



**BATHURST  
REGIONAL COUNCIL**



# **SEWER RETICULATION NETWORK ASSET MANAGEMENT PLAN**

**Version 2.2  
February 2021**



## Document Control

# Bathurst Regional Council

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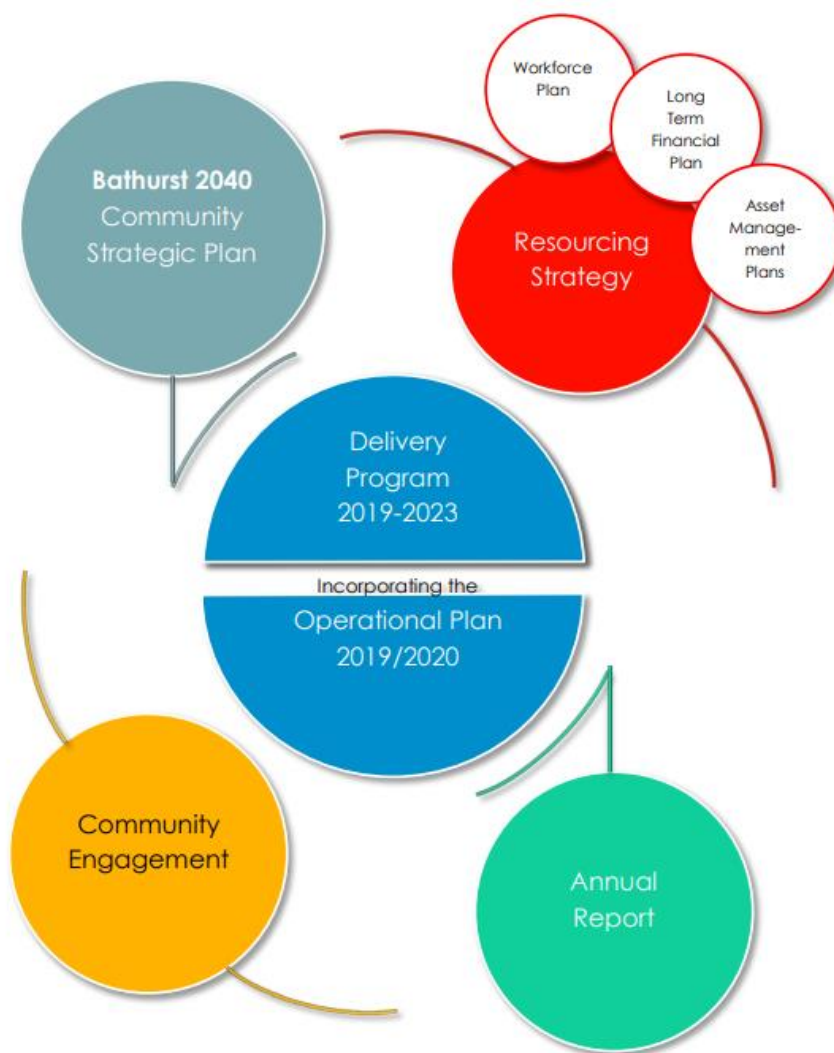
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## Integrated Planning and Reporting Framework







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## ABBREVIATIONS

<b>AAAC</b>	Average annual asset consumption
<b>AMP</b>	Asset management plan
<b>ARI</b>	Average recurrence interval
<b>BOD</b>	Biochemical (biological) oxygen demand
<b>CRC</b>	Current replacement cost
<b>CWMS</b>	Community wastewater management systems
<b>DA</b>	Depreciable amount
<b>DoH</b>	Department of Health
<b>EF</b>	Earthworks/formation
<b>IRMP</b>	Infrastructure risk management plan
<b>LCC</b>	Life Cycle cost
<b>LCE</b>	Life cycle expenditure
<b>MMS</b>	Maintenance management system
<b>PCI</b>	Pavement condition index
<b>PPI</b>	Producer Price Index
<b>RV</b>	Residual value
<b>SS</b>	Suspended solids
<b>vph</b>	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 discretionary 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 road 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 road 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 discretionary 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 road, 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.

Source: DVC 2006, Glossary

Note: Items shown \* modified to use DA instead of CRC  
Additional glossary items shown \*\*

**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.

**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, cycle, 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. 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 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.

**Source:** DVC 2006, Glossary

**Note:** Items shown \* modified to use DA instead of CRC  
**Additional glossary items shown \*\***

**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 Expenditure to give an initial indicator of life cycle sustainability.

**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 (egg 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 if 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, roads 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 road 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 road 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.

Source: DVC 2006, Glossary

Note: Items shown \* modified to use DA instead of CRC  
Additional glossary items shown \*\*

**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.

**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 is 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 provides a sewer reticulation network to enable the safe and effective transport of wastewater to the sewerage treatment plant. 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<sup>1</sup> consists of:

Asset category	Dimension	Replacement Value (\$)
Treatment Plant	1	\$54,563,929
Building/Structures	77	\$18,545,239
Sewer Pipes	451.4km	\$159,714,496
Pump Stations	37	\$12,244,550
Sewer Manholes	7,793	*
<b>Total</b>		<b>\$245,068,213</b>

\*Denotes Replacement Value included Sewer pipe cost

### What does it Cost?

There are two key indicators of cost to provide the sewer reticulation 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 Sewer reticulation network is estimated at **\$11,901 Million** per annum. Council's planned life cycle expenditure for year 1 of the asset management plan is **\$7,134 Million** which gives a life cycle sustainability index of **0.60<sup>2</sup>**, resulting in a shortfall of **-\$4,767,522** for year 1..

The total maintenance and capital renewal expenditure budgeted for the Sewer reticulation network in the next 10-years is estimated at **\$79,528 Million**. This is an average of **\$7,953 Million** per annum; giving a 10-year sustainability index of **0.90**, resulting in an anticipated funding shortfall of **-\$47,675 million** over the medium term.

<sup>1</sup>The detail of this plan only covers the piped reticulation network. A major component of the system is the Wastewater Treatment 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.

<sup>2</sup>See Section 6.1.1, Sustainability of service delivery.

### Plans for the Future

Council plans to operate and maintain the sewer reticulation network to achieve the following strategic objectives.

1. Ensure the sewer reticulation network is maintained at a safe and functional standard as set out in this asset management plan.
2. Ensure that future growth is catered for.

### Measuring our Performance

#### Quality

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

#### Function

Our intent is that an appropriate sewer reticulation network is maintained in partnership with other levels of government and stakeholders to ensure public health is upheld and the environment is not compromised.

Key functional objectives are met:

- Safe and efficient transport of wastewater.
- Maintenance and renewal of the network is within budget.

#### Safety

Regular inspections with defects repaired and prioritised in accordance with our inspection schedule to ensure they are safe.

### The Next Steps

This action resulting from this asset management plan are:

- Work towards an advanced asset management plan for the Wastewater Treatment Plant.
- Undertake condition assessments on the parts of the sewer network where samples are available (e.g. mains repair locations and re-lining).
- 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.



## 2. INTRODUCTION

### 2.1 Background

This asset management plan is to demonstrate responsive management of 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:

- Local Government Act 1993
- Protection of the Environment Operations Act 1997
- Water Management Act 2000
- Catchment Management Authorities Act 2003
- Australian Guidelines for Water Recycling 2006
- Bathurst Regional Council 2011 *Guidelines for engineering works*
- Bathurst Regional Council 1996 *Strategic business plan – water supply and sewer services*
- NSW Department of Water and Energy Code of Practice for Plumbing and Drainage, 2006
- NSW Department of Local Government Consumption Based Pricing for Council Water Supply and Sewerage Services.

This Asset Management Plan covers the following infrastructure assets:

**Table 2.1. Assets covered by this Plan**

Asset category	Dimension	Replacement Value (\$)
Treatment Plant	1	\$54,563,929
Building/Structures	77	\$18,545,239
Sewer Pipes	451.4km	\$159,714,496
Pump Stations	37	\$12,244,550
Sewer Manholes	7,793	*
<b>Total</b>		<b>\$245,068,213</b>

\*Denotes Replacement Value included in Sewer pipe cost

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

<b>The Councillors</b>	Formulate policy for the allocation of resources to maximise benefit to the community whilst minimising the Council's exposure to risk.
<b>The Council</b>	To manage the implementation of policy in a timely and cost-effective manner. To ensure resources are effectively utilised.
<b>General Public</b>	End users of the sewer reticulation system.
<b>Local Businesses</b>	Many local business discharge to sewer and are required to have trade waste agreements in place with the Council
<b>Health care facilities</b>	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 the 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,
- Developing cost-effective management strategies for the long term,
- Providing a defined level of service and monitoring performance,
- Understanding and meeting the demands of growth through demand management and infrastructure investment,
- Managing risks associated with asset failures,
- Sustainable use of physical resources,
- Continuous improvement in asset management practices<sup>3</sup>.

