Tenterfield Shire Council

Strategic Business Plan for Water Supply and Sewerage Services

December 2015

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PROJECT 15-016– TENTERFIELD SHIRE COUNCIL WATER SUPPLY AND SEWERAGE SBP

REV	DESCRIPTION	AUTHORS	REVIEW	APPROVAL	DATE
0	Issued for TSC review	R. Campbell	M. Howland	M. Howland	25 Aug 2015
1	Updated with TSC comments	R. Campbell		R. Campbell	22 Dec 2015

EXECUTIVE SUMMARY

This strategic business plan addresses the development and operation of the Tenterfield Shire Council (TSC) water supply and sewerage businesses.

TSC provides water supply and sewerage services to the urban areas of the Local Government Area (LGA). Water supplies are provided to Tenterfield, Urbenville and Jennings (bulk water purchased from Southern Downs Regional Council) and sewerage services are provided to Tenterfield and Urbenville as shown in Figure 1. TSC also provides bulk treated water to Kyogle Council from the Urbenville water supply.

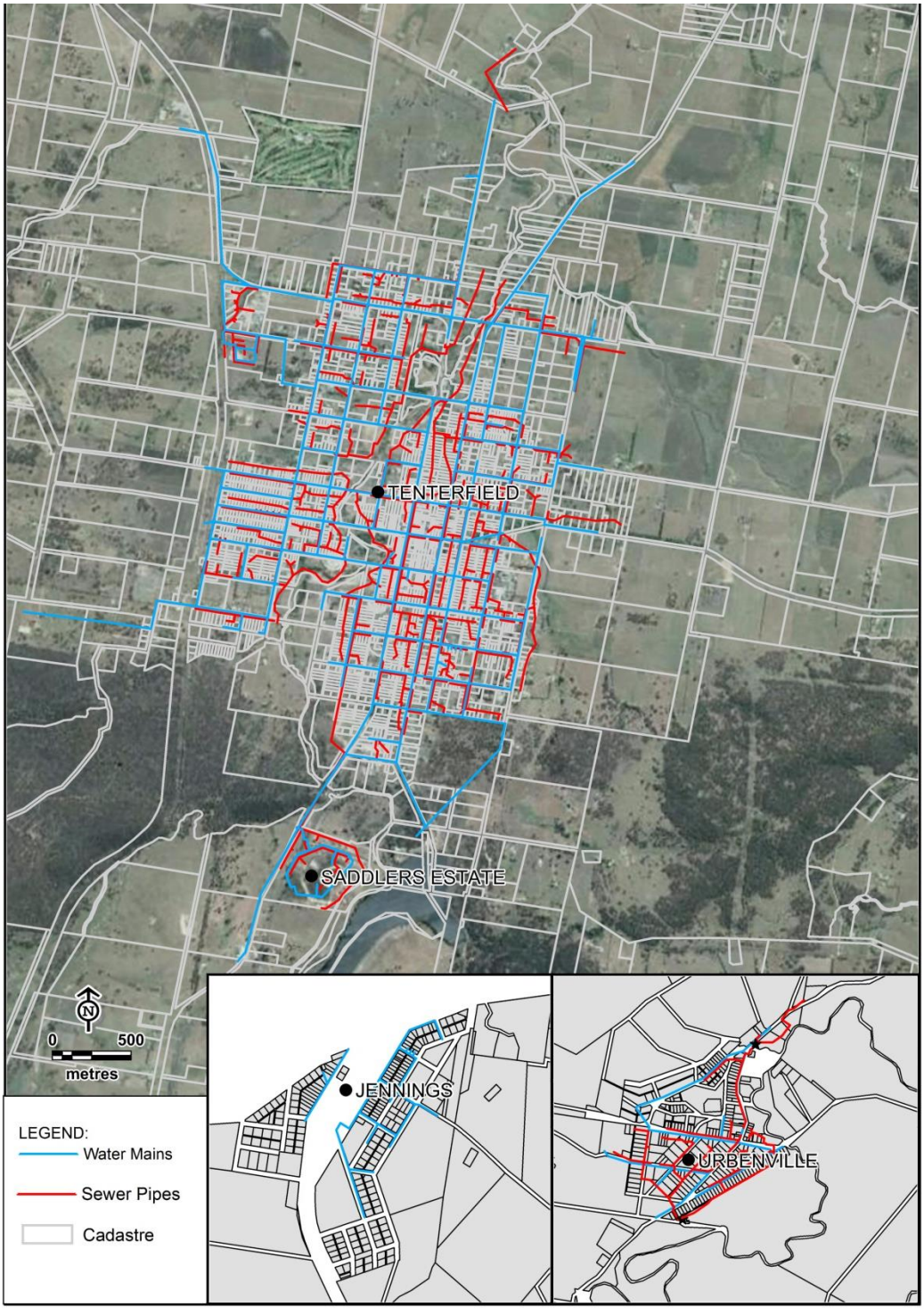

Figure 1: TSC Water Supply and Sewerage Schemes – Tenterfield, Urbenville and Jennings

Mission Statement

Tenterfield Shire Council provides local civic leadership and a wide range of community services and facilities. Our mission statement "Quality Nature, Quality Heritage and Quality Lifestyle" provides focus and direction in the manner in which we provide leadership and services.

Council's mission statement is a key driver of water supply and sewerage strategic planning. The key implications for the provision of water supply and sewerage services are:

- Council will provide water that meets the water quality standards and sewerage services that meet environmental licence requirements in order to protect the public health and the environment;
- Council will operate, maintain and administrate the water supply and sewerage systems efficiently and meet the proposed levels of service in order to provide value-for-money to all customers in the Shire;
- Council will incorporate ecological sustainable development principles into all planning and operations in order to become an environmentally responsible local water utility; and
- Council will engage the customers in decision-making process to provide satisfaction with the service provided.

Operating Environment

As a local government owned business, a water utility is subject to a number of legislative obligations. The operation of the water supply and sewerage schemes is driven by the following key requirements:

- Council's Integrated Planning and Reporting documents;
- The NSW Government Best-Practice Requirements for Water Supply and Sewerage;
- Water Sharing Plans for Tenterfield Creek Water Source (2004) and NSW Murray-Darling Basin Fractured Rock Groundwater (2012) under the *Water Management Act, 2000* governing the Tenterfield water sources and Water Access Licences under the Water Act, 1912 governing the Urbenville water source;
