



# Gilgandra Shire Council

## Water Supply Asset Management Plan

Version 3.0 December 2016



## Water Asset Management Plan

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### Document Control

Issue	Revision	Date	Author	Reviewed by	Approved by
	0.1	May 2016	Jacqui Hansen	Mike Brearley and Mike Cuthbert	
Draft	1.0	May 2016	Jacqui Hansen	Mike Brearley	Jacqui Hansen
A	2.0	August 2016	Jacqui Hansen	Mike Brearley	Jacqui Hansen
	3.0	December 2016	Jacqui Hansen	Mike Brearley	Jacqui Hansen

## 1. Executive Summary

Council's intention is to provide the Shire with reticulated water via infrastructure that is serviced and maintained to a level which reflects the community's expectations and operates in a manner that is both functional and cost effective. The Water System had a fair value of **\$27 million** as of 30 June 2016.

This plan assists Council in the decision making process and is presented at a high level to provide key information that can be used in the determination of levels of service and funding required. Table 1.1 identifies the asset categories in this plan, whilst Table 1.2 shows the ten (10) year average costs for the various expenditure types. Figure 1.1, on the following page, also indicates the proposed expenditure over the next 10 years.

**Table 1.1 Water Asset Portfolio Overview (in 2016)**

Component	Asset Type	Details	Current Replacement Cost
Water Mains	Reticulation	49.1 km	\$7,854,043
	Trunk	13.8 km	\$3,516,498
Water Pumping Stations	Bores	Gilgandra (7) and Tooraweenah (2)	\$2,505,527
	Distribution	6	\$596,765
Water Reservoirs	Standpipe	2.27ML and 4.5ML both in Gilgandra	\$2,856,692
	Steel	0.2ML at Tooraweenah	\$156,568
	Tanks	2 in Tooraweenah	\$48,226
Water Treatment Works	Aeration Tower	Gilgandra (1) and Tooraweenah (1)	\$121,473
	Conventional	Gilgandra only	\$9,367,232
	Water Chlorinator	Gilgandra only	\$56,768
	Water Fluoridation Plant	Gilgandra only	\$117,090
Ancillary	Monitoring	Radio telemetry Gilgandra and Tooraweenah	\$74,160
<b>TOTAL</b>			<b>\$27,271,042</b>

**Table 1.2 What will we spend each year over the next ten years (in 2016 \$)?**

Expenditure Type	Planned Expenditure
Operations and Maintenance Budget	\$580,000
Renewal Budget	\$294,000
Upgrade and New Budget	\$132,000

Notes:

1. *Planned Expenditures are the 10 year annual average amounts*
2. *Upgrade/ new projects proposed in 2017, 2020, 2023 and 2024 only*

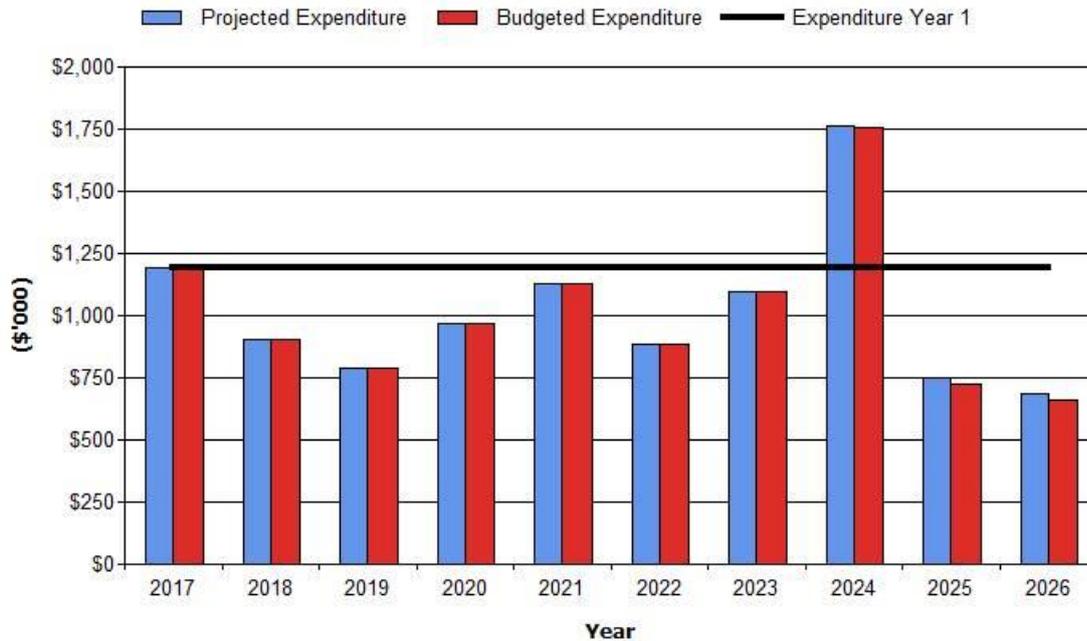
## Water Asset Management Plan

### What will we spend over the next 10 years (2016 \$M)?

Projected expenditure required to provide the target level of service in the AM Plan, compared with planned expenditure currently included in the Long Term Financial Plan, is shown in the following graphs.

**Figure 1.1: What will we spend over the next 10 years (2016 \$M)?**

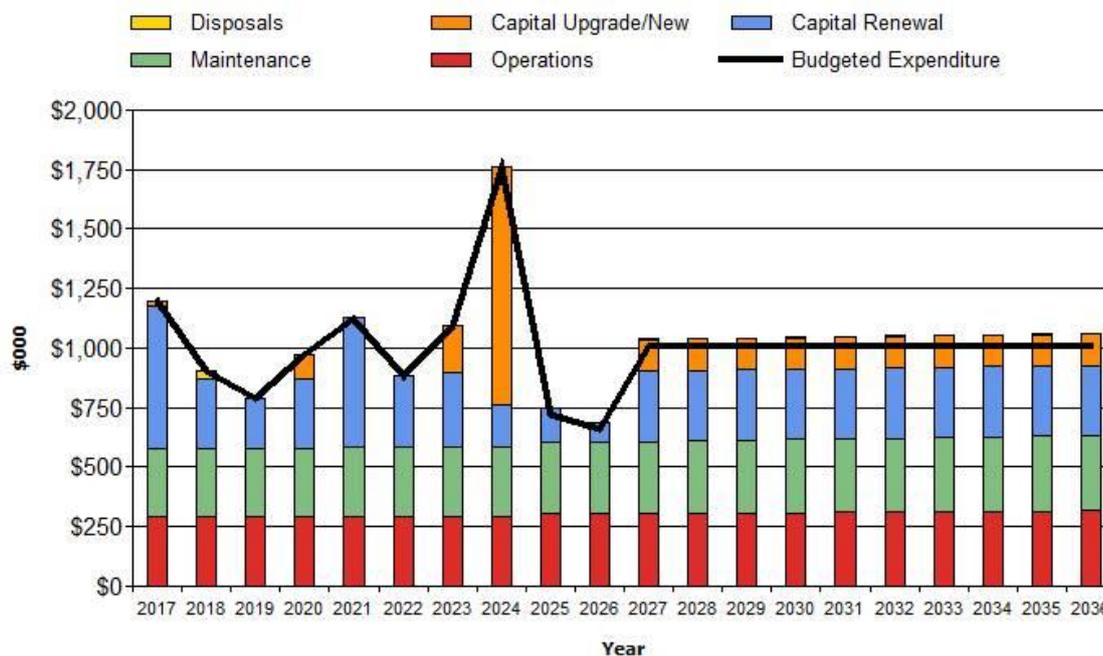
### Gilgandra SC - Projected and Budget Expenditure for (Water\_S2\_V3)