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

Council's mission:

***"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 indiscriminate water usage in the use of wastewater treatment, implement treatment 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 desired domestic usage, sewer network blockages, upgrades and other works that will impact services for the community and council.
6.4 Meet legislative and compliance requirements.	<ul style="list-style-type: none"> <li>• Water Management Act 2000</li> <li>• Protection of the Environment Act 1997</li> <li>• Local Government Act 1993</li> <li>• Australian Guidelines for Water Recycling 2006</li> </ul>
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.



<sup>3</sup> IIMM 2018 Sec 1.1.3, p 1.3

Kings Parade, Bathurst CBD





Relevant Council goals and objectives and how these are addressed in this asset management plan are:

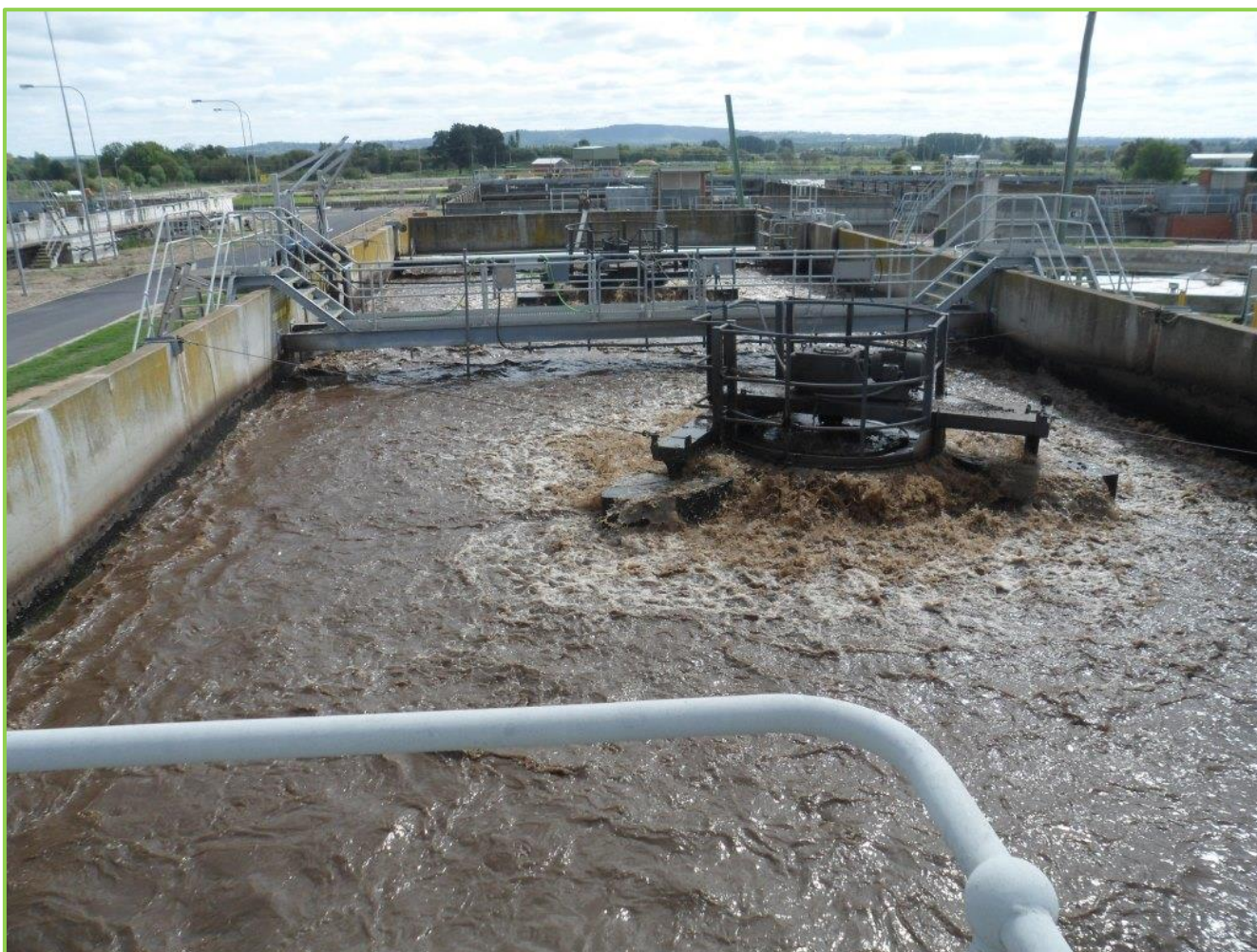
The key issues of the sewer reticulation asset management plan are

- Deterioration of network
- Potential pollution of environment
- Loss of amenity
- Regulatory control
- Community concern

## 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



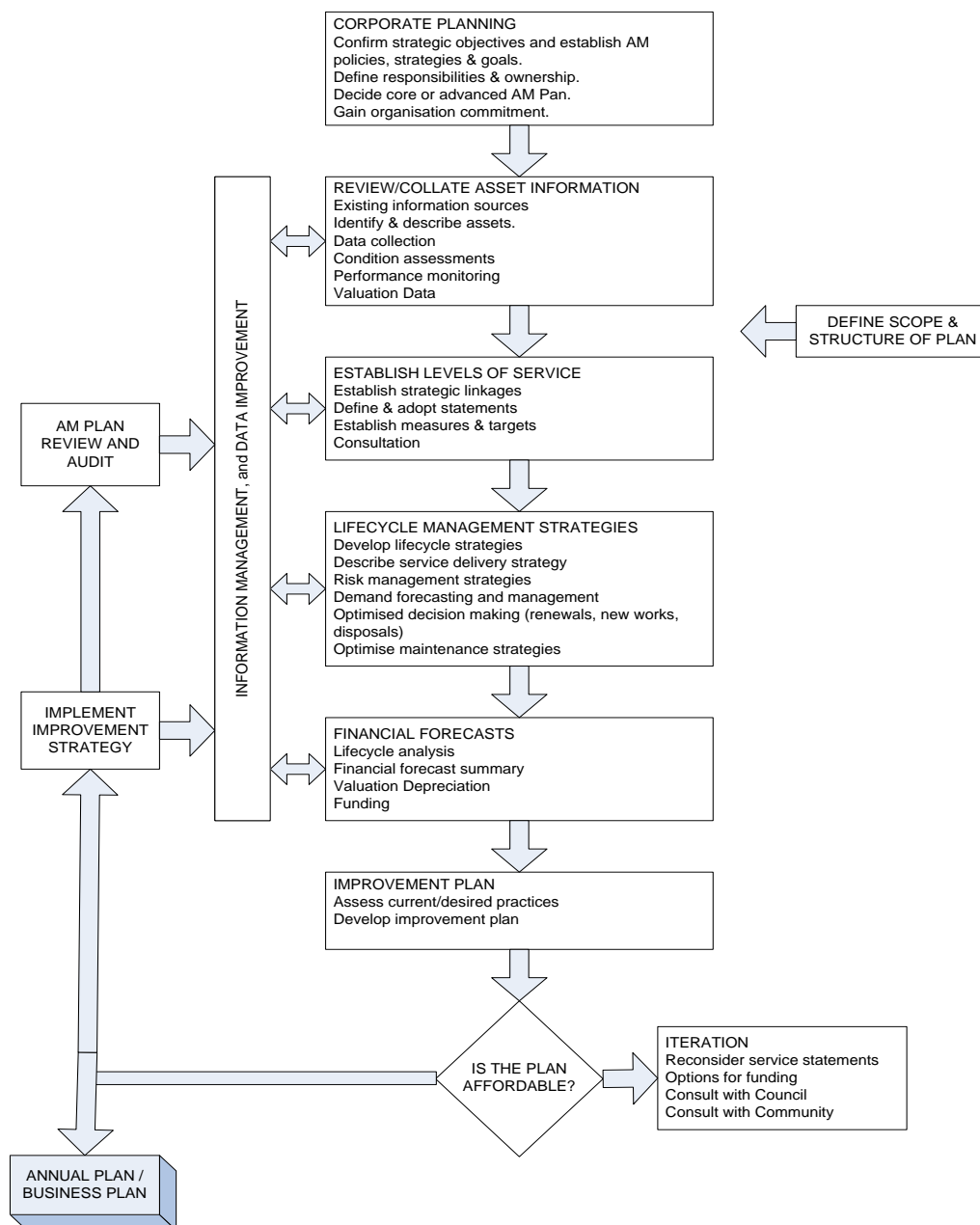
External Aeration Treatment Tank No.1, Wastewater Treatment Plant





## Road Map for preparing an Asset Management Plan

Source: IIMM Fig 1.5.1, p 1.11



## 2.3 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 move towards 'advanced' 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.



