A FUTURE READY CABONNE

WATER ASSET MANAGEMENT PLAN

2025-2029

CABONNE COUNCIL

Document Control					
Rev No	**Date**	**Revision Details**	**Author**	**Verifier**	**Approver**
0.5		Draft	SB/TS	BC	
0.9		Update based on feedback from GM			GM
1.0		Final Draft for Exhibition			Council
2.0	May 2018	Asset Management Plan updated with latest available revaluation data - Draft	DL/LM	RS/SS/RC	

1 Executive Summary

Council's intention is to provide the Shire with reticulated water via infrastructure that is serviced and maintained to a level which reflects the community's expectations and operates in a manner that is both functional and cost effective. The Water System had a fair value of **$21.69 million** on the 30 June 2018.

This plan assists Council in the decision making process and is presented at a level to provide key information that can be used in the determination of levels of service and funding required. The following table identifies the asset categories in this plan, the five (5) year average costs and funding gap if one exists. Figure 1.1 indicates the proposed expenditure over the next 5 years.

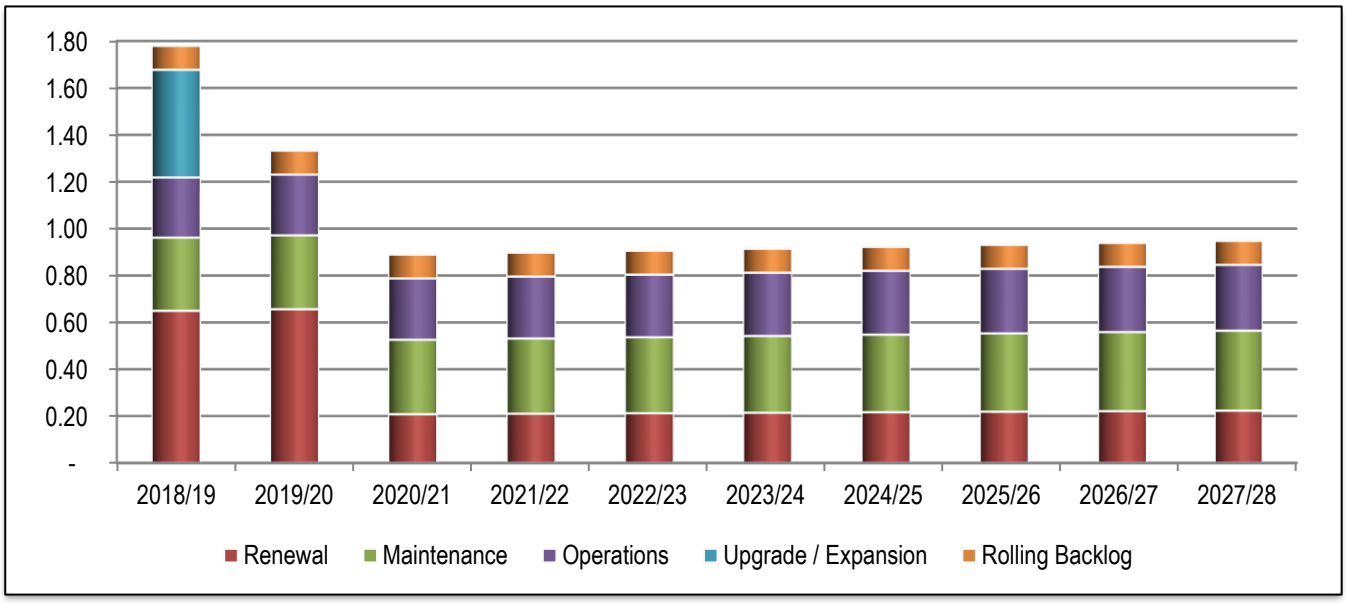
Table 1.1: Water Asset Portfolio Overview (in 2018 $,000)

Component	Dimension	Operation & Maintenance Budget[1]	Renewal Budget[1]	Upgrade & New Budget[1]	Average Renewal Funding Gap[1]	Backlog (2018/19)	Backlog (2022/23)
Water Management Expenses		$804	-	-	-	-	-
Dams	2		-	-	$243.8	$4,745.8	$4,855.8
Bore Field	8		-	-	$45.3	$611.7	$906.0
Water Pump Stations	3		-	-	$48.9	$680.0	$818.5
Water Mains	94.9 KM		-	-	-	-	-
Water Treatment Plants	1		-	-	$100.2	$1,910.7	$2,003.1
Reservoirs	6		-		$89.6	$1,010.8	$1,791.0
Water Telemetry	6		-	$188.1	-	-	-
Meters	1178		$40.3	$376.9	-	-	-
TOTAL		**$804**	$40.3	$565.1	$527.7	$8,918.8	$10,173.2

Notes:
1. *Budget Figures are the 5-year annual average amounts.*
2. *Where O&M budgets are not specifically tied to a component they are listed here including items such as: electricity, telemetry, cleaning, internal costs, plant hire and insurance.*

The following figure identifies the proposed expenditure over the next 10 years together with the backlog if one exists.

Figure 1.1: What will we spend over the next 10 years (2018 $M)?



The process of managing our Water assets is one of continually improving the knowledge Council has including maintaining up to date asset registers, condition ratings, and the cost of work on the asset and the rate at which assets deteriorate and reach their intervention level. Section 12 contains tasks to further improve the details contained in the next Water Asset Management Plan.

2 Strategic Objectives

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

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

Cabonne Council developed a comprehensive community engagement strategy to ensure a broad range of opinions; ideas and visions were captured to help shape the Cabonne Community Strategic Plan. The outcomes & strategies supported by that plan are detailed in the Strategic Asset Management Plan.

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

Table 2.1: Where can I find additional information?

