



Coonamble Shire Council

Water and Sewer Management Plan 2011/2020

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Executive Summary

Introduction

In May 2004, Council resolved to adopt a Water and Sewer Management Plan in order to establish a rational, long term approach to the maintenance of the Shire's water and sewer assets. In addition, Council sought to implement a "user pays" pricing regime, and improve the treatment of water within the Shire, particularly in relation to removal of iron and the addition of fluoride.

This Water and Sewer Management Plan is a review and update of previous plans and will form input into Council's Management Plan for 2011/2012.

Water Quality

The presence of iron in the town water supply has been a problem since the introduction of reticulated water over 50 years ago. Dissolved iron leads to rust stained water that not only impacts on the washing of clothes, but also leads to visible stains on sinks, toilets and the exterior of buildings. The proposal to remove iron from the town water will rectify these problems.

Varying concentrations of hardness in the form of calcium carbonate (CaCO_3) exist within the councils three water supply systems. Gulargambone and Quambone both have a Total Hardness well below the Australian Drinking Water Guidelines (ADWG). The levels of calcium in Coonamble's water supply are very close to that suggested in ADWG causing some difficulties to users, particularly with scale on electrical appliances and evaporative air conditioners.

The cost of removal of both iron and calcium is likely to be excessive. As a result, Council has concentrated on the removal of iron, resolving in December 2008 to purchase filters to be installed at each of Coonamble's Bores.

The addition of fluoride to the water supply is expected to provide long term health benefits to the local population. The funding for this project was finalised in late 2007, with the fluoridation system expected to be operational at Coonamble's Bore No. 5, and the Gulargambone bore by mid 2011.

It is noted that the Quambone Water Supply currently does not recover the cost of operation. Consequently, it is difficult to justify any improvements to the Quambone system in the short to medium term.

Asset Management – Water

With the introduction of mains water within Coonamble Shire in the 1950's parts of the system are reaching the end of their economic life. The result of this is that a mains replacement program to update aging infrastructure has been implemented. It is expected that this program will involve an average expenditure of \$350,000 per annum in Coonamble, \$140,000 per annum in Gulargambone and \$70,000 per annum in Quambone over the next 5 years. Details of the proposed program are appended (Appendix A).

The replacement of water mains commenced in 2005/06 but difficulties were experienced with maintaining staffing levels, particularly with appropriate skills. Therefore, tenders were called by open tender for contractors to undertake future main replacement work. The first of the contracted works are due to commence July 2011.

During 2007/08 all water assets were re-valued to meet the new Fair Value requirements. The total replacement value of Coonamble Shire water assets is approximately \$12.5 million, with an annual depreciation of approximately \$225,000. The annual depreciation will be cash funded in order to ensure adequate reserves are available to ensure long term sustainability of the systems. The construction of any additional assets will increase the value of the system and hence, the annual accrual required for the replacement of the works.

It has also been identified that Coonamble Reservoirs No 3 (on the sportsground) and No 4 (Yarran St) are nearing the end of their life. Given the major cost associated with such a replacement it will be necessary to review options over coming years to ensure that the total cost is minimised.

Pricing - Water

As noted in the 2004/05 Plan, the pricing at Quambone is unlikely to recover the full amount required to operate the village's water supply. For several years Quambone's water has been subsidised by other areas of Council. It is unlikely that this subsidy could be completely removed without the cost of water becoming prohibitive. As a result, charges at Quambone have been arbitrarily set to the same rate as Gulargambone. This pricing structure will be reassessed in future reviews.

Asset Management - Sewer

With the introduction of a sewerage system within Coonamble in the 1960's parts of the system are reaching the end of their economic life. The result of this is that in the near future there will be a need for a sewer mains replacement/lining program to upgrade aging infrastructure. It is expected that this program will involve expenditure of \$360,000 per annum in Coonamble. Details of the proposed program will be provided to Council for approval later in the year.

Funds were allocated for the replacement of sewer mains over recent years although difficulties have been experienced with a lack of skilled staff and the availability of local tradespeople have meant that these funds continue to accrue. As a result, the use of contractors and technology that would essentially renew the mains is a viable alternative to full replacement.

Gulargambone will not require major capital investment in the near future, with the system having been constructed in 1976 and unlikely to require significant replacements within the next 15-20 years.

During 2007/08 all sewer assets were re-valued to meet the new Fair Value requirements. The total replacement value of Coonamble Shire sewer assets was approximately \$17.2 million, with an annual depreciation of approximately \$350,000. The annual depreciation will be cash funded in order to ensure adequate reserves are available to ensure long term sustainability of the systems.