### 3. LEVELS OF SERVICE

#### 3.1 Customer Research and Expectations

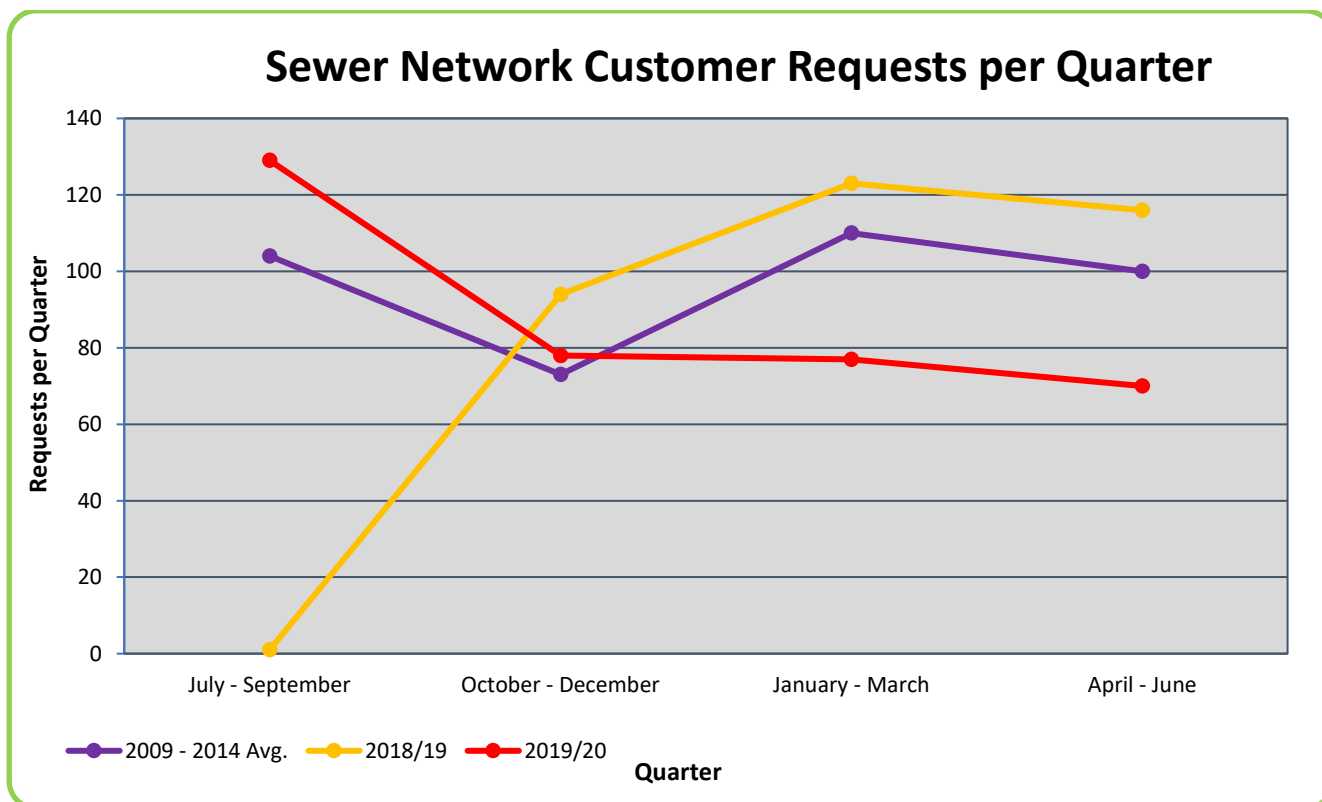
The Council undertakes community surveys on a 2-yearly basis to gauge community expectations and satisfaction with the services Council provides. A series of questions are put to a broad cross section of the community including residents from rural and urban areas each year. Using the data from the Community 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 sewer 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 sewer network as being 4.44 out of 5 in importance. In terms of satisfaction, they rated the sewer network as being 4.10 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).

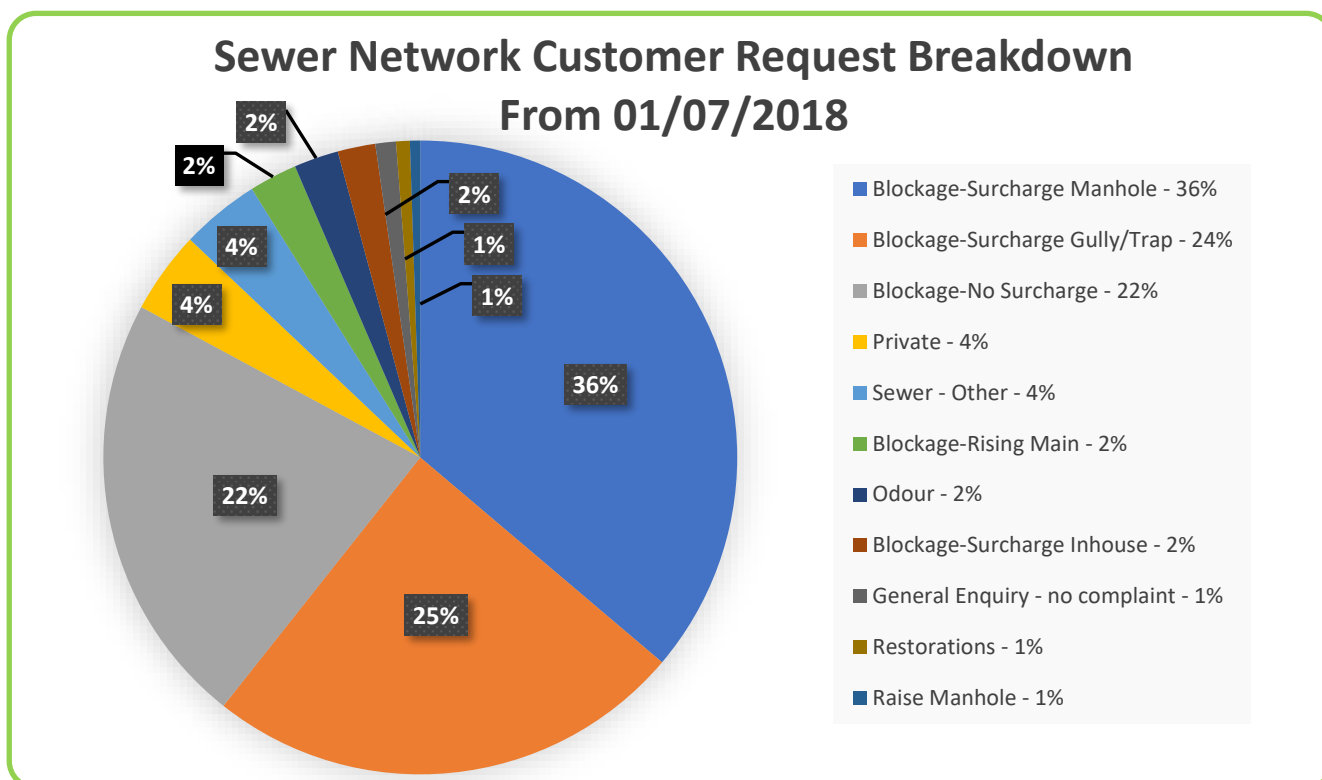
**Fig 3.1a. Customer Requests for Sewer Network**



The above graph shows customer requests relating to council's sewer network have trended +/- 30 requests from the 2009-2014 average. 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 5-year average from 2009-2014 requests has been used as a baseline to compare recent financial years.



**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 sewer requests made by customers. 62% of all requests made are in relation to sewer surcharging of some nature. Most of these events are isolated however, areas of deficiencies are specified in table 5.1.2.

The function of the sewer reticulation system is collection and transport of wastewater to the Bathurst sewerage treatment works. Due to the basic functional nature of the sewer reticulation system, customer expectations at a high level are simple. In most instances an attitude of 'flush and forget' is as far as expectations go.

Occurrences of sewer chokes and problems with odours account for all residential customer requests and complaints relating to the sewer reticulation system.

Some commercial and industrial customers require a specific level of capacity from the reticulation network to manage the amount and nature of the trade waste being discharged. An example is the Kelso industrial park network of collection mains and the pump station. These requirements are generally managed through Council's trade waste policy.



Caravan Waste Dump Point, Wastewater Treatment Plant



## 3.2 Legislative Requirements

Council has to meet many legislative requirements including Australian and State legislation and State regulations. The primary acts and regulations relating to the sewer reticulation system are:

**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.
Water Management Act 2000	Legislates the sustainable and integrated management of water resources for NSW
Public Health Act 1991 – Part 2B	Dictates the provision of safe drinking water (Water Recycling)
Australian Guideline for Water Recycling 2006	Provides guidelines for recycling wastewater and re-introducing it into the Macquarie river
Environmental Planning and Assessment Act 1979	The principal planning instrument in NSW – specifies environmental considerations required for all development activities.
Catchment Management Act 2003	Seeks to co-ordinate policies, programs and activities within a catchment area that have an effect on the environment
Environmental Protection Licence	Dictates the levels of pollutants that the wastewater treatment works may discharge to the Macquarie River
Civil Liabilities Act 2002	Sets out the provisions that give protection from civil liability and the responsibilities of Council and public alike.
Protection of the Environment Act 1997	To protect, restore and enhance the quality of the environment having regard to the need to maintain ecologically sustainable development.