Peak in 2024 when the new West Gilgandra reservoir is constructed

**Figure 1.2: Projected capital and operating expenditure**

### Gilgandra SC - Projected Operating and Capital Expenditure (Water\_S2\_V3)

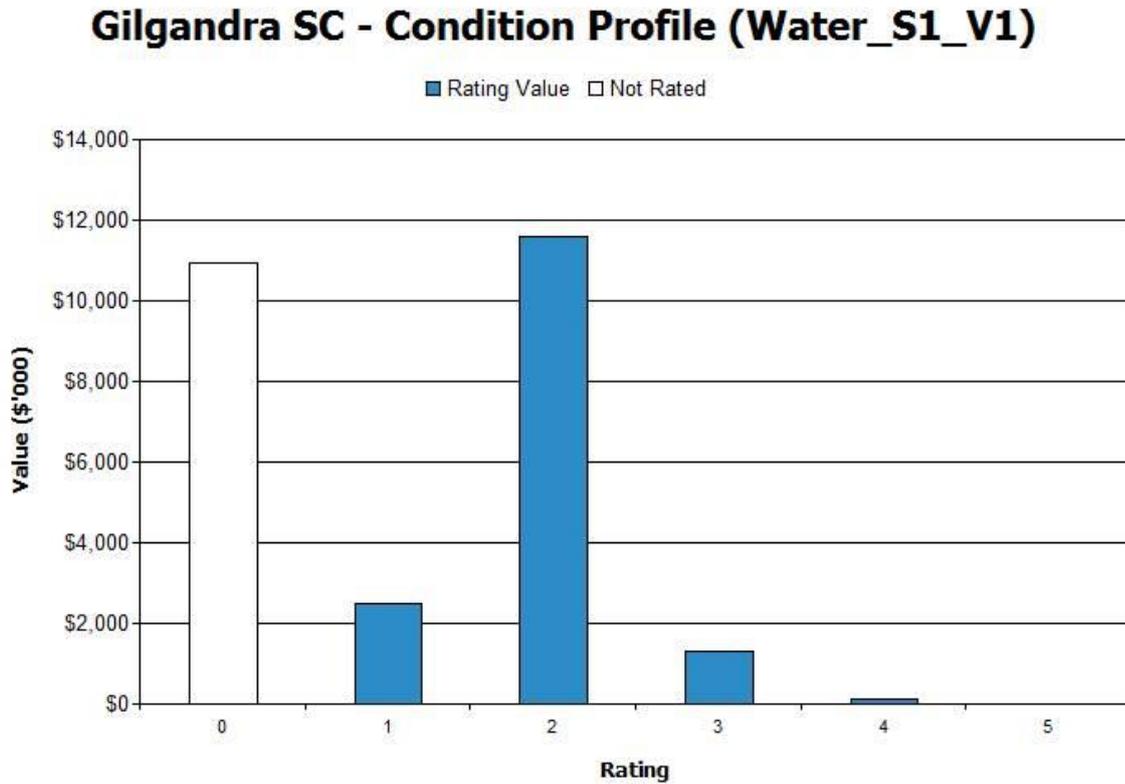


## Water Asset Management Plan

The current condition of our assets is shown in the following graph based on the value of each asset in each of 5 conditions ranging from 1 to 5, with 1 being near new and 5 as a completely failed asset. A condition grading of zero (0) indicates that the condition of the asset was not determined during most recent valuation (January 2016) and valuation proceeded based on typical useful life.

**What condition are our assets currently (\$M)?**

Figure 1.3: Condition profile

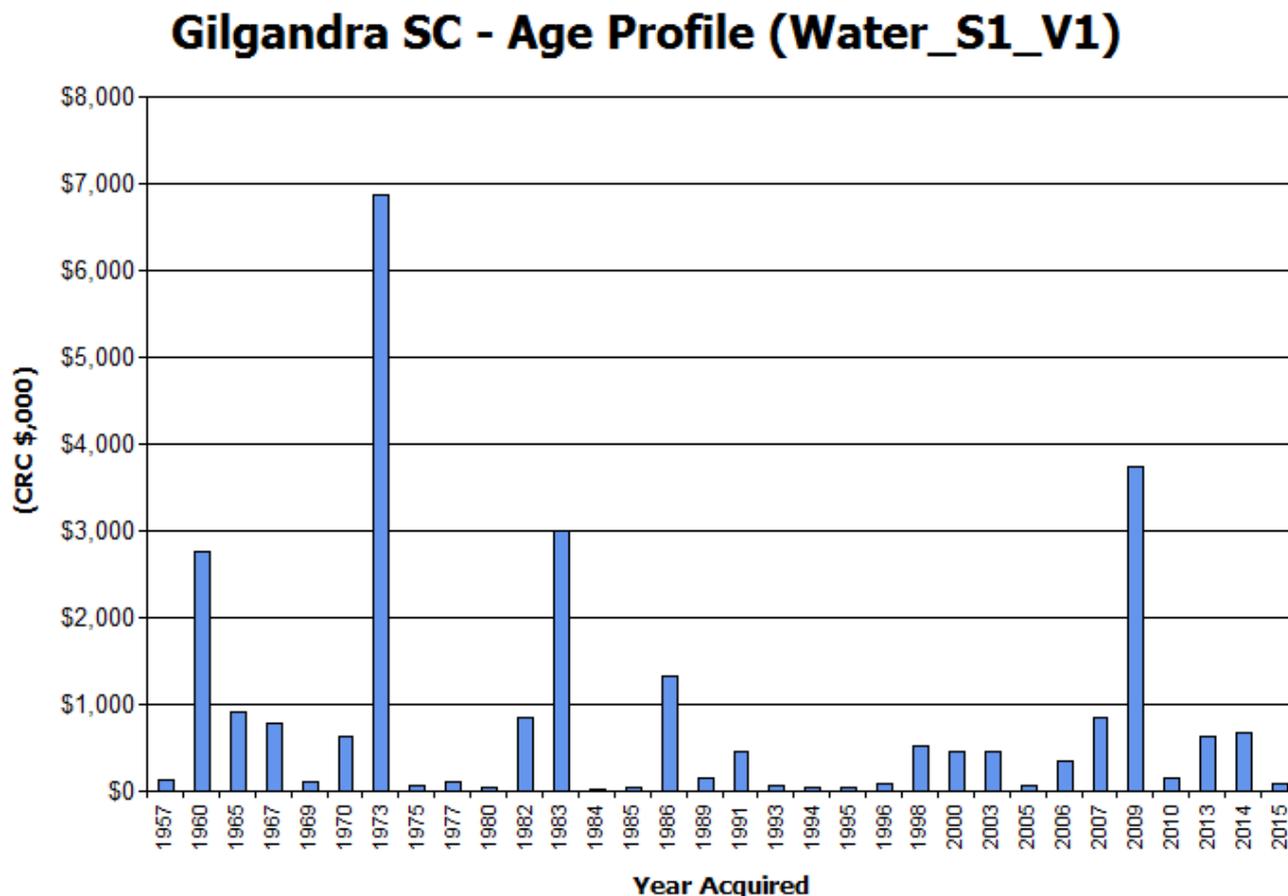


The process of managing our water supply assets is one of continually improving the knowledge of Council. This includes maintaining up to date asset registers, condition ratings, the cost of maintenance on the asset and the rate at which assets deteriorate and reach their intervention level. Section 13 contains tasks to further improve the details contained in the next Water Asset Management Plan.

**What is the age of our assets?**

Council's water treatment plant was opened in 1973, hence the spike in assets added to the network that year. Significant upgrades were last made to the water treatment plant electrical systems in 2009, leading to another spike in 2009.

**Figure 1.4: What is the age of our assets?**



**Acknowledgements**

This plan has been prepared by Jacqui Hansen and Mike Brearley, of Brearley & Hansen, consultants engaged by Gilgandra Shire Council to assist them in this process.

The development of this plan has extensively relied on knowledge and input of the staff of Gilgandra Shire Council, particularly Rolly Lawford and Brad Perera.

**Disclaimer**

This document is an Asset Management Plan for water supply assets, prepared to a format developed by Oranasoft, using the NAMS Plus online asset management tools for scenario modelling. It has been prepared for this purpose, using information made available by the client in accordance with the client's instructions. Users of this document should note the assumptions and approximations used. Any use of the document outside of the stated purpose is at the user's risk.

### 2. Strategic Objectives

Council operates and maintains these water supply assets to achieve the following strategic objectives.

1. Provide water to our customers at a standard that supports the outcomes identified in the Council Community Strategic Plan.
2. Ensure that infrastructure is maintained at a safe and functional standard as set out in this asset management plan.
3. Ensure that Water Supply Infrastructure assets are managed to deliver the requirements of Council's Asset Management Policy and Asset Management Strategy.

Gilgandra Shire Council has developed a comprehensive community engagement strategy to ensure a broad range of opinions; ideas and visions were captured to help shape the Gilgandra Community Strategic Plan (CSP).

To assist in the delivery of the objectives in this plan, a number of key documents & systems have been prepared and should be referred to in considering the findings presented:

**Table 2.1: Where can I find additional information?**

Document / System	Content
Community Strategic Plan	Outcomes and Strategies identified by the community.
Council's Asset Policy	How we manage assets.
Asset Management Strategy	Overall direction of asset management and portfolio summary.
Condition Assessment Manual	Details on the process of assessing condition, including photographic examples of various conditions.
GIS	Geographical information system that produces maps of assets.
Water Supply and Sewerage Strategic Business Plan	It gives details and supporting information for Council's Community Strategic Plan, Delivery Program and Operational Plan and Budget. To be developed following completion of this Water Asset Management Plan.
Regional Water and Drought Security Report (2014)	Gilgandra Shire Council is responsible for the water supply reticulation, sewerage and stormwater management services within the Gilgandra local government area (LGA). As a local water utility (LWU), Gilgandra Shire Council aims to be consistent with the DPI Water (formerly the NSW Department of Water and Energy), Best Practice Management of Water Supply and Sewerage Guidelines (DWE, 2007). This Drought Security report addresses localised emergency actions for drought conditions.