Pricing - Sewer

User Pays sewer pricing was introduced within Coonamble Shire during 2005/06. This brings Coonamble toward best practice pricing; however there are currently no Trade Waste charges for commercial businesses, with the residential rate being applied across the entire system. This will need to be addressed in the future to ensure equitable charging. The introduction of Trade Waste charges is currently being reviewed, although the impact to Council's revenue associated with this pricing regime would be insignificant due to the small amounts of industry.

In the past, Gulargambone sewerage charges have been set at a level that has not recovered its operating cost, let alone the accrual of funds for future capital works. This practice is unsustainable and pricing has been set to reverse this trend. Despite this, the Gulargambone sewerage system will not be providing for the future replacement of its infrastructure. In order to address this, the Coonamble and Gulargambone businesses were amalgamated for 2008/09, with Coonamble likely to subsidise Gulargambone to some extent in the future.

Recommendations

The Plan makes a series of detailed recommendations to Council. If adopted, these recommendations will form input into Councils 2011/2012 Management Plan. They include:

Water Quality

1. Continue to seek approvals for funding for a Treatment Plant for Coonamble.
2. Treatment of Iron in the Coonamble Water Supply to be progressed as a matter of priority.
3. The Treatment process implemented at Coonamble to be reviewed to determine its suitability for the Gulargambone Water Supply.

Asset Management - Water

1. That the Water Mains Replacement Program be continued in Coonamble, Gulargambone and Quambone at an estimated cost of \$350,000 per annum in Coonamble, \$140,000 per annum in Gulargambone and \$70,000 per annum in Quambone.
2. That an accrual of funds is made to allow for future capital works on the water system at a rate equal to the annual depreciation based on valuation at Fair Value as suggested in Section 2 of this report.

Pricing - Water

1. Monitor the pricing of water to ensure adequate provision is made for the long term management and replacement of water assets as identified in Section 2.4 of this Plan.

Asset Management - Sewer

1. That a Sewer Mains Replacement Program continue in Coonamble at an estimated cost of \$360,000 per annum in Coonamble.
2. That an accrual of funds is made to allow for future capital works on the water system at a rate equal to the annual depreciation based on valuation at Fair Value as suggested in Section 4 of this report.

Pricing - Sewer

1. That sewer pricing be increased in accordance with the draft budget for the year 2011/2012.

Introduction

In May 2004, Council resolved to adopt a Water and Sewer Management Plan in order to establish a rational, long term approach to the maintenance of the Shire's water and sewer assets as well as improving the existing system.

This plan is on annual review and update of previous plans and will be an input into Councils 2009/2010 Management Plan.

1. Water Quality

There are at present a number of water quality issues within the three systems in Coonamble Shire. These are discussed individually below.

1.1. Coonamble

1.1.1 Overview

The main areas of concern in relation to water quality in Coonamble are:

1. High concentration of dissolved iron, leading to rust staining on sinks, basins, buildings and clothes;
2. High concentration of dissolved calcium, leading to calcium build up on electrical appliances, bathrooms and evaporative air conditioning systems;
3. Occasional high concentration of various other products, such as aluminium and arsenic.

The level of iron is generally much higher than that recommended by the Australian Drinking Water Guidelines (ADWG), however iron levels are generally prescribed for aesthetic reasons rather than any health concern. Iron levels at Coonamble typically vary between 0.5 and 15mg/L, 95% of the samples being greater than the prescribed limit of 0.3mg/L. It is worth noting that the highest iron levels are found in Bore 3 (in Smith Park), and that the other two bores are generally only slightly above the ADWG.

Due to the fact that iron concentrations are so high and that treatment is relatively straight forward, it is proposed that a treatment system to remove iron is introduced in Coonamble.

The level of calcium is generally close to that recommended by the ADWG. The derivation of the guideline value is based on two considerations:

1. Difficulty in obtaining a lather with soap
2. Undesirable build up on hot water pipes and fittings

Calcium Levels (Total Hardness) typically vary between 165 mg/L and 215 mg/L, only 20% of results are slightly higher than the prescribed limit of 200mg/L. As a result, it is not proposed to remove Calcium from the Coonamble water supply unless it can be shown to be relatively inexpensive. Information received by Council to date suggests that this is not the case.

There are a number of other chemicals found in Coonamble's water supply. These are generally in very small concentrations and usually below the limits prescribed by the ADWG. However, on occasions there have been concentrations found that exceed these guidelines, for chemicals that are a concern for health reasons. Examples of this are Aluminium, found in levels between 0.58 and 0.01 mg/L, with 7% of samples being greater than the prescribed limit of 0.2 mg/L, and Arsenic, found in levels between 0.001 and 0.008 mg/L, compared to the prescribed limit of 0.007 mg/L.