Caravan Waste Dump Point, Cnr Morrisset and Commonwealth Streets





### 3.3 Current Levels of Service

Service levels can be defined by 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 reliability of the sewer service (number of chokes recorded). Odour complaints.
Quantity	The catchment area for collection service (replacing septic systems)
Availability	Capacity of the sewer reticulation system to cope with the full system load (diurnal pattern). Ensuring 'self-cleansing' flow is maintained.
Safety	Frequency of surcharging

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 sewer reticulation network will be maintained to a level that allows the reliable, safe discharging of wastewater from 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	Sewer service is sufficient and adequately maintained for residential customers	Number of residential requests relating to sewer service	<400 p.a.	541 (2019)
	Sewer service does not contribute to air pollution	Number of requests relating to odour emissions	<2 p.a.	14 (2019)
Quantity	Customers have service disruptions resolved within Council's KPI Service Standards	Number of requests relating to sewer pit and pipe blockages	100%	100% (2019)
		Organisational Measure of number of customer requests relating to Council's sewer network		541 (2019)
Safety	Sewer reticulation is isolated from ground	Reported cases sewer surcharges in 12 months	< 175 p.a.	337 (2019)
	Sewer chokes are cleared quickly	Reported cases of sewer blockages in 12 months	< 125 p.a.	135 (2019)



## TECHNICAL LEVEL OF SERVICE

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
<b>Quality</b>	Compliance with EPA Guidelines	Testing of Wastewater in each area of the Treatment Plant	>95% EPA Compliance	<b>100%</b>
<b>Quantity</b>	Sewer reticulation network flow is sufficient for peak demands	Monitoring flows through internal hydraulic software Organisation measure of maintenance and operations budget expenditure	<b>Desired Budget (Over 10yrs)</b> <b>Avg. \$6,040,689 p.a.</b>	<b>2019/20 Budget</b> <b>Avg. \$5,266,849 p.a.</b>
<b>Dry Weather Leakage ratio</b>	Keep the sewer network as watertight as possible to reduce the amount of water leaking into and out of the pipes	A measure of the leakiness of the pipes in the sewer network thus allowing water to infiltrate or exfiltrate from the network	Network Condition >45% Satisfactory/Fair <20% Poor/Bad	<b>Network Condition</b> <b>42% Satisfactory/Fair</b> <b>16% Poor/Bad</b>
<b>Availability</b>	Connections for domestic sewerage are provided to all allotments within a designated area	Number of lots not connected to the sewerage system within the serviced areas	100%	<b>&lt;100%</b> <b>(See table 5.1.2)</b>
	Acceptance of commercial and industrial waste is in accordance with Council's trade waste policy	Local business and industry are able to effectively carry out their operations whilst complying with the trade waste policy	100% compliance	<b>&lt;100%</b> <b>Council has an inspection regime to ensure compliance</b>
<b>Condition</b>	Majority of Sewer Assets are in reasonable condition	Sewer Network Age	% Age of Asset are Not exceeding Useful Life	<b>14%</b>
		Organisational Measure of Sewer Network Average Age		<b>35yrs</b>
		Organisational Measure of Sewer Network Condition	Network Condition 75% Excellent/Good 10% Poor/Bad <b>Expenditure Required to Improve Network Condition</b> <b>\$10,311,071</b>	<b>Network Condition</b> <b>37% Excellent/Good</b> <b>23% Poor/Bad</b> <b>Projected Position</b> <b>59% Excellent/Good</b> <b>41% Satisfactory/Fair</b> <b>0% Poor/Bad</b>
<b>Camera, Clean and Condition Rate Sewer Network</b>	Have a rigorous pro-active programme of pipe defect maintenance to prevent major blockages and breakages	Have areas of older construction and areas of known problems camera inspected & cleaned each year for planned relining in future.	To camera and clean at least 2 km of the sewer network each year.	<b>3.5 km</b> <b>Camera, Cleaned &amp; Relined (2019)</b>
<b>Relining Programme</b>	Relining the inner wall of pipes to extend their life by 50 years and return their condition to new pipe condition	All existing defects are removed, and pipes are in "excellent" condition. The older parts of the network are kept in good operating condition.	2km relined each year	



## 4. FUTURE DEMAND

### 4.1 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 4.1.

The major factor affecting demand on the Council's infrastructure is population growth.

**Table 4.1. Demand Factors, Projections and Impact on Services**

Demand factor	Present position	Projection	Impact on services
<b>Population</b>	42,389 (2016 census)	52,500 (2031)	
<b>Demographic</b>	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	Increased population means increased infrastructure. An increasing length of pipe network.
<b>Demand for sewer connections</b>	A feasibility study is being undertaken to assess the viability of connecting the village of Georges Plains to the sewer network		Increasing connections means increasing network length. The outlying areas require more infrastructure including pumps stations and holding tanks
<b>Climate Change</b>	Predicted decline in overall rainfall with an increase in severe rainfall events		Increased peak demand on the reticulation system during severe rainfall events.
<b>Trade waste discharging</b>	Council's trade waste policy		Increasing onus on discharging business to pre-treat waste reducing the load on the system.
<b>Environmental Standards</b>	The NSW Environmental Protection Authority through the discharge licensing system dictates the allowable discharge from the sewage treatment plant.		As new legislation demands council is required to ensure that all wastewater transport is compliant with the relevant sections of the Government acts

### 4.2 Changes in Technology

Wastewater technological change is reflecting the greater value being placed on water resources in recent times. Grey water treatment systems are being developed that are applicable to small residential blocks. Council has implemented assessment procedures in accordance with the NSW Department of Primary Industries, Office of Water.

There has also been an increase in the water efficiency of many domestic appliances including shower heads, washing machines and dishwashers. These factors, along with the increased awareness of water issues have reduced the flow into the system, which can itself cause problems with minimum flow requirements to ensure the efficient movement of wastewater through the system.

Material technology is constantly developing and improving. Examples of past developments include uPVC piping and innovative pipe relining techniques.



**Table 4.2. Changes in Technology and Forecast effect on Service Delivery**

Technology Change	Effect on Service Delivery
Water efficient appliances	As new technology becomes available, domestic and commercial appliances are using water more efficiently. This reduces the load placed on the sewer system. It may reduce the flow to below the critical level for self-cleansing flow. Sewer design may need to be reassessed for managing low flow.
Grey water re-use	Awareness of water conservation issues has led to an increase in the installation of grey water systems. The installation is tightly regulated by Council to ensure safe and effective installations.
Improvements in maintenance techniques	The continuing development of in-situ pipe renewal systems and advancements in pipe cleaning methods. These new technologies reduce the cost of renewing pipes at the end of their useful life.

### 4.3 Demand Management Plan

Due to the public health and environmental implications of the sewer reticulation system being compromised, demand management is aimed primarily at managing the load on the system in terms of quantity and content, rather than lowering the level of service standards and the acceptance of a greater number of service failures.

Load reduction is a consequence of a reduction in water consumption. During periods of low rainfall, a low flow through the sewer can be undesirable as a minimum flow is required to ensure that flow is self-cleansing and waste is transported effectively to the filtration plant

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
Septic tank systems	Council are commissioning a study into the viability of providing sewer services to the village of Georges Plains. The outcome of the study may be to retain the status quo.
Trade waste discharging	Implementation of the NSW Department of Water and Energy trade waste guidelines as Council Policy that dictates discharge limits and volumes and the instrument for issuing fines.
Low flow (less than self-cleansing flow)	A sewer flushing program may need implementing if the load on a particular section of the system is insufficient to maintain self-cleansing flow.



Surcharging sewer manhole, George Street



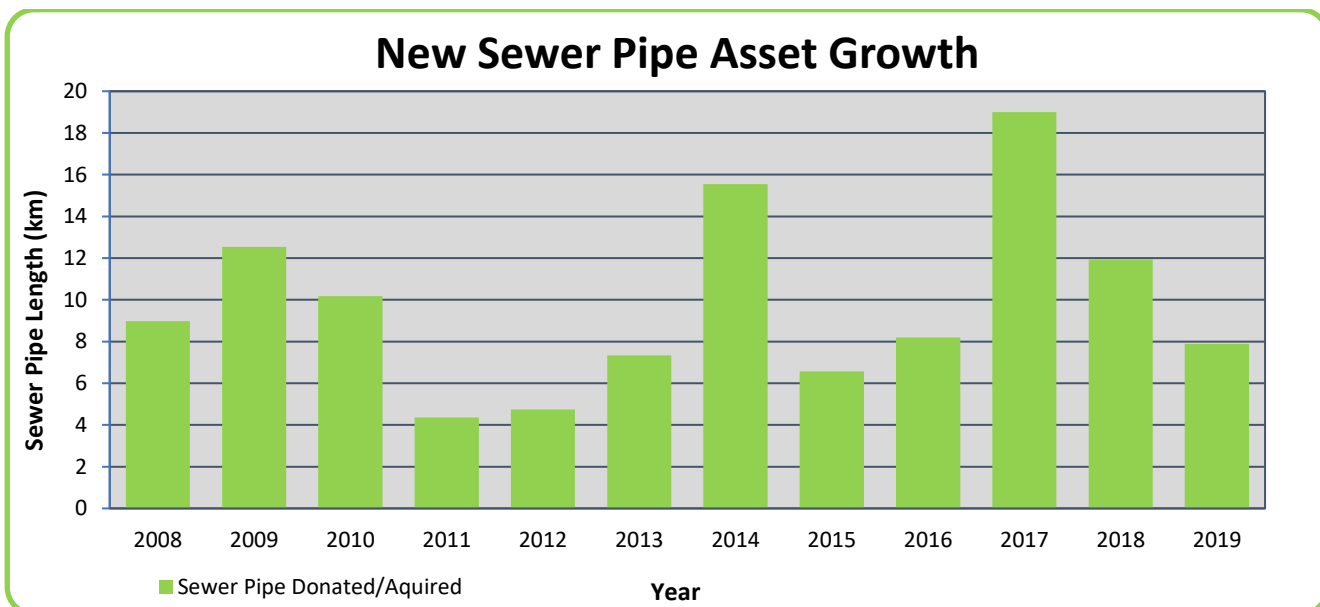


## 4.4 New Assets from Growth

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 manholes and fittings are required proportionally to the new length of network added. Other assets such as pump stations and rising mains will be installed as necessary and are not considered.