Document / System	Content
Community Strategic Plan	Outcomes and Strategies identified by the community.
Council Asset Policy	How we manage assets.
Asset Management Strategy	Overall direction of asset management and portfolio summary.
Asset Management Manual	Procedures and Processes that guide the management of assets (currently drafting).
Condition Assessment Manual	Details on the process of assessing condition, including photographic examples of various conditions.
Enterprise Risk Management Plan	The identification and management of risks across Council operations.
Asset Class Definitions	How assets are grouped into their classes.
Asset Management System (Assetic)	Electronic system that contains the asset register, condition ratings and used to model future renewals.
GIS System (MapInfo Professional)	Geographical information system that produces maps of assets.
Water and Sewerage Strategic Business Plan	It gives details and supporting information for Council's Community Strategic Plan, Delivery Program and Operational Plan and Budget.
Cabonne Demand Management Plan	Cabonne Council is responsible for the water supply reticulation, sewerage and stormwater management services within the Cabonne local government area (LGA). As a local water utility (LWU), Cabonne aims to be consistent with the DECCW (formerly the NSW Department of Energy, Utilities and Sustainability, DEUS), Best Practice Management of Water Supply and Sewerage Guidelines (DWE, 2007). This Demand Management Plan addresses one of the six "best practice" criteria set out by the guidelines by recommending an appropriate demand management strategy for implementation across Cabonne's water supply systems.

The Cabonne CSP Outcomes supported by the Water Asset Management Plan include:

- 5.1 All villages have a secure and quality water supply
  - Manage secure water supply schemes
  - Investigate provision of potable water to Molong, Cumnock and Yeoval
  - Promote responsible water use across the community

3 Services Provided & Classification

Council provides the towns of Molong and Mullion Creek with a reticulated water supply that meets current drinking water standards, and the towns of Cumnock and Yeoval with a reticulated non-potable water supply, at minimum pressures as outlined in our Customer Service Levels.

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

Criticality Grade	Water
Very High	Hospitals etc.
High	Trunk mains >= 250 mm
Medium	Trunk mains 150 mm - 200 mm
Low	Retic 100 mm, bore lines
Very Low	Retic <= 100 mm

cet = Cumulative ET's

The criticality rating identifies different intervention levels for different assets depending on their assessed criticality and consequence rating. The water assets had a fair value of **$48.1 million** on the 30 June 2017. Details of the major components are contained in Table 3.1 together with their renewal cost.

Table 3.1: What is provided?

Classification	Asset	Quantity
Very High	Reticulation Pipework	2,215.27 m
High	Reticulation Pipework	1,066.14 m
Medium	Reticulation Pipework	16,959.35 m
Low	Reticulation Pipework	34,631.07 m
Very Low	Reticulation Pipework	40,063.33 m
Medium	Reservoirs	6
Medium	Bores	8
Medium	Pump Stations	3
Very High	Treatment Plant	1
Very High	Dams	3

4 Levels of Service & Key Performance Measures

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

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

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

Finally, Key Performance Measures and how they will be measured provide the detail on how we determine whether we are delivering what the community are asking for. Development of Key Performance Measures (KPM's) based on condition have been developed by considering the statutory regulated quality of potable water and agreed customer service levels. The KPM's are to be reviewed to align with the Technical LOS and the Strategies identified in the CSP that support the outcomes identified in Levels of Service section of this document.

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

Table 4.1: What does the Community want?

CSP	The Community Wants (Community LOS)	How we Deliver this (Technical LOS)	Target	Current
	Water quality suitable for drinking.	Compliance with Australian Drinking Water Guidelines for health and aesthetics.	100% compliance for potable supplies	100% at Molong 85% at Delgany
	Permanently secure supply in all conditions including drought years.	Secondary water supply & infrastructure maintained at a safe and reliable standard.	Restrictions should not be applied for longer than 5% of the year.	Compliant at all supplies.

	Infrastructure operates continuously to meet the user's needs.	Infrastructure is maintained in an operational condition, and replaced at adopted intervention level.	a) Individual components operational 98% of the time. b) Reactive maintenance activities completed within 72 hrs for minor defects, 12 hrs for pipe work repairs & 6 hrs for mechanical repairs. c) Condition 4 & 5 assets replaced within 1 year of assessment. d) Minimum pressure	a) Compliant b) 100% Compliance within timeframes c) Not compliant. d) Compliant

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

5 Condition of Our Assets

Council maintains a Condition Assessment Manual that details the frequency of inspection and condition rating to be used for all assets. This data is recorded in the Council Asset Management System and used to predict the timing of renewal/maintenance requirements in the Long Term Financial Plan.

Assets are rated on a 1 (Excellent) to 5 (Very Poor) scale consistent with the requirements for Integrated Planning & Reporting (pg. 90, 2013). Details on how Council assesses condition and further information on the rating scale will be contained in the Condition Assessment Manual.

The intent of Council is not to undertake renewal on an asset until it reaches its 'Intervention Level', that is the condition at which the community has determined renewal is required based on the LOS analysis. Typically, assets will be renewed between condition 3 & 4, which is the threshold for average to poor condition, depending on their classification.

Straight-line deterioration profiles will be used to determine when an asset is expected to be due for renewal, until such time that historical data can be used to define a more accurate reflection of the deterioration curves for each material type in an asset group.

Table 5.1: What are our Intervention Levels to Renew an Asset?

Component	*Criticality*	*Intervention Level*	*Useful Life (yrs)*
Reticulation Pipework	Very High	3	70 (AC) 70 (VC) 70 (uPVC) 70 (Concrete) 70 (DI)
Reticulation Pipework	High	4	
Reticulation Pipework	Medium	4	
Reticulation Pipework	Low	5	
Reticulation Pipework	Very Low	5	
Pumps	Medium	4	Civil – 50 Mech/Elec - 25
Reservoirs	Medium	4	Civil – 100 Roof – 40 Mech – 40 Elec - 30
Bores	Medium	4	Civil – 50 Mech/Elec - 25
Water Treatment Plant	Very High	3	Varies on component
Dams	Very High	3	Varies on component

Each asset's condition is maintained in the Asset Register.

6 Operations

Operational activities are those regular activities that are required to continuously provide a service. These include asset inspections, electricity costs, fuel and overheads. The Operational Plan details the specific projects and activities to be achieved to meet the commitments in the Delivery Program. It spells out the details of the Delivery Program – the individual projects and activities that will be undertaken each year to achieve the commitments made in the Delivery Program. It will also include the council's operational budget for the year.