The Gilgandra Shire Council CSP Outcomes supported by the Water Asset Management Plan include:

- ✓ 4.1.1 Develop and implement asset management policies, strategies and plans
- ✓ 4.1.2 Develop and implement forward works infrastructure programs and plans

### 3. Services Provided & Classification

Council provides the Shire of Gilgandra and its wider rural community with a reticulated water supply that meets current drinking water standards at minimum pressures as outlined in our Customer Service Levels.

The criticality ratings and condition ratings have been reviewed and updated to reflect optimum asset management practices. This will allow Council to have a more relevant grading of its assets to determine intervention levels and renewal costs based on risk.

**Table 3.1: Criticality ratings for assets**

Criticality Grade	Water
AAA	Gilgandra Water Treatment Plant and Tooraweenah Treatment Plant
AA	Radio Telemetry Network and Trunk Mains 250mm
A	Reservoirs, Bores and Pump Stations
A	Mains 225mm
B	Mains 150mm
C	Mains 100mm or less

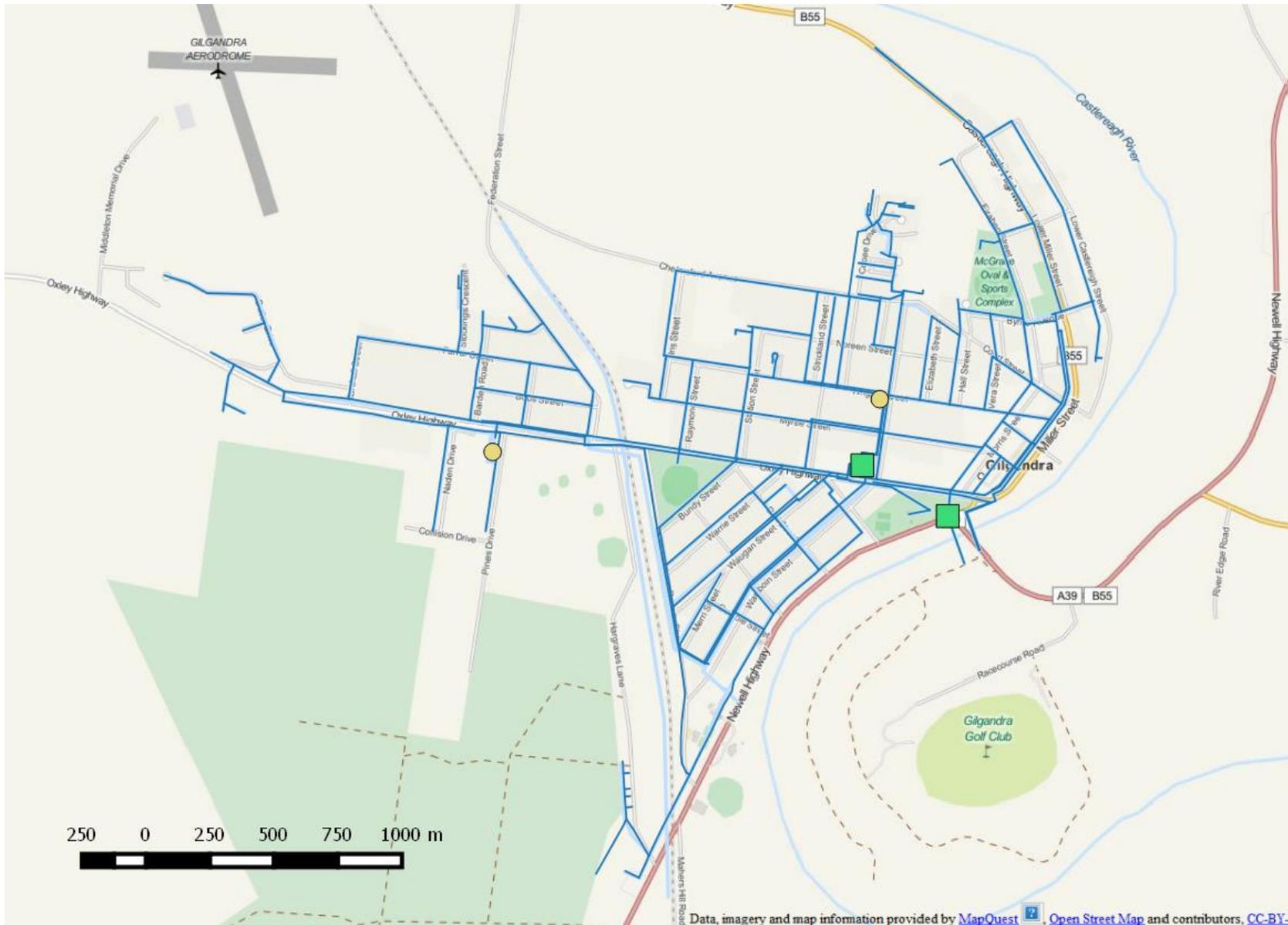
The criticality rating identifies different intervention levels for different assets depending on their assessed criticality and consequence rating. The water assets had a fair value of \$27 million as of 30 June 2016. Details of the major components are contained in Table 3.2 together with their renewal cost.

**Table 3.2: What is provided?**

Criticality	Description	Dimension	Renewal Cost
Criticality AAA	Gilgandra Water Treatment Plant	1	\$9,654,391
Criticality AAA	Tooraweenah Aeration Plant	1	\$8,137
Criticality AA	Radio Telemetry Network	2	\$74,160
Criticality AA	Trunk Mains 250mm	5.7km	\$1,849,603
Criticality A	Reservoirs	5	\$3,061,488
Criticality A	Bores	9	\$2,505,528
Criticality A	Pump Stations	6	\$596,766
Criticality A	Mains 225mm	4.6km	\$1,313,573
Criticality B	Mains 150mm	14.2km	\$2,887,101
Criticality C	Mains 100mm or less	38.5km	\$5,320,262
			<b>\$27,271,008</b>

## Water Asset Management Plan

Figure 3.1 What are the key elements of our water supply?



### Legend

Blue lines –  
reticulation mains

Green boxes –  
distribution pumping  
stations

Yellow dots –  
standpipe reservoirs

*Groundwater bores  
and trunk mains not  
shown.*

## 4. Levels of Service

Council is responsible for providing a safe, reliable and cost effective drinking water supply that is customer focused, enhances the Gilgandra Shire environment and caters for the sustainable growth of the Shire. Ongoing consultation is undertaken with the community to ensure the provision of the potable water supply is acceptable to the wider community.

Levels of service indicators have been developed for the services provided by the Water Supply Network based on the objectives set in the Community Strategic Plan. These objectives have been used to define Community Levels of Service (CLOS) which relates to how the community receives the service in terms of safety, quality, quantity, reliability responsiveness, cost efficiency and legislative compliance.

From these CLOS, Technical LOS (TLOS) have been developed that detail how these services will be delivered in terms of quantity, frequency and standard.

Finally, Key Performance Measures and how they will be measured provide the detail on how we determine whether we are delivering what they community are asking for.

Table 4.1 summarises at a high level what the community desires for each asset and how Council will deliver it. The CSP Ref column identifies the Community Strategic Plan objective that is being supported by the asset group and the LOS defined.

**Table 4.1: What does the Community want?**

CSP	The Community Wants (Community LOS)	How we Deliver this (Technical LOS)	Key Performance Measure	How Measured
4.1	A community with well constructed, maintained and managed public infrastructure including water and sewer	Reliable water supply	Incidence of unplanned interruptions	Formal records of all reports of failures leading to interrupted service without notice
			Adequate water pressure	Records of daily maximum and minimum reservoir levels. Customer advice of low pressure validated by staff inspection/measurement.
		Safe water supply	Testing for microbiological and chemical compliance	Water sampling and statutory testing

*Note: The CSP reference number relates to the Community Strategic Plan outcome that are supported by the Community LOS identified.*

## 5. Condition of Our Assets

Prior to commencement of this Water Asset Management Plan, Gilgandra Shire Council's portfolio of water and sewer assets were valued in accordance with "Fair Valuation" principles. The valuation relied upon a current condition assessment of the assets.

Hence in December 2015, a field survey, involving a physical inspection of the ground-level facility assets in Council's water supply system was conducted. Items such as treatment plants, pumping stations and reservoir exteriors were inspected. Dams or the interior of reservoirs were not inspected, given the highly specialised nature of this work.

The object of the survey was to uncover any evidence that would challenge the default useful life for that asset class such as corrosion (or lack of), obvious mechanical/electrical defects or structural damage. Field survey sheets were completed and a photographic record also was made.

Field surveyors used this information to determine a grading of condition according to the criteria in Table 5.1.