- Environment Protection Licences (*Protection of the Environment Operations Act, 1997*) for Urbenville and Tenterfield sewage treatment works, Tenterfield Dam and Tenterfield water treatment plant (WTP);
- A joint water supply agreement between Kyogle and Tenterfield relating to the funding, construction and operation of the Urbenville, Woodenbong and Muli Muli water supply system;
- The TSC Drinking Water Management System (DWMS, 2013); and
- The adopted Levels of Service (LOS) documented in this SBP.

The LOS are the primary driving force for the water supply and sewerage businesses. They explicitly define the standards required from the water and sewerage systems and will largely shape Council's detailed operations, maintenance and capital works planning. Council's primary objective with water supply and sewerage services is to meet the adopted levels of service summarised in the following table.

Table 1: Summary of Levels of Service

Water Supply Targets	Sewerage Targets
100% compliance with ADWG water quality requirements	Service provided to all residential and non-residential properties within the defined service area.
During drought, duration of restrictions does not exceed 5% of the time, frequency of restriction does not exceed 5 times per 10 years and the severity of restrictions does not exceed 10% of the unrestricted water demand.	100% compliance with sewerage system Environment Protection Licences.
100% compliance with Building Code of Australia and NSW Fire Fighting requirements	
Four hours maximum duration of supply interruptions	

Service Delivery

The majority of operational and maintenance tasks for the sewerage and water supply schemes are undertaken by Council's in-house staff. Most major capital works are contracted out, including design, construction and commissioning. Where considered beneficial, TSC identifies and implements opportunities for sharing of resources and utilising joint contracts with other parts of Council and with neighbouring water utilities.

Customer Service

The customer service plan in this SBP covers the adopted levels of service, determines the areas to be serviced, analyses demand management and sewer load management. It also establishes the pricing structure, determines customer satisfaction targets and establishes methods for customer and community involvement in decision making.

Council has adopted a growth rate of 0.9% p.a. for strategic planning purposes but will consider the impact of lower growth rates on financial planning.

A comparison of secure yield of the water supplies and forecast future demand management suggests the TSC water supplies are secure for the long-term planning horizon.