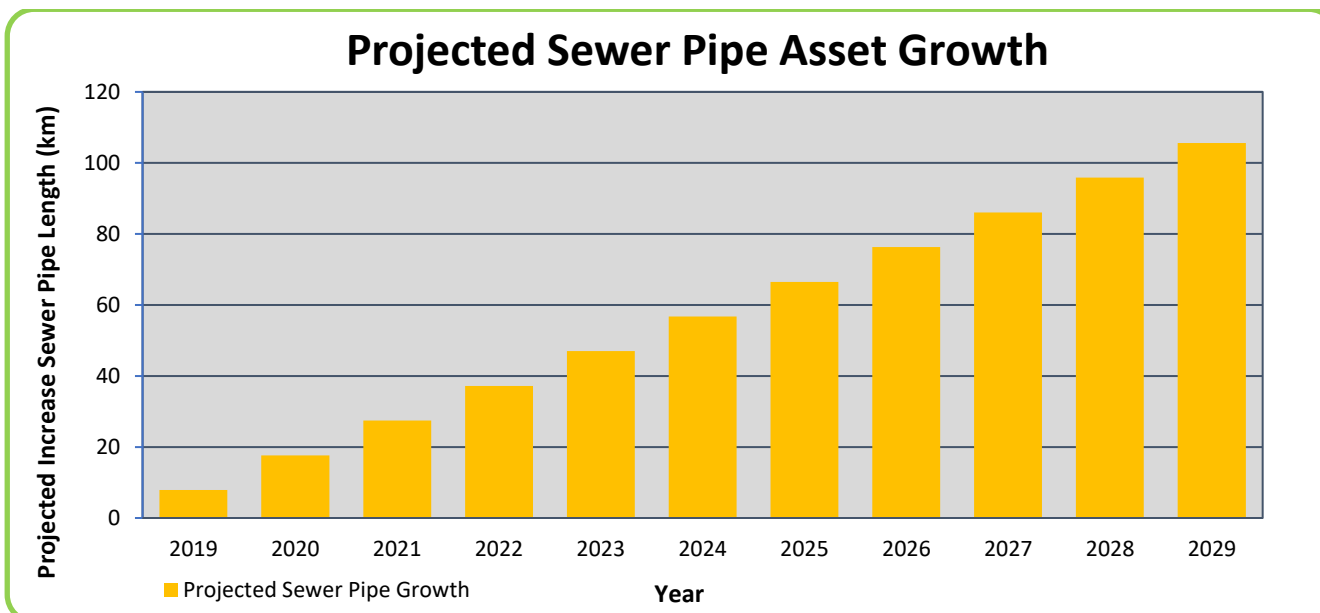
These network length growth trends are summarised in Fig 4.4 and 4.4.1

**Fig 4.4. New Assets from Growth**



The above graph shows the largest increase of 19km in 2017 and the smallest increase of 4.4km in 2011. The sewer network over the last 10yrs has increased on average by 9.8km p.a.

**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 97.7km by 2029. Projecting the overall length of the sewer network at 549.1km. 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



#### 5.1.1 Physical parameters

The assets covered by this asset management plan:

Asset Category	Measure
Treatment Plant	1
Building/Structures	77
Sewer Pipe	451.4km
Pump Stations	37
Sewer Manholes	7,793

**Table 5.1.1a Sewer Pipe Network Material Breakdown**

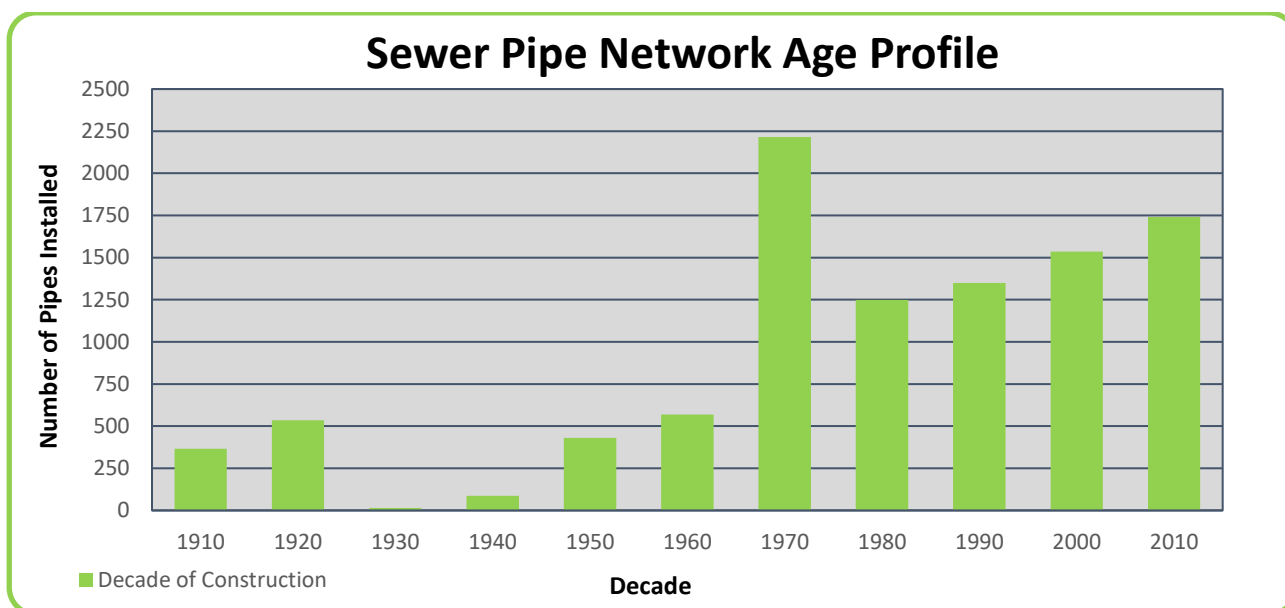
Pipe Type	Reticulation	Rising main	Trunk main	Total (m)
Asbestos cement	215	6,684	3,598	10,498
Vitreous clay	263,845	9,511	23,421	296,777
uPVC/PVC	84,153	11,123	5,392	100,668
Reinforced concrete	1,565	1,160	28,962	31,688
Glass reinforced plastic	5	-	2,238	2,243
Ductile iron, concrete lined	756	1,266	710	2,733
Ductile iron	887	-	53	940
Cast iron	-	303	-	303
Galvanised iron	-	438	-	438
Polypropylene	937	4,089	-	5,025
Steel	97	-	-	97
<b>Total</b>	<b>352,461</b>	<b>27,890</b>	<b>60,776</b>	<b>451,410</b>

**Table 5.1.1b Sewer Pipe Network Diameter Breakdown**

Pipe Diameter (mm)	Length (m)	% of Network	Pipe Diameter (mm)	Length (m)	% of Network
50	4,593	1.02	300	17,200	3.81
100	9,263	2.05	375	16,348	3.62
150	357,622	79.22	450	8,126	1.80
200	1,603	0.36	525	4,266	0.95
225	26,365	5.84	600	1,408	0.31
250	3,491	0.77	675	1,063	0.25
<b>Grand Total</b>			<b>451,410</b>	<b>100.00%</b>	



**Fig 5.1.1c. Sewer Pipe Network Age Profile**



Approximately 8% of the network age has been estimated by using the date of registration of deposited plans. This is generally applying to pipes installed earlier than 1960.

### 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**

Location	Service Deficiency
Durham Street	Insufficient fall from the house to the sewer main for gravity feed into the sewer system. A number of houses are connected to a septic system.
Morrissett Street area	Insufficient fall from the house to the sewer main for gravity feed into the sewer system. A number of houses are connected to a pump out sewer system.
Numerous locations in Bathurst	A number of trunk main locations have been identified through AWT modelling that during under certain conditions have inadequate capacity and as a result surcharging from adjacent manholes may occur.