**Table 5.1 Description of condition gradings (NZWWA, 2008, p29)**

Grade	Condition	Description <sup>1</sup>
1	Very Good	Some wear or discolouration but no evidence of damage. Can include repaired assets where the repair is as good as the original. New or near new condition
2	Good	Deterioration or minor damage that may affect performance. Includes most repaired assets.
3	Moderate	Includes repaired where the repair is deteriorated. Clearly needs some attention but is still working. Structure in need of repair.
4	Poor	Either not working or is working poorly because of damage or deterioration. Condition or structure is poor or structural integrity in question.
5	Very Poor	Replace or repair. Needs urgent attention.

A grading of zero (0) was allocated if the condition could not be determined and valuation proceeded based on typical useful life.

For pressure pipelines, useful lives were reviewed in terms of pipe media and breakage history. The breakage history of the various material/age/sizes of pipe in the network was used to challenge the default useful lives provided in the Local Government Asset Accounting Manual, and considering the experience of other comparable utilities.

Table 5.2 below, provides a suggested series of responses based on the condition gradings applied. For longer life assets (say, having a typical life of 50 years or greater), a timeframe for repair or renewal is suggested.

**Table 5.2 Suggested action timescales for condition gradings (NZWWA, 2008, p30)**

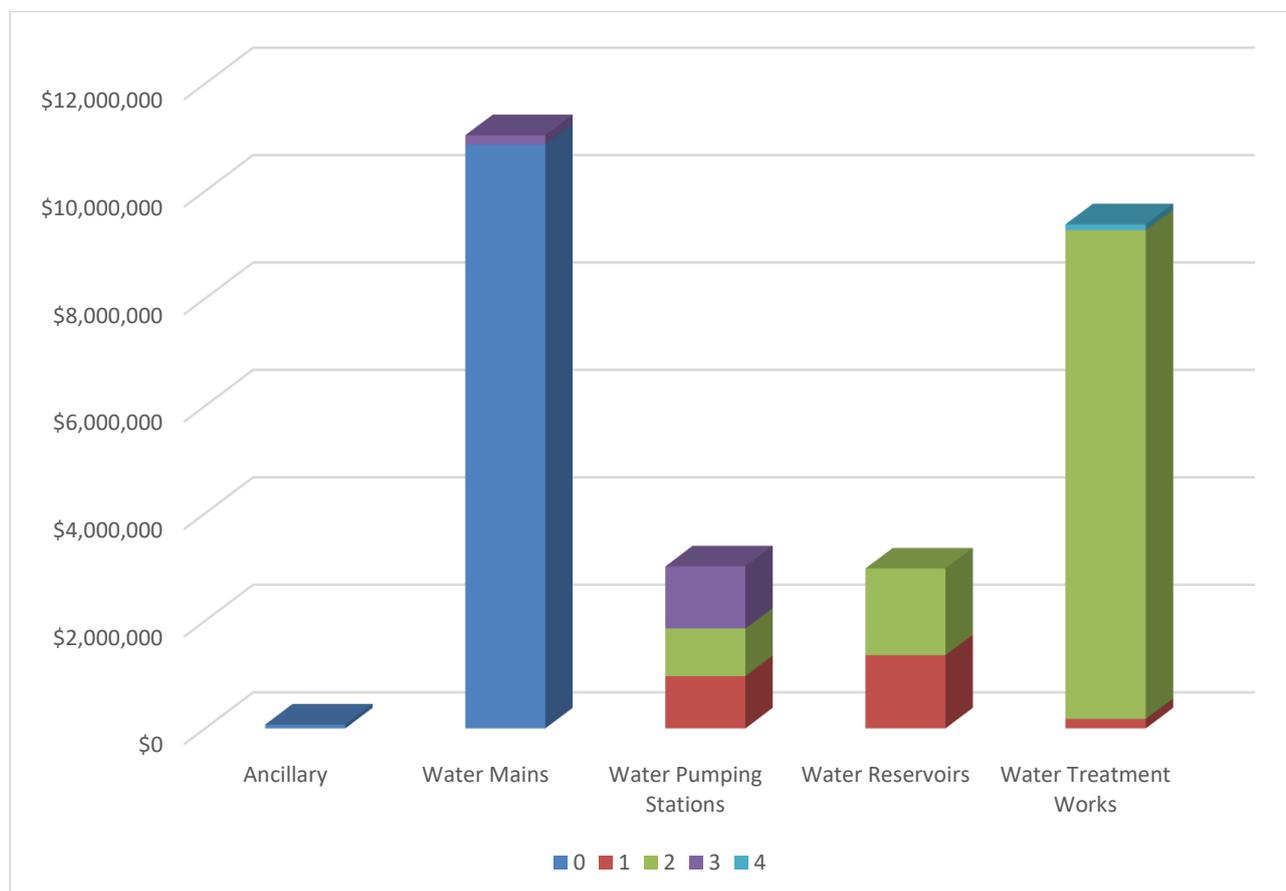
Grade	Condition	Action	Repair for longer life assets
1	Very Good	No Action required	No action needed within 20 years.
2	Good	Monitor to see if there are changes	Some action needed within 20 years
3	Moderate	Consider specialist assessment.	Some action needed within 10 years
4	Poor	Get specialist assessment or repair.	Action needed within 3 years
5	Very Poor	Replace or repair	Action required within one year.

<sup>1</sup> Based on New Zealand Water & Wastes Association (2008) *Visual Assessment of Utility Assets*. The terminology used in the *International Infrastructure Management Manual* is unhelpful as it refers to 'repairs' while many water supply and sewerage assets are not subject to any maintenance until they are near end of life.

## Water Asset Management Plan

The condition of asset is maintained in the Asset Register. Note, a condition grading for most water mains was not formally determined (condition grade zero) as to date there is no evidence to suggest that their useful life would be significantly greater or less than typical for these long life assets. Their true useful life will become evident later in their life cycle. Therefore, for the purposes of this asset management plan, pipes with a condition grading of zero can be interpreted as having a condition grading of 1.

**Figure 5.1: What Conditions are our assets?**



The valuation process identified assets that require attention in the short term. The water tower at the water treatment plant is the most urgent of these. The recommendation is as follows:

The aeration tower at the water treatment works has been graded at condition 4 (poor). In particular, there is structural cracking affecting the reinforced concrete beams supporting this elevated structure. While it may be possible to conduct repairs it may be more cost effective to replace this older style asset with a modern equivalent, such as a forced aeration tower. (Note the aqua blue colour on top of the far column of Figure 5.1 above). This replacement is scheduled for 2021 at a cost of \$200,000.

The valuation report also noted a number of Condition 3 Water supply assets i.e. assets that may require some action within 10 years: These assets include:

- Tooraweenah Water Reticulation -. The Tooraweenah non-potable water network is formalisation of an unplanned system. The initial water system was installed in 1983, with a major upgrade in 2003. The system consists of a combination of galvanised iron pipelines and MDPE polyethylene pipe ('rural grade') joined with compression couplings. The use of low standard polyethylene pipe may result in reduced life, particularly if the pipe was laid by ripping. Replacement of steel pipe mains will take place in 2016/17. A tank in Tooraweenah (3000 gallon) requires replacement within a decade.
- The mechanical and electrical components of water pumping stations No's 1 and 3, will require replacement in 5 to 10 years.

Council's 30 year capital works plan has been refined to align with the recommendations of the valuation report.

## 6. Operations

Operational activities are those regular activities that are required to continuously provide the service. These activities include asset inspection, electricity costs, fuel and overheads. The Operational Plan summarises the specific projects and activities to be achieved to meet the commitments in the Delivery Program. It spells out how the commitments of Delivery Program will be delivered as individual projects and activities that will be undertaken each year. It also forms the council's operating budget for the year.

Regular inspection and maintenance of the above ground infrastructure is completed by the field operations staff.

Council conducts regular Hydrant and Dead-End Flushing programmes as part of the reticulation maintenance for the water supply for Gilgandra Shire.

**Cleaning** – There is an allocated budget for the reticulation network pipe cleaning. Council has a developed plan for cleaning of the reticulation network and is able to use specialist contractors to carry out this work.

**Inspections** – Due to the sensitivity of contamination of the Water Supply Service Council does not internally inspect the reticulation network.