There are approximately 1,550 rural properties in the LGA not connected to a Council water supply or reticulated sewerage system. The main villages are Jennings (water supplied by SDRC), Torrington, Drake, Legume, Liston and Mingoola. Residents in these villages generally rely on rainwater tanks, groundwater supplies and on-site sewage treatment usually in the form of septic tanks and absorption trenches. Water supplies in the rural areas appear to be adequate. The extension of sewerage services is dependent on a range of factors, mainly the environmental impact of the existing systems and the cost of providing Council services to these villages. Data on the adequacy of existing on-site systems will be used to confirm the need for centralised sewerage systems in these villages.

Total Asset Management

Asset Management Plans for water and sewerage services have been developed by Council to define levels of service, how the services will be provided and how much it will cost. The Plans also detail information about infrastructure assets (condition, age, life cycle etc.) and actions required to provide the agreed level of service in the most cost effective manner. TSC's asset register lists all water supply and sewerage assets with basic physical data (location, material, size, age and remaining useful life) and financial statistics (depreciation and current replacement cost) for each asset.

The Capital Works Plan documents the anticipated future capital works requirements and expenditures to meet the Levels of Service and provide a basis for financial planning and capital budgeting. The estimated capital investment over the next 30 years for water supply is $24.4 million. About 65% of this amount is for improving levels of service, particularly dam stability works and water treatment upgrades. Approximately 34% of the expenditure is for renewal of existing assets with the remaining 1% to serve growth. The estimated capital investment over the next 30 years for sewerage services is $16.5 million. About 86% of this amount is for renewal of existing assets, 13% for improving levels of service, particularly potential village sewerage schemes and the remainder is to service growth.

Work Force

The Work Force Plan identifies strategies to ensure staff levels and skills are adequate for the operation and management of the water supply and sewerage businesses. Challenges include staff recruitment and retention, levels of technical and engineering staff and communications in remote areas.

Principal Issues

The principal water supply and sewerage management issues are:

- An upgrade of the WTP is required to address risks related to asset condition, treatment performance, capacity and workplace health and safety;
- The age and deterioration of the water supply assets may affect the ability to achieve the levels of service in future (e.g. water quality and continuity of service). TSC has a large water supply infrastructure renewal backlog;
- The age and deterioration of sewerage assets may affect the ability to achieve the levels of service in future (e.g. sewer overflows and treatment performance). During wet weather the sewer load is substantially increased due to infiltration and inflow to the sewers. TSC has a large sewerage system infrastructure renewal backlog;
- Council's limited internal human resources (particularly engineering skills) affect the ability to deliver strategic planning, design and asset management tasks; and
- The Tenterfield Shire community has a limited capacity to absorb future increases in water and sewerage pricing.

Summary of Action Plan

This SBP has identified actions to address the issues identified in relation to management of the water supply and sewerage businesses. A summary of the objectives, performance targets and strategies is given in the following table.

Table 2: SBP Objectives, Performance Targets and Strategies

Key Result Area		Objective	Performance Target	Strategy
1	Levels of Service	Operation of the water supply and sewerage systems meets the adopted Levels of Service which take into account financial implications, statutory/regulatory requirements, customer desires and industry standards	100% compliance with the Levels of Service	Monitor and report on levels of service being achieved. Address non-compliances. Review of adopted levels of service.

Key Result Area		Objective	Performance Target	Strategy
2	Areas Serviced	Provide sewerage services to all areas where there are identified significant environmental and health risks, community desires and economic feasibility	Adequate water and sewer services are available to all areas by 2020.	Examine the feasibility of providing services to all towns.
3	Demand Management	Efficient water use in all customer sectors	Average annual residential demand is less than 170 kL/residential property.	Implement best-practice demand management strategies. Review pricing annually.
4	Drought Management	Responsive, efficient and acceptable drought management strategies are implemented	A feasible emergency and drought management strategy is developed. Water supplies are “secure”.	Prepare and implement sound drought management procedures
5	Inflow and Infiltration	Reduce sewer infiltration and inflow	Targeted mains and manhole relining programs are implemented. Identified sewer defects are repaired	Complete sewer system repairs as part of renewal program
6	Liquid Trade Waste (LTW)	Effective management of liquid trade waste	LTW services agreements are applied in accordance with the adopted Policy	Implement LTW Policy
7	Service Pricing	Pricing system is equitable and reflects the actual cost of service provision	Best-practice pricing structure is achieved	Review and update tariffs and charges
8	Customer and Community Involvement	Gain community ownership of major asset management decisions and ensure affordability and marketability of the project outcomes	All major projects (greater than $1 million construction cost) and decisions are subject to a community consultation process	Provide accurate information to the community to create awareness of the issues, receive community input into decision-making processes including willingness-to-pay for asset development and create a sense of community ownership
9	Customer Satisfaction	Achieve customer satisfaction in water and sewerage services	The majority of customers are satisfied with Council water and sewerage services	Communicate with customers and measure customer satisfaction.
10	Environmental Management	Water and sewerage activities are environmentally sustainable	100% compliance with Environment Protection Licences and statutory obligations	Assess and manage environmental risks
11	Operations	Operate the water supply and sewerage assets in a safe and cost-effective manner which meets the required levels of service	Operations issues do not cause a failure to meet the Levels of Service	Operate the schemes in accordance with documented system procedures, rules and due diligence programs