Due to the irregular presence of these substances, it is not proposed to introduce treatment for them, however ongoing monitoring should be conducted to determine exactly how prevalent they are.

1.1.2 Proposed Treatment

Following extensive investigation, a treatment plant concept design was produced by the Department of Commerce with the aim of removing both iron and calcium. The cost associated with this system is high. Further investigations revealed the possibility that the iron could be removed using low cost aeration and filtration systems. Following a trial, Council decided to proceed to implement these systems at each of Coonamble's three bores. This was abandoned following objections from the NSW Office of Water.

The construction of a water treatment plant as described has been budgeted at approximately \$4.5 million.

After the construction of the treatment plant a mains cleaning program will need to be carried out to remove the iron residue from inside the pipes.

1.1.3 Other Water Quality Issues

Other issues of note in relation to the quality of the Coonamble water supply are:

1. Low pressure
2. Lack of fluoridation

The first of these appears to be problematic and not cost effective to remedy and will not be considered further.

Fluoridation has been shown to be effective in improving dental health in the general population. It has been used throughout most major cities in Australia for decades.

In December 2005, Council formally resolved to introduce fluoride to Coonamble and Gulargambone water supplies. Late in 2007, funding for these installations became available with Gulargambone and the Coonamble Bore 5 anticipated to be fluoridated by mid 2011.

1.2. Gulargambone

The water supply in Gulargambone is from much the same groundwater source as Coonamble, however current records show that only iron exceeds ADWG limits.

Gulargambone water typically contains:

Dissolved Iron	0.3 to 2.0 mg/L	(0.3mg/L ADWG limit)
Dissolved Calcium	100 to 125mg/L	(200mg/L ADWG limit)
Other chemicals	No results exceeding limits	

The dissolved iron and calcium levels are considerably lower than Coonamble's. On this basis it may not be cost effective to treat Gulargambone's water. This warrants further investigation once the Coonamble treatment plants are finalised.

1.3. Quambone

The water supply in Quambone is also from groundwater sources similar to Coonamble. As such it has essentially the same water quality issues.

Quambone water typically contains:

Dissolved Iron	0.3 to 3.5mg/L	(0.3mg/L ADWG limit)
Dissolved Calcium	50mg/L	(200mg/L ADWG limit)
Other chemicals	Occasional sample exceeding ADWG	

Whilst it is likely that a similar treatment regime to that proposed in Coonamble may be beneficial, it is unlikely that the relatively small rate base of Quambone could sustain the cost of such improvements. Quambone is currently not recovering the cost of running its existing system. As such, it is unlikely that any further improvements to the Quambone water supply could be justified. Rather, capital investment into the Quambone water supply will target upgrades of existing infrastructure.

Despite this, it is recommended that the water quality continue to be monitored to investigate exceedence of the ADWG for those substances that are considered to be a risk to health.

1.4. Conclusion

All three water supply systems have similar water quality issues. Council has resolved to implement treatment systems at Coonamble and this work is currently being progressed. It is considered that the removal of iron from the Coonamble supply is achievable at a reasonable cost to the consumer.

The improvement of water pressure will no longer be considered as a cost effective or viable option. The introduction of fluoride will continue to be progressed as previously resolved by Council. Outstanding fluoridation works will be undertaken during the construction of treatment systems.

The Gulargambone supply, being similar to Coonamble's, would benefit from all of the same improvement, however it is suggested that the proposed processes be installed, trialled and verified in Coonamble prior to considering their introduction in Gulargambone. Therefore, it is unlikely these improvements will be introduced at Gulargambone in the short term.

The Quambone water supply, whilst similar to the other two, is considered to be too small to justify additional infrastructure, particularly when the system is not currently recovering its existing cost of operation. Capital investment at Quambone will be limited to upgrades of existing infrastructure.

All three water supplies should continue to have monitoring conducted to focus on pollutants that occasionally exceed the ADWG and could have health impacts. Further review of this monitoring data will be conducted in the future.

2. Asset Management - Water

Each of the three water systems in the Shire is reaching an age where assets are starting to fail and need replacement. At the same time, there are currently considerable reserves available for these works. In previous plans Council adopted a system of accruing for asset replacement and the introduction of a mains replacement program. These works have now commenced but a lack of suitable staff and/or lack of available tradespeople has proved to be a major impediment. Consequently, Council has moved to contract the works out. Each of the three systems is discussed in detail below.

2.1. Coonamble

2.1.1 *Discussion*

The Coonamble water supply was introduced around 1950, at which time the two older reservoirs (at the sportsground and in Yarran St) were constructed, along with over 5,000m of water main. These mains were generally in the vicinity of the CBD, but also included a pipe down Wingadee St to join Bore No. 5 to the system.