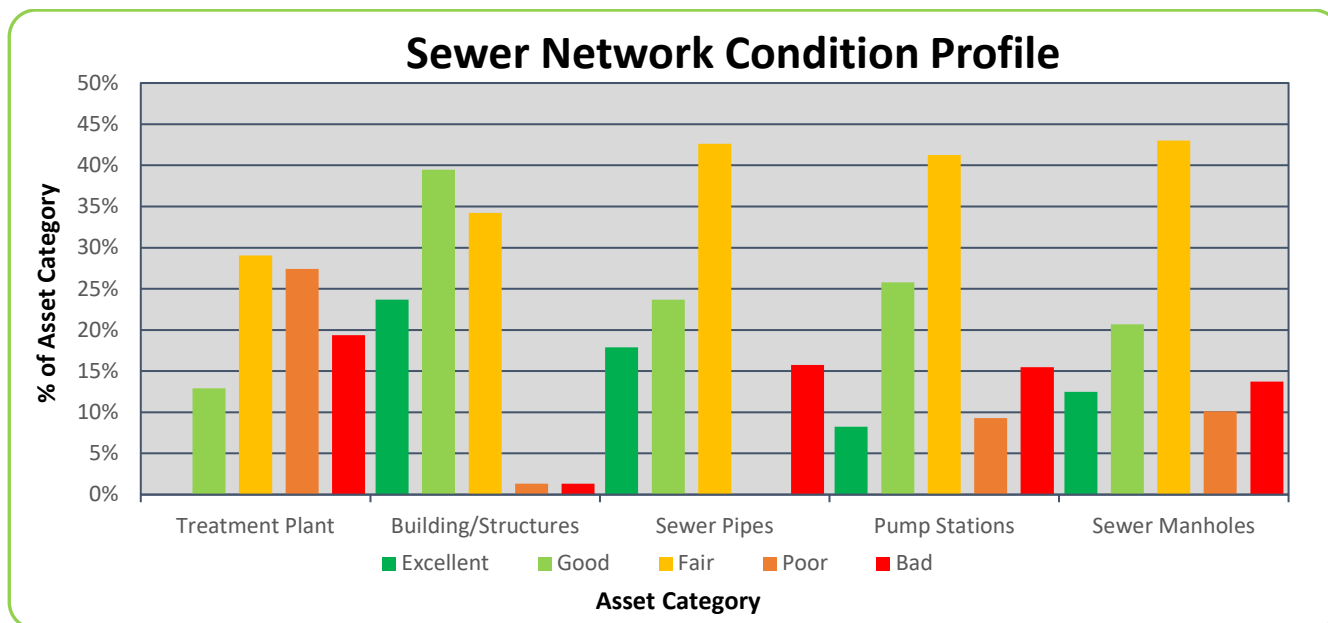
Aluminium Dosing Plant, Wastewater Treatment Plant



### 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 will be used to estimate the condition. Council does have some condition data on the older parts of the network; however, this is only a small sample and is not representative of the entire network.

**Fig 5.1.3. Sewer Network 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. The condition rating breakdown of the above sewer network are as follows:

Condition Rating		Treatment Plant	Building/Structures	Sewer Pipes	Pump Stations	Sewer Manholes
1	Excellent	0%	24%	18%	8%	12%
2	Good	13%	39%	24%	26%	21%
3	Fair	29%	34%	43%	41%	43%
4	Poor	27%	1%	0%	9%	10%
5	Bad	19%	1%	16%	15%	14%

Condition Rating	Description	Useful Life % Remaining
1	Excellent	100-90%
2	Good	80-70%
3	Fair	60-40%
4	Poor	30-10%
5	Bad	<10%

**Average age of network components is 35 years**





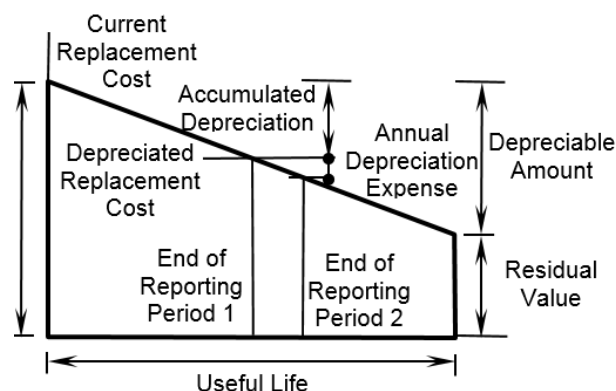


### 5.1.4 Asset valuations

The current replacement cost to replace all of council's sewer network as of **30/06/2019** is **\$245,068 million**. The depreciation replacement cost, the accumulated depreciation shown as the cost of the sewer asset network consumed/expired is **\$160,524 million**. Meaning the sewer network has depreciated by **\$84,439 million**.

The total **2019/20** maintenance/operational and capital renewal/upgrade budget is **\$7,134 million**. The capital renewal budget represents **6%** or **\$424,000** of the overall budget and capital upgrade/expansion comprises **23%** or **\$1,653 million**. The remaining **71%** or **\$5,057 million** is allocated for maintenance and operations.

Assets are valued at greenfield rates.



## 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**

Risk	What can Happen	Risk Rating	Risk Treatment Plan
<b>Pumping station</b>	Power/electrical or mechanical failure	<b>VERY HIGH</b>	Installation of holding tanks for offline storage of wastewater until such time as the pump station is operational. Minimum 8 hours holding capacity
<b>Trunk main choke</b>	Through a combination of a build-up of solids and low flow a sewer choke can occur in larger diameter mains	<b>VERY HIGH</b>	The AWT modelling has identified areas around town where pipe capacities may be inadequate. Council are implementing the recommendations as budgeting allows.
<b>Environment &amp; Public health</b>	Discharge from manhole in low sensitivity area such as industrial area	<b>HIGH</b>	Council has a 24-hour emergency line to ensure any surcharge is dealt with quickly and efficiently.
	Discharge from manhole is in a public or environmentally sensitive area	<b>VERY HIGH</b>	Council has a 24-hour emergency line to ensure any surcharge is dealt with quickly and efficiently.



## 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 maintenance to the sewer reticulation network includes:

- Clearing sewer chokes.
- Repairing or replacing broken pipes.
- Replacing damaged manhole lids.
- Making necessary repairs to failed pump stations

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 maintenance on the sewer reticulation system includes:

- Relining of mains in poor condition.
- Regular cleaning of sections of the reticulation network known to have problems.
- Using pipe cameras to assess areas of the network suspected of poor condition.

Cyclic maintenance is replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, building roof replacement, etc. This work generally falls below the capital/maintenance threshold. Cyclic maintenance on the reticulation network is mainly performed on the pump stations through implementing the pump station asset maintenance plan. This includes:

- Servicing of pumps and motors to manufacturers recommendations.
- Replacing electrical components with finite life spans.

Maintenance expenditure levels are considered to be adequate. Assessment and prioritisation of reactive maintenance is undertaken by Council staff using experience and judgement.

### 5.3.2 Standards and specifications

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

- Bathurst Regional Council 2004 *Guidelines for engineering works*, Bathurst Regional Council, 2004
- Australian Builders Code Board, Plumbing Code of Australia (PCA)

### 5.3.3 Summary of future maintenance expenditures

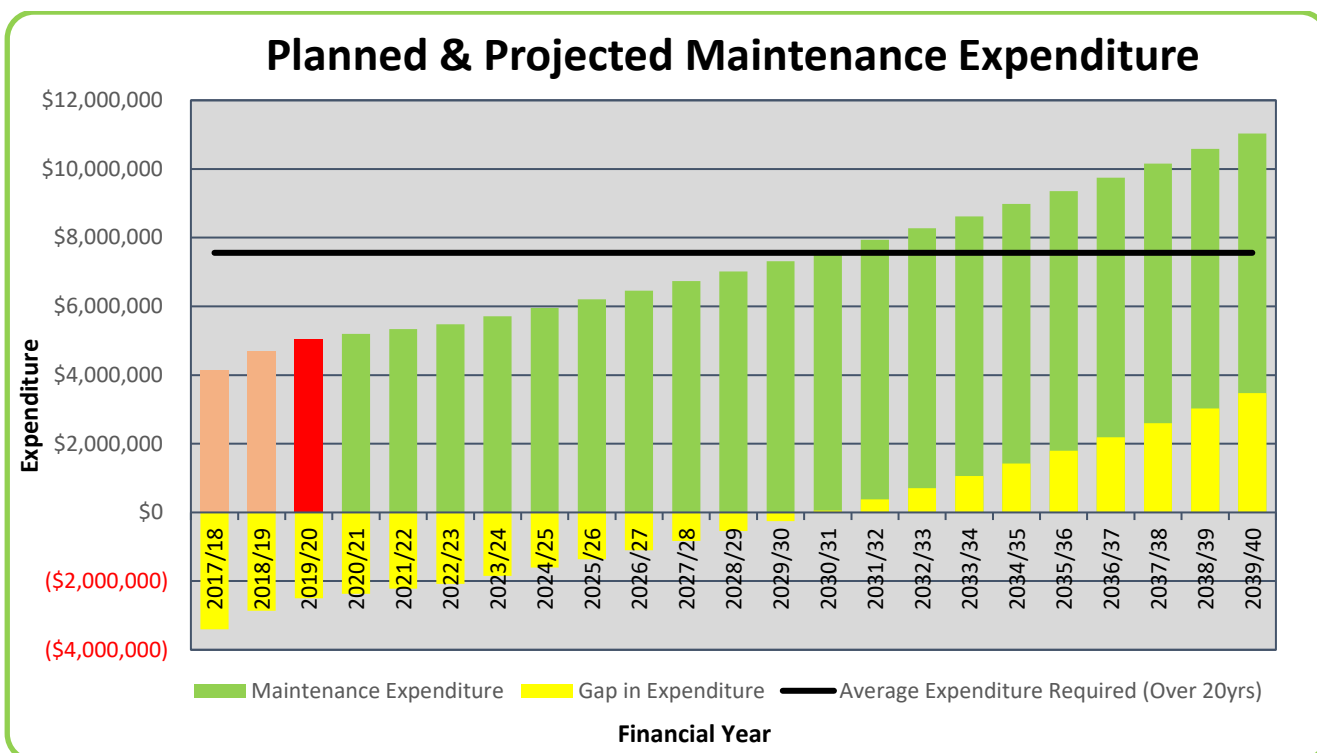
Future maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Fig 5.3.3 Note that all costs are shown in current 2019-dollar values.