Regular inspection and maintenance of the above ground infrastructure is completed by the field operations staff. Council conducts regular Hydrant and Dead-End Flushing programmes as part of the reticulation maintenance of the water supply for Molong. Council currently has a quarterly inspection programme that is completed by an independent specialised consultant. This inspection programme includes the above ground infrastructure on all of Councils Water and Sewerage Asset sites.

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

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

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

- Undertake Best Practice for Water Supply within Cabonne;
- Water Treatment Operations/Maintenance;
- Water Supply Storage Systems Operations/Maintenance;
- Pipelines, Hydrant and Meter Operations/Maintenance; and
- Water Pump Operations/Maintenance.

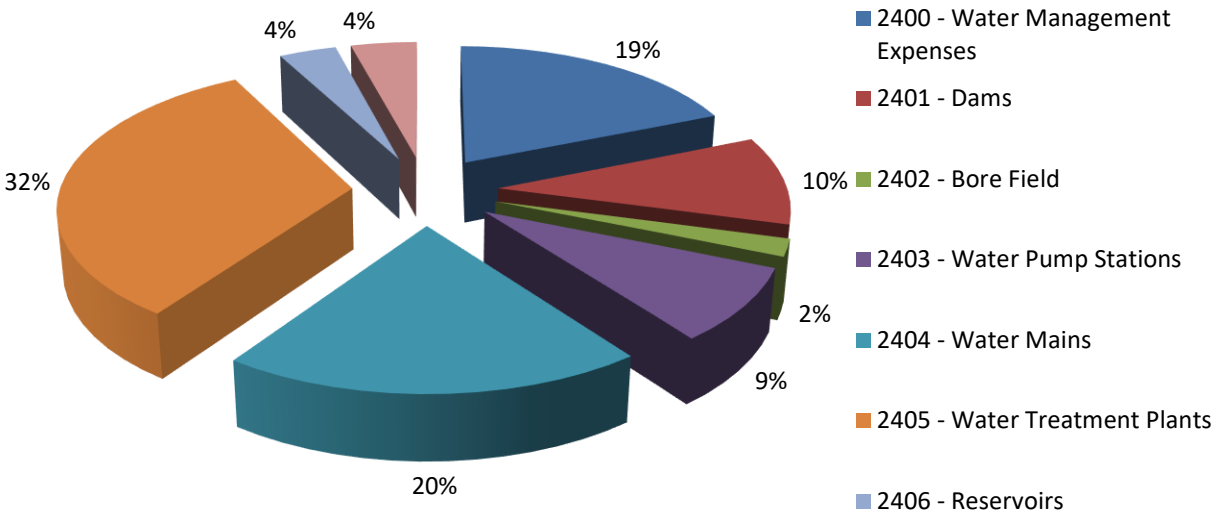
Table 6.1: What are some of our Operational Activities and the frequency we undertake them?

Inspection	Current Frequency	Proposed Frequency
Hydrant Inspections	Annually	Annually
Pressure testing	Nil	Yearly
Condition Assessments of all Above Ground External Assets	In line with revaluations	2.5% annually/ 40 years
Dead End Flushing	3 monthly	3 monthly
Reticulation Mains Cleaning/Flushing	6 monthly	6 monthly
Hydrant Maintenance	Infrequent	Annually
Clean Water Storage Reservoirs	Every 2 years	Every 2 years
Water Treatment Plant checks	Daily	Daily
Water PS checks	Daily	Daily
Water reservoir checks	Monthly	Monthly
Dam safety reports	Biennial	Biennial

Table 6.2: What are our Operational Costs?

Item	Budget
Water Management Expenses	$143,782.28
Dams	$78,057.40
Bore Field	$15,221.24
Water Pump Stations	$64,969.33
Water Mains	$152,670.16
Water Treatment Plants	$247,220.55
Reservoirs	$27,736.09
Water Telemetry	$31,937.56
Water Management Expenses	$143,782.28

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



7 Maintenance

Routine maintenance is the regular on-going work that is necessary to keep assets operating, to ensure they reach their expected useful life. It includes work on an asset where a portion may fail and need immediate repair to make it operational again. It may be either planned, where works are programmed in or cyclic in nature or reactive in response to storm damage or vandalism.

Council undertakes routine and reactive inspections and maintenance when the need arises. The water storage reservoirs are also cleaned every four years on a cyclic programme.

Repairs – As this is a critical service provided by Council all repairs are completed within agreed customer service level guidelines.

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

Activity	Current Frequency	Proposed Frequency
Hydrant Maintenance	Infrequent	Annually
Water Leakage Detection – reactive	Reactive	Reactive
Reservoir Overflow Check – alarms	Reactive	Reactive
Dead End Hydrant Flushing	3 Monthly	3 Monthly
Pumps	Grease & oil	Grease & oil
Reservoir Cleaning	Annually	Annually
Compressor & Blowers servicing	Yes	Yes