The Operational Plan for Councils water supply includes but is not limited to:

- Water Treatment Operations/Maintenance;
- Water Supply Storage Systems Maintenance;
- Pipelines, Hydrant and Meter Operation/Maintenance; and

**Table 6.1: When do we undertake Inspections?**

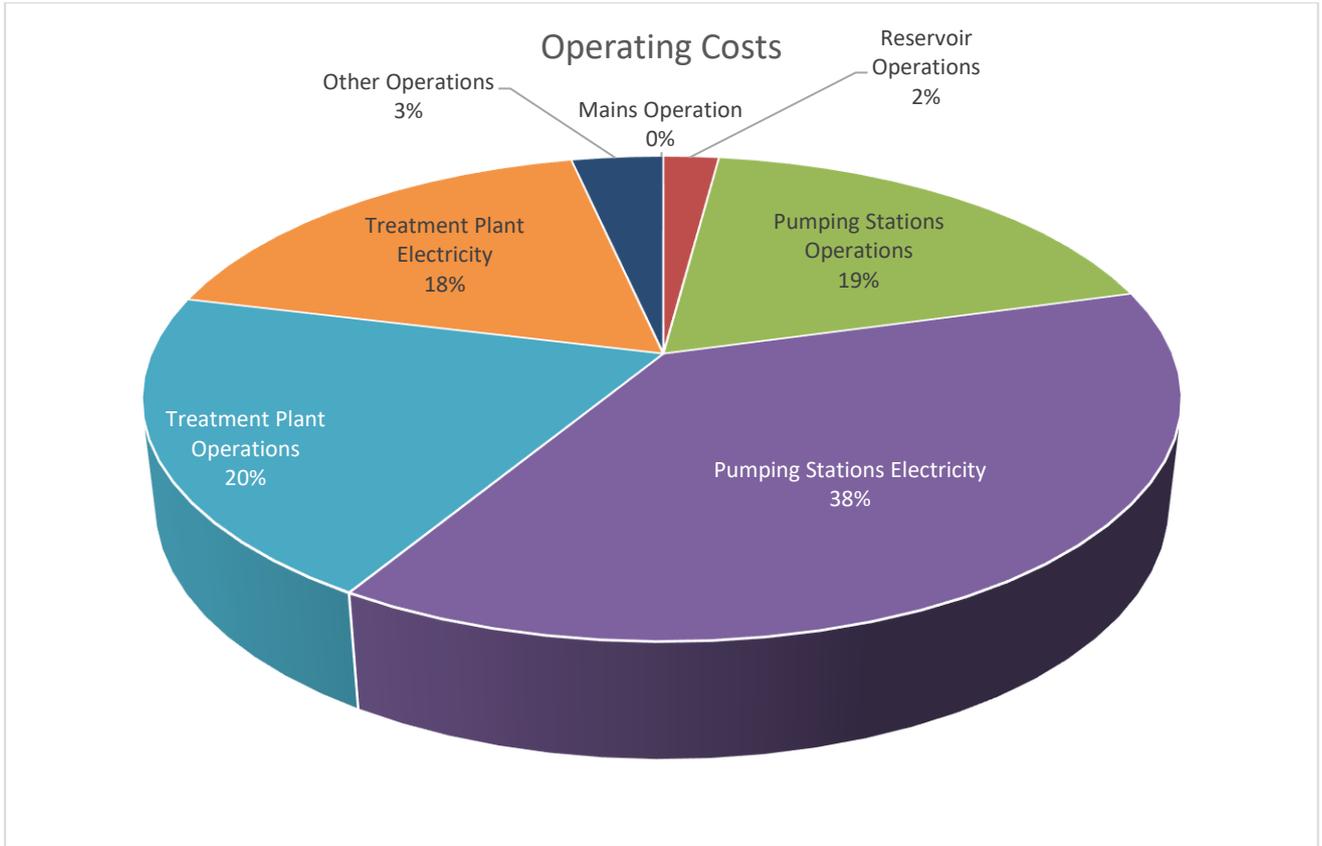
Inspection	Frequency
Condition Assessments of all Above Ground External Assets	6 monthly
Dead End Flushing	Quarterly
Hydrant Maintenance and Reticulation Mains Cleaning	Every 4 years
Safety Inspections	Quarterly
Water Storage Reservoirs	Every 4 years

**Table 6.2: What are our Operating Costs?**

Activity	Three year average (12/13, 13/14 & 14/15)
Mains Operation	0
Reservoir Operations	\$3,302
Pumping Stations Operations	\$29,873
Pumping Stations Electricity	\$60,909
Treatment Plan Operations	\$32,529
Treatment Plant Electricity	\$28,417
Other Operations	\$5,466
<b>Total</b>	<b>\$160,496</b>

## Water Asset Management Plan

Figure 6.1: What is the breakup of our Operating Costs?



## 7. Maintenance

Routine maintenance is the regular on-going work that is necessary to keep assets operating to ensure they reach their expected useful life. It includes work on an asset where a portion may fail and need immediate repair to make it operational again. It may be either planned (where works are programmed based on condition or according to a cycle), or reactive (in response to a failure, an event which leads to damage such as a storm or vandalism).

**Repairs** – As this is a critical service provided by Council all repairs are completed so that agreed customer service levels are maintained.

**Table 7.1: What are some of our Maintenance Activities and the frequency we undertake them?**

Activity	Frequency
Mains Cleaning	Every 10 years
Hydrant Maintenance	Every 3 years
Water Leakage Detection	Ongoing
Reservoir Overflow Check	Ongoing
Dead End Hydrant Flushing	Quarterly
PRV Maintenance	Annually
Pumps	10,000 hours
Reservoir Cleaning	Every 4 years

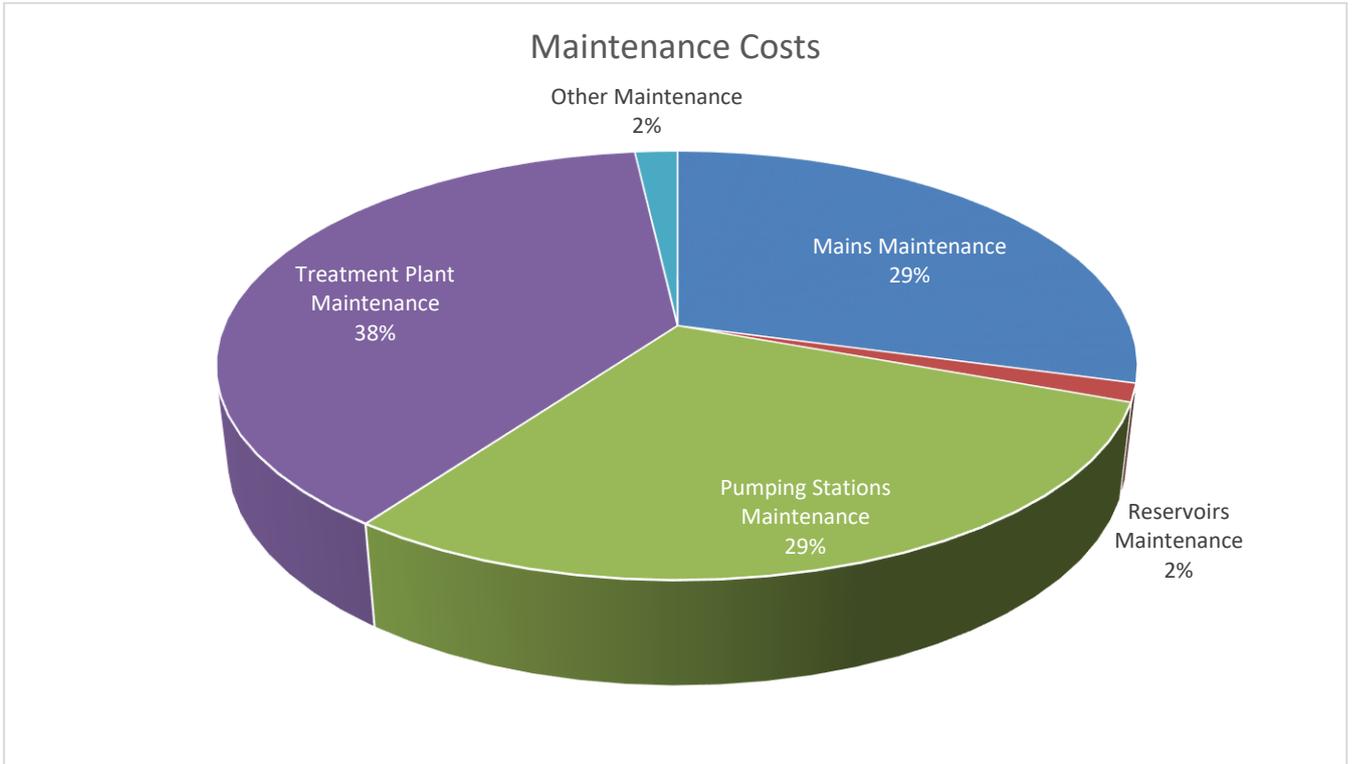
### Adjusting Levels of Service

The adjustment of LOS for a critical service, such as potable water supply, is only undertaken after consultation with the community ensuring it is still within statutory regulations and health guidelines.

**Table 7.2: What are our Maintenance Costs?**

Activity	Three year average (12/13, 13/14 & 14/15)
Mains Maintenance	\$84,106
Reservoirs Maintenance	\$3,950
Pumping Stations Maintenance	\$84,180
Treatment Plant Maintenance	\$110,077
Other Maintenance	\$5,123
<b>Total</b>	<b>\$287,436</b>

**Figure 7.1: What is the breakup of our Maintenance Costs?**



## 8. Capital Renewal / Rehabilitation

This includes work on an existing asset to replace or rehabilitate it to a condition that restores the capability of the asset back to that which it had originally. Estimated useful lives are shown in Table 8.1. below.