Key Result Area		Objective	Performance Target	Strategy
12	Maintenance	Maintain the water supply and sewerage assets in a cost-effective manner which meets the required levels of service	Maintenance issues do not cause a failure to meet the Levels of Service	Maintain the schemes in accordance with documented procedures
13	Capital Works	Adequate water supply and sewerage infrastructure is provided for present and future customers.	Infrastructure capacity and condition issues do not cause a failure to meet the Levels of Service	Review and implement the capital works programs

Financial Planning

Thirty year financial plans have been developed for the water supply and sewerage businesses. The financial plans indicate the typical residential bills for water supply and sewerage will need to increase in the medium term to fund the identified expenditure requirements. Loans and subsidies will also be required to fund major capital works including the Tenterfield Dam Safety Upgrade, Tenterfield WTP upgrade and Jennings Sewerage Scheme. State government subsidies have also been assumed for these major capital projects.

The medium-term price paths (2017$) are provided in the following figures.

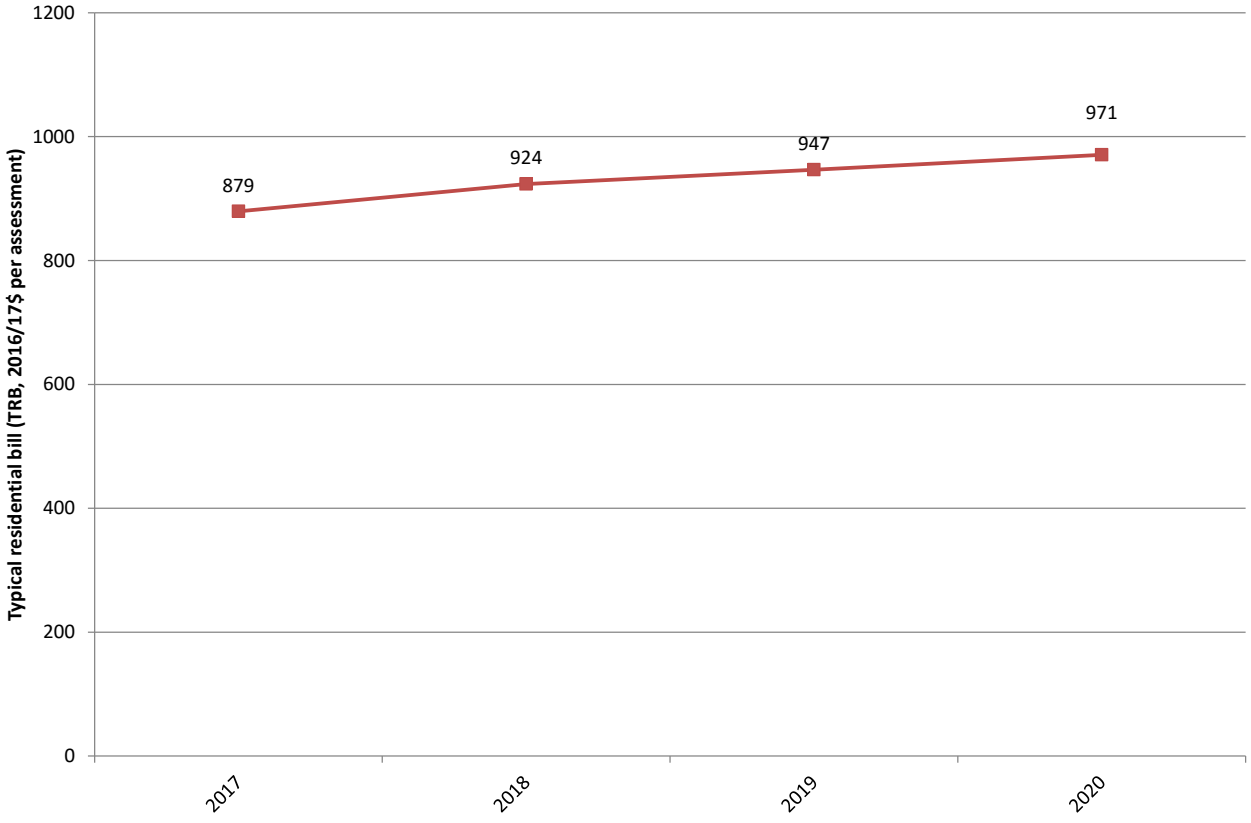

Figure 2: Water Supply Price Path

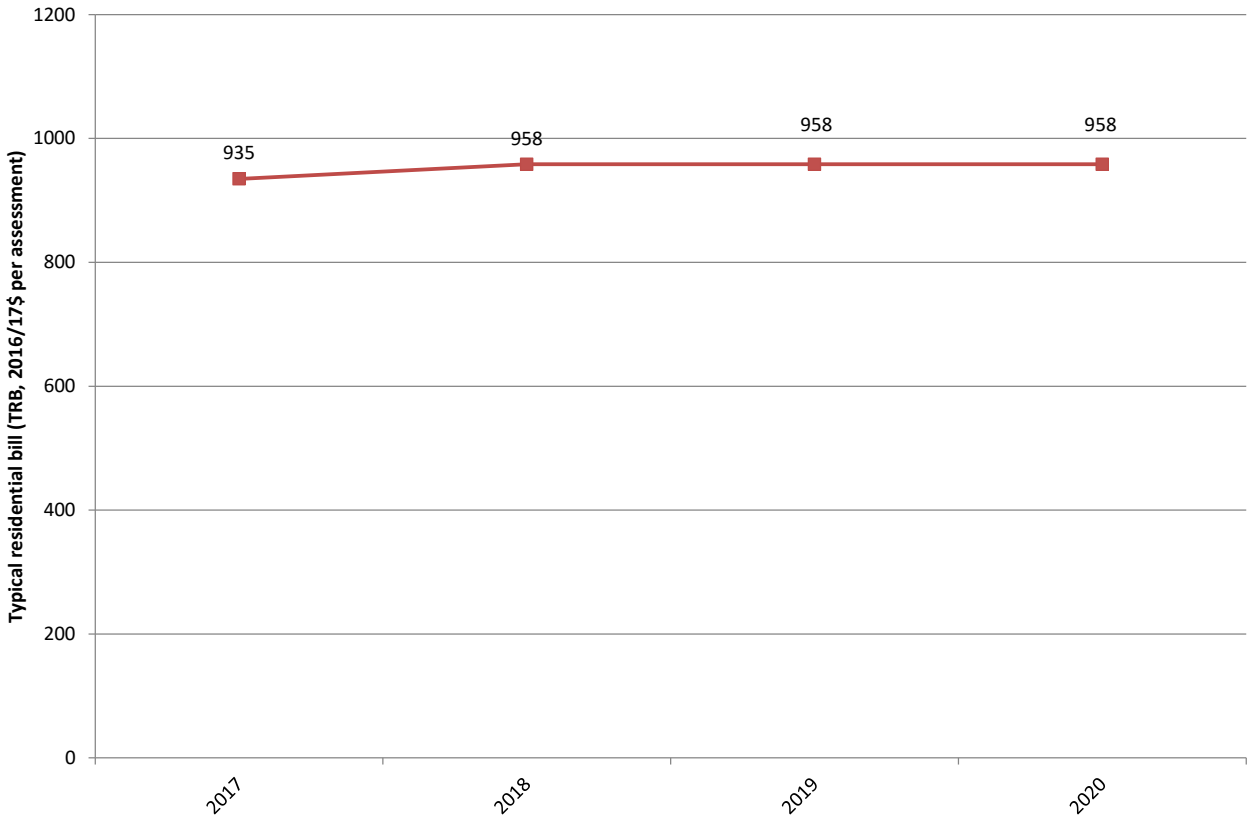

Figure 3: Sewerage Price Path

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1. INTRODUCTION

This Strategic Business Plan (SBP) provides guidance for future management of the Tenterfield Shire Council (TSC) water supply and sewerage businesses. The SBP will also:

- Focus attention on the key issues affecting the day to day operations of water supply and sewerage services;
- Demonstrate to stakeholders that the schemes are well managed;
- Identify the financial and other resources required to operate the services;
- Provide a long-term price path for services; and
- Provide information for Council's Resourcing Strategy as required for compliance with the Integrated Planning and Reporting Framework.