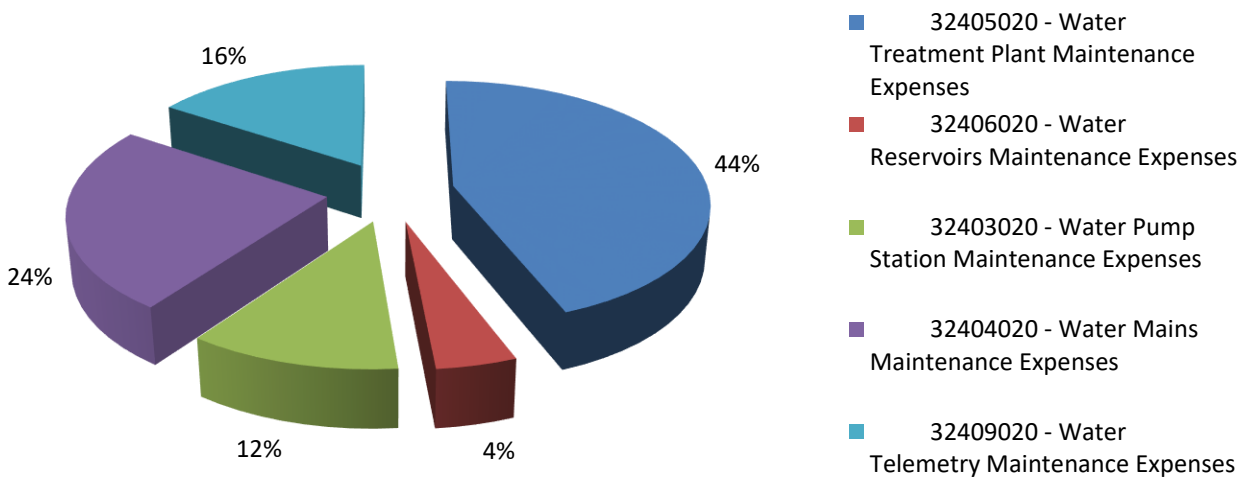
Adjusting Levels of Service

The opportunity to adjust the level of service provided is primarily through changing the frequency of maintenance and operational activities. The adjustment of LOS for a critical service as potable water supply is only undertaken after consultation with the community ensuring it is still within statutory regulations and health guidelines.

Table 7.2: What are our Maintenance Costs?

Activity	5 year average (2018 $,000)
Water Treatment Plant Maintenance Expenses	$75 472
Water Reservoirs Maintenance Expenses	$7 454
Water Pump Station Maintenance Expenses	$19 463
Water Mains Maintenance Expenses	$41 650
Water Telemetry Maintenance Expenses	$26 816
TOTAL	**$170 856**

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



Capital Renewal / Rehabilitation

This includes work on an existing asset to replace or rehabilitate it to a condition that restores the capability of the asset back to that which it had originally. The intervention level and estimated useful lives are contained in Table 5.1.

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

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

Assets requiring renewal will be generally identified from estimates of remaining life and condition assessments obtained from the asset register and models. Candidate proposals will be inspected to verify the accuracy of the remaining life estimate and to develop a preliminary renewal estimate. Verified proposals are ranked by priority and available funds and scheduled in future works programmes.

Details of planned renewal activities proposed in the current Delivery Program are contained in Appendix A for each asset category. The first year of the program will be considered in the development of the next Operational Plan and the remaining 3 years of work will be assessed each year to confirm that the asset has reached its intervention level prior to the work being scheduled.

The costs presented in the following table identifies the current level of funding for the required renewal programs and the funding required to maintain the asset to what is considered an appropriate standard. The required funding in that table is based on the intervention specified in Section 5.

For this asset group, an analysis has been undertaken to determine assets that are already at or above intervention level that are not able to be funded in the next Operational Plan. This work is quantified in the 'Backlog' column.

Table 0.1: What are our Renewal Costs, Gap and Backlog (2018 $, 000)?

Activity	Budget[1]	Required[1]	Average Gap[1]	Backlog (2018/19)	Backlog (2026/27)
Meters	$40.3	-	-	-	-
Dam	-	$971.2	$243.8	$4,745,846.7	$4,855.9
Pumps	-	$204.6	$48.9	$680,030.0	$818.5
Reservoirs	-	$447.8	$89.6	$1,010,797.4	$1,791.0
Bores	-	$226.5	$45.3	$611,650.0	$906.0
Treatment Plant	-	$667.7	$100.2	$1,910,720.0	$2,003.1
Telemetry	-	-	-	-	-
Total	$40.3	$1,623.5	$527.7	$8,918.8	$10,173.2

Notes:

1. *Figures are based on the 5 year annual average amounts*
2. *Central West Regional Water Security Pipeline Project has not been included*

Lifecycle costs

The Asset Life Cycle Cost is the total cost of ownership over the life of the asset. Typically, the capital cost of water supply and sewerage assets will be about 70% of the life cycle cost. A life cycle cost analysis should be undertaken which examines capital costs, recurrent costs (O&M), financing arrangements and residual costs at end of life.

Estimating life-cycle costs

The life-cycle cost of an asset can be expressed by the simple formula:

LCC = Capital cost + lifetime operating costs + lifetime maintenance costs + disposal cost – residual value.

However, ascertaining a measure of each variable in the formula can be difficult. Future costs are usually subject to a level of uncertainty that arises from a variety of factors, including:

- The prediction of the pattern of use of the asset over time;
- The nature and scale of operating costs;
- The need for and cost of maintenance activities;
- The impact on inflation on individual and aggregate costs;
- The prediction of the length of the asset's useful life; and
- The significance of future expenditure compared with present day expenditure.

Please note that there is quite a variation between costs for differing sizes of mains and associated infrastructure depending on capacity and type of construction material. As this document is a high-level overview of the Asset Management Plan for Water Supply, the table has been produced using averages of these different costs. For a more detailed and precise lifecycle cost forecast, the individual units of infrastructure must be interrogated on its own merits.

8 Capital Upgrades & New Assets

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

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

The Contributions Policy Section 64 is not currently part of Cabonne Council's policy for anticipated development or the increase in demand for water and/or sewerage services. Projected population and development growth will place additional demands and loadings on the Council's water supply and sewerage systems respectively. Generally, additional capacity is required in the water supply and sewerage systems to accommodate increased demands and loadings. This normally requires system components, such as pumping stations and pipelines, to be upgraded. On occasions, it is necessary to construct additional system components to service the growth.

Programs are determined by analysing the cost of existing infrastructure, existing demand, anticipated growth and the cost of works required to meet the demands created by growth. The total cost of these works is divided between demand units to determine the capital cost per unit.

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.

In line with Council's mission for its water supply service, the Asset Creation Plan is the mechanism by which Council proposed to accomplish that part of its mission to cater for the sustainable growth of the Shire. It will be necessary over the next 5 years to undertake an ongoing programme of capital works augmentation.

The design of every water supply scheme incorporates a trade-off between treatment plant capacity and storage capacity. For major projects, detailed analyses are required to ensure that the project will have net benefit for the wider community and maximise value for money.

These analyses include:

- Life Cycle Cost Analysis;
- Economic Appraisals; and
- Value Management Study.

The Asset Life Cycle Cost is the total cost of ownership over the life of the asset. Typically, the capital cost of water supply and sewerage assets will be about 70% of the life cycle cost.

