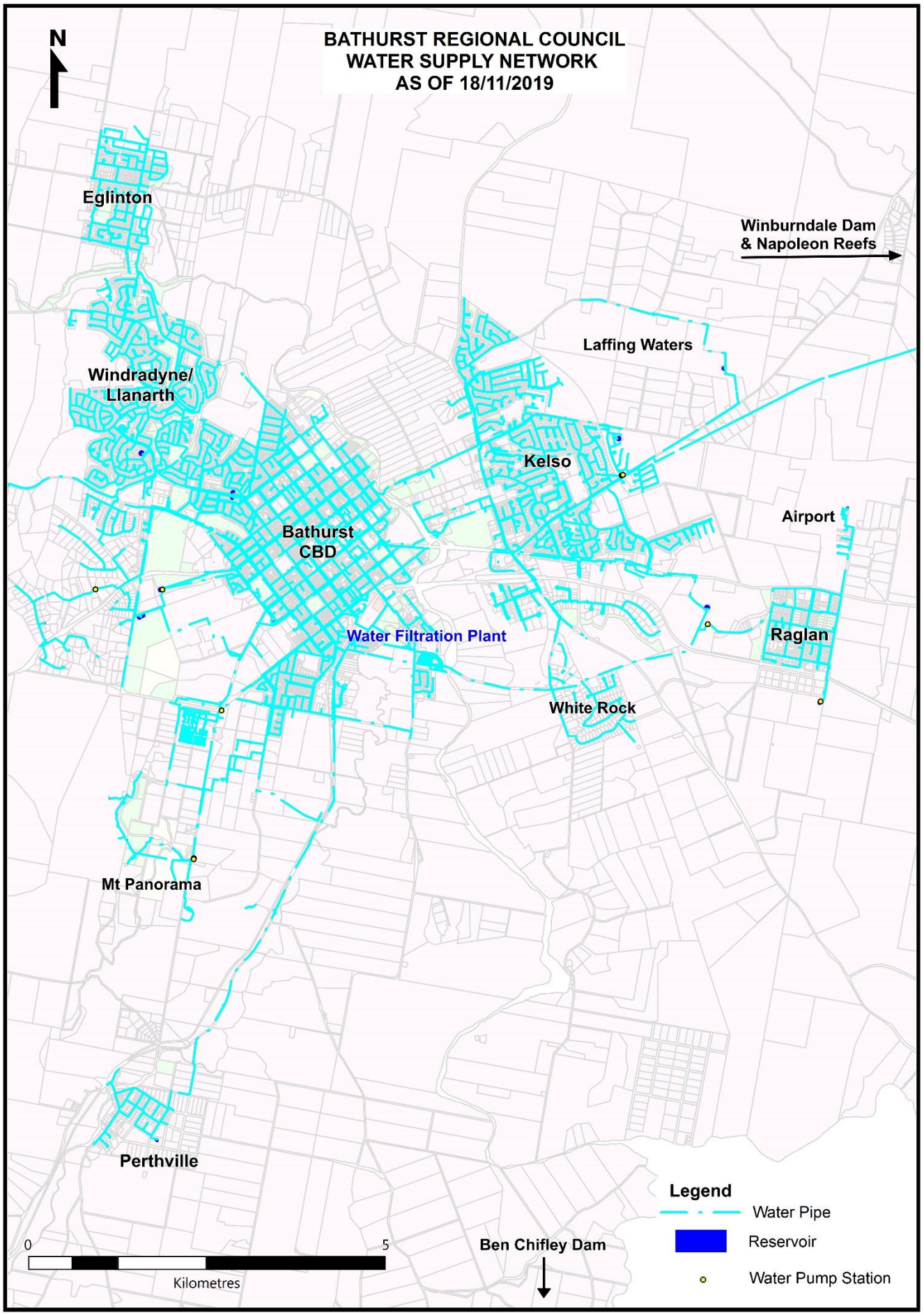
Task	Responsibility	Resources Required	Timeline
Review plan Annually	Asset Systems Administrator	Input from Water Section Staff	January 2021

	Enforced Restrictions		
	HIGH	EXTREME	CRITICAL
In Effect	26/11/18	14/10/19	15%-0%
Watering – Lawns	Odds and evens 6am-9am or 6pm-9pm Maximum 30 minutes/day	Not permitted	Not permitted
Watering – Gardens	Odds and evens 6am-9am or 6pm-9pm Maximum 30 minutes/day	Above 29% hose and trigger nozzle permitted for 30 minutes/day on Wed & Sun only 6pm – 9pm Below 29% bucket or watering can permitted for 30 minutes/day on Wed & Sun only 6pm-9pm	Not permitted
Car Washing - At Home	Bucket & trigger nozzle on lawn 6am-9am or 6pm-9pm	Not permitted	Not permitted
Swimming Pools	Top up: 6am-9am or 6pm-9pm with pool covers First fill: with Council permission	Top up & filling not permitted	Top up & filling not permitted
Garden Features & Temporary Child Pools	Top up & filling permitted	Top up & filling not permitted	Top up & filling not permitted
Washing Hard Surfaces	Not permitted	Not permitted	Not permitted
Indoor Activities	Water wise actions required	4 minute showers or 1 bath/person/day (150mm deep) Water wise actions required	3 minute showers or 1 bath/person/day (100mm deep) Water wise actions required

Water Restrictions Action Plan As of August 2019

REFERENCES

- Bathurst Regional Council, 'Management Plan 2019-2023',
- Bathurst Regional Council, 'Detailed Financial Budget and Revenue Policy 2019-2023'
- Bathurst Regional Council Community Survey 2018
- Bathurst Regional Council Community Strategic Plan 2040
- Bathurst Regional Council Guidelines for Engineering Works 2011
- Bathurst Regional Council Bathurst Region Urban Strategy 2008
- Bathurst Regional Council Strategic Business Plan for Water Supply & Sewerage Services 2009/10 (DLM Environmental Consultants Pty Ltd 2010)
- National Health and Medical Research Council Australian Drinking Water Guidelines 2011 – Updated August 2018 (Australian Government Publications, Canberra)
- NSW DPI Water Best Practice Management of Water Supply and Sewerage 2007 (NSW Government)
- IPWEA, 2011 'International Infrastructure Management Manual', Institute of Public Works Engineering Australia, Sydney
- IPWEA, 2009 First Ed 'Australian Infrastructure Financial Management Guidelines' , Institute of Public Works Engineering Australia, Sydney
- Rawlinsons, 2018 'Australian Construction Handbook', Rawlinsons Publishing, Perth.
  NSW Department of Local Government, 1999 *Local Government Asset Accounting Manual - Update 4* NSW DLG, Nowra
- *Water Drinking Guidelines:* https://www.nhmrc.gov.au/guidelines-publications/eh52
- Local Government Act 1993
- Protection of the Environment Operations Act 1997
- Water Management Act 2000
- Catchment Management Authorities Act 2003


BATHURST REGIONAL COUNCIL
WATER SUPPLY NETWORK
AS OF 18/11/2019
N
Eglinton
Winburndale Dam
& Napoleon Reefs
Laffing Waters
Windradyne/
Llanarth
Kelso
Airport
Bathurst
CBD
Water Filtration Plant
Raglan
White Rock
Mt Panorama
Perthville
Ben Chifley Dam
0
5
Kilometres
Legend
Water Pipe
Reservoir
Water Pump Station


Bathurst Regional Council
Ben Chifley Dam
N
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1
Kilometres
Aerial image Bathurst Regional Council Imagery Rural17-15cm


N
Bathurst Regional Council
Winburndale Dam
0
250
Metres