The development of this SBP has followed the process illustrated in Figure 4.

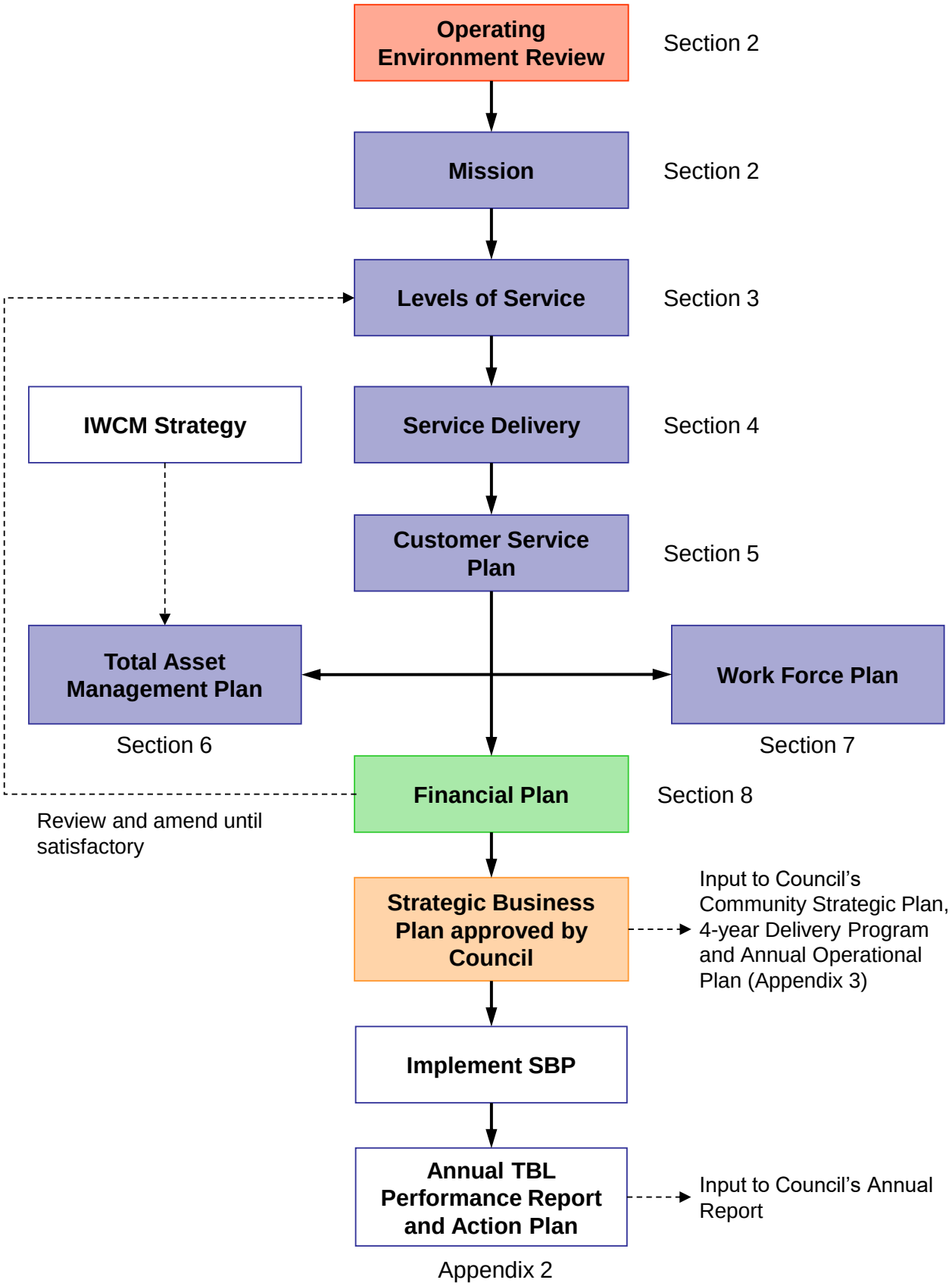

Figure 4: The Strategic Business Planning Process

1.1 Existing Schemes

TSC provides water supply and sewerage services to the urban areas of the Tenterfield Local Government Area (LGA) (refer Figure 5 and Figure 6).