Sewer Pump Station No.4, Eglinton Road



**Fig 5.3.3 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.
- Maintenance & Operating Budget from 2023/24 onwards has been extrapolated with a 4.2% PPI factor Over 20yrs.

Sewer Network Current Position:

- Total Maintenance & Operating Expenditure (required over 20yrs) = **\$167,599,095**
- Average Maintenance & Operating Expenditure (required over 20yrs) = **\$7,559,419 p.a.**
- Average Gap in Expenditure = **-\$272,502 p.a.**
- Increase in Expenditure from 2019/20 to 2039/40 = **\$5,973,262**
- 2019/20 Budget Maintenance & Operating = **\$5,266,849 Avg. p.a.**



Sewer Pump Station No.2. Dorman Place 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

Sewer pipes requiring renewal are identified from estimates of remaining life obtained from the asset register and from recommendation made by Councils wastewater technicians. Candidate proposals are inspected by remote camera to verify pipe condition and to develop a preliminary renewal estimate. Suspect pipes are inspected and cleaned with a camera and a condition rating applied. Available funds are scheduled in future works programmes.

Modern pipe renewal techniques are generally in-situ relining of the pipe wall using one of a number of proprietary methods. Relining restores the service potential of the pipe at a cost significantly less than replacement. Where a pipe cannot be renewed via relining it is necessary to dig it up and replace the damaged or aged section.

### 5.4.2 Renewal standards

Renewal work is carried out in accordance with the Australian Builders Code Board, Plumbing Code of Australia (PCA). Further to this, all work is inspected by remote camera before and after relining. The end product is to be to the satisfaction of the operations manager of the wastewater system.

### 5.4.3 Summary of future renewal expenditure

Projected future renewal expenditures are forecast to increase over time as the asset stock ages. The costs are summarised in Fig 5.4.3 Note that all costs are shown in current 2019-dollar values.

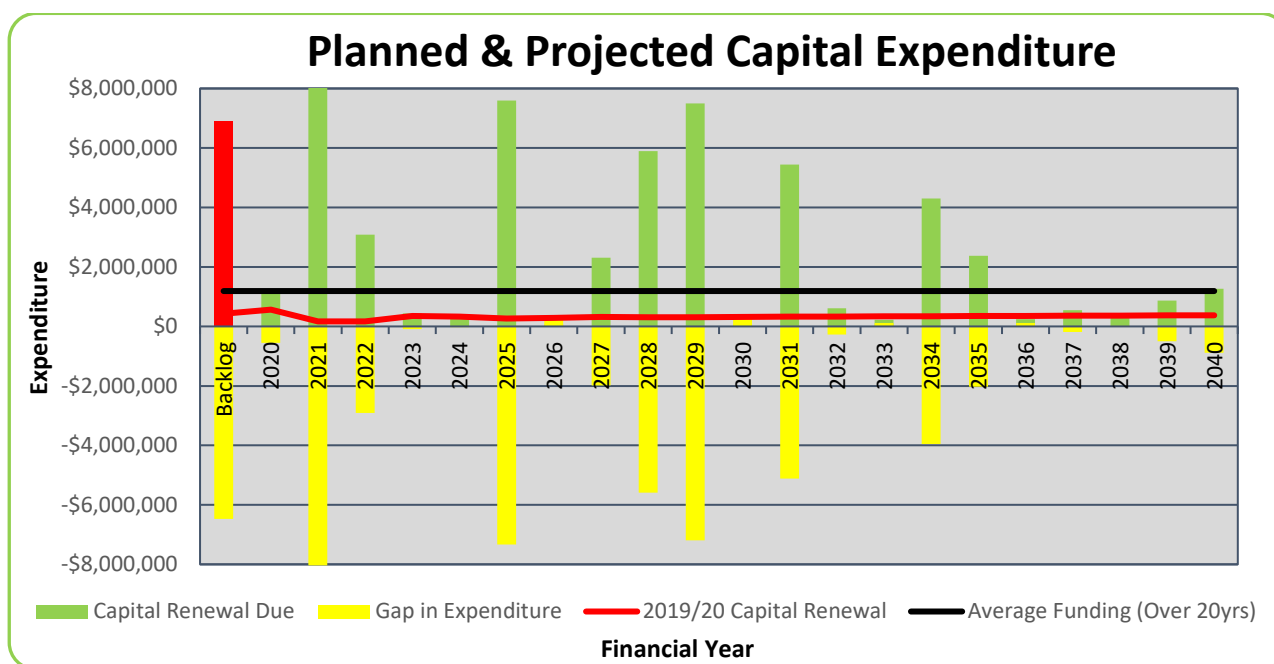


Inlet Works, Wastewater Treatment Plant





**Fig 5.4.3 Planned and Projected Capital Expenditure**



The above graph shows:

- Sewer 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

#### Sewer Network Current Position

- Total Renewal Expenditure (required over 20yrs) = **\$52,823 million**
- Backlogged Asset Renewals = **\$6,898,579**
- Average Renewal Expenditure (required over 20yrs) = **\$2,515 million p.a.**
- Average Gap in Expenditure = **-\$2,186 million p.a.**

Renewal Year	Asset Category	Locality	Replacement Cost
2021	Sewer Pipes	Various Locations	\$934,111
	WWTP	EAT 6 & 7	\$7,268,094
2025	Sewer Pipes	Various Locations	\$632,167
	WWTP	DAF, Laboratory, EAT 2 to 5	\$6,913,733
2028	Sewer Pipes	Various Locations	\$425,259
	WWTP	DAF Plant, EAT 6 & 7	\$5,471,377
2029	Sewer Pipes	Various Locations	\$1,368,647
	WWTP	Inlet Works	\$4,825,791
	SPS	Various Pump Stations	\$1,307,062
2031	Sewer Pipes	Various Locations	\$2,980,106
	WWTP	Inlet Works	\$1,163,164
	SPS	SPS02 & SPS06	\$1,299,014



## 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.

### 5.5.1 Selection criteria

New sewer reticulation assets are constructed as new growth dictates. Reticulation system assets include pipes, manholes and pump stations where required.

Necessary upgrades of pipes are identified through a comprehensive process of modelling the sewer system. Council typically reviews its sewer model ever 5 years, currently using consultant Mott Macdonald Pty Ltd. The Consultants identify areas with insufficient capacity and recommend upgrades to reduce the risk of surcharges. Council actions these based on risk profile and completes work as resources permit. Planned growth areas are also reviewed within the model and predicted upgrades to the network programmed and completed as growth occurs.

### 5.5.2 Standards and specifications

Standards and specifications for new assets and for upgrade/expansion of existing assets are the same as those for renewal shown in Section 5.4.2.

### 5.5.3 Summary of future upgrade/new assets expenditure

Planned upgrade/new asset expenditures are summarised in Fig 5.4.3  
All costs are shown in current 2019-dollar values.

## 5.6 Disposal Plan

The sewer network is not subject to disposal.