Today, there are nearly 49,000m of water main in Coonamble, three reservoirs and five bores (of which only three are currently used). The total replacement value of the system is in the order of \$10 million. There are currently \$3.4 million held in reserves for Coonamble Water.

Following the revaluation of the water assets, the depreciation of the Coonamble Water system is approximately \$180,000 per annum, and this should be accrued toward asset replacement to ensure its long term sustainability. This amount should be budgeted annually as either expenditure on assets, or if this is not necessary at the time, then as an accrual for future works.

Water mains are generally considered to have a 50 year life. Whilst many will be serviceable beyond this time, for planning purposes this life has been used for revaluations. On this basis, there are over \$1.3 million worth of mains that are due for replacement within the next five years. It is felt that the regularity of main breaks in certain areas show that this expenditure is warranted.

In addition, the two concrete reservoirs are nearing their serviceable life, with No 3 (on the sportsground) currently leaking and showing signs of deterioration. Both have been scheduled for replacement in 2014; however their replacement will be reviewed once the final treatment process is determined and it may be better to refurbish than replace.

2.1.2 Conclusion

As noted in the preceding discussion, it is recommended that \$180,000 per annum be accrued by the Coonamble Water Supply for the purpose of infrastructure replacement. This will ensure the long term sustainability of the system. It is worth noting that the construction of a water treatment plant will increase the value of Council's assets and with it, the accrual required for the infrastructure replacement.

It is also recommended that a Coonamble mains replacement program be progressed, based on an expenditure of \$350,000 per annum. This expenditure should focus on areas that are at the end of their economic life and/or are showing signs of major failure. The proposed program is appended (Appendix A).

Finally, it is recommended that the status of Reservoirs No 3 and No 4 be reviewed upon final determination of treatment systems for the Coonamble Water Supply. This is due to the fact that they are nearing the end of their economic life and their replacement could result in significant cost savings in the iron treatment process.

2.2. Gulargambone

2.2.1 Discussion

The Gulargambone water supply was introduced around 1955. Today, there are nearly 12,000m of water main in Gulargambone, one reservoir and two bores. The total replacement value of the system is in the order of \$2.6 million. There is currently \$1million held in reserves for Gulargambone Water.

Based on the estimated replacement value of the Gulargambone Water system, \$49,000 per annum must be accrued toward asset replacement to ensure its long term sustainability. This amount should be budgeted annually as either expenditure on assets, or if this is not necessary at the time, then as an accrual for future works.

As with the Coonamble system, water mains are estimated to have a 50 year life. On this basis, there are approximately \$600,000 worth of mains that are due to be replaced within the next five years.

The bores and reservoir are considered to be in reasonable condition for their age, and are not due for replacement, for approximately 20 years (or more).

2.2.2 Conclusion

As noted earlier, it is recommended that \$49,000 per annum be accrued by the Gulargambone Water Supply for the purpose of infrastructure replacement. This will ensure the long term sustainability of the system and prevent deterioration over time.

It is also recommended that a Gulargambone mains replacement program be implemented, based on an expenditure of \$140,000 per annum. This expenditure should be focussed on areas that are at the end of their economic life and/or are showing signs of major failure. The proposed program will be provided to Council for their approval later in the year.

2.3. Quambone

2.3.1 Discussion

The Quambone water supply was introduced around 1956. Today, there are approximately 3,300m of water main in Quambone, one reservoir and one bore. The total replacement value of the system is approximately \$850,000. There are currently no funds held in reserves for Quambone Water, as it has traditionally not recovered its cost of operation. The annual shortfall is in the order of \$13,000, despite the fact that there is no accrual being made to fund future replacement of infrastructure.

Based on the estimated replacement value of the Quambone Water system, \$15,000 per annum must be accrued toward asset replacement to ensure its long term sustainability. This amount should be budgeted annually as either expenditure on assets, or if this is not necessary at the time, then as an accrual for future works.

As with the Coonamble system, water mains are estimated to have a 50 year life. On this basis, there are approximately \$350,000 worth of mains that are due to be replaced within the next five years. As there are currently no reserves for Quambone water supply, this program will need to be funded by the newly combined Coonamble Shire Water Fund.

The reservoir and pump are due for replacement/ refurbishment in approximately 10 years but are currently serviceable.

2.3.2 Conclusion

As noted in the preceding discussion, it is recommended that \$15,000 per annum be accrued by the Quambone Water Supply for the purpose of infrastructure replacement. This will ensure the long term sustainability of the system and prevent deterioration over time. Given the lack of revenue from Quambone water, it is unlikely that this level of accrual will be achieved in the short term, although efforts should be made in coming years to address this.