**Table 8.1 - Asset Useful Lives**

Asset Class	Asset Type	Adopted Useful Life
Ancillary	Radio telemetry	15
Water mains	Reticulation (AC or PVC)	80
	Reticulation (galvanised iron or rural grade polyethylene in Tooraweenah)	53
	Trunk	80
Water Pumping Stations	Bores	30
	Distribution Civil Works	Varies (Average 63)
	Distribution Mechanical/ Electrical	Varies (Average 38)
Water Reservoirs	Standpipe Structure - green	100
	Standpipe structure – white	73
	Standpipe roof	40
	Tank stands	50
	Tanks – concrete	32
	Tanks – PE	16

The adopted useful lives of assets shown in the table above are based on a condition grading approach. The useful life of an asset can vary markedly, due to factors such as construction methods, manufacturing defects, the host environment and the maintenance regime applied. Condition grading was used to adjust the useful life based on the observed condition of the asset.

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 the full replacement cost.

This Asset Management Plan contains an analysis based on broad assumptions and best available knowledge to date. Modelling is not an exact science so we deal with long term averages across the entire asset stock. Work will continue on improving the quality of our asset registers and systems to increase the accuracy of our renewal models.

Assets requiring renewal will be generally identified from estimates of remaining life and condition assessments obtained from the asset register. Candidate proposals will be inspected to verify the accuracy of the 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.

Details of planned renewal activities proposed in the current Delivery Program are detailed in Table 8.2.

Renewal projects described in Table 8.2 (on the following page). were prioritised based on the adopted Water Capital Works 30 year Plan, the outcomes of the 2016 condition assessment and recent advice on the need to replace telemetry. The 2016 condition assessment identified the need to replace or extensively refurbish the aeration tower at the water treatment plant in the short term, due to its current structural condition.

## Water Asset Management Plan

**Table 8.2: What will we spend over the next 10 years on Renewal (2016 \$,000)?**

Year	Network Renewal Projects	Estimate (\$'000)
2017	Stop valve and hydrant replacements	20
2017	Water meter replacement	20
2017	Water treatment plant - stairway	40
2017	Water treatment plant - installation of three turbidity meters	22
2017	Reservoir No 1 establish flow meter	16
2017	Reservoir No 1 replacement of stairway	92.25
2017	Bore No 1 condition casing camera assessment	25
2017	Reservoir Tooraweenah- install new tank	40
2017	Reservoir No 2 modifications to inlet and overflow pipes	40
2017	Reservoir No 1 modification to inlet and overflow pipes	40
2017	Tooraweenah steel pipe mains replacement	40
2017	Bore No#1 Water Pumping Station	200
	<b>2017 Total</b>	<b>595.25</b>
2018	Stop valve and hydrant replacements	25
2018	Water meter replacement	20
2018	Replace reticulation main in Wrigley Street - 185m	25
2018	Replace reticulation main in Wrigley Street- 530m	103
2018	Bore No 2 condition casing camera assessment	25
2018	Telemetry upgrade (\$250K for 7WPS & 19SPS split pro rata)	67
2018	Plant replacement - W&S small truck	24
	<b>2018 Total</b>	<b>289</b>
2019	Stop valve and hydrant replacements	25
2019	Water meter replacement	20
2019	Plant replacement 50% contribution	20
2019	Replace filtration system at the WTP	120
2019	Bore No 5 & 6 condition casing camera assessment	25
	<b>2019 Total</b>	<b>210</b>
2020	Stop valve and hydrant replacements	25
2020	Water meter replacement	20
2020	Plant replacement 50% contribution	20
2020	New rising main (replacement component of \$200k project)	100
2020	Main replacement	100
2020	Bore No 7 condition camera casing assessment	25
	<b>2020 Total</b>	<b>290</b>
2021	Stop valve and hydrant replacements	25
2021	Water meter replacement	20
2021	Plant replacement W&S small truck	25
2021	Main replacement	100

## Water Asset Management Plan

Year	Network Renewal Projects	Estimate (\$'000)
2021	Replace Aeration Tower at the Water Treatment Plant	200
2021	Pump station works	150
2021	Bore No 8 condition camera casing assessment	25
	2021 Total	545
2022	Stop valve and hydrant replacements	25
2022	Water meter replacement	20
2022	Plant replacement - utility	15
2022	Main replacement	100
2022	Bore No 9 condition camera casing assessment	25
2022	Reservoir No 1 internal inspections and cleaning	20
2022	Reservoir No 2 internal inspections and cleaning	20
2022	Water pumping station No 1 replace mechanical/ electrical	77.9
	2022 Total	302.9
2023	Stop valve and hydrant replacements	30
2023	Water meter replacement	20
2023	Plant replacement	40
2023	Main replacement	100
2023	Bore Tooraweenah condition camera casing assessment	25
2023	Water pumping station No 3 replace mechanical/ electrical	100
	2023 Total	315
2024	Stop valve and hydrant replacements	30
2024	Water meter replacement	20
2024	Plant replacement - truck	24
2024	Main replacement	100
	2024 Total	174
2025	Stop valve and hydrant replacements	30
2025	Water meter replacement	20
2025	Plant replacement	24
2025	Water pumping station No 2 replace mechanical/ electrical	69
	2025 Total	143
2026	Stop valve and hydrant replacements	30
2026	Water meter replacement	20
2026	Plant replacement	20
2026	Replace concrete tank 3000 gal Tooraweenah	11
	2026 Total	81
	<b>Grand Total</b>	<b>\$2.945</b>

Table 8.2 above indicates that, based on current projections, Council will spend approximately \$2,945,000 over the next ten years (\$294,500 per annum) on renewals.

## 9. Capital Upgrades & New Assets

Upgrades enhance an existing asset to provide a higher level of service, for example widening an existing road seal. New assets are those created to meet an additional service level requirement or increase the size of a network, for example, new subdivisions, or extension of the water supply network.

The requirements for new assets may result from growth, social or environmental needs. The impact from growth is included in the demand analysis within the Asset Management Strategy.

### Selection criteria

New assets and upgrade/ expansion of existing assets are identified in accordance with Council's Best Practice obligations. The scheduling of new (and upgrade) capital works are based upon an adopted level of service negotiated with the community, total asset management planning and development servicing planning which identifies the need for the new assets and the financial planning required to fund them.

Gilgandra Shire Council undertakes very limited upgrade and new asset works. These projects only occur when a new subdivision is developed or a deficiency in the actual level of service provided is identified. Table 9.1 below lists the upgrades and new works proposed by Council in the coming 10 years.

**Table 9.1: What upgraded / new assets are proposed over the next 10 years?**

Year	Capital Upgrade/ New Project	Estimate (\$'000)
2017	Coose Drive water main extension	20
2017	No upgrade/ new works proposed	
2018	No upgrade/ new works proposed	
2019	New rising main	100
2020	No upgrade/ new works proposed	
2021	No upgrade/ new works proposed	
2022	No upgrade/ new works proposed	
2023	West Gilgandra Reservoir – preconstruction works	200
2024	West Gilgandra Reservoir – construction	1,000
2025	No upgrade/ new works proposed	
	<b>Total</b>	<b>\$1,320</b>

### 10. Disposal Plan

Disposal is any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. Assets with a condition rating of 5 (poor condition), where Council has received no contact through the Customer Request System indicating that the community doesn't require the asset (as they have raised concerns or complaints about the asset condition) may be considered to be a redundant asset or not utilised and therefore decommissioned and disposed unless it is considered critical infrastructure.

Through careful analysis of all the existing assets Council may become aware of assets no longer required, and funds can, therefore, be raised through their sale. An example of this may be surplus areas of land. An added advantage is that, if such assets are sold or disposed, there will be avoided maintenance expenses in relation to those assets.

**Table 10.1: What assets are we planning to dispose of?**

Asset	Year	Cost
240m Wamboin Street 100mm AC water main – Deri to Mullion Streets	2017	\$33,200

The 100mm water main in Wamboin Street being decommissioned is an old AC water main subject to repeated leakage and breakage. It is being decommissioned because there is a parallel 150mm PVC main running along the same street. It is operationally redundant and an unnecessary maintenance burden. As a buried asset on public land it is not capable of being sold.

## 11. Financial Plan

### Funding of Water Asset Management

The best practice guidelines set out for the water pricing principles for customers are as follows:

- Pricing must raise enough revenue so that the water supply fund achieves a positive Economic Real Rate of Return (ERRR) in most years over the next 30 years.
- Residential water usage charges must be set to recover at least 75% of residential revenue.
- Access charges are to be based on the square of the diameter of the water service connection.
- Local Water Utilities (LWUs) must bill at least three times each year (and preferably every quarter).
- No land value based charges (i.e. rates)
- No “free” or “pre-paid” water allowance.

Council’s water pricing adheres to these principles.