A life cycle cost analysis should be undertaken which examines capital costs, recurrent costs (O&M), financing arrangements and residual costs at end of life.

An Economic Appraisal is essentially a benefit-cost analysis. It shows whether the benefits exceed the costs and which option has a higher net benefit or is the most cost-effective.

A Value Management Study is a structured analytical process which seeks to ensure that the project achieves all of the necessary functions at the lowest total cost. It does this by examining the relationship between function, cost and worth. An external group of specialists examines the project and challenges the solution to identify cost savings. The process is applied both at concept and design phases.

Council has an adopted a strategy for the expansion of the water supply network and associated infrastructure with the following new/upgraded assets proposed over the next 10 years to meet demand and safety improvement requirements. Table 8.1 indicates the major projects and groups of new / upgraded assets proposed.

Table 8.1: What upgraded / new assets are proposed over the next 10 years?

Project / Group	Year(s)	Justification
Molong Water Meters Replacement	2014 onwards	Demand and system loss management
Yeoval Water Quality Improvement Works	2015-2018	Improved Level of Service
Cumnock Water Quality Improvement Works	2016-2018	Improved Level of Service

A more detailed program for capital upgrades & new assets will be included in future revisions of this asset management plan.

9 Disposal Plan

Disposal is any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. Assets with a condition rating of 5 (very poor condition) and is not considered critical infrastructure, may be considered to be a redundant asset and therefore decommissioned and disposed.

Through careful analysis of all the existing assets Council may become aware of assets no longer required, and finance can, therefore, be raised through their disposal. An example of this is the current water infrastructure at Cumnock and Yeoval, once the Cumnock and Yeoval Water Quality Works are complete. Once potable water is served to the towns of Cumnock, residents may no longer require Yeoval the current water infrastructure that delivers non-potable water, and as such, it may be decommissioned or rendered obsolete.

An added advantage of disposal is that, if such assets are sold, there will be a saving on maintenance expenditure in relation to those assets.

Upon further investigation, a more detailed disposal plan will be included in future revisions of this asset management plan.

10 Financial Plan

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

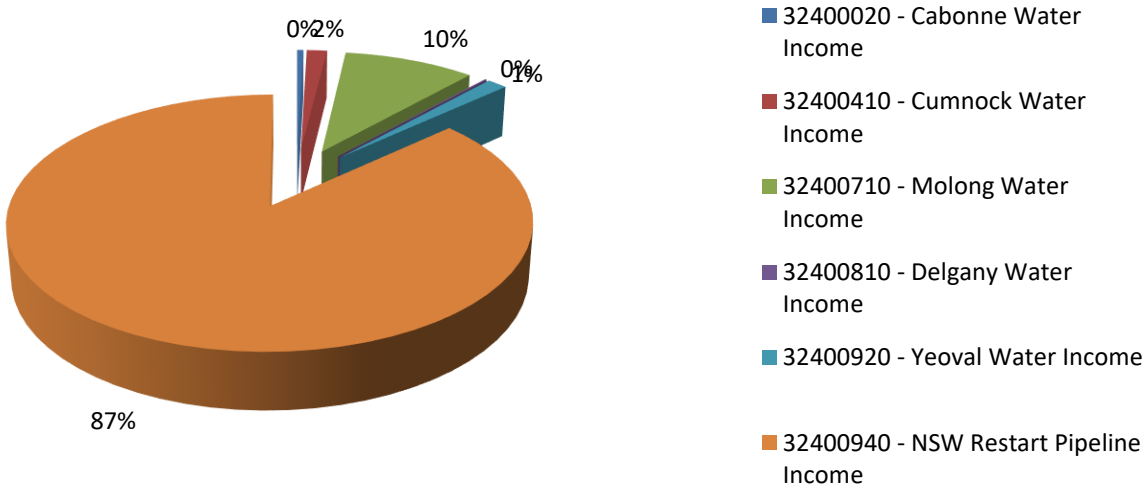
- Usage charges should be set to reflect the long-run margin of water supply.
- Residential water usage charges must be set to recover at least 75% of residential revenue.
- To encourage water conservation, high water consuming residential customers should be subject to a stepped price increase (expressed as an "excess water charge) of at least 50% for incremental usage above a specified threshold. This threshold should not exceed 450 kL/yr per household.
- Local Water Utility's (LWU's) must bill at least three times each year (and preferably every quarter) to improve the effectiveness of pricing indicators.
- No land value based charges (i.e. rates).
- No "free" or "pre-paid" water allowance.

A summary of the funding requirements and expenditure over the next 5 years is included in Appendix C, with the projected budget amounts being based on 2018 dollars. Funding for management of assets can come from a variety of sources as detailed in the table below.

Table 10.1: Where does our Income come from?

Activity	5 year average (2018 $,000)
Cabonne Water Income	$49.9
Cumnock Water Income	$161.5
Molong Water Income	$1048.9
Delgany Water Income	$15
Yeoval Water Income	$161.2
NSW Restart Pipeline Income	$9411
Capital Income - Cabonne Water	$45.1
Total	$10892.7

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



11 Plan Improvements

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

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

Task	Timeframe
Upgrade of asset register as maintenance, replacement and survey data is collected.	Ongoing
Utilise and develop Asset Information System (Assetic), providing deterioration modelling and other analysis tools	Ongoing
Review and develop performance measures and reporting	Ongoing
Use collected data to define acceptable asset deterioration profiles	Ongoing
Review and modify intervention levels for assets of criticality	Ongoing
Use any data collected to continually improve accuracy rating	Ongoing
Develop and adopt Asset Management Policy	May 2018
Revalue water assets and update the asset register to ensure the financial and technical asset registers reflect the same water infrastructure	May 2018
Restructure finance ledgers so as to separate operation, maintenance and renewal costs at asset class levels	May 2018
Develop and implement data capture and conditioning process	November 2017
Identify deficiencies in current maintenance activities and develop measures to recover them	November 2017
Investigation into recommended frequency of maintenance activities better suited to asset criticality	November 2017
Undertake targeted engagement with the community to resolve acceptable and achievable levels of service	November 2018
Carry out Infrastructure Risk Management Planning process to consider consequences of failure for water assets, and impact of failure on the community	November 2018
Undertake analysis of the water supply system to develop a detailed Capital Upgrades & New Assets Program.	November 2020
Undertake analysis of the water supply system to develop a detailed Disposal Plan.	November 2020
Determine number of connections for each pipe to improve criticality	TBD

12 Risk Management Plan

Council is committed to the identification and elimination or reduction of risks associated with hazards that arise throughout Council operations as far as reasonably practicable. To facilitate this process an Enterprise Risk Management Plan has been developed which includes the management of risks for each of its assets.