Switchboards in Control Tower, Wastewater Treatment Plant



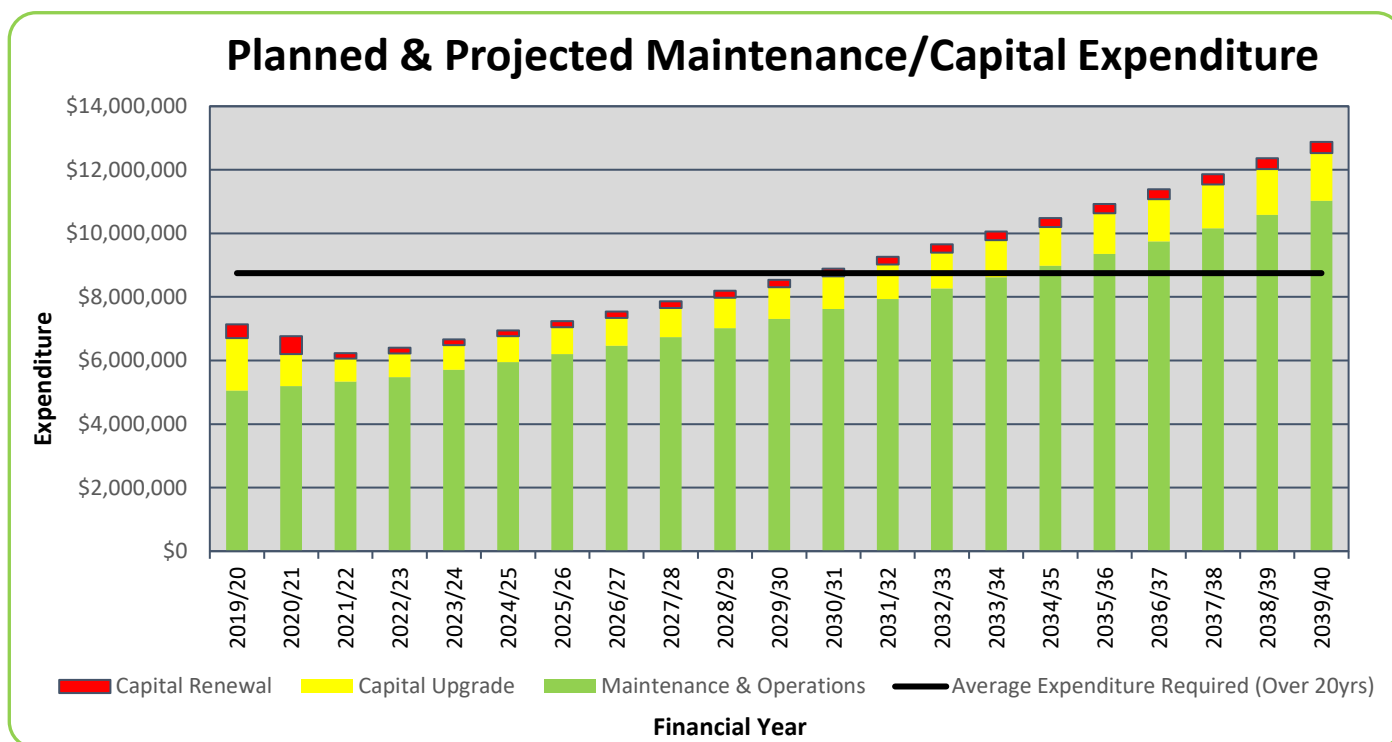
## 6. FINANCIAL SUMMARY

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 and Projected Maintenance/ 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.

#### Sewer Network Current Position:

- Total Maintenance, Operating, Capital Renewal & Upgrade Expenditure (required over 20yrs) = **\$158,747,795**
- Average Expenditure (required over 20yrs) = **\$8,748,556 p.a.**
- 2019/20 Maintenance and Operating Budget = **\$5,056,837 Year 1**
- 2019/20 Capital Renewal & Upgrade Budget = **\$2,077,086 Year 1**



### 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 **\$4,768 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 **\$7.134 million**.

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.

#### 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 20-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 20-year period to identify any gap.



Sewer Pump Station No.10, Queen Street Perthville





## 6.2 Funding Strategy

Projected expenditure identified in Section 6.1 is to be funded from Council's operating and capital budgets.

Ideally Council would maintain the sewer reticulation network at condition 1 or 2. Subterranean pipe networks make condition inspections expensive and not necessarily definitive. Further to the difficulty and expense of inspections is the maintenance work, generally in the form of renewal for pipes. Due to the 'go/no go' nature of the sewer network, the benefits of such a programme in terms of additional level of service offered to the consumers are very minimal. The balance between providing a reliable service and ensuring that the network is maintained to a level that provides long term service are the responsibility of the Council's sewer engineers with only small input from consumers.

The council funds all work to the sewer reticulation service through income raised by the wastewater levy applied to all urban residential lots. The structure of rates payable is reviewed each year and published in the annual management plan.

The current levels of funding are proving adequate in the short and medium term. An increase in the funds available for asset renewal 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 and from assets constructed by land developers and others and donated to Council.

The depreciated replacement cost (current replacement cost less accumulated depreciation) will vary over the future 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 NSW Reference Rates Manual for Valuation of Water Supply, Sewerage and Stormwater Assets published by the NSW Office of Water in June 2014. Updates on rate changes are published annually to keep valuations current.
- Annualised PPI of approximately 4.2% for the 2018/2019 financial year. A continued annualised PPI of 4.2% over the 20-year long term planning period. With the uncertainty in current markets the actual PPI may differ significantly from this figure.
- Depreciation is calculated on a straight-line method

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

- Improving the accuracy of unit rates by collecting more detailed financial information from construction work and comparing and adjusting the unit rates derived from the NSW Office of Water.



Buried sewer manhole, Beside 212 Rankin Street



## 7. ASSET MANAGEMENT PRACTICES

### 7.1 Accounting/Financial Systems

Council currently uses Civica Authority as the primary Corporate 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

### 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:	Assets Systems Administrator
Data entry:	3 x Asset Technicians
Field inspections:	Asset Inspector

Confirm consists of:

- A comprehensive sewer inventory;
- Condition rating for the sewer network where available;
- Data Management, with functional reporting procedure to present inventory and assessment information;
- Asset Accounting, AAS27 reporting capability and life cycle costing; and
- Council uses MapInfo GIS system linked to CONFIRM.
- A number of handheld GPS devices are used to collect data in the field.

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

- Ascertaining more accurate unit rates for work performed in the sewer network.
- 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. CONFIRM provides asset valuations and capitalisations. These figures are supplied to the finance system for reporting purposes.



## 8. CONCLUSION

### 8.1 Current position statement

The provision of sewer service is one of Council's Principal Activities. Council provides the sewer reticulation network to the urban area which also includes the villages of Raglan, Eglinton and Perthville.

The current network consists of **451.41km** of pipes, approximately **7,793** sewer pits and **37** pump stations. Over the last 10 years the network has increased in length at an average of **9.8km p.a.** and **10** pump stations (all small local catchment units). The average age of the pipe and pit sewer assets is **35** years. The average age of the sewer pump stations is **17** years.

The Bathurst sewer supply dates back to **1917**. There are possibly some original pipes still in use in the network, making them almost **100** years old. Approximately **25%** of the network has been assessed as in poor or bad condition, based on the age of the pipes.

The current replacement cost of the reticulation network is **\$245,068 million**.

The annual depreciation expense is **\$2.372 million**.

The current maintenance and repair budget for the entire reticulation network is approximately **\$1,560,283 p.a.**

The current sewer capital renewal budget for **2018/19 FY** is **\$2,077 million** and the current capital renewal budget required is **\$2,515 million** creating a shortfall of **-\$438,306** for year 1 of the planning period. The shortfall in funding does not allow for any upgrades of road infrastructure, only maintaining the pre-existing infrastructure.

In the medium term (10yrs) the average maintenance and capital renewal expenditure required is **\$7,953 million p.a.** and the current maintenance and capital renewal budget is **\$5,057 million**. This is average shortfall of **-\$2,896 million p.a.** The difference in the required budget when compared to the actual budget indicates that the overall Sewer network average age will continue to increase, and the overall condition could be expected to deteriorate.

The budget for maintenance and repair is currently forecast by adding an additional amount due to PPI on 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 reticulation network more surcharge incidents and a generally lower level of service could be reasonably expected.

The assets within the reticulation network have varied useful lives as published in the NSW Office of Water Reference Rates Manual, 2014. The Reference Rates manual gives useful lives of sewer pipes ranging from **40** years for ductile iron pipe to **70** years for uPVC and vitreous clay. In reality the individual assets within the pipe network have different life expectancies dependant not only the material of their construction, but the makeup of the wastewater in the pipe and the ground the pipe is laid in. Although the final assessment on capital renewal of sewer pipes will be based on the criteria in 5.4.1, asset age is the best indicator available to predict the future expenditure required to replace footpath infrastructure that has deteriorated to a point where it is no longer serviceable.

The information contained within the asset management plan sets a benchmark for the sewer 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 sewer reticulation strategies can be measured, reported on and improved in the future.



## 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 Team	Input from Sewer Section Staff	4 years
Development of advanced asset management plan for Wastewater Treatment Plan	Asset Technician	Input from WWTP Staff & Supervisors	
Improve the date of construction or replacement information within the asset register	Asset Technician/Water & Sewer Crew Supervisor	Any plans, diagrams and/or other evidence of works	



Sewer Pump Station No.34, Reid Park Mount Panorama





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