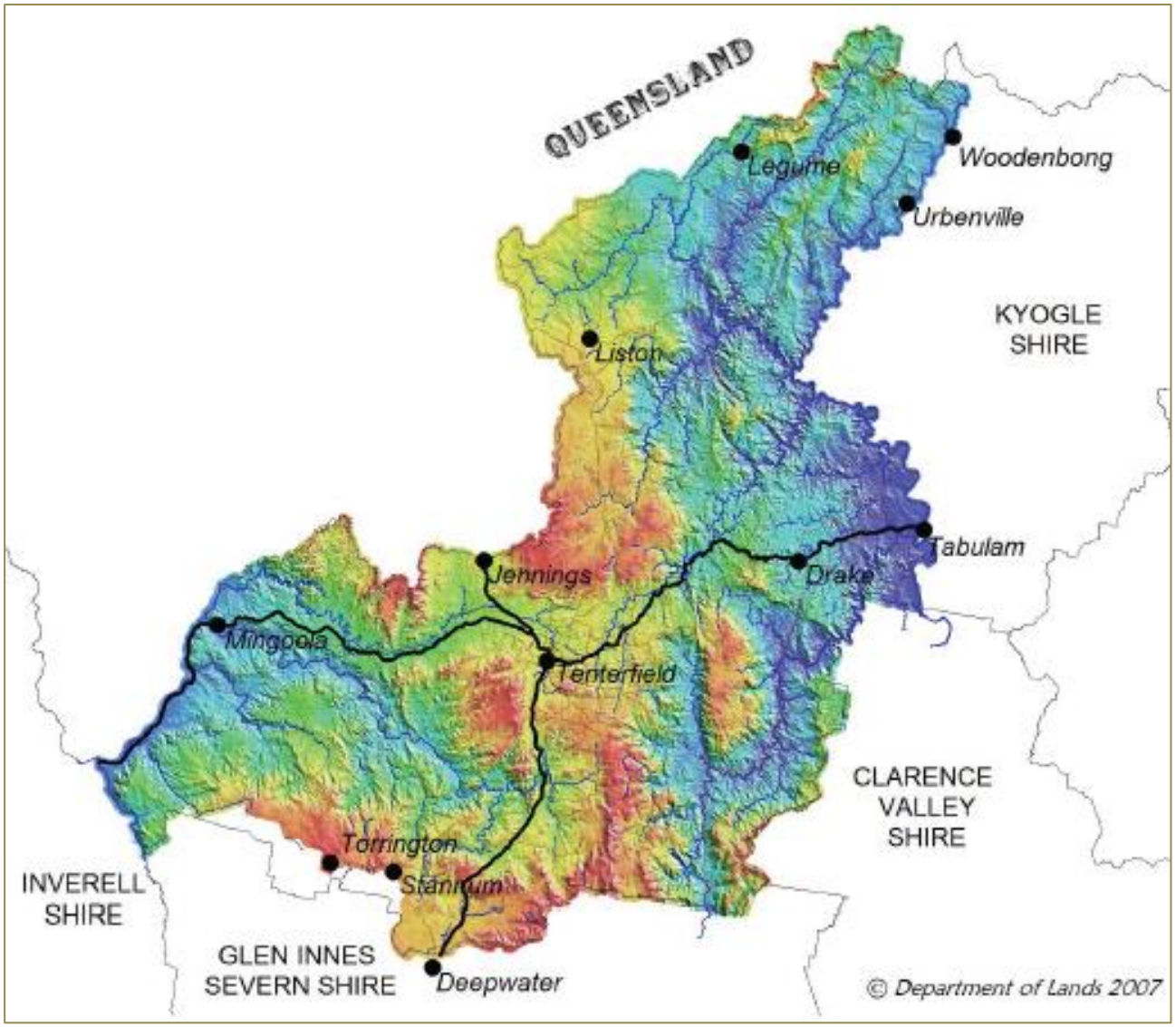

Figure 5: Tenterfield Shire Council Local Government Area

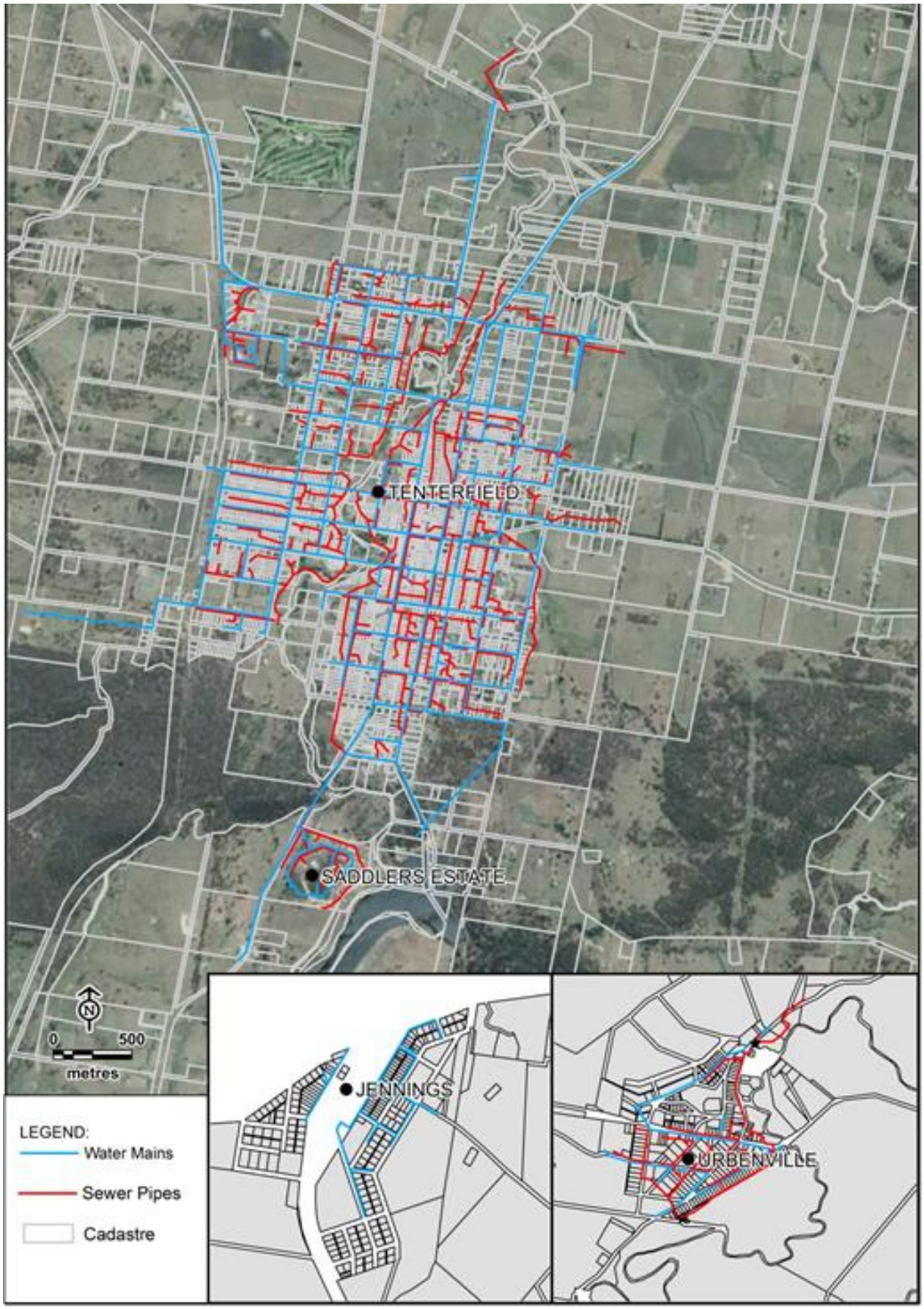

Figure 6: TSC Water Supply and Sewerage Schemes – Tenterfield, Urbenville and Jennings

GIS data provided by TSC. Note the data are incomplete.

1.1.1 Water Supply Systems

TSC operates three water supply schemes in Tenterfield, Urbenville and Jennings.

Tenterfield Water Supply

The Tenterfield scheme consists of the Tenterfield Dam, Shirley Park bore, Tenterfield Water Treatment Plant (WTP), two service reservoirs and 56 km of water mains. Tenterfield