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

For assets with potentially long lives, risks associated with changing economic conditions, varying levels of demand for services, new competition and maintenance and disposal requirements needs to be analysed and managed to ensure the investment is worthwhile.

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

Maintaining a good reputation and positive public image is vital to a successful asset management business. Council has commenced the development of an Enterprise Risk Management Strategy to appropriately manage risks across the organisation.

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

Table 12.1: Critical Risks and Treatment Plans

Asset	Risk	Consequence	Risk Rating	Risk Management Plan
Dam	Structural failure	Flooding downstream Death	Very High	Biennial Dam Safety Audits 5 Yearly Dam Safety Inspection
	No Water	Resident discomfort Increased cost for water supply	Medium	Council's Drought Management Plan
	Water Quality Issue	Pathogen/s in water supply	Medium	Council's Drinking Water Management System Plan
Filtration Plant	Structural failure	Poor or no water filtration No water supply	Low	Daily Maintenance checks
	No Water	Resident discomfort Increased cost for water supply	Low	Daily Maintenance checks
	Water Quality Issue	Pathogen/s in water supply	Medium	Council's Drinking Water Management System Plan

Asset	Risk	Consequence	Risk Rating	Risk Management Plan
	Mechanical/Electrical Failure	Poor or no water filtration No water supply	Low	Daily Maintenance checks
Delgany Bore	Structural failure	No water supply	Low	Bi-weekly Maintenance checks
	No Water	Resident discomfort Increased cost for water supply	Low	Bi-weekly Maintenance checks
	Water Quality Issue	Pathogen/s in water supply	Medium	Bi-weekly Maintenance checks
	Mechanical/Electrical Failure	Poor or no water filtration No water supply	Low	Bi-weekly Maintenance checks

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

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

The identification of critical pipe assets is identified in Table 5.1, reservoirs where there is a potential for failure to risk public safety or property have also been identified as critical, as has the Water Treatment Plant. Table 12.2 identifies the critical assets for the water network.

Table 12.2: Critical Assets

Critical Assets	Critical Failure Mode	Treatment Plan
Molong Creek Dam	Structural Failure	Borenore Dam as back up Preventative measures including Dam Safety Inspections
Borenore Dam	Structural Failure	Preventative measures including Dam Safety Inspections
Molong Filtration Plant	Mechanical/Electrical Failure	
Delgany Bore	Mechanical/Electrical Failure	

Appendix A Delivery Program Renewals

Please note that due to the Molong Pipeline Project some assets may be disposed and become redundant.

	2018/19	2019/20	2020/21	2021/22	2022/23	TOTAL
Bore						
Cumnock Baldry Rd Bore Raw Water Supply Bore Civil Works	$52,000.00					$52,000.00
Cumnock Baldry Rd Bore Raw Water Supply Bore Electrical	$19,500.00					$19,500.00
Cumnock Baldry Rd Bore Raw Water Supply Bore Mechanical	$11,050.00					$11,050.00
Cumnock Gap Rd Bore Raw Water Supply Bore Civil Works	$52,000.00					$52,000.00
Cumnock Gap Rd Bore Raw Water Supply Bore Electrical	$19,500.00					$19,500.00
Cumnock Gap Rd Bore Raw Water Supply Bore Mechanical	$11,050.00					$11,050.00
Mullion Creek Res Raw Water Supply Booster PS Electrical			$6,500.00			$6,500.00
Mullion Creek Res Raw Water Supply Booster PS Mechanical					$29,250.00	$29,250.00
Mullion Creek Res Raw Water Supply Bore Civil Works	$52,000.00					$52,000.00
Mullion Creek Res Raw Water Supply Bore Electrical	$15,600.00					$15,600.00
Mullion Creek Res Raw Water Supply Bore Mechanical	$9,100.00					$9,100.00
Mullion Creek Res Raw Water Supply Building Civil Works	$65,520.00					$65,520.00
Mullion Creek Res Raw Water Supply Building Electrical	$14,040.00					$14,040.00
Mullion Creek Res Raw Water Supply Building Mechanical	$9,360.00					$9,360.00
Mullion Creek Res Raw Water Supply Cl Dosing System Electrical					$35,100.00	$35,100.00
Mullion Creek Res Raw Water Supply Cl Dosing System Mechanical			$50,700.00			$50,700.00
Mullion Creek Res Raw Water Supply Process Systems Electrical				$71,500.00		$71,500.00
Mullion Creek Res Raw Water Supply Process Systems Mechanical				$35,750.00		$35,750.00
Yeoval Bore A Raw Water Supply Bore Civil Works	$42,250.00					$42,250.00
Yeoval Bore A Raw Water Supply Bore Electrical	$5,200.00					$5,200.00
Yeoval Bore A Raw Water Supply Bore Mechanical	$11,700.00					$11,700.00
Yeoval Bore A Raw Water Supply Building Civil Works	$8,450.00					$8,450.00
Yeoval Bore A Raw Water Supply Building Mechanical	$8,515.00					$8,515.00
Yeoval Bore B Raw Water Supply Bore Civil Works	$42,250.00					$42,250.00
Yeoval Bore B Raw Water Supply Bore Electrical	$5,200.00					$5,200.00
Yeoval Bore B Raw Water Supply Bore Mechanical	$11,700.00					$11,700.00
Yeoval Bore B Raw Water Supply Building Civil Works	$8,450.00					$8,450.00
Yeoval Bore B Raw Water Supply Building Mechanical	$8,515.00					$8,515.00
Yeoval Bore C Raw Water Supply Booster PS Mechanical	$7,800.00					$7,800.00
Yeoval Bore C Raw Water Supply Bore C Mechanical			$11,700.00			$11,700.00
Yeoval Bore C Raw Water Supply Building Civil Works					$11,180.00	$11,180.00
Yeoval Bore C Raw Water Supply Building Mechanical				$17,290.00		$17,290.00
Yeoval Bore C Raw Water Supply Chlorine Dosing Mechanical			$25,350.00			$25,350.00
Yeoval Bore C Raw Water Supply Process Systems Electrical	$120,900.00					$120,900.00
Borenore Dam Raw Water Storage Wall Civil Works	$4,401,506.67					$4,401,506.67
Borenore Dam Raw Water Storage Weather Station Electrical		$20,300.00				$20,300.00
Borenore Dam Raw Water Storage Weather Station Mechanical	$10,500.00					$10,500.00
Cumnock Googodery Rd Dam Raw Water Storage Lagoon Mechanical	$174,720.00					$174,720.00
Cumnock Googodery Rd Res Potable Water Storage Building Civil Works	$18,720.00					$18,720.00
Cumnock Googodery Rd Res Potable Water Storage Building Electrical	$2,925.00					$2,925.00
Cumnock Googodery Rd Res Potable Water Storage Building Mechancial	$1,755.00					$1,755.00
Cumnock Googodery Rd Res Potable Water Storage Chlorine Dosing Electrical	$72,800.00					$72,800.00
Cumnock Googodery Rd Res Potable Water Storage Chlorine Dosing Mechanical					$50,700.00	$50,700.00
Cumnock Googodery Rd Res Potable Water Storage Mechanical	$52,000.00					$52,000.00
Cumnock Googodery Rd Res Potable Water Storage Reservoir Roof				$9,750.00		$9,750.00

