**BERRIGAN SHIRE COUNCIL** 



# WATER SUPPLY

# ASSET MANAGEMENT PLAN



Adopted by Council on 24 February 2011

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The Institute of Public Works Engineering Australia.

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### ABBREVIATIONS

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

vph Vehicles per hour

### GLOSSARY

### Annual service cost (ASC)

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

### Asset class

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

### Asset condition assessment

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

### Asset management

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

### Assets

Future economic benefits controlled by the entity as a result of past transactions or other past events (AAS27.12).

Property, plant and equipment including infrastructure and other assets (such as furniture and fittings) with benefits expected to last more than 12 month.

### Average annual asset consumption (AAAC)\*

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

### Brownfield asset values\*\*

Asset (re)valuation values based on the cost to replace the asset including demolition and restoration costs.

### Capital expansion expenditure

Expenditure that extends an existing asset, at the same standard as is currently enjoyed by residents, to a new group of users. It is discretional expenditure, which increases future operating, and maintenance costs, because it increases council's asset base, but may be associated with additional revenue from the new user group, eg. 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, eg. resurfacing or resheeting a material part of a road network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

### Capital upgrade expenditure

Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretional and often does not result in additional revenue unless direct user charges apply. It will increase operating and maintenance expenditure in the future because of the increase in the council's asset base, eg. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

### Carrying amount

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

### Class of assets

See asset class definition

### Component

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

### 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/subcomponents 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 arms 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, eg. roads, drainage, footpaths and cycleways. These are typically large, interconnected networks or portfolios of composite assets The components of these assets may be separately maintained, renewed or replaced individually so that the required level and standard of service from the network of assets is continuously sustained. Generally the components and hence the assets have long lives. They are fixed in place and are often have no market value.

### Investment property

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

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

(b) sale in the ordinary course of business (AASB 140.5)

### Level of service

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

### Life Cycle Cost \*\*

The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises annual maintenance and asset consumption expense, represented by depreciation expense. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.

### Life Cycle Expenditure \*\*

The Life Cycle Expenditure (LCE) is the actual or planned annual maintenance and capital renewal expenditure incurred in providing the service in a particular year. Life Cycle Expenditure may be compared to Life Cycle 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 (eg 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 (eg 5, 10 and 15 years).

### Maintenance expenditure

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

### Materiality

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

### Modern equivalent asset.

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

#### Non-revenue generating investments

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

### Operating expenditure

Recurrent expenditure, which is continuously required excluding maintenance and depreciation, eg 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.

### **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, eg public halls and theatres, childcare centres, sporting and recreation facilities, tourist information centres, etc.

### **Risk management**

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

### Section or segment

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

### Service potential

The 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 water supply network in each of its four townships to enable extraction, treatment and delivery of the garden and filtered water supplies at highest standards.

The Asset Management Plan covers the infrastructure assets listed in Table 2.1 below:

 Table 2.1. Assets covered by this Plan

Asset category	Dimension	Replacement Value (\$M)
Water treatment plants	4	11,053,000
Water storage dams	5	1,320,000
Service reservoirs	11	7,151,000
Water mains		
<ul> <li>Gravity Mains</li> <li>Rising and Trunk Mains</li> </ul>	192.3 km 18.4 km	14,848,352 2,650,375
Pump stations	11	1,163,000
TOTAL		38,185,727

### What does it Cost?

There are two key indicators of cost to provide the water supply service.

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

The life cycle cost to provide the water supply service is estimated at **\$839,188**per annum. Council's planned life cycle expenditure for year 1 of the asset management plan is **\$1,219,190** which gives a life cycle sustainability index of 1.45.

The total maintenance and capital renewal expenditure required to provide the water supply service the in the next 10 years is estimated at **\$4,888,450**. This is an average of \$488,845 per annum.

Council's maintenance and capital renewal expenditure for year 1 of the asset management plan of **\$1,219,190** giving a 10 year sustainability index of **2.49**.

### Plans for the Future

Council plans to operate and maintain the water supply network to achieve the following strategic objectives.

- 1. Ensure the water supply network is maintained at a safe and functional standard as set out in this asset management plan.
- Ensure sufficient funds are raised through its fees and charges policy to provide for water assets renewal over the life of the assets.
- 3. Meet the Australian Drinking water Guidelines in terms of quality and community expectations.

### Measuring our Performance

### Quality

Water supply 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 water supply network is maintained in partnership with other levels of government and stakeholders to extract, treat and deliver the garden and filtered water supplies at highest standards.

Water supply asset attributes will be maintained at a safe level and associated signage and equipment be provided as needed to ensure public safety. We need to ensure key functional objectives are met:

- Water is extracted from the river/channel, disinfected/treated in a water treatment plant and delivered to users through its reticulation system.
- The operation and maintenance of the water supply network does not have adverse effect on the environment, and does not cause damage to private properties or public places.

The main functional consequence of ensuring the water supply network is maintained at a safe and functional standard as set out in this Asset Management Plan is the continued provision of the water supply to the four townships within the Berrigan Shire at a level acceptable by the community and in compliance with the standards.

### Safety

We inspect all water supply infrastructures regularly and prioritise and repair defects in accordance with our inspection schedule to ensure they are safe.

### The Next Steps

Task

No

1.

2.

3.

4.

5.

6.

This actions resulting from this asset management plan are:

Complete the Improvement plan as set out in table • 8.2.

> and disposed of assets. the

maintenance costs,

renewal, upgrade and new.

the desired level of service.

operation

maintenance costs into reactive, planned

and cyclic. Capital cost to be split into

Undertake a customer satisfaction survey

and consult with the community to identify

and

Separate

Table 8.2 Improvement Plan Resources Task Timeline Responsibility Required Water Assets Audit the Register and June breakdown the large assets into individual EE, TOA Staff 2012 components. Update the Asset Register and add the June unregistered assets (water meters, valves, EE, TOA Staff 2012 fire hydrants, etc). Inspect and assess the conditions of all water assets in order to estimate the June EΕ Staff remaining life and reassess the useful life 2012 of the assets. Establish a reporting system to update the Asset Register as per feedback from the EE. TO W & S. June Staff field including new assets, renewed assets TOA 2012

and

the

FΜ

DCS

costs split Make provision for the completion of the Capital

June

2010

March

2013

Staff

Staff/External

Works Program attached as Appendix C. Carry out community consultation.

### **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 required to provide the required levels of service.

The asset management plan is to be read with the following associated planning documents:

Berrigan Shire Council Management Plan

Report on Water and Wastewater Infrastructure Maintenance Strategy, GHD, 1997

Water Supply Strategic Business Plan, Fisher Stewart, 1997

OH&S Audit Report of the Water and Sewerage Schemes Facilities, DPWS, 1999

Finley Urban Water Plan, DPWS, 2000

Planning Workshop No. 2 Report, DPWS, 2000

Water and Sewerage Strategic Business Planning Review, DPWS, 2001

Water and Sewerage Strategic Business Planning Review, BSC, 2004

Berrigan Shire Council – State of Environment Report, 2008

This asset management plan covers the following infrastructure assets:

Water supply assets including: water treatment plants, water storage dams, water reservoirs, water mains and water pump stations for the townships of Barooga, Berrigan, Finley and Tocumwal.

Asset category	Dimension	Replacement Value (\$M)
Water treatment plants	4	11,053,000
Water storage dams	5	1,320,000
Service reservoirs	11	7,151,000
Water mains		
Gravity Mains	192.3 km	14,848,352
Rising and Trunk Mains	18.4 km	2,650,375
Pump stations	11	1,163,000
TOTAL		38,185,727

Table 2.1. Assets covered by this Plan

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

- 3 -

State Local Members	Represent community interest
Department of Water and Energy (DWE)	Deliver the Government's policy and responsible for management of water supply
Department of Commerce	Provide technical support to water authorities
Murray Irrigation	provide irrigation water and operate water canals and drains
NSW EPA	Provide advice on water pollution and treatment and protects water resources
NSW Health Department	Monitor and provide advice on water quality
Murray Catchment Management Authority	Responsible for managing natural resources at the catchment scale.
Berrigan Shire Council	Provide high quality water and water services to customers while complying with the legislations

### 2.2 Goals and Objectives of Asset Management

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

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

- Taking a life cycle approach,
- 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>1</sup>

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

Council's vision is:

<sup>1</sup> IIMM 2006 Sec 1.1.3, p 1.3

The vision of the Berrigan Shire Council is to create a sustainable, healthy and vibrant community that takes advantage of economic opportunities, promotes innovation and diversification, realises the potential of existing businesses and welcomes compatible strategic investment into the Shire.

COUNCIL – ASSET CATEGORY ASSET MANAGEMENT PLAN

In expanding the Council's vision to the 30 year planning horizon for the provision of water supply services, the following expectations have been identified:

- Government policy provides regional and local leadership.
- Council will shape Government policy to better serve the community.
- □ A sense of belonging and pride will come from a partnership between Council and the community.
- **Quality of life means a clean, safe environment with high social and community values**
- □ Infrastructure will be properly planned and maintained.
- **Economic development.**
- **Quality and value for money demonstrated by market testing and benchmarking.**

Council's vision has implications for the provision of the water supply services to provide excellence in service to the community to enable enhanced quality of life. This will be achieved through:

Integrity Leadership Selflessness Objectivity Accountability Openness Honesty Respect Trust and teamwork Advocacy Partners

### 2.3 Plan Framework

Key elements of the plan are

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

A road map for preparing an asset management plan is shown below.

### Road Map for preparing an Asset Management Plan

Source: IIMM Fig 1.5.1, p 1.11



### 2.4 Core and Advanced Asset Management

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

Future revisions of this asset management plan will 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

Council has not carried out any research on customer expectations. This will be investigated for future updates of the asset management plan

### 3.2 Legislative Requirements

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

Legislation	Requirement
Local Government Act	• 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.
Environmental Planning and Assessment Act 1979	Requirement for LEP and DCP's.
	<ul> <li>Council control of service approvals.</li> </ul>
Catchment management Act 1989	Requirement for ongoing management plan.
	• Promotes the coordination of activities within catchment areas.
	• Under the provision of this Act, Local Catchment Management Committees can be established to oversee this process in the region.
Soil Conservation Act 1938	Preservation of water course environment.
Public health Act	Effluent and waste disposal methods.
	Delivery of quality water supply services.
Public Works Act	Role of DPWS in planning and construction of new assets.
Water Act 1912	Water rights, licenses, allocations.
Water Authorities Act 1987	Determining developer charges.

Table 3.2. Legislative Requirements

Occupational health and Safety Act	Impacts all operations.	
	• Note public safety – insurance.	
	Cost implications.	
	• Council's responsibility to ensure health, safety and welfare of employees and others at places of work.	
Independent Pricing and Regulatory Tribunal Act 1992	Charging guidelines.	
	• Trends toward a user pay system in the industry.	
	<ul> <li>Gives powers to the Independent Pricing and regulatory Tribunal to inquire into and regulate prices.</li> </ul>	
Protection of the Environment Operations Act 1997	Control of run-off or escape of contaminants entering water courses.	
	<ul> <li>Regulating pollution activities and issue of licenses as well as the monitoring of and reporting on waste output.</li> </ul>	
	• This act includes "Due Diligence requirements, disposal procedures for chemicals and sludge and details penalties for causing environmental impacts.	
Native Titles Act	Provides definition of freehold zone-able land.	

### 3.3 Current Levels of Service

Council has defined service levels in two terms.

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

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

Service Criteria	Technical measures may relate to
Quality	Smoothness of roads
Quantity	Area of parks per resident
Availability	Distance from a dwelling to a sealed road
Safety	Number of injury accidents

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

### Table 3.3. Current Service Levels

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
COMMUNITY LI	EVELS OF SERVICE	<u>.</u>	·	<u>.</u>
	Physical water quality parameters conform to standards:	Customer complaints	Ора	0
Quality	(odours, colour, taste Turbidity)	Test results of the water quality monitoring program	100%	100%
	Chemical water quality parameters conform to standards (PH Eluoride	Customer complaints	Ора	0
	Residual Chlorine, Hardness,etc.	Test results of the water quality monitoring program	100%	100%
	Provide high quality and pathogen free potable water supply	Customer complaints	Ора	0
		Test results of the water quality monitoring program	100%	100%
	Provide a safe and reliable water supply system that is	Unplanned interruption due to:	Ора	
Function	operated and maintained with minimum interruption	-Main breaks -Water service failure	< 40pa < 10pa	60 30
	No damages to private properties or public places because of reservoir overflows or water runoff because of broken/burst mains	Incidents	Ора	0
Safety	Provide a water supply system that is low risk to the community and safe to operate	No incidents and claims	Ора	0
	No overflows or chemical spills	No incidents and claims	Ора	0

TECHNICAL LE	TECHNICAL LEVELS OF SERVICE				
Condition	Provide a safe and reliable water supply system that meets customer satisfaction	Equipment and infrastructure of the water supply system are maintained & operational at all times	Repairs completed within minimum time		
		Breakdowns	< 2 pa	0	
		Age of system	< 5% Assets > 95%useful life	0.01%	
		Maintenance to be routine	Planned/Reactive maintenance work value ratio 70% - 30%	40% - 60%	
Function	Availability of water reticulation system	% of lots serviced	100%	100%	
	Provide a safe and reliable water supply system that meets customer satisfaction	Failures due to low water level in the Mulawala channel	Ора	0	
		Failures due to high presence of Blue Green Algae	Ора	0	
System Availability	Response time incidents	<ul> <li>Major burst main</li> <li>Minor burst main</li> <li>Water service failure</li> </ul>	<ul> <li>◆ 15 – 30mins</li> <li>◆ 2hrs</li> <li>◆ 1hr</li> </ul>	<ul> <li>◆ 15 – 30mins</li> <li>◆ 2hrs</li> <li>◆ 1hr</li> </ul>	
Cost Effectiveness	Provide service at reasonable cost	Maintenance cost	Maintenance cost ≤ last year + CPI		
Safety	Provide water supply services with minimum hazards and risks	Reported incidents, accidents and near misses	Ора	0	
Quality	Provide quality water supply in line with the Australian Standards	Water quality parameters	0 Noncompliance	0	

INSERT current service levels – See guidelines for examples of levels of service

### 3.4 Desired Levels of Service

At present, indications of desired levels of service are obtained from various sources including residents' feedback to Councillors and staff, service requests and correspondence. Council has yet to quantify desired levels of service. This will be done in future revisions of this asset management plan.

### 4. FUTURE DEMAND

### 4.1 Demand Forecast

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

Demand factor trends and impacts on service delivery are summarised in Table 4.1.

Demand factor	Present position	Projection	Impact on services
Population	Barooga 1453 (2006)	Barooga 2668 (2028)	Treatment plant, chemical dosing systems, pump stations, service reservoirs for filtered water and trunk mains will need to be upgraded to meet the demand for water. New reticulation works will be funded by developers.
	Berrigan 929 (2006)	Berrigan 1094 (2028)	Treatment plant, pump stations and trunk mains will have adequate capacity. New reticulation works will be funded by developers.
	Finley 2053 (2006)	Finley 2555 (2028)	Treatment plant, pump stations and trunk mains will have adequate capacity. New reticulation works will be funded by developers.
	Tocumwal 1861 (2006)	Tocumwal 3344 (2028)	Treatment plant, chemical dosing systems, pump stations and trunk mains will need to be upgraded to meet the demand for water. New reticulation works will be funded by developers.

 Table 4.1. Demand Factors, Projections and Impact on Services

### 4.2 Changes in Technology

Technology changes are forecast to have little effect on the delivery of services covered by this plan.

### 4.3 Demand Management Plan

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

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
Upgrade Barooga Water Treatment Plant to meet the demand for water resulted from the increase in population as per projections	Double the capacity of the treatment plant by constructing a second treatment line and a filtered water reservoir. Upgrade the chemical dosing systems and water pumping stations. Investigate the adequacy of the trunk lines.
	Reticulation expansion will be provided by the developers of the

	new developments.
Upgrade Tocumwal Water Treatment Plant to meet the demand for water resulted from the increase in population as per projections	Increase the capacity of the treatment plant by constructing another treatment line. Upgrade the chemical dosing systems and water pumping stations. Investigate the adequacy of the trunk lines and the need for providing additional service "storage" reservoirs.
	Reticulation expansion will be provided by the developers of the new developments.

#### 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 are summarised in Fig 1.



### Fig 1. New Assets from Growth

Berrigan SC - New Assets from Growth (Water)

Acquiring these new assets will commit council to fund ongoing operations and maintenance costs for the period that the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operating and maintenance costs.

### 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 are shown below.

Water treatment plants	4
Water storage dams	5
Service reservoirs	11
Water mains	
Gravity Mains	192.3 km
<ul> <li>Rising Mains</li> </ul>	18.4 km
Pump stations	11
Water Meters	5,022

The abovementioned water assets are distributed amongst Berrigan Shire Council's towns (Barooga, Berrigan, Finley and Tocumwal). The water mains are made of different materials including Asbestos Cement, PVC, UPVC, Cast Iron, Galvanised Steel and Black Polyethylene.

The water treatment plants for Berrigan and Finley are conventional treatment while Tocumwal and Barooga are DAFF treatment systems.

The water treatment plants are operating satisfactorily with some works being carried out to improve the chemical dosing and control process. Based on the demand management plan and actual average water consumption, the treatment plants at Berrigan and Finley are operating at only 1/3 of their design capacity and have the capacity to provide for future projected increase in population. Barooga and Tocumwal treatment plants are operating well below their design capacities, however, the projected high population growth rate and increase in demand for water will require the expansion of these plants.

A long term plan is already in place to address the water supply system deficiencies which is reviewed as required to identify new programs.

The water mains are mainly made of Asbestos Cement that were laid 30 – 40 years ago and are being progressively replaced with uPVC.

The age profile of Council's assets is shown below.

Fig 2. Asset Age Profile



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.

Location	Service Deficiency	
Berrigan Water	<ul> <li>Burst mains because of tree roots</li> </ul>	
Finley Water	<ul> <li>Limited capacity of the town water storages during water supply cut off period</li> </ul>	
	<ul> <li>Blue Green Algae growth in the water supply off storages</li> </ul>	
	<ul> <li>High turbidity in the raw water supply leading to high maintenance and treatment cost</li> </ul>	
	<ul> <li>Burst mains because of tree roots</li> </ul>	
	<ul> <li>One unroofed service reservoir</li> </ul>	
Tocumwal Water	<ul> <li>Two Unroofed service reservoirs</li> </ul>	
	<ul> <li>The clear and backwash water tanks are leaking and need to be replaced</li> </ul>	
	<ul> <li>The pipework at the treatment plant is aging asbestos cement and won't stand excessive pressures resulted from potential water hammers</li> </ul>	
	<ul> <li>A retaining wall and a new ladder system are required to</li> </ul>	

Table 5.1.2. Known Service Performance Deficiencies

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COUNCIL – ASSET CATEGORY ASSET MANAGEMENT PLAN

	<ul> <li>provide support to the plant building and adequate access to the treatment plant components</li> <li>Recycling of the backwash water</li> <li>Burst mains because of tree roots</li> </ul>
Barooga Water	<ul> <li>Burst mains because of tree roots</li> <li>Upgrade the raw water pumps / Garden Supply</li> <li>Upgrade the electrical power supply at the water treatment plant to facilitate operation of a generator in the case of power failure</li> </ul>

The above service deficiencies were identified from field records and based on potential risks associated with the provision of water supply under the existing asset conditions

### 5.1.3 Asset condition

The condition profile of Council's assets is currently unknown and will be determined through field inspections based on a risk assessment approach.

The asset condition profile will be added in the next update of the Asset Management Plan.

Condition will be measured using a 1-5 rating system.<sup>2</sup>

Rating	Description of Condition
1	Excellent condition: Only planned maintenance required.
2	Very good: Minor maintenance required plus planned maintenance.
3	Good: Significant maintenance required.
4	Average: Significant renewal/upgrade required.
5	Poor: Unserviceable.

### 5.1.4 Asset valuations

The value of assets as at 30 June, 2008 covered by this asset management plan is summarised below. Assets were last re-valued at 30 June, 2007. Assets are valued at Greenfield rates.

Current Replacement Cost	38,185,727
Depreciable Amount	38,185,727
Depreciated Replacement Cost	26,146,780
Annual Depreciation Expense	491,497

Council's sustainability reporting reports the rate of annual asset consumption and compares this to asset renewal and asset upgrade and expansion.

Asset Consumption	1.29%
Asset renewal	0.29%
Annual Upgrade/expansion	0.9%

### 5.2 Risk Management Plan

An assessment of risks<sup>3</sup> associated with service delivery from infrastructure assets has identified critical risks to Council. The risk assessment process identifies credible risks, the likliehood of the risk event

<sup>&</sup>lt;sup>2</sup> IIMM 2006, Appendix B, p B:1-3 ('cyclic' modified to 'planned')

<sup>&</sup>lt;sup>3</sup> Berrigan Shire Council 'Core' Infrastructure Risk Management Plan – Water / May 2009

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.

Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan
Pump stations & water supply at BGA & TOC WTP's	Water level in the Murray drops below the pumping capacity of the pumps	H	Drought Management Plan, a booster pump to feed the suction line of the pump is in place
PAC dosing system	Blocking of PAC dosing lines, overflow of the PAC tank	VH	Install flushing and overflow control systems
Supply, revenue & level of service	External impacts	Н	Water restrictions - (political intervention)
Rising mains and gravity mains, Pumps	Failure of the mains	Н	Maintenance & repairs, call out system and capital replacement program
The clear and backwash water tanks at TOC, water revenue	Leak and or collapse of the tanks	Η	Install new tanks
Pipe-work at TOC WTP	Leak and or collapse of the pipework	Η	Install new pipework
Potable water reservoirs at TOC	Quality of the water supply	Η	Install roofs
Potable water reservoir at FIN	Quality of the water supply	Η	Install roof
Bulk flow meter	No signal to chemical dosing equipment resulting in water not being treated, fluoridated	Н	Bi-annual preventative maintenance
Customer water meters, loss of revenue, water quality and quantity	Operational or physical failure, blocking of filter, cross contamination	Η	Inspect and assess the requirement for installation of reduced pressure zone valves, develop backflow prevention policy
Water reservoirs (3) & water quality at BGA water treatment plant	Erosion of the interior and exterior paint layers on the walls	Н	1- CCTV survey to identify current interior paint layers and walls condition 2- repaint the interior of the towers 3-repaint the exterior of the towers BGA WTP
Water reservoirs at Berrigan and Finley Water Treatment Plants	Erosion of the interior and exterior paint layers on the walls	H	1- CCTV survey to identify the condition of the interior paint layers and walls 2- repaint the interior of the towers 3-repaint the exterior of the towers

Table 5.2. Critical Risks and Treatment Plans

### 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.

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.

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.

Maintenance expenditure trends are shown in Table 5.3.1

Year	Maintenance Expenditure		
	Reactive	Planned	Cyclic
2005/06	\$176,333	\$114,899	\$17,560
2006/07	\$181,787	\$118,453	\$18,140
2007/08	\$187,797	\$122,369	\$18,740

### Table 5.3.1. Maintenance Expenditure Trends

Planned maintenance work is 40% of total maintenance expenditure in 2007/2008.

Maintenance expenditure levels are considered to be adequate OR inadequate to meet required service levels. Future revision of this asset management plan will include linking required maintenance expenditures with required service levels.

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.

Water Supply Code of Australia WSA 03-2002

Aus-Spec 2008

AS 3500.1:2003 Water Services

NSW Plumbing Code

Manufacturers' recommendations and requirements

Berrigan Shire Council's specifications, standard operating procedures and safe work method statements

### 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 4. Note that all costs are shown in current 2008 dollar values.



### Fig 4. Planned Maintenance Expenditure

Berrigan SC - Planned Maintenance Expenditure (Water)

Deferred maintenance, ie works that are identified for maintenance and unable to be funded are to be included in the risk assessment process in the infrastructure risk management plan.

Maintenance is funded from Council's operating budget and grants where available. This is further discussed in Section 6.2.

### 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

Assets requiring renewal are identified from estimates of remaining life obtained from the asset register worksheets on the *'Planned Expenditure template'*. Candidate proposals are inspected to verify accuracy of remaining life estimate and to develop a preliminary renewal estimate. Verified proposals are ranked by priority and available funds and scheduled in future works programmes. The priority ranking criteria is detailed in Table 5.4.1.

Criteria	Weighting
Structural Integrity	30%
Function	30%

### Table 5.4.1 Renewal Priority Ranking Criteria

Safety	30%
Service	10%
Total	100%

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

Examples of low cost renewal include relining of water mains, replacement of the mechanical seals/impellers of the pumps, recoating the water reservoirs ...etc.

### 5.4.2 Renewal standards

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

Water Supply Code of Australia WSA 03-2002

Aus-Spec 2008

AS 3500.1:2003 Water Services

**NSW Plumbing Code** 

Manufacturers' recommendations and requirements

Berrigan Shire Council's specifications, standard operating procedures and safe work method statements

### 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. Note that all costs are shown in current 2010 dollar values.

The projected capital renewal program is shown in Appendix B.

### Fig 5. Projected Capital Renewal Expenditure



### Berrigan SC - Projected Capital Renewal Expenditure (Water)

Deferred renewal, ie those assets identified for renewal and not scheduled for renewal in capital works programs are to be included in the risk assessment process in the risk management plan.

Renewals are to be funded from Council's capital works program and grants where available. This is further discussed in Section 6.2.

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

Criteria	Weighting
Insufficient Capacity	50%
Improve Quality – Public Health and Compliance Benefits	30%
Water Conservation and Water Supply System Safety	20%

### Table 5.5.1 New Assets Priority Ranking Criteria

### 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 6. The planned upgrade/new capital works program is shown in Appendix C. All costs are shown in current 2010 dollar values.

### Fig 6. Planned Capital Upgrade/New Asset Expenditure



Berrigan SC - Planned Capital Upgrade/New Expenditure (Water)

New assets and services are to be funded from Council's capital works program and grants where available. This is further discussed in Section 6.2.

### 5.6 Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. There have been no assets identified for possible decommissioning and disposal at this time.

### 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 7 for planned operating (operations and maintenance) and capital expenditure (renewal and upgrade/expansion/new assets).

### Fig 7. Planned Operating and Capital Expenditure



Berrigan SC - Planned Operating and Capital Expenditure (Water)

Note that all costs are shown in current 2010 dollar values.

### 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 \$839,188.

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 \$1,219,190.

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 Water asset management plan is to identify levels of service that the community needs and can afford and develop the necessary long term financial plans to provide the service in a sustainable manner.

The life cycle gap for services covered by this asset management plan is \$380,002 per annum. The life cycle sustainability index is 1.45

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. In a core asset management plan, a gap is generally due to increasing asset renewals.

Fig 8 shows the projected asset renewals in the 20 year planning period from the asset register. The projected asset renewals are compared to planned renewal expenditure in the capital works program and capital renewal expenditure in year 1 of the planning period as shown in Fig 8. Table 6.1.1 shows the annual and cumulative funding gap between projected and planned renewals.

### Fig 8. Projected and Planned Renewals and Current Renewal Expenditure



Berrigan SC - Projected & Planned Renewals and Current Renewal Expenditure (Water)

Year	Projected Renewals	Planned Renewals	Renewal Funding Gap	Cumulative Gap
2010	\$377.00	\$871.50	-\$494.50	-\$494.50
2011	\$0.00	\$996.00	-\$996.00	-\$1,490.50
2012	\$500.00	\$1,114.00	-\$614.00	-\$2,104.50
2013	\$0.00	\$604.00	-\$604.00	-\$2,708.50
2014	\$0.00	\$234.00	-\$234.00	-\$2,942.50
2015	\$221.00	\$222.00	-\$1.00	-\$2,943.50
2016	\$0.00	\$154.00	-\$154.00	-\$3,097.50
2017	\$0.00	\$139.00	-\$139.00	-\$3,236.50
2018	\$0.00	\$259.00	-\$259.00	-\$3,495.50
2019	\$0.00	\$859.00 -\$859.00		-\$4,354.50
2020	\$566.58	\$239.00	\$327.58	-\$4,026.92
201	\$0.00	\$2,317.00	-\$2,317.00	-\$6,343.92
2022	\$0.00	\$269.00	-\$269.00	-\$6,612.92
2023	\$27.67	\$1,169.00	-\$1,141.33	-\$7,754.24
2024	\$0.00	\$199.00	-\$199.00	-\$7,953.24
2025	\$104.00	\$164.00	-\$60.00	-\$8,013.24
2026	\$0.00	\$274.00	-\$274.00	-\$8,287.24
2027	\$0.00	\$174.00	-\$174.00	-\$8,461.24
2028	\$0.00	\$194.00	-\$194.00	-\$8,655.24
2029	\$645.00	\$1,772.00	-\$1,127.00	-\$9,782.24

Table 6.1.1 shows the gap between projected and planned renewals.

Table 6.1.1 Projected and Planned Renewals and Expenditure Gap

Providing services in a sustainable manner will require matching of projected asset renewals to meet agreed service levels with planned capital works programs and available revenue.

A gap between projected asset renewals, planned asset renewals and funding indicates that further work is required to manage required service levels and funding to eliminate any funding gap. The actual gap between the projected and planned renewals is greatly affected by the asset components and their useful life; i.e. whilst a treatment plant that consists of mechanical and electrical components that have a useful life of 25 years, the structure of the plant has a useful life of 70 years. It is imperative that the assets be broken down into their smaller components to reflect their useful life and consequently arrive at a more accurate and realistic projected as opposed to planned renewals.

Analysing fig.8 and table 6.1.1 indicate that the planned expenditure over the period of this plan exceeds the actual projected expenditure. Whilst this might indicate that the system is being over serviced on one hand, on the other hand, the actual situation is that a large number of water assets will reach the end of their useful life at one time "beyond this plan", resulting in an increasing demand for expenditure to meet the requirements for assets renewal/replacement and subsequently a large funding gap. In order to address this issue, a planned asset renewal/replacement program has been integrated into this plan to renew/replace the water assets progressively as required, and this eventually will ease the burden on the council to provide the required funds once the assets have reached the end of their useful life.

Council will manage the 'gap' by developing this asset management plan to provide guidance on future service levels and resources required to provide these services, by inspecting the water assets to investigate their conditions and substantiate the necessity for the proposed renewal works, and prioritize those works based on the actual asset conditions and their operational capability to deliver and maintain the agreed levels of service. Upon completion of these works, a more accurate and detailed data will be available to review the Asset Management Plan and hence producing an Advanced Asset Management Plan that takes in account all aspects of asset maintenance, renewal and the required funds.

Council's long term financial plan covers the first 10 years of the 20 year planning period. The total maintenance and capital renewal expenditure required over the 10 years is \$4,888,450.

This is an average expenditure of \$488,845. Estimated maintenance and capital renewal expenditure in year 1 is \$1,219,190 and this would give a 10 year sustainability index of 2.49.

While the sustainability index for the first year of the plan is 2.49, the whole of life index (Ratio of Total Receipts to Total of Life Cycle Cost [Depreciation + Maintenance + Management + New (Works average over 20 years)] is ranging between 1.03 - 1.10 for the first 10 years of the plan, and this represents a good result which indicate that the council's water supply operation is financially sustainable in line with the Australian Infrastructure Financial Management Guidelines.

### 6.2 Funding Strategy

Projected expenditure identified in Section 6.1 is to be funded from Council's operating and capital budgets. The funding strategy is detailed in the Council's 10 year long term financial plan (Attached as Appendix D).

The 10 year medium term financial plan shows that \$ 2,465,900 will be accumulated over the proposed expenditure if the current fees and charges are maintained.

The remaining useful life of the water assets is far beyond the extent of this Asset Management Plan. It's understood that most of those assets will reach the end of their useful life at one time, resulting in an enormous demand for their renewal/replacement and hence increasing the funding gap significantly.

In order to reduce/eliminate the funding gap and provide the required funds for the renewal/replacement of water assets, the following measures need to be undertaken:

- 1. Rationalization of asset renewal/replacement it is very important to thoroughly investigate asset conditions, estimate the remaining of their useful life and prioritize maintenance/renewal/replacement works accordingly. Asset renewal/replacement to be carried out based on asset conditions, rather than asset age.
- 2. Monitor the fees and charges for water supply/treatment & supply and adjust them based on the actual cost, taking into account elevated charges during drought periods due to low water consumption as a result of water restrictions and for water treatment using activated carbon.

Implementing the abovementioned measures should provide substantial savings without affecting the level of service and hence provide sufficient funds for the asset renewal/replacement as required.

### 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. Fig 9 shows the projected replacement cost asset values over the planning period in current 2010 dollar values.



# Fig 9. Projected Asset Values

Depreciation expense values are forecast in line with asset values as shown in Fig 10.

Fig 10. Projected Depreciation Expense



The depreciated replacement cost (current replacement cost less accumulated depreciation) will vary over the forecast period depending on the rates of addition of new assets, disposal of old assets and consumption and renewal of existing assets. Forecast of the assets' depreciated replacement cost is shown in Fig 11.



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Berrigan SC - Projected Depreciation Expense (Water)



### Berrigan SC - Projected Depreciated Replacement Cost (Water)

### 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:

- Renewal costs of water mains are 100% of current replacement value.
- Renewal costs of pumps are 40-60% of current replacement value as the pumps will be refurbished rather than replaced.
- Assets have been given nominal useful life values based on the NSW Reference Rates Manual produced by the Ministry of Energy and Utilities NSW Government.
- The Water pump stations have been broken down into two components (Civil (structure) & Mechanical and Electrical (pumps). The useful life of the structure has been set to 50 years and the pumps to 25 years.
- The age of the coating systems of the interior and exterior of the BGN raw water and FIN raw/filtered water reservoirs have been reset as per the date of the renewal, 2009.
- The purchase date of the coating systems of the BGA raw water reservoirs has been increased by 2 years to 2012 based on the last renewal date 1992.
- The useful life of the Water Pump Station Civil has been increased by 10 years from 50 years to 60 years, pending actual survey and assessment of condition to estimate the remaining life.

• The projected works associated with some of the Mechanical and Electrical components of the water pump stations are to be investigated. A survey has to be carried out to determine the conditions of those components, estimate their remaining life, adjust the assets' useful life based on the survey and undertake the required action to ensure that the assets will remain functional till the end of their useful life.

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

- Audit the Water Assets Register and breakdown the large assets into individual components.
- Update the Asset Register and add the unregistered assets (water meters, valves, fire hydrants, water services, etc).
- Inspect and assess the conditions of all water assets in order to estimate the remaining life and reassess the useful life of the assets.
- Establish a reporting system to update the Asset register as per feedback from the field including new assets, renewed assets and disposed of assets. The age of the assets needs to be revised after completion of the renewal works.
- Keep a track of the asset maintenance cost and this will assist in making a decision on whether to renew or replace the asset.
- Keep the focus and direction on how to improve the Asset Register and data collection process.
- Undertake a customer satisfaction survey and consult with the community to identify the desired level of service, and this will help in determining the key deficiencies of the system and allocate the required resources to address those issues as required.

### 7. ASSET MANAGEMENT PRACTICES

### 7.1 Accounting/Financial Systems

Berrigan Shire Council uses Civica PCS as its primary accounting & financial system. The water costing accounts are split into Capital and Maintenance & Operation. Better information would have been available if the Maintenance and Operation costs were subdivided into two separable accounts, and the Maintenance costs into reactive, planned and cyclic. This would provide direct information to the asset registerer as to which assets have been renewed and which maintained, and subsequently assist in tracking the whole of life cost of the assets.

The Finance Manager is responsible for the management of the Councils finances, information system, statuary and management reporting.

The Council's Financial Statements are prepared in accordance with:

- The Local Government Act1993 (as amended) and the regulations made there under,
- The Australian Accounting Standards and professional pronouncements, and
- The Local Government Code of Accounting Practice and Financial Reporting.

Items of infrastructure, plant and equipment are not capitalised unless their cost of acquisition exceeds \$5,000.

### 7.2 Asset Management Systems

Berrigan Shire Council uses Bize Asset as its asset management system.

The asset management system is linked to the accounting / financial system manually. The AM system provides the relevant information and the financial system is updated on a six monthly basis. The values in the financial system are categorised into two categories – water treatment, storage and pump stations assets and mains for each town. Although most of the water assets are valued individually, some assets are valued based on their category (Water treatment plants, pump stations, etc.).

The Technical Officer – Assets is responsible for the input and maintenance of water assets in the AM system. The Finance Manager is responsible for the transfer of the values into the financial system and to test the accuracy and reasonableness of the values against the costs in the finance system and any other relevant information.

### 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 financial reports generated by BizeAsset including valuations, depreciation calculations etc. are provided to the Finance Manager for input into Civica PCS financial system. Actual construction costs for capital works are provided by financial services staff to the Technical Officer – Assets for input into BizeAsset.

New assets constructed by Council are captured by the Technical Officer – Assets from the adopted works program with confirmation of construction from the Environmental Engineer. Actual construction costs for capital works are provided by financial services staff to the Technical Officer – Assets for input into BizeAsset.

New assets gifted to Council by developers are captured by the Technical Officer – Assets from 'As Constructed' drawings and cost estimates submitted by developers. These plans and estimates are checked and signed off by the Environmental Engineer as correct.

- 7.4 Standards and Guidelines
  - The standards and guidelines relevant to this plan are set out below:
  - AAS27, Financial Reporting by Local Governments, Australian Accounting Standards, June 1996.
  - AASB1031, Materiality, Australian Accounting Standards Board, July 2004.
  - AASB116, Property, Plant and Equipment, Australian Accounting Standards Board, July 2007.
  - 2009/2010 Management Plan, Berrigan Shire Council
  - International Infrastructure Management Manual, Institute of Public Works Engineering Australia, 2006
  - Local Government Asset Accounting Manual, Department of Local Government, New South Wales, Update No. 4, 1999

### 8. PLAN IMPROVEMENT AND MONITORING

### 8.1 Performance Measures

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

- The degree to which the required cashflows 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;

### 8.2 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 8.2.

Task No	Task	Responsibility	Resources Required	Timeline
1.	Audit the Water Assets Register and breakdown the large assets into individual components.	EE, TOA	Staff	June 2012
2.	Update the Asset Register and add the unregistered assets (water meters, valves, fire hydrants, etc).	EE, TOA	Staff	June 2012
3.	Inspect and assess the conditions of all water assets in order to estimate the remaining life and reassess the useful life of the assets.	EE	Staff	June 2012
4.	Establish a reporting system to update the Asset Register as per feedback from the field including new assets, renewed assets and disposed of assets.	EE, TO W & S, TOA	Staff	June 2012
5.	Separate the operation costs and maintenance costs, and split the maintenance costs into reactive, planned and cyclic. Capital cost to be split into renewal, upgrade and new.	FM	Staff	June 2010
6.	Undertake a customer satisfaction survey and consult with the community to identify the desired level of service.	DCS	Staff/External	March 2013

### Table 8.2Improvement Plan

### 8.3 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.

### REFERENCES

Sample Council, 'Strategic Management Plan 20XX – 20XX,

Sample Council, 'Annual Plan and Budget.

- DVC, 2006, 'Asset Investment Guidelines', 'Glossary', Department for Victorian Communities, Local Government Victoria, Melbourne, <u>http://www.dvc.vic.gov.au/web20/dvclgv.nsf/allDocs/RWP1C79EC4A7225CD2FCA25717000325</u> <u>9F6?OpenDocument</u>
- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australia, Sydney, <u>www.ipwea.org.au</u>

### APPENDICES

- Appendix A Plans of Water Reticulation System for Barooga, Berrigan, Finley and Tocumwal.
- Appendix B Projected 20 year Capital Renewal Works Program
- Appendix C Planned Upgrade/Exp/New 20 year Capital Works Program
- Appendix D 10 Year Long Term Financial Plan









### Berrigan SC >> Renewal Program (Water)

		Sub				Rem	Planned	Renewal	Useful
UID	Asset ID	Category	Asset Name	From	То	Life	Renewal	Cost	Life
						(Years)	Year	(\$)	(Years)
3653002	2.00707E+13	Barooga Pump Station	Pump Station - Mech. & Elec.	BUCHANANS RD		0	2010	\$85,000.00	25
3653029	2.00708E+13	Finley Pump Station	Pump Station 1 - Mech. & Elec.	TUPPAL ST		0	2010	\$97,000.00	25
3653031	2.00708E+13	Finley Pump Station	Pump Station 3 - Mech. & Elec.	TUPPAL ST		0	2010	\$22,000.00	25
3653039	2.00707E+13	Tocumwal Pump Station	Pump Station - Mech. & Elec.	TUPPAL ST		0	2010	\$85,000.00	25
3653041	2.00708E+13	Tocumwal Pump Station	Pump Station 3 - Mech. & Elec.	TUPPAL ST		0	2010	\$22,000.00	25
3653043	2.00708E+13	Tocumwal Pump Station	Pump Station 4 - Mech. & Elec.	TUPPAL ST		0	2010	\$66,000.00	25
Subtotal								\$377,000.00	
3653006	2.00707E+13	Barooga Reservoir	Reservoir 1 - Coating System	BUCHANANS RD		2	2012	\$250,000.00	20
3653008	2.00707E+13	Barooga Reservoir	Reservoir 1 - Coating System	<b>BUCHANANS RD</b>		2	2012	\$250,000.00	20
Subtotal								\$500,000.00	
3653016	2.00708E+13	Berrigan Pump Station	Pump Station 3 - Mech. & Elec.	DAVIS ST		5	2015	\$24,000.00	25
3653018	2.00502E+13	Berrigan Pump Station	Pump Station 6 - Mech. & Elec.	SH/21		5	2015	\$85,000.00	25
3653020	2.00708E+13	Berrigan Pump Station	Pump Station 7 - Mech. & Elec.	DAVIS ST		5	2015	\$22,000.00	25
3653022	2.00708E+13	Berrigan Pump Station	Pump Station 8 - Mech. & Elec.	DAVIS ST		5	2015	\$90,000.00	25
Subtotal								\$221,000.00	
3653001	2.00707E+13	Barooga Pump Station	Pump Station - Civil	BUCHANANS RD		10	2020	\$27,000.00	60
3653010	2.00707E+13	Barooga Reservoir	Reservoir 2 - Coating System	BUCHANANS RD		10	2020	\$360,000.00	20
3651848	2.01E+13	Berrigan Rising Main	Rising Main			10	2020	\$179,584.50	80
Subtotal								\$566,584.50	
3652506	2.01E+13	Tocumwal Filtered Main	Filtered Main	PRIVATE LAND		13	2023	\$13,587.28	80
3652507	2.01E+13	Tocumwal Filtered Main	Filtered Main	PRIVATE LAND		13	2023	\$4,706.46	80
3652508	2.01E+13	Tocumwal Filtered Main	Filtered Main	PRIVATE LAND		13	2023	\$9,378.92	80

Subtotal							\$27,672.66	
3653004	2.00708E+13	Barooga Pump Station	Pump Station 5 - Mech. & Elec.	BUCHANANS RD	15	2025	\$104,000.00	25
Subtotal							\$104,000.00	
3653025	2.00502E+13	Berrigan Reservoir	Reservoir 1 - Coating System	DAVIS ST	19	2029	\$250,000.00	20
3653034	2.00707E+13	Finley Reservoir	Reservoir 3 - Coating System	TUPPAL ST	19	2029	\$368,000.00	20
3653038	2.00707E+13	Tocumwal Pump Station	Pump Station - Civil	TUPPAL ST	19	2029	\$27,000.00	60
Subtotal							\$645,000.00	
Program To	otal						\$2,441,257.16	

	BERRIGAN COUNCIL - STRATEGIC ACTION PLANNING																						
	CAPITAL WORKS (Water Supply)		FINANCI/	AL YEAR E	NDING \$																		
Data																							
Source		09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	Totals
	New Works																						
	Major Works																						
	General																						
	Upgrade the motor reading system to a fixed system				200.000																		0
	Opgrade the meter reading system to a fixed system				300,000																		0
	Derrigen																						0
	<u>Berngan:</u>																						0
																							0
	Finley:																						0
																							0
	Tocumwal:																						0
	Upgrade TOC water treatment plant, PS's and fluoridation plant												2,000,000										2,000,000
	Upgrade chemical dosing systems												50,000										50,000
																							0
	Barooga:																						0
	Upgrade BGA WTP																				1,100,000		1,100,000
	Upgrade PS's, Sludge tank pumps and fluoridation plant																				100,000		100,000
	Construct a 1.0 ML filtered water service reservoir																				330,000		330,000
	Upgrade the power supply at BGA WTP to facilitate op.of a Generator				125,000																		
																							0
	Sub-total (maior works)	0	0	0	425.000	0	0	0	0	0	0	0	2.050.000	0	0	0	0	0	0	0	1.530.000	0	3.580.000
					,	-	-		-	-		-	_,,				-	-		-	.,,		-,,
	Minor New works																						
	General																						
	Durchase two standard motors for motors audit		10,000																				10 000
	Inspection and assessment of PD7 requirements		10,000	10.000																			10,000
				10,000																			10,000
	Devector																						0
	Barooga	40.000																					0
	PH & Chlorine control system	13,000	40.000																				13,000
	CCTV survey to the interior of the reservoirs at BGA		10,000																				10,000
	-																						0
	Berrigan																						0
	PH & Chlorine control system	13,000																					13,000
	Static Mixer (100mm) for BGN WTP	8,000																					8,000
																							0
	Finley																						0
	PH & Chlorine control system	13,000																					13,000
	Roof of the filtered water supply tower		130,000																				130,000
																							0
	Tocumwal																						0
	PH & Chlorine control system	13,000																					13,000
	Upgrade the backwash tank Pumps to 3085 at TOC WTP.	3,500																					3,500
	Static Mixer (300mm) for TOC WTP	14.000																					14.000
	Roof of the TOC water plant concrete tower		110.000																				110.000
	Roof of the TOC Hennessev Street concrete tower		120,000																				120.000
	Install 5 Stop Valves in the Retic System	7,000	,																				7.000
	Recycle numps	10,000	5 000																				15 000
	Pump station for backwash water recycling	10,000	120,000																				120 000
	i unp station for backwash water recycling		120,000																				120,000
	Sub-total (minor works)	04 500	505 000	10.000								•	<b>^</b>		•	^	<u> </u>	•			-		600 500
	Grand Total ( New Works)	94,500	505,000	10,000	425 000	0	0		0	0	0	0	2 050 000	0	0	0		0	0	0	1 520 000	0	4 190 500
	GIANU TOTAL/ NEW WOLKS	94,000	505,000	10,000	420,000	U	U	0	U	U	0	0	2,000,000	0	U	U	U	U	U	U	1,000,000	U	4,109,500
			I			1						1	1				1	1	1	I			

	1	1	1						-		1		1									
Renewals:																						
Conorol																						
														1 000 000								1 000 000
Chamical design number variancement	40.000	10.000	45.000											1,000,000								1,000,000
Chemical dosing pumps replacement	12,000	12,000	15,000		00.000				00.000				00.000				00.000					39,000
	0.000	0.000	0.000	0.000	80,000	0.000	0.000	0.000	80,000	0.000	0.000	0.000	80,000	0.000	0.000	0.000	80,000	0.000	0.000	0.000	0.000	320,000
	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	42,000
Laboratory equipment	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	42,000
Improve the OH & S conditions at work sites	00.000	20,000	10.000	15,000	10.000	10,000	40.000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	115,000
Upgrade the telemetry system	22,000	5,000	10,000		10,000		10,000		10,000		10,000		10,000		10,000		10,000		10,000		10,000	127,000
Devices																						0
Berrigan CDD Ann A DawMater Lew Lift Durane Meek & Else (2)(201441)		200.000																				0
DBP App / Rawwater Low Lift Pumps Mech. & Elec. (2x22kW)		20,000				40.000																20,000
HD Sect. Raw water LL submersible Pumps Mech.&Elec.						12,000																12,000
HD Sect.   Treated Water HL Pumps - Mech. & Elec. (2x5.5kW)			70.000			30,000																30,000
HD Sect. Raw water HL Pumps - Mech. & Elec. (2x40kw)			70,000																	F 4 000		70,000
CPD App A Oblastice design exercise (Develop Mater)										45.000										54,000		54,000
BBP App / Chlorine dosing system (Raw and Clear Water)	00.000									15,000												15,000
	60,000			20,000																		60,000
Flouride dosing system				30,000								00.000										30,000
I reated Water Switch Gear/Control Panel												36,000										36,000
Alum Dosng system		-										18,000							-			18,000
Soda ash dosing system												18,000										18,000
Water Main Replacement	10,000	55,000	60,000	05 000	20,000	05.000	20,000	05.000	20,000		20,000		20,000		20,000		20,000	00.000	20,000	00.000	20,000	305,000
Other minor repairs	18,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	578,000
Barooga	40.000																					0
SBP App ARaw Water HL Pumps - Mech. & Elec. (2x37kW)	40,000	1.5.000	1												10.000			10.000				40,000
Water Main Replacement	15,000	15,000	15,000			10,000			10,000			10,000			10,000			10,000			10,000	105,000
Repaint the interior of the water towers at BGA WTP		ļ	800,000																			800,000
Repaint the exterior of the water towers at BGA WTP		ļ								700,000												700,000
Replace the Botanical Garden pump	15,000																					15,000
HD Sect. Other minor repairs	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	615,000
Finley																						0
SBP App A Raw Water LL Pumps - Mech. & Elec. (2x4.0kW)											10,000			10,000								20,000
SBP App A Treated WaterHL Pumps - Mech. & Elec. (2x11.0kW)												36,000										36,000
HD Sect. Fluoride Dosing system				30,000																		30,000
Water Main Replacement	20,000	20,000	20,000			20,000		20,000		20,000		20,000		20,000		20,000		20,000		20,000		220,000
SBP App E Other minor repairs	25,000	25,000	25,000	25,000	25,000	25,000	25,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	40,000	40,000	40,000	40,000	40,000	40,000	695,000
Clear Water High Lift pumps	30,000																					30,000
Replace the ladder system at the concrete tower	20,000																					20,000
Replace the raw water switch board and starter	25,000																					25,000
Filtration plant switch board upgrade	7,000																					7,000
Upgrade sedimentation ponds at WTP		200,000									-											200,000
																						0
Tocumwal																						0
HD Sect. Treated Water HL Pumps - Mech. & Elec. (37kW)	30,000																					30,000
HD Sect. Raw Water LL Pumps - Mech. & Elec. (45kW)											50,000											50,000
HD Sect. Chlorine Dosing System						12,000																12,000
SBP App A Soda Ash Hopper and Dosing System						24,000																24,000
Water main replacement	10,000	35,000	15,000		20,000		20,000		20,000		20,000		20,000		20,000		20,000		20,000		20,000	240,000
Water Plant MCC	-	-																		24,000	24,000	48,000
Other minor repairs	20,000	20,000	20,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	565,000
Replace the backwash and clear water tanks at TOC WTP	250,000																					250,000
Replace the pipework at TOC WTP	65,000																					65,000
Retaining wall and stairs	54,000																					54,000
Replace dosing pumps		10,000																				10,000
Sub-Total (renewals)	777,000	491,000	1,104,000	179,000	234,000	222,000	154,000	139,000	259,000	859,000	239,000	267,000	269,000	1,169,000	199,000	164,000	274,000	174,000	194,000	242,000	228,000	7,837,000
GRAND TOTAL	871,500	996,000	1,114,000	604,000	234,000	222,000	154,000	139,000	259,000	859,000	239,000	2,317,000	269,000	1,169,000	199,000	164,000	274,000 1	174,000	194,000 1	,772,000	228,000	12,026,500

### Appendix "D"

			10 Y	'EAR FIN	IANCIAL	PLAN						
Cashflow Growth Factor Inflation Factor Assessments	Units 3,551	Jun-10 1.9% 3.0% 3,551	Jun-11 1.9% 3.0% 3,617	Jun-12 1.9% 3.0% 3,684	Jun-13 1.9% 3.0% 3,752	Jun-14 1.9% 3.0% 3,821	Jun-15 1.9% 3.0% 3,892	Jun-16 1.9% 3.0% 3,964	Jun-17 1.9% 3.0% 4,037	Jun-18 1.9% 3.0% 4,112	Jun-19 1.9% 3.0% 4,188	Totals
Brought Forward		2,047.6	1,900.5	1,629.3	1,235.5	1,341.6	1,827.8	2,350.6	2,967.8	3,653.5	4,366.6	
Reserve	2,047.6											
Receipts:												
Rates	\$ 1,479.40	1,479	1,507	1,535	1,563	1,592	1,621	1,651	1,682	1,713	1,745	16,088.4
Interest on Investment @	4.0%	81.9	76.0	65.2	49.4	53.7	/3.1	94.0	118.7	146.1	1/4./	932.8
Total Receipts	5	0 1 566 3	0 1 588 0	0 1 605 2	כ 1 617 4	0 1 650 7	0 1 600 1	0 1 750 0	0 1 805 7	0 1 864 1	3 1 924 7	17 071 2
		1,000.0	1,000.0	1,005.2	1,017.4	1,000.7	1,000.1	1,700.0	1,000.7	1,004.1	1,524.7	17,071.2
Payments:												
Management		359.0	369.8	380.9	392.3	404.1	416.2	428.7	441.6	454.8	468.4	4,115.8
Maintenance		345.0	355.4	366.1	377.1	388.4	400.1	412.1	424.5	437.2	450.3	3,956.2
Debt Redemption @ 6.77%	\$ 1,000.00	137.97	137.97	137.97	137.97	137.97	137.97	137.97	114.98	0.0	0.0	1,080.8
Interest on Overdraft @	0.0%		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital Works		871.5	996.0	1,114.0	604.0	234.0	222.0	154.0	139.0	259.0	859.0	5,452.5
Total Payments		1,713.5	1,859.2	1,999.0	1,511.4	1,164.5	1,176.3	1,132.8	1,120.1	1,151.0	1,777.7	14,605.3
Carried Forward	2,047.6	1,900.5	1,629.3	1,235.5	1,341.6	1,827.8	2,350.6	2,967.8	3,653.5	4,366.6	4,513.6	2,465.9
Annual Average Life												
Cycle Cost (Dep + Maint)	836.5	836.5	861.6	887.4	914.0	941.4	969.6	998.7	1,028.7	1,059.6	1,091.4	9,588.9
Sustainability Cost												
(AALCC +												
Management+New												
Works average)	230.73	1,426.2	1,469.0	1,512.9	1,557.8	1,603.9	1,651.1	1,699.7	1,749.5	1,800.5	1,852.8	16,554.2
Receipts - SC		140.1	119.0	92.3	59.6	46.8	48.0	50.3	56.2	63.6	71.9	517.0
Life Cycle Sustainability			110.0	02.0	00.0	10.0	10.0	00.0	00.2	00.0	11.0	011.0
Index		1.10	1.08	1.06	1.04	1.03	1.03	1.03	1.03	1.04	1.04	
Projected Renewal												
Costs+Upgrade		471.5	505.0	510.0	425.0	0.0	221.0	0.0	0.0	0.0	0.0	2,132.5
Total Projected	:											
Payments		1,175.5	1,230.2	1,257.0	1,194.4	792.5	1,037.3	840.8	866.1	892.0	918.7	10,204.5
Receipts - TPP		390.8	357.8	348.2	423.0	858.2	661.8	909.2	939.6	972.1	1,006.0	6,866.7

G:\Management\MANUAL\PLANS\Asset Management Plans\Water Supply public exhibition\Water 10 Years Financial Plan - Final - November 2009Water 10 Years Financial Plan - Final - November 2009

Appendix "D"

**BERRIGAN SHIRE COUNCIL** 

# 'Core' Infrastructure Risk Management Plan

WATER ASSETS

Insert photo of major asset at risk

Version

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The Institute of Public Works Engineering Australia.

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### 1. INTRODUCTION

### 1.1 Aim

The purpose of this core infrastructure risk management plan is document the results and recommendations resulting from periodic identification, assessment and treatment of risks associated with providing services to the community from infrastructure, using the fundamentals of Australian Standard for Risk Management, AS/NZS 4360; 2004.

Risk Management is defined in AS/NZS 4360; 2004 as: "the culture, processes and structures that are directed towards realising potential opportunities whilst managing adverse effects" <sup>1</sup>.

### 1.2 Objectives

The objectives of the plan are:

- to identify risks to the Berrigan Shire Council that may impact of the delivery of services from infrastructure
- to select credible risks for detailed analysis,
- to analyse and evaluate risks in accordance with AS/NZS 4360:2004,
- to prioritise risks,
- to identify risks requiring treatment by management action,
- to develop risk treatment plans identifying the tasks required to manage the risks, the person responsible for each task, the resources required and the due completion date.

### 1.3 Core and Advanced Risk Management

This core risk management plan has been designed to be read as a supporting document to the infrastructure and asset management plan. It has been prepared using the fundamentals of Australian Standard for Risk Management, AS/NZS 4360:2004.

Future revisions of this risk management plan will move toward more comprehensive documentation in accordance with Australian Standard for Risk Management, AS/NZS 4360:2004.

### 1.4 Scope

This plan considers risks associated with delivery of services from infrastructure.

### 1.5 The Risk Management Context

Council has implemented many management practices and procedures to identify and manage risks associated with providing services from infrastructure assets. These include:

- operating a reactive maintenance service for all assets and services;
- operating a planned maintenance system for key assets;
- monitoring condition and remaining service life of assets nearing the end of their service life;
- renewing and upgrading assets to maintain service delivery;
- closing and disposing of assets not providing the required service level; and
- acquiring or constructing new assets to provide new and improved services.

Council has assigned responsibilities for managing risks associated with water assets and service delivery to its Technical Services Department.

<sup>1</sup> p4

### 1.6 Risk Management Model

The risk management process used in this project is shown in Fig 1.6 below.

It is an analysis and problem solving technique designed to provide a logical process for the selection of treatment plans and management actions to protect the community against unacceptable risks.

The process is based on the fundamentals of Australian Standard AS/NZS 4360:2004, Risk Management.



Fig 1.6. Risk Management Process – Abridged Source: Adapted from AS/NZS 4360:2004, Fig 3.1 p 13

### 2. COMMUNICATION AND CONSULTATION

Risk communication is 'the interactive process of exchange of information and opinion involving multiple messages about the nature of risk and risk management'.<sup>2</sup>

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'Appropriate communication and consultation seeks to:

- Improve people's understanding of risks and the risk management processes;
- Ensure that the varied views of stakeholders are considered; and
- Ensure that all participants are aware of their roles and responsibilities.'

The development of this infrastructure risk management plan was undertaken using a consultative team approach to:-

- Identify stakeholders and specialist advisors who need to be involved in the risk management process;
- Discuss and take into account the views of stakeholder and specialist advisors; and
- Communicate the results of the risk management process to ensure that all stakeholders are aware of and understand their and roles and responsibilities in risk treatment plans.

Members of the team responsible for preparation of this risk management plan are:

- Fred Exton Director of Technical Services
- Muneeb Sunna Environmental Engineer
- Garry Graham Technical Officer Water and Sewer
- Michelle Koopman Enterprise Risk Manager
- Toney Davis Technical Officer Assets
- Arlena Pyle Finance Officer

### 3. **RISK IDENTIFICATION**

### 3.1 General

Potential risks associated with providing services from infrastructure were identified at meetings of the council's infrastructure risk management team.

Team members were asked to identify "What can happen, where and when" to the various council services and then to identify possible "Why and how can it happen" as causes for each potential event.

Each risk was then tested for credibility to ensure that available resources were applied to those risks that the team considered were necessary to proceed with detailed risk analysis

The assets at risk, what can happen, when, possible cause(s), existing controls and credibility are shown in Appendix A – Risk Register.

Credible risks are subjected to risk analysis in Section 4.4.5. Risks assessed as non-credible were not considered further and will be managed by routine procedures.

<sup>&</sup>lt;sup>2</sup> HB 436:2004, Sec 3.1, p 20

### 4. RISK ANALYSIS

### 4.1 General

Credible risks which have been identified during the risk identification stage were analysed. This process takes into account the '**likelihood'** and the '**consequences'** of the event. The objective of the analysis is to separate the minor acceptable risks from the major risks and to provide data to assist in the assessment and management of risks.

The risk analysis process is applied to all credible risks to determine levels of risk. The process acts as a filter by applying a reasoned and consistent process. Minor risks can be eliminated from further consideration and dealt with within standard operating procedures.

The remaining risks will therefore be of such significance as to consider the development of risk treatment options and plans.

### 4.2 Likelihood

Likelihood is a qualitative description of probability of an event occurring. The process of determining likelihood involves combining information about estimated or calculated probability, history or experience. Where possible it is based on past records, relevant experience, industry practice and experience, published literature or expert judgement.

### 4.3 Consequences

Consequences are a qualitative description of the effect of the event. The process of determining consequences involved combining information about estimated or calculated effects, history and experience.

### 4.4 Method

The risk analysis method uses the risk rating chart shown in Section 4.4.3. This process uses a qualitative assessment of likelihood/probability and history/experience compared against a qualitative assessment of severity of consequences to derive a risk rating.

The qualitative descriptors for each assessment are shown below.

### 4.4.1 Likelihood

Likliehood	Descriptor	Probability of occurrence
Rare	May occur only in exceptional circumstances	More than 20 years
Unlikely	Could occur at some time	Within 10-20 years
Possible	Might occur at some time	Within 3-5 years
Likely	Will probably occur in most circumstances	Within 2 years
Almost	Expected to occur in most	Within 1 year
certain	circumstances	

### 4.4.2 Consequences

Consequences	Description
Insignificant	No injuries, low financial loss (less than \$10,000)
Minor	First aid treatment, on-site release immediately contained, medium financial loss (\$10,000 - \$50,000)
Moderate	Medical treatment required, on-site release contained with outside assistance, high financial loss (\$50,000 - \$200,000)
Major	Extensive injuries, loss of production capacity, off-site release with no detrimental effects, major financial loss (\$200,000 - \$1,000,000)
Catastrophic	Deaths, toxic release off-site with detrimental effect, huge financial loss (more than \$1M)

### 4.4.3 Risk Assessment

The risk assessment process compares the likliehood of a risk event occurring against the consequences of the event occurring. In the risk rating table below, a risk event with a likliehood of 'Possible' and a consequence of 'Major' has a risk rating of 'High'. This rating is used to develop a typical risk treatment in Section 5.3.

	Risk Rating														
	Consequences														
Likelihood	Insignificant	Minor	Moderate	Major	Catastrophic										
Rare	L	L	М	М	Н										
Unlikely	L	L	М	М	Н										
Possible	L	М	Н	Н	Н										
Likely	М	М	Н	Н	VH										
Almost Certain	М	Н	Н	VH	VH										

Ref: HB 436:2004, Risk Management Guidelines, Table. 6.6 p 55.

### 4.4.4 Indicator of Risk Treatment

The risk rating is used to determine risk treatments. Risk treatments can range from immediate corrective action (such as stop work or prevent use of the asset) for 'Very High' risks to manage by routine procedures for 'Low' risks.

An event with a 'High Risk' rating will require 'Prioritised action'. This may include actions such as reducing the likliehood of the event occurring by physical methods (limiting usage to within the asset's capacity, increasing monitoring and maintenance practices, etc), reducing consequences (limiting speed of use, preparing response plans, etc) and/or sharing the risk with others (insuring the organisation against the risk).

	Risk Rating	Action Required
VH	Very High Risk	Immediate corrective action
Н	High Risk	Prioritised action required
М	Medium Risk	Planned action required
L	Low Risk	Manage by routine procedures

### 4.4.5 Analysis of Risk

The team conducted an analysis of credible risks identified in section 3.1 using the method described above to determine a risk rating for each credible risk.

The credible risks and risk ratings are shown in Appendix A – Risk Register

### 4.5 Risk Evaluation

The risk management team evaluated the need for risk treatment plans using an overall assessment of the following evaluation criteria to answer the question "is the risk acceptable?"

Criterion	Risk Evaluation Notes
Operational	Risks that have the potential to reduce services for a period of time
	unacceptable to the community and/or adversely affect the council's
	public image.
Technical	Risks that cannot be treated by council's existing and/or readily available
	technical resources.
Financial	Risks that cannot be treated within council's normal maintenance
	budgets or by reallocation of an annual capital works program.
Legal	Risks that have the potential to generate unacceptable exposure to
	litigation.
Social	Risks that have the potential to:
	<ul> <li>cause personal injury or death and/or</li> </ul>
	- cause significant social/political disruption in the community.
Environmental	Risks that have the potential to cause environmental harm.

The evaluation criteria are to provide guidance to evaluate whether the risks are acceptable to the council and its stakeholders in providing services to the community. Risks that do not meet the evaluation criteria above are deemed to be unacceptable and risk treatment plans are required to be developed and documented in this Infrastructure Risk Management Plan.

### 5. RISK TREATMENT PLANS

### 5.1 General

The treatment of risk involves identifying the range of options for treating risk, evaluating those options, preparing risk treatment plans and implementing those plans. This includes reviewing existing guides for treating that particular risk, such as Australian and State legislation and regulations, Australian Standards and Best Practice Guides.

Developing risk treatment options starts with understanding how risks arise, understanding the immediate causes and the underlying factors that influence whether the proposed treatment will be effective.

One treatment option is to remove the risk completely by discontinuing the provision of the service.

Other options include risk reduction by reducing the likliehood and/or the consequences of the risk.

### 5.2 Risk Treatment Process

The risk treatment process comprises 5 steps.

### Step 1. Review causes and controls

The risk identification process documented in Section 3 included identifying possible causes and documenting existing controls.

Step 2. Develop treatment options

Treatment options include those that eliminate risk, reduce the likliehood or the risk event occurring, reducing the consequences should the risk event occur, sharing of the risk with others and accepting the risk.

Step 3. Assess risk treatment options against costs and residual risk

The method of assessment of risk treatment options can range from an assessment by a local group of stakeholders and practitioners experienced in operation and management of the assets/service to detailed risk cost and risk reduction cost/benefit analysis.

Step 4. Select optimum risk treatment

Step 5. Develop risk treatment plans

### 5.3 Risk Treatments

The risk treatments identified for non-acceptable risks are detailed in Appendix A – Risk Register.

### 5.4 Risk Treatment Plans

From each of the risk treatments identified in Appendix A – Risk Register, risk treatment plans were developed.

The risk treatment plans identify for each non-acceptable risk:-

- 1. Proposed action
- 2. Responsibility
- 3. Resource requirement/budget
- 4. Timing
- 5. Reporting and monitoring required

The risk treatment plan is shown in Appendix A – Risk Register.

### 6. MONITORING AND REVIEW

The plan will be monitored and reviewed as follows.

Activity	Review Process						
Review of new risks and changes to existing risks	Annual review by team with stakeholders and report to council						
Review of Risk Management Plan	3 yearly review and re-write by team and report to council						
Performance review of Risk Treatment Plan	Action plan tasks incorporated in council staff performance criteria with 6 monthly performance review. Action plan tasks for other organisations reviewed at annual team review meeting						

### 7. **REFERENCES**

- AS/NZS 4360:2004, Australian/New Zealand Standard, Risk Management, Standards Australia, Sydney.
- HB 436:2004, Risk Management Guidelines, Companion to AS/NZS 4360:2004, Standards Australia, Sydney.
- International Infrastructure Management Manual, 2006, Institute of Public ~Works Engineering Australia, Sydney, 2006 <u>www.ipwea.org.au</u>

INSERT OTHER APPLICABLE REFERENCES IN ALPHABETICAL ORDER

APPENDIX A RISK REGISTER

		RISK ID	ENTIFICATIO	DN .					RISK ANALY	SIS		RISK TREATMENT			RISK TREATMENT PLAN				
Risk	Asset at Risk	What can	When can it	Possible cause	Existing	ls risk	Likelihood	Consequences	<b>Risk rating</b>	Action required	ls risk	Treatment	Residual	Risk treatment	Actions	Responsibility	Resources	Budget	Date due
No.		happen?	occur?		controls	credible?					acceptable?	option(s)	risk	plan					
1	Pump stations & water supply at BGA & TOC WTP's	Water level in the Murray drops below the pumping capacity of the pumps	Anytime now	Drought	Drought Management Plan, a booster pump to feed the suction line of the pump is in place	Yes	Possible	Minor	Medium	Planned action required	Yes	<u> </u>							
2	Pump stations & water quality	Detorioration of	Anytime in the	Flood	Non	No	Rare	Moderate	Medium	Planned action	Yes								
3	Water supply & water quality	Detorioration of water quality, Increase in the cost of treatment	Anytime now	Blue Green Algae	Chemical (PAC) addition at Barooga, FIN and TOC WTP's, Aeration of the town water dams at BGN & BGA management	Yes	Likely	Minor	Medium	Planned action required	Yes								
4	Water supply & water quality at Finley	Detorioration of water quality, Increase in the cost of the treatment	Anytime now	Blue Green Algae	Chemical addition (PAC) & BGA management	Yes	Likely	Minor	Medium	Planned action required	No	Aeration of the town water supply dam	- low	Design and install an aeration system	Arrange for the installation of the aeration system	Environmental Engineer	Council staff and contractor	\$20,000	Jun-09
5	PAC dosing system	Blocking of PAC dosing lines, overflow of the PAC tank	Anytime now	Precipitation of PAC in the lines due to water plant not operating, during preparation of	Daily checks and maintenance	Yes	Almost certain	Major	Very High	Immediate corrective action	No	Retrofitting of flushing systemand a probe to control the overflow	- low	Upgrade the PAC dosing system	Install flushing and overflow control systems	Environmental Engineer	Council staff and contractor	7,000	Jun-09
6	BGA Water treatment plant, Pump stations & water quality	Power failure	Within 10 years	storms & lightning strike	Stand by power generator & water storage in reservoirs	Yes	Possible	Minor	Medium	Planned action required	No	Standby power generator	- low	Regular generators Checks for operation	Make necessary arrangements for operation of the plant using a generator	Environmental Engineer	Contractors	\$150,000	Dec-11
7	BGN Water pump station at Finley road, water supply	Power failure	Within 10 years	storms & lightning strike	Stand by power generator & water storage in the town water dams &	Yes	Possible	Minor	Medium	Planned action required	Yes								
8	Supply, revenue & level of service	External impacts	Anytime in the future	Water restrictions - (political intervention)	Variable rate policy	Yes	Likely	Insignificant	Medium	Planned action required	Yes	b							