To inform this Water Asset Management Plan, Council’s water 30 year capital works plan was financially modelled using the FINMOD software. The modelling outcomes were documented in a Financial Plan, which is compliant with the financial planning section of the Department of Primary Industries, Office of Water: “Water Supply and Sewerage Strategic Business Planning and Financial Planning Check List – July 2014”. It includes all foreseeable costs and income and achieves the lowest uniform level of stable typical residential bill to meet the levels of service derived through the asset management process.

Regarding borrowing, there are currently two loans in the water fund, both of which will be repaid over the next ten years. There is the capacity for additional borrowing throughout the 30 years, however significant borrowings are not required until the water treatment plan is to be renewed, at around 2040.

For Council’s **Water Fund**, the modelling determined that the situation is not complex. Council has developed a comprehensive 30 capital works plan that meets the renewal needs of water assets and provides new assets when required. The first decade of this capital works plan is outlined in Sections 8 (Renewal), 9 (Upgrade/ new) and 10 (Disposal) of this AM Plan.

The typical residential bill for water fund is currently \$775 (*Source: Table 6 of “2014-15 NSW Water Supply and Sewerage Benchmarking Report”*). FINMOD financial modelling results predict that the current typical residential bill will meet the modelling objectives. It is recommended that Council maintain the existing typical residential bills for water fund, with increases in line with inflation. **The Water business is capable of funding new and replacement assets needed to provide the current level of service to its customers and the broader community.**

Funding for management of assets can come from a variety of sources as detailed in the table below.

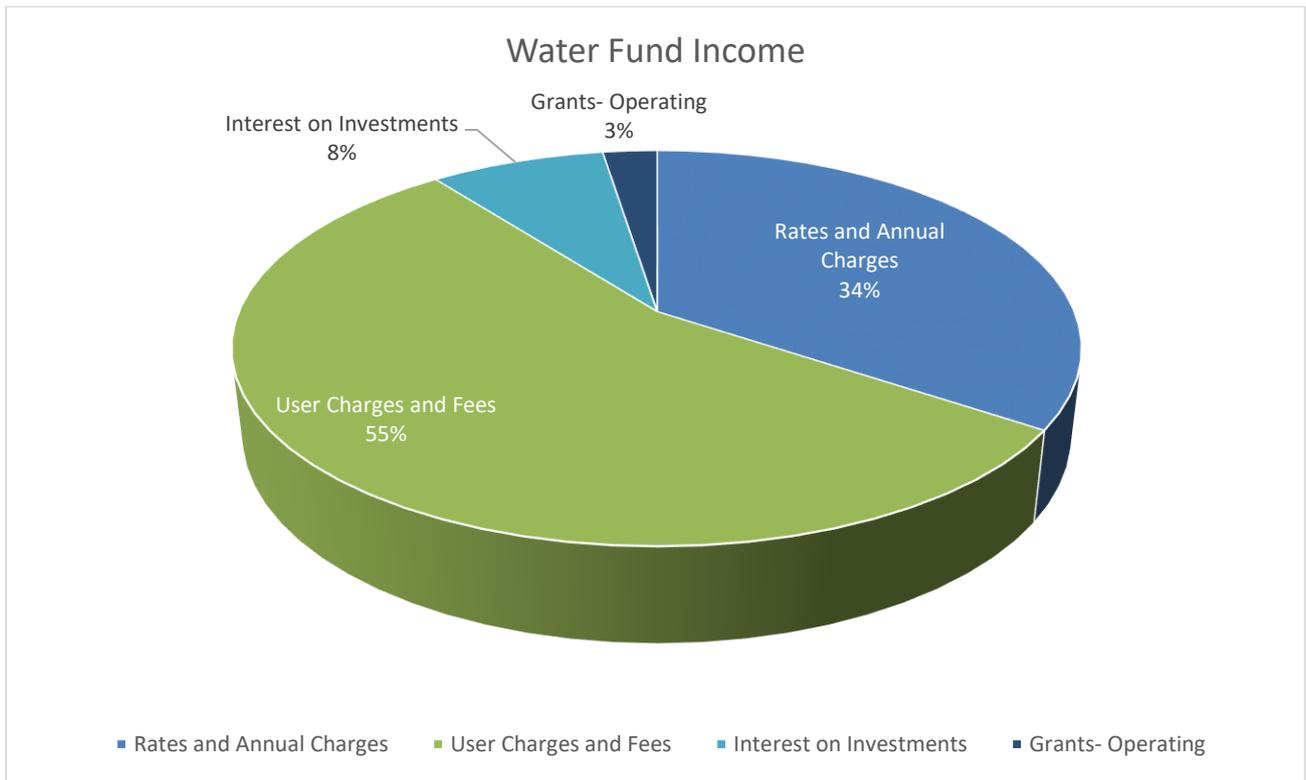
**Table 11.1: Where does our Income come from?**

Activity	2016/17	2015/16	2014/15	2013/14
Annual Charges	\$347,310	\$319,582	\$300,240	\$291,747
User Charges and Fees	\$561,043	\$530,545	\$412,245	\$444,684
Interest on Investments	\$74,692	\$61,860	\$72,783	\$70,663
Other Revenue	\$0	\$0	\$0	\$0
Grants- Operating	\$26,055	\$26,660	\$21,786	\$12,733
Grants - Capital	\$0	\$1,110,000	\$0	\$0
<b>Total</b>	<b>\$1,009,100</b>	<b>\$2,048,647</b>	<b>\$807,054</b>	<b>\$819,827</b>

*Source: Council’s Operational Plans (2013/14, 2014/15, 2015/16 and 2016/17)*

Forecast income for 2015/16 is \$1,009,100.

Figure 11.1: What is the breakup of our income streams?



Source: Council's Operational Plans (2013/14, 2014/15, 2015/16 and 2016/17) Forecast Operating Statements, three year average income, excluding Capital Grants.

**Sustainability of Service Delivery**

**Asset Renewal Funding Ratio**

Asset Renewal Funding Ratio                      **100%**

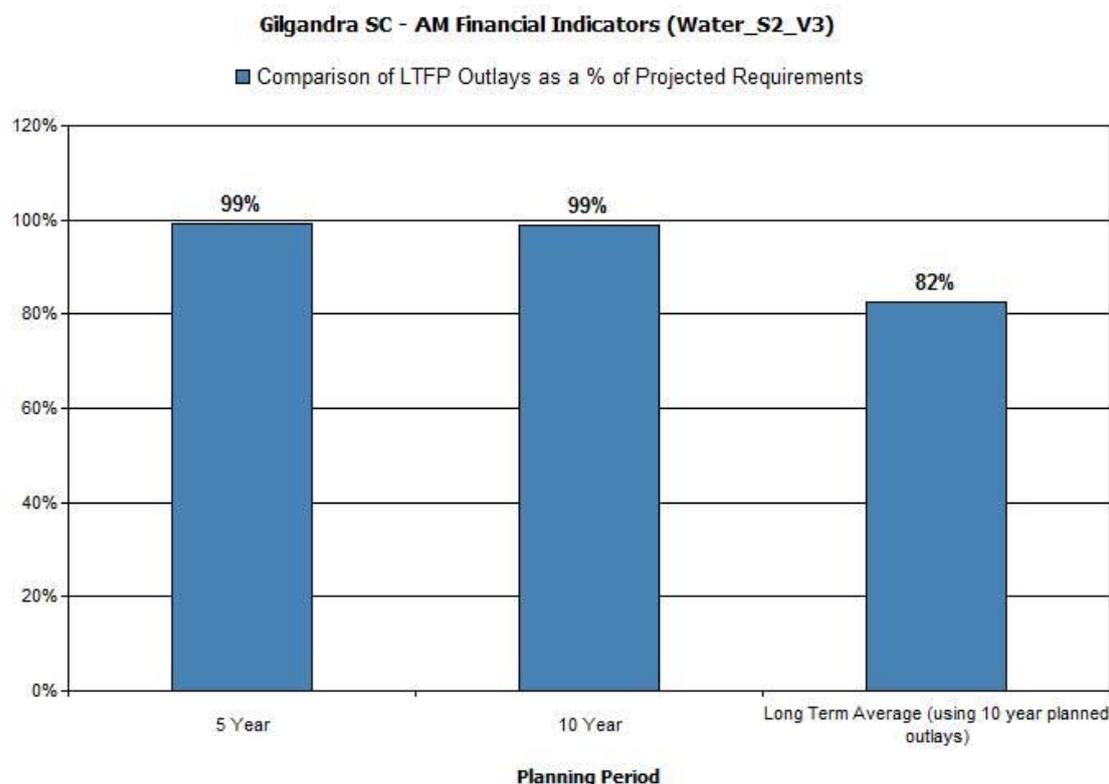
The Asset Renewal Funding Ratio is the most important indicator and reveals that over the next 10 years, Council is forecasting that it will have 100% of the funds required for the optimal renewal and replacement of its assets. Council is prudently replacing assets before they reach end of life and failure occurs.