Cumnock Googodery Rd Res Potable Water Storage Site works Fencing	$10,920.00					$10,920.00
Cumnock Googodery Rd Res Potable Water Storage Tanks Civil Works			$19,500.00			$19,500.00
Cumnock Googodery Rd Res Potable Water Storage Tanks Mechanical				$9,750.00		$9,750.00
Pumps						
Cumnock Bell River PS Pump Stations Electrical	$56,550.00					$56,550.00
Cumnock Bell River PS Pump Stations Pipework	$32,500.00					$32,500.00
Cumnock Bell River PS Pump Stations Pump	$19,500.00					$19,500.00
Cumnock Bell River PS Pump Stations Valve Pit Civil Works	$4,550.00					$4,550.00
Cumnock Bell River PS Pump Stations Valve Pit Mechanical	$1,950.00					$1,950.00
Cumnock Bell River PS Pump Stations Valves	$9,750.00					$9,750.00
Cumnock Bell River PS Pump Stations Wet Well Mechanical	$44,200.00					$44,200.00
Molong Gidley St Res Pump Stations Booster PS Electrical					$66,300.00	$66,300.00
Molong Gidley St Res Pump Stations Building Civil Works	$36,400.00					$36,400.00
Molong Gidley St Res Pump Stations Building Electrical	$7,800.00					$7,800.00
Molong Gidley St Res Pump Stations Building Mechanical	$5,200.00					$5,200.00
Molong Gidley St Res Pump Stations Process Systems Electrical			$65,650.00			$65,650.00
Molong Gidley St Res Pump Stations Process Systems Mechanical	$74,100.00					$74,100.00
Molong Gidley St Res Pump Stations Site works Civil Works	$72,150.00					$72,150.00
Molong Gidley St Res Pump Stations Site works Electrical				$6,500.00		$6,500.00
Molong Gidley St Res Pump Stations Site works Mechanical	$17,550.00					$17,550.00
Yeoval Buckinbah Creek PS Raw Water Supply Cl Dosing System Mechanical	$18,850.00					$18,850.00
Yeoval Buckinbah Creek PS Raw Water Supply Dry Well Civil Works	$175,240.00					$175,240.00
Yeoval Buckinbah Creek PS Raw Water Supply Dry Well Electrical	$5,850.00					$5,850.00
Yeoval Buckinbah Creek PS Raw Water Supply Dry Well Mechanical	$20,670.00					$20,670.00
Yeoval Buckinbah Creek PS Raw Water Supply Process Systems Electrical	$31,070.00					$31,070.00
Yeoval Buckinbah Creek PS Raw Water Supply Process Systems Mechanical	$46,150.00					$46,150.00
Reservoir						
Molong Gidley St Res Potable Water Storage Reservoir Civil Works	$517,546.65					$517,546.65
Molong Gidley St Res Potable Water Storage Reservoir Mechanical				$225,494.19		$225,494.19
Molong South St Res Potable Water Storage Reservoir Electrical					$33,800.00	$33,800.00
Molong South St Res Potable Water Storage Reservoir Mechanical				$264,494.19		$264,494.19
Mullion Creek Res Potable Water Storage Reservoir 1 Civil Works	$84,845.13					$84,845.13
Mullion Creek Res Potable Water Storage Reservoir 1 Mechanical				$44,365.66		$44,365.66
Mullion Creek Res Potable Water Storage Reservoir 2 Civil Works	$84,845.13					$84,845.13
Mullion Creek Res Potable Water Storage Reservoir 2 Mechanical				$44,365.66		$44,365.66
Mullion Creek Res Raw Water Supply Reservoir 1 Electrical			$8,450.00			$8,450.00
Mullion Creek Res Raw Water Supply Reservoir 2 Electrical			$8,450.00			$8,450.00
Yeoval Banjo Pat Res Potable Water Storage Reservoir Civil Works	$289,760.49					$289,760.49
Yeoval Banjo Pat Res Potable Water Storage Reservoir Electrical	$33,800.00					$33,800.00
Yeoval Banjo Pat Res Potable Water Storage Reservoir Mechanical				$150,783.45		$150,783.45
Treatment Plant						
Molong WTP Filtration Air Scour System Electrical				$46,200.00		$46,200.00
Molong WTP Filtration Gravity Filters Civil Works	$1,463,000.00					$1,463,000.00
Molong WTP Primary Sedimentation Tanks Civil Works	$447,720.00					$447,720.00
Molong WTP Site works Services Civil Works			$46,200.00			$46,200.00
Total	**$8,959,044.06**	**$20,300.00**	**$242,500.00**	**$926,243.15**	**$226,330.00**	**$10,374,417.20**

Appendix B Upgrade / New Capital Works Program

Program for Upgrade / New Capital Works will be included in future revisions of this asset management plan.