It is also recommended that a Quambone mains replacement program be implemented, based on an expenditure of \$70,000 per annum. This program will need to be funded by the newly combined Coonamble Shire Water Fund, with expenditure focussed on areas that are at the end of their economic life and/or are showing signs of major failure. The proposed program will be provided to Council for their approval later in the year.

2.4. Recommendations

It is proposed that a Water Mains Replacement Program be implemented with an annual expenditure in the order of:

- Coonamble \$350,000,
- Gulargambone \$140,000 and
- Quambone \$70,000 respectively.

The proposed program is provided in the appendices (Appendix A).

It is proposed that an annual accrual of funds be made for future infrastructure replacement at an annual rate of:

- Coonamble \$180,000
- Gulargambone \$ 49,000
- Quambone \$ 15,000

3. Pricing - Water

It is proposed that the existing pricing regime be maintained, in accordance with the draft budget for the year 2011/2012.

It is worth noting that the decision to construct a treatment plant for Coonamble's water will lead to a significant increase above CPI (less any increases that had been introduced in prior years) for that system. The increase will be phased in over the 4 years following the commissioning of the plant.

4. Asset Management - Sewer

The Coonamble sewerage system is reaching an age where assets are starting to fail and are in need of replacement. There are currently considerable reserves available for works at Coonamble while reserves for the Gulargambone system are non-existent. This problem will be addressed through the process of combining the Coonamble and Gulargambone sewer businesses, with future price increases set to subsidise the Gulargambone system.

Each of the systems is discussed in detail below.

4.1. Coonamble

4.1.1 *Discussion*

The Coonamble sewerage system was established around 1963, at which time the sewerage treatment plant was constructed, along with approximately 19,000m of sewer main.

Today, there are nearly 35,000m of sewer main in Coonamble. The total replacement value of the system is in the order of \$13 million. There are currently \$3.6 million held in reserves for Coonamble Sewer.

Based on the estimated replacement value of the Coonamble Sewer system, \$250,000 per annum must be accrued towards asset renewal to ensure its long term sustainability. This amount should be budgeted annually as either expenditure on assets, or if this is not necessary at the time, then as an accrual for future works.

Sewer mains are generally considered to have a 50 year life, however many of the older pipes are earthenware and prone to failure earlier, particularly in ground that is subject to movement such as that in the reactive clay soils of Coonamble. For planning purposes, a 45 year life has been used for these mains. On this basis, there are approximately \$6 million worth of mains that are due to be replaced/lined within the next ten years. This may pose cash flow problems for the Coonamble Sewer fund. It will be necessary to do a more detailed analysis of this issue over the coming year.

In addition, the existing sewerage treatment plant is expected to have a remaining life of approximately 20 years. Whilst this does not cause an immediate problem, it is anticipated that this will create a significant cash shortfall when this plant is due to be replaced. Whilst the annual provision mentioned earlier will ultimately ensure that this work can be funded, there will be a need for either loan or grant funding for this major investment.

4.1.2 Conclusion

As noted earlier, it is recommended that \$250,000 per annum be accrued by the Coonamble Sewerage System for the purpose of infrastructure replacement. This will ensure the long term sustainability of the system and prevent deterioration over time.

It is also recommended that a Coonamble mains replacement program be implemented, based on an expenditure of \$360,000 per annum, with a more detailed review of the required works program during 2009/10. Expenditure should be focussed on areas that are at the end of their economic life and/or are showing signs of major failure. The proposed program will be provided to Council for their approval later in the year.

4.2. Gulargambone

The Gulargambone sewerage system was established in 1976. The current system involves nearly 8,500m of sewer main. The total replacement value of the system is in the order of \$4.1 million. There are currently no reserves held for Gulargambone Sewer.

Based on the estimated replacement value of the Gulargambone Sewer system, \$86,000 per annum must be accrued toward asset replacement to ensure its long term sustainability. This amount should be budgeted annually as either expenditure on assets, or if this is not necessary at the time, then as an accrual for future works.

As the Gulargambone Sewerage System was constructed in 1976, there are no major capital works anticipated within the next 15-20 years. Whilst there is obviously no immediate problem with Gulargambone's sewerage system, the lack of reserves is of particular concern, especially given that there has been a draw down of funds in recent years just to cover the operating cost of the system. Clearly there will be no funds available for major works in the future unless this trend is reversed.

If cash or the ability to repay a loan is not available within the Gulargambone sewer fund then the burden would ultimately fall on other areas of council. As discussed in Section 4.1.1 Coonamble sewer fund is likely to be in considerable debt at this time and unable to afford the works. Neither water fund is legally allowed to fund sewer works, leaving the only avenues as General Revenue and Grant Funding (currently unavailable for this type of works). This is clearly of major concern and needs to be addressed in the near future.