## Water Asset Management Plan

### Asset management financial indicators

Figure 11.2 shows the asset management financial indicators over the 10 year planning period and for the long term life cycle.

**Figure 11.2: Asset Management Financial Indicators**



### Modelling of Scenarios

Providing services from infrastructure in a sustainable manner requires the matching and managing of service levels, risks, projected expenditures and financing to achieve a financial indicator of approximately 1.0 for the first years of the asset management plan and ideally over the 10 year life of the Long Term Financial Plan.

For this Asset Management Plan, two different scenarios were modelled using the NAMS Plus online asset management tools.

1. Scenario 1 – Using the Asset Register to determine projected renewals from remaining useful life
2. Scenario 2- Using planned renewals from Council's adopted Water Capital Works 30 year Plan

Gilgandra Shire Council's water assets are reasonable condition. The condition assessment which took place in late 2015 identified a few assets reaching end of life in the next ten years. As a result, the projected renewal expenditures identified by the Scenario 1 modelling outcomes are lean.

According to the Scenario 1 modelling, Council is overspending on asset renewal in the short term, with an unfunded major renewal of the water treatment plant is forecast for 2041. This result does not reflect the capital works planning undertaken by Council and is unrealistic.

It was therefore necessary to model Scenario 2 using the renewal expenditure itemised in the Water Capital Works 30 Year Plan. The items in the Water Capital Works 30 Year Plan have been included by staff based on their detailed knowledge of the asset portfolio and its renewal needs, and has been informed by the useful life information extracted from the valuation report. It can be considered an indicator of the renewal spending actually required to replace assets in the short term as they approach end of life and before they fail. The Scenario 2 modelling revealed that Council's proposed spending on asset renewals was appropriate and lead to balanced financial indicators, as shown in Figure 8 above.

## 12. Key Performance Measures

Development of Key Performance Measures (KPM's) based on condition have been developed by considering the statutory regulated quality of potable water and agreed customer service levels. The KPM's are to be reviewed to align with the Technical LOS and the Strategies identified in the CSP that support the outcomes identified in Levels of Service section of this document.

**Table 12.1 Performance Measures**

Key Performance Measure	Level of Service	Target	Current
Incidence of unplanned interruptions	Water to be available to customers when required with minimal planned and no unplanned interruptions	<10	11 incidents of unplanned interruptions to water in 2014/15
Adequate water pressure	Water pressure is sufficient to meet customers' needs	Average operating pressure of 19m across the network, checked regularly to ensure compliance	No consistent methodology for checking pressure
Compliance with "Australian Drinking Water Guidelines 2004" issued by the National Health and Medical Research Council (NHMRC) and ARMCANZ	Water is suitable for drinking	100% compliance	In 2014/15, 93.88% of samples achieved microbiological compliance. For chemical compliance 96.8% of samples achieved compliance for fluoride, while other elements were fully compliant

### 13. Plan Improvements

The Asset Improvement Plan is intended to provide improvements in the knowledge of our assets and their management. This plan will ensure that acceptable progress is made on improving asset management processes and procedures and that progress can be verified and quantified.

In addition to the Asset Management Strategy improvements, the following improvements in the way building assets are managed and planned for the coming 12 months:

Task	Expected Completion
Review of capital works planning to align with the recommendations of the valuation report	Completed
Prepare a new Financial Plan using FINMOD software to estimate a typical residential bill and to confirm financial sustainability of the water fund	Completed
Update this AM Plan, with Scenario 2 Modelling once the financial plan has been developed using FINMOD and a new capital works plan prepared using the 2015 valuation report, to give a more reliable outcome and robust future projections.	Completed
Review of maintenance planning to align with the specific recommendations of the valuation report	December 2016
Monitor levels of service (KPM) and document outcomes. Use to plan service improvements	On-going

## 14. Risk Management Plan

Council is committed to assessing risks associated with hazards and mitigating assessed risks where practicable.

Delivering services through infrastructure is broad, complex and involves significant capital outlays. Managing risks is a key element in the management of infrastructure assets, particularly in the balance of desired/required levels of service and available funding. Capital projects could lead to significant financial losses unless they are managed carefully. Such projects often involve unbalanced cash flows, when large initial investments are necessary before any returns are obtained.

For assets with potentially long lives, risks associated with changing economic conditions, varying levels of demand for services, new competition and maintenance and disposal requirements needs to be analysed and managed to ensure the investment is worthwhile. These impact of these risks should be tested through the financial planning process.

Size is not the only consideration. Projects or programs, which are inherently complex will also benefit from particular attention to Risk Management. This might occur when there are important economic or financial aspects, sensitive environmental or safety issues, or complex regulatory and licensing requirements.

Risk Management will be considered in the development of individual Asset Management Plans. Systematic management of risk is a large task requiring a continuous improvement approach. Most service areas are managing operational risk and our challenge is to manage all risks through a consistent framework of infrastructure asset management plans and risk management plans. From this Plan the following key Risks have been identified:

**Table 14.1 Critical Risks and Treatment Plans**

Asset at Risk	What can Happen	Risk Treatment Plan
Chlorination plant failure	Death or serious injury	Council has plans to issue a boil water alert in conjunction with NSW Health should this occur
Water treatment works failure	Death or serious injury	Council has plans to impose water restrictions should this occur
Contamination of the water supply distribution system	Death or serious injury	Council has plans to issue boil water alerts and undertake flushing
Reservoir contamination	Death or serious injury	Council has plans to drain the contaminated reservoir and refill them
Major power failure	Loss of production	Council has plans to impose water restrictions should this occur
Bore failure	Loss of production	Council has multiple bores with a degree of redundancy. Water can be extracted from the river in an emergency.

One of the outcomes of this assessment is the determination of **Critical Assets** Critical assets are specific assets which have a high consequence of failure but not necessarily a high likelihood of failure by identifying critical assets and critical failure modes, Council can appropriately target and refine inspection regimes, maintenance plans and capital expenditure plans.

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

The identification of critical pipe assets has been identified using Table 5.1. Reservoirs where there is a potential for failure to risk public safety or property have also been identified as critical, as has the Water Treatment Plant. Table 14.2 identifies the critical assets for the water network.

## Water Asset Management Plan

**Table 14.2 Critical Assets**

Critical Assets	Critical Failure Mode	Treatment Plan
Water Treatment Plant	Civil, electrical or chemical failure	Scheduled maintenance and regular inspection regime to ensure that it is functioning as required
Bores	Power failure, pump failure or blockage	Scheduled maintenance of pumps and equipment. Regular casing camera assessment.
Reservoirs	Failure due to structural deterioration or contamination of water storage	Scheduled structural inspections and maintenance of vermin proofing including internal cleaning of the reservoirs.

15. Appendix A: Budgeted Expenditures Accommodated in LTFP

**NAMS.PLUS3 Asset Management Gilgandra SC**

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**Water\_S2\_V3 Asset Management Plan**

First year of expenditure projections **2017** (financial yr ending)

**Water**

**Asset values at start of planning period**

Current replacement cost	\$27,273 (000)
Depreciable amount	\$24,944 (000)
Depreciated replacement cost	\$14,810 (000)
Annual depreciation expense	\$474 (000)

Calc CRC from Asset Register

\$0 (000)

This is a check for you.

**Operations and Maintenance Costs for New Assets**

Additional operations costs	1.06%
Additional maintenance	1.06%
Additional depreciation	1.90%
Planned renewal budget (information only)	

% of asset value

You may use these values calculated from your data or overwrite the links.

**Planned Expenditures from LTFP**

**20 Year Expenditure Projections**

Note: Enter all values in current **2017** values

Financial year ending	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000
<b>Expenditure Outlays included in Long Term Financial Plan (in current \$ values)</b>										
<b>Operations</b>										
Operations budget	\$190	\$190	\$190	\$190	\$190	\$190	\$190	\$190	\$190	\$190
Management budget	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100
AM systems budget	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total operations</b>	\$290	\$290	\$290	\$290	\$290	\$290	\$290	\$290	\$290	\$290
<b>Maintenance</b>										
Reactive maintenance budget	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180
Planned maintenance budget	\$110	\$110	\$110	\$110	\$110	\$110	\$110	\$110	\$110	\$110
Specific maintenance items budget	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total maintenance</b>	\$290	\$290	\$290	\$290	\$290	\$290	\$290	\$290	\$290	\$290
<b>Capital</b>										
Planned renewal budget	\$595	\$289	\$210	\$290	\$545	\$303	\$315	\$174	\$143	\$81
Planned upgrade/new budget	\$20	\$0	\$0	\$100	\$0	\$0	\$200	\$1,000	\$0	\$0
<b>Non-growth contributed asset value</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Asset Disposals</b>										
Est Cost to dispose of assets	\$0	\$33	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Carrying value (DRC) of disposed assets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0