Appendix C 10 Year Financial Plan (2018, $000)

Year	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	Average
Income											
Lease Rental	$ 2.3	$ 2.3	$ 2.3	$ 2.3	$ 2.3	$ 2.3	$ 2.3	$ 2.3	$ 2.3	$ 2.3	$ 2.3
Contributions	$ 59.7	$ 59.7	$ 59.7	$ 59.7	$ 59.7	$ 59.7	$ 59.7	$ 59.7	$ 59.7	$ 59.7	$ 59.7
Fees & Charges	$ 1,208.4	$ 1,208.4	$ 1,208.4	$ 1,208.4	$ 1,208.4	$ 1,208.4	$ 1,208.4	$ 1,208.4	$ 1,208.4	$ 1,208.4	$ 1,208.4
Interest	$ 70.2	$ 70.2	$ 70.2	$ 70.2	$ 70.2	$ 70.2	$ 70.2	$ 70.2	$ 70.2	$ 70.2	$ 70.2
Other Revenues	$ 6.8	$ 6.8	$ 6.8	$ 6.8	$ 6.8	$ 6.8	$ 6.8	$ 6.8	$ 6.8	$ 6.8	$ 6.8
Sub-Total	**$ 1,347.5**	**$ 1,347.5**	**$ 1,347.5**	**$ 1,347.5**	**$ 1,347.5**	**$ 1,347.5**	**$ 1,347.5**	**$ 1,347.5**	**$ 1,347.5**	**$ 1,347.5**	**$ 1,347.5**
Renewals											
Mains											
Meters	$ 40.3	$ 40.3	$ 40.3	$ 40.3	$ 40.3	$ 40.3	$ 40.3	$ 40.3	$ 40.3	$ 40.3	$ 40.3
Pumps											
Reservoirs											
Bores											
Treatment Plant											
Sub-Total	$ 40.3	$ 40.3	$ 40.3	$ 40.3	$ 40.3	$ 40.3	$ 40.3	$ 40.3	$ 40.3	$ 40.3	$ 40.3
Maintenance											
Salaries	$ 35.4	$ 35.4	$ 35.4	$ 35.4	$ 35.4	$ 35.4	$ 35.4	$ 35.4	$ 35.4	$ 35.4	$ 35.4
Service Contracts	$ 184.9	$ 184.9	$ 184.9	$ 184.9	$ 184.9	$ 184.9	$ 184.9	$ 184.9	$ 184.9	$ 184.9	$ 184.9
Travel	$ 10.2	$ 10.2	$ 10.2	$ 10.2	$ 10.2	$ 10.2	$ 10.2	$ 10.2	$ 10.2	$ 10.2	$ 10.2
Overheads & Oncost	$ 56.2	$ 56.2	$ 56.2	$ 56.2	$ 56.2	$ 56.2	$ 56.2	$ 56.2	$ 56.2	$ 56.2	$ 56.2
Materials & Consumables	$ 60.1	$ 60.1	$ 60.1	$ 60.1	$ 60.1	$ 60.1	$ 60.1	$ 60.1	$ 60.1	$ 60.1	$ 60.1
Sub-Total	**$ 346.7**	**$ 346.7**	**$ 346.7**	**$ 346.7**	**$ 346.7**	**$ 346.7**	**$ 346.7**	**$ 346.7**	**$ 346.7**	**$ 346.7**	**$ 346.7**
Operations											
Salaries	$ 168.5	$ 168.5	$ 168.5	$ 168.5	$ 168.5	$ 168.5	$ 168.5	$ 168.5	$ 168.5	$ 168.5	$ 168.5
Service Contracts	$ 0.4	$ 0.4	$ 0.4	$ 0.4	$ 0.4	$ 0.4	$ 0.4	$ 0.4	$ 0.4	$ 0.4	$ 0.4
Licence Agreements	$ 5.8	$ 5.8	$ 5.8	$ 5.8	$ 5.8	$ 5.8	$ 5.8	$ 5.8	$ 5.8	$ 5.8	$ 5.8
Insurances	$ 7.2	$ 7.2	$ 7.2	$ 7.2	$ 7.2	$ 7.2	$ 7.2	$ 7.2	$ 7.2	$ 7.2	$ 7.2
Rates Expenses	$ 13.8	$ 13.8	$ 13.8	$ 13.8	$ 13.8	$ 13.8	$ 13.8	$ 13.8	$ 13.8	$ 13.8	$ 13.8
Overheads & Oncost	$ 114.8	$ 114.8	$ 114.8	$ 114.8	$ 114.8	$ 114.8	$ 114.8	$ 114.8	$ 114.8	$ 114.8	$ 114.8
Plant Running Costs	$ 56.5	$ 56.5	$ 56.5	$ 56.5	$ 56.5	$ 56.5	$ 56.5	$ 56.5	$ 56.5	$ 56.5	$ 56.5
Utilities	$ 40.5	$ 40.5	$ 40.5	$ 40.5	$ 40.5	$ 40.5	$ 40.5	$ 40.5	$ 40.5	$ 40.5	$ 40.5
Sub-Total	**$ 407.4**	**$ 407.4**	**$ 407.4**	**$ 407.4**	**$ 407.4**	**$ 407.4**	**$ 407.4**	**$ 407.4**	**$ 407.4**	**$ 407.4**	**$ 407.4**
Upgrade / Expansion											
TBD											
Sub-Total											
Total Expenditure	**$1,171.3**	**$1,171.3**	**$1,171.3**	**$1,171.3**	**$1,171.3**						
Rolling Backlog	**$8,918.8**	**$8,898.8**	**$9,101.1**	**$9,987.1**	**$10,173.2**						


Australia's
Food Basket
CABONNE COUNCIL