4.2.1 Conclusion

As noted earlier, it is recommended that pricing be progressively adjusted in coming years to allow the accrual of \$86,000 per annum for the Gulargambone Sewerage System for the purpose of infrastructure replacement. This will ensure the long term sustainability of the system and prevent deterioration over time.

4.3. Conclusion and Recommendations

It is proposed that a Sewer Mains Replacement Program be implemented in Coonamble with an annual expenditure of \$360,000. A proposed program based on age of asset is will be provided in the appendices (Appendix B).

It is also proposed that the following annual accrual of funds be made,

- Coonamble - \$250,000 and
- Gulargambone - \$86,000.

Although it is likely to take a number of years of adjustment to the Gulargambone pricing before this is achieved.

5. Pricing - Sewer

In 2005/06 Coonamble introduced user pays charges for sewer. The only exception to this principle is the lack of Trade Waste charges. It has been proposed to introduce Trade Waste charges however the amount of "industrial" type waste in Coonamble Shire is relatively minor, and the cost of administering such a system would offset any additional revenue from the scheme.

Further investigation into this item will be undertaken at some point in the future. In the interim, trade waste will be charged on the same basis as domestic sewer, but with estimated discharge quantities determining the actual charge.

In recent years, the Gulargambone sewerage system has not been recouping sufficient revenue to cover its operating costs, let alone the future infrastructure costs described in Section 4.2. Consequently, the reserve fund available to Gulargambone sewerage is depleted and full cost recovery in the short term unlikely. The Gulargambone sewer system has previously been priced on the assumption that no funds are accrued for future infrastructure replacement.

Due to the unsustainable nature of the Gulargambone Sewerage system, it is proposed to amalgamate the Coonamble and Gulargambone schemes. There will be an amount of subsidy from Coonamble toward the long term operation of the Gulargambone scheme, approximately equal to the depreciation cost of the assets. In order to minimise any subsidy, pricing relativity between the two towns should be maintained. It will be necessary to increase the price of both schemes in order to ensure that the overall system is sustainable in the long term. It is proposed to increase charges associated with Gulargambone sewer services in accordance with the draft budget for the year 2011/2012.

6. Estimated Capital Investment 2011/2012 – 2019/2020

6.1. Water Treatment

- i) Coonamble #3 Sportsground Reservoir (opposite Smith Park)
Rehabilitate following construction of treatment plant (2014/2015)
Cost \$300,000
- ii) Coonamble #4 Reservoir (cnr Yarran/Barton Sts)
Refurbish in year 2015/2016. Cost \$300,000.
- iii) Coonamble #5 Reservoir (cnr Wingadee/Conimbia Sts)
The steel reservoir is the newest, but requires some localised areas of repainting to prevent rusting. The estimated cost is \$150,000.
- iv) Reservoir Modifications to Improve Water Quality:
All three reservoirs are filled by their bore pumps from the Great Artesian Aquifer by inlet pressure mains near ground level. The same mains simultaneously feed into the reticulation with the chlorinated water. The water, which surfaces around 28°C into the network, has minimal time to cool to around 15°, which is normally the case. Low detention times leads to less contact time between the chlorine and the water for effective disinfection. In addition, chlorine gas escapes into the atmosphere quicker with warmer water temperatures.

A longer term project would be to eliminate the present “short-circuiting” by introducing the bore water further up in the reservoirs, allowing increased disinfection time and cooling. Estimated cost (3 reservoirs) for pipe work is \$75,000.

v) Old Water Mains Replacement:

Council’s adopted 2009-2012 Management Plan sets aside approximately \$350,000 per year (Coonamble), \$150,000 per year (Gulargambone) and \$70,000 per year (Quambone) to replace the oldest or most stressed (via recorded mains breaks) sections of the networks. This allows replacement of the 1950’s era asbestos pipes with modern “Blue Brute” PVC mains. By the end of 2013/2014 this will represent 17% replacement for Coonamble (8.7km of 49kms), 30% for Gulargambone (3.6kms of 12kms) and 56% (1.9kms of 3.3kms) for Quambone.

vi) Bore Pumps at Stations #3, #4 & #5:

A major overhaul of the bore pumps by qualified staff or contractors is required on a programmed basis to ensure efficient running. This is not a “quick fix” at breakdowns, but a planned servicing regime, especially to prevent a major failure of equipment (for example at peak summer periods when the three pumps operate at maximum times). This is estimated at \$10,000 per bore pump every 3 years, or \$30,000 for the 3 pumps in 3 years.

vii) Telemetry:

Councils are required to submit yearly information statements to the Office of Water and telemetry allows analysis and real time reporting of the flow characteristics of the water supply system, and also the flows into the Wastewater Treatment Plant (WWTP). The equipment uses microwave flow detectors at the inlet flume at the WWTP, and electronic measuring equipment within the water supply network. The telemetry reports “back to base”, and can be accessed via modems to start and shut down pumps as required. The cost varies based on how many functions are required, but is approximately \$40,000 per year for 2 years, plus \$5,000 per year for maintenance.

viii) Water Quality Improvements (new treatment plant):

This major item consists of a water treatment plant (Council approved 10/03/2010): \$2.5 million) to remove the iron, calcium and carbonate and other constituents (Al, Ar, Mg) of the town water pumped from the Great Artesian Basin bores. This project needs the concurrence of the NSW Office of Water to proceed. For estimating, assume the works capital cost is \$4.5 million, with \$25,000 per year (1%) running costs for the first 8 years.

ix) General Maintenance

General maintenance (mains repairs, running WWTP, pump stations, etc) is \$519,000 per year.

6.2. Gulargambone

- i) Old Water Main Replacement:
As previously noted, Council budgets \$150,000 per year.
- ii) General Maintenance:
General maintenance (mains repairs, running WWTP, pump stations, etc) is \$166,000 per year.

6.3. Quambone

- i) Ground Tank Repair and Re-Roofing:
The ground tank below the two overhead tanks requires maintenance to extend its life. The cost is in the order of \$30,000.
- ii) Replacement of Overhead Tanks:
These two old galvanised tanks (set high up on a frame) have become rusted, and the stairway access ladder does not comply with the current standards. The replacement cost for tanks and complying ladders is estimated at \$60,000.
- iii) Old Water Mains Replacement:
As previously noted, Council budgets \$70,000 per year.
- iv) General Maintenance:
General maintenance (mains repairs, running WWTP, pump stations, etc) is \$43,000 per year.

6.4. Sewerage System

Some ageing sewer components at Coonamble and Gulargambone require upgrading and process improvements to increase efficiencies, as follows in this forward strategy. The items are listed and explained as follows:

6.4.1 Coonamble

- i) Submersible Pumps at Pump Stations:
Proposed 2 pumps per year at approximately \$9,000 per pump (installed).

Notes: The oldest 5 of Councils 8 pump stations, built around 1963/1964, are approaching 50 years of age with replacement parts difficult to source.

- ii) “Soft Starter” Switchgear at Pump Stations:
Proposed at 1 pump station per year at approximately \$3,000 per pump station (installed).

Notes: This electrical equipment gradually speeds up the sewer pumps, rather than a “shock start” which causes water hammer effects in the rising mains.

- iii) Safety Railings at WWTP:
Estimated at \$120,000 per year for 2 years. This work consists of the placing of galvanised safety railings to prevent staff falling into the various flumes and deep chambers that date back to the 1960's. The most dangerous sections are to be done in the 2010/2011 year. This is an on-going OH&S issue, with an immersion accident already. Similar work has already been completed at Gulargambone WWTP, and could be done under a minor contract at Coonamble in 2011/201.
- iv) Humus Draw Off Pumps:
Removal of humus tank sludge (biomass residue from the trickling filters) must be presently done daily (including weekends) to prevent the humus tank overflowing. A mono submersible pump and timer would automate this operation. The cost is estimated at \$6,000.
- v) Investigations for a Supplementary Effluent Storage Pond:
The area surrounding and to the North of the WWTP (adjacent and to the right on the Walgett Road) contains Councils two (2) Final Polishing ponds. Designed in 1984 (and replacing a series of channels) to the then licensing standards of nearly 30 years ago, these are shallow ponds, averaging only 1.3m deep, which allows sunlight to kill pathogens in the treated effluent released from the WWTP, after a slow journey of up to 30 days.
- The overflow travels to a small (6.5ML) dam, from which treated water is pumped to the Golf Course in summer. This is quickly depleted in summer, especially if Council works staff also need it.
- In winter, there is no demand and too much treated water, which floods the area and backs up the WWTP. A concept design for a 90ML holding dam to supply Council operations and the Golf Course throughout summer/drought periods has been prepared. This long-term project can be developed by further investigation, survey and design, at approximately \$3,000 per year for 2 years.
- vi) Smoke Detection for Illegal connections:
This item refers to the location of illegal connections to Councils sewerage network. In times of heavy or prolonged rain, the pump stations run continuously as infiltration to the network from stormwater occurs. This results in high power costs and overloading of the pump stations. Some rainfall infiltration occurs via manholes, or joints or cracked pipes. However other entry via illegal connection of roofs and shed downpipes to the sewers inside yards.