		RISK ID	ENTIFICATI	ON				RISK ANALY	SIS		RIS	K TREATN	IENT	RISK TREATMENT PLAN					
Risk No.	Asset at Risk	What can happen?	When can it occur?	Possible cause	Existing controls	ls risk credible?	Likelihood	Consequences	Risk rating	Action required	ls risk acceptable?	Treatment option(s)	Residual risk	Risk treatment plan	Actions	Responsibility	Resources	Budget	Date due
9	Water quality & quantity	Contamination of water source	Anytime in the future	Chemical spill into the water supply service	Daily monitoring of raw water quality	No	Rare	Major	Medium	Planned action required	No	Isolation of Supply, alternative supply, water carting	Low	Emergency response procedure, business continuity	None	Environmental Engineer	Council Staff		
10	Rising mains and gravity mains, Pumps	Failure of the mains	Anytime now	Ground movement, tree roots and aging pipes, water hammer	Maintenance & repairs, call out system and capital replacement program	Yes	Likely	Insignificant	Medium	Planned action required	Yes								
11	Chemical dosing system and water quality	No chemicals added to the water, therefore the water is	Anytime now	Mechanical and/or electrical failure	Regular inspection &maintenance, standby	Yes	Unlikely	Minor	Low	Manage by routine procedures	Yes								
12	Water supply and water quality	Deterioration of water quality	Anytime now	Over or underdosing of chemicals due to operational failure (clogging of the chemical supply line) or operator's mistake	Manual daily testing and monitorin, automatic ALUM dose adjustment system	Yes	Possible	Minor	Medium	Planned action required	No	Installation of automatic control systems to regulate chemical (chlorine and PH) dosing	- low	Installation of an automatic chemical control system	Design and install an automatic chemical (chlorine and PH) control system	Environmental Engineer	Contractors	15,000 / treatment plant (60,000).	Dec-09
13	Supply & water quality	Run out of chemicals	Anytime now	Lack of monitoring	Hold adequate quantity of chemicals in storage	Yes	Unlikely	Minor	Low	Manage by routine procedures	Yes								
14	Static mixer and water quality at BGA & TOC water treatment	Poor mixing of chemicals and consequently poor fluccolation	Anytime in the future	external impact leading to damaging the mixer, errosion of the interior parts	Monitoring of water quality and daily inspections of the plant's	Yes	Rare	Minor	Low	Manage by routine procedures	Yes								
15	Filtration plant and water quality at BGN, BGA and TOC water treatment plants	Poor fluccolation and filtration processes leading to filter overload and high turbidity in the water	Anytime now	Mechanical / electrical flocculator failure	Monitoring of water quality and daily inspections of the plant's components, maintenance	Yes	Unlikely	Minor	Low	Manage by routine procedures	Yes								
16	Filtration plant and water quality at FIN water treatment plant	Poor fluccolation and filtration processes leading to filter overload and high turbidity in the water	Anytime now	Overload of the flocculation / sedimentation ponds	Daily inspections & regular desilting of the ponds	Yes	Unlikely	Minor	Low	Manage by routine procedures	Yes								
17	Clear water tank and water Supply	Pumps fail to operate leading to water overflow, disruption to reservoir supply causing insufficient	Anytime now	Mechanical / electrical pump failure	Regular inspections and periodical maintenance programs. Telemetry alarm system. Backup sump	Yes	Unlikely	Minor	Low	Manage by routine procedures	Yes								

		RISK ID	ENTIFICATIO	DN .					RISK ANALY	SIS		RISK TREATMENT			RISK TREATMENT PLAN				
Risk No.	Asset at Risk	What can happen?	When can it occur?	Possible cause	Existing controls	ls risk credible?	Likelihood	Consequences	Risk rating	Action required	ls risk acceptable?	Treatment option(s)	Residual risk	Risk treatment plan	Actions	Responsibility	Resources	Budget	Date due
18	Backwash water tank at Barooga	Pumps fail to operate leading to hindering the backwash process from being accomplished due to exessive backwash water and sludge built up in the tank	Anytime now	Mechanical / electrical pump failure, blocking of the sewer discharge line	Regular inspections and periodical maintenance programs	Yes	Unlikely	Minor	Low	Manage by routine procedures	Yes								
19	The clear and backwash water tanks at TOC, water	Leak and or collapse of the tanks	Anytime now	Age	Non	Yes	Likely	Major	High	Prioritised action required	No	Repair / replace the tanks	minimal	Replace the tanks	Install new tanks	Environmental Engineer	Council staff & contractors	250,000	Jul-09
20	Pipe-work at TOC WTP	Leak and or collapse of the pipework	Anytime now	Age, operational conditions	Non	Yes	Likely	Major	High	Prioritised action required	No	Replace the pipework and install an additional non- return valve	minimal	Replace the pipe work	Install new pipework	Environmental Engineer	Council staff	65,000	Aug-09
21	Potable water reservoirs at TOC	Quality of the water supply	Anytime now	contamination of the water supply in the water reservoirs at TOC	Disinfection of water supply	Yes	Likely	Moderate	High	Prioritised action required	No	Roof of the water reservoirs to prevent contamination	minimal	Roof the water reservoirs	Install roofs	Environmental Engineer	Contractors	230,000	Dec-11
22	Potable water reservoirs at FIN	Quality of the water supply	Anytime now	contamination of the water supply in the water reservoirs at TOC	Disinfection of water supply	Yes	Likely	Moderate	High	Prioritised action required	No	Roof of the water reservoirs to prevent contamination	minimal	Roof the water reservoirs	Install roofs	Environmental Engineer	Contractors	130,000	Dec-11
23	Disinfection system and water quality	Treated water is not disinfected	Anytime now	Mechanical / electrical failure	Regular inspections and periodical maintenance programs, daily testing of chlorine	Yes	Unlikely	Minor	Low	Manage by routine procedures	Yes								
24	Bulk flow meter	No signal to chemical dosing equipment resulting in water not being treated, fluoridated	Anytime now	Mechanical / electrical failure	Bi-annual preventative maintenance	Yes	Possible	Insignificant	Low	Manage by routine procedures	Yes								
25	Fluoridation plant and water quality	No fluoride is added to the water,	Anytime now	mechanical / electrical failure of the fluoride pumps or the magflow meter	Daily testing of treated water quality	Yes	Possible	Insignificant	Low	Manage by routine procedures	Yes								
26	Customer water meters, loss of revenue, water quality and quantity	Operational or physical failure, blocking of filter, cross contamination	Anytime now	Mechanical meter failure, no check valves on large size meters	Quarterly reading and billing system, dual check valves incorporated in the new 20mm	Yes	Possible	Moderate	High	Prioritised action required	No	Installation of backflow prevention valves	- low	Develop a policy & Survey large sizes meters and make assessment on RPZ installation requirements	Inspect and assess the reqirement for installation of reduced pressure zone valves, develop backflow prevention policy	Environmental Engineer	Council staff	10,000	Dec-10

		RISK ID	ENTIFICATIO	ON			RISK ANALYSIS					RIS	SK TREATM	IENT	RISK TREATMENT PLAN				
Risk No.	Asset at Risk	What can happen?	When can it occur?	Possible cause	Existing controls	Is risk credible?	Likelihood	Consequences	Risk rating	Action required	ls risk acceptable?	Treatment option(s)	Residual risk	Risk treatment plan	Actions	Responsibility	Resources	Budget	Date due
27	The Council	False meter reading when checking for the water meter accuracey upon	Anytime now	Unforseeable circumstances leading to meters being out of calibration	Checking meter accuracey using another meter	Yes	Possible	Minor	Medium	Planned action required	No	carry out tests using standard meters	- low	Purchase two meters that can be calibrated regularly	purchase two standard meters and set programmed calibration as per the manufacturers recommendations	Environmental Engineer	Contractors	10,000	Dec-11
28	Water resservoirs (3) & water quality at BGA water treatment plant	Erosion of the interior and exterior paint layers on the walls	Within 2-3 years	Age, operational conditions	Long term capital works and financial plan.	Yes	Possible	Major	High	Prioritised action required	No	Maintenance	- low	Implement regular inspections, repaint the water tower	1- CCTV survey to identify current interior paint layers and walls condition 2- repaint the interior of the towers 3-repaint the exterior of the towers PCA WTP	Environmental Engineer	Contractors	1- 10,000 2- 800,000 3- 700,000	1-2010 2- 2012 3- 2018
29	Water reservoirs at Berrigan and Finley Water Treatment Plants	Erosion of the interior and exterior paint layers on the walls	Within 10 years	Age, operational conditions	Tanks just have been refurbished	Yes	Possible	Major	High	Prioritised action required	No	Maintenance	- low	Implement regular inspections, repaint the water towers	1- CCTV survey to identify the condition of the interior paint layers and walls 2- repaint the interior of the towers 3-repaint the exterior of the towers	Environmental Engineer	Contractors	1- 10,000 2- 800,000 3- 700,001	1-2024 2- 2030 3- 2030
30	Water reservoir	Maintaining service pressure in the tank	Anytime now	Faulty transducers, mechanical pumps failure	Telemetry system and biannual testing	Yes	Possible	Insignificant	Low	Manage by routine procedures	Yes								
31	Concrete Water Reservoirs at Tocumwal, Finley and Berrigan	Collapse of the towers	Anytime now	1- assets reached the end of their useful life. 2- External effects or ground movements,	Non	Yes	Unlikely	Catastrophic	High	Prioritised action required	No	Regular Inspections and structural testing	- low	Regular testing of the structural integrity of the towers, Asst Disposal Plan	Carry out structural testing of the towers every 5 years	Environmental Engineer	Contractors	15,001	Jun-12
32	Sludge pumpwell at Barooga WTP	Overflow of the sludge pumpwell leading to breaching of the licence	Anytime now	Mechanical / electrical pump failure	Telemetry system	Yes	Unlikely	Minor	Low	Manage by routine procedures	Yes								