Various companies carry out investigative services to Councils using smoke generating equipment at the boundary risers, and if smoke starts rising above the guttering Council staff can further investigate/arrange Notices to be served. Estimated cost is \$12,000.

vii) Laboratory Equipment and Facilities:

Some small scale renovations to existing older sheds at Gulargambone and Coonamble WWTP's is required to allow storage of laboratory equipment used in the testing of wastewater parameters required by the EPA or NSW Office of Water. This includes painting, benches, sink and storage space for the Council lab equipment. Estimated cost is \$5,000.

viii) Relining of Cracked, Blocked or Unserviceable Lines:

Council has previously endorsed the 2009-2012 Management Plan allowing a 5 year works plan (to 2011/2012) to reline damaged sewer mains. The damaged sections have been picked up by contractors using Closed Circuit TV, and a program has been formulated. There is approximately 35kms of 150mm and 225mm main presently installed since the early 1960's, and around 8.4kms (24%) have sustained damage. Relining with a thermoplastic material is a cheaper solution than digging up and replacing with a new piping. However, it DOES NOT increase the mains size. This may cause problems if further subdivision and houses are built "upstream" of a particular sewer "catchment area", as a particular feeder line may become overloaded. A bypass line, larger main or duplication would then need to be installed. Costs are \$250,000 per year for Coonamble.

ix) General Maintenance:

General maintenance (mains repairs, running WWTP, pump stations, etc) is \$566,000 per year.

6.4.2 Gulargambone

i) Relining of Cracked, Blocked or Unserviceable Lines:

The Gulargambone sewer network installation commenced in 1976 and currently comprises about 8.5kms of mains, pump station and WWTP. As with elements of Coonambles system, fracturing and drop-downs of mains can occur through ground movement. Although, at 35 years of age, the system is 10 years younger than Coonambles, to check on the condition of the network a survey by CCTV is required over a 2 year period. Cost is estimated at \$5,000 per year for 2 years.

- ii) General Maintenance:
General Maintenance (mains repairs, running WWTP, pump stations, etc) is \$188,000 per year.

7. Conclusion and Recommendations

7.1. Water Assets

It is recommended that Council:

1. Continue with Water Mains Replacement Program in Coonamble, Gulargambone and Quambone at an estimated cost of \$350,000 per annum in Coonamble, \$140,000 per annum in Gulargambone and \$70,000 per annum in Quambone.
2. Accrue funds to allow for future capital works on the water system at the rates suggested in Section 2 of this report.

7.2. Water Pricing

It is recommended that Council:

1. Increase water charges by 10% in accordance with Section 3.0 of this Plan.
2. Monitor the pricing of water to ensure adequate provision is made for the long term management and replacement of water assets as identified in Section 2.4 of this Plan.

7.3. Sewer Assets

It is recommended that Council:

1. Adopt a Sewer Mains Replacement Program in Coonamble at an estimated cost of \$360,000 per annum in Coonamble
2. accrue funds to allow for future capital works on the sewer system at the rates suggested in Section 4 of this report

7.4. Sewer Pricing

It is recommended that Council:

1. Gulargambone and Coonamble sewer scheme be amalgamated into a single scheme, with existing pricing relativity to be retained
2. Increase sewer charges by 8% for Gulargambone and 4% for Coonamble for 2009/10, with a detailed review to be conducted when further data is available.

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
ACTIVITY REQUIRED									
SEWERAGE NETWORK									
a) Coonamble:-									
i New submersible pumps at 5 stations				18000	18000	18000	18000	18000	
ii "Soft Starter" switchgear (7 pump stations)		3000	3000	3000	3000	3000	3000	3000	
iii Safety railings at WWTP	60000								
iv Humus draw-off pump at WWTP									
v Investigations for WWTP effluent storage	3000	3000							
vi Smoke detection/illegal connections									
vii Laboratory facilities & equipment	5000								
viii Relining of cracked or blocked lines	250000	250000	250000	250000	250000	250000	250000	250000	250000
ix Yearly General Maintenance (with CPI adj.)	384000	407000	419000	432000	445000	458000	472000	486000	500000
Depreciation of Assets	269,000	269,000	269,000	269,000	269,000	269,000	269,000	269,000	269,000
b) Gulgambone:-									
i Relining of cracked or blocked lines						5000		5000	
ii Yearly General Maintenance (with CPI adj.)	108,000	111,000	114,000	117,000	121,000	124,000	132,000	136,000	140,000
Depreciation of Assets	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000
YEARLY TOTALS:	1113000	1137000	1149000	1183000	1200000	1221000	1238000	1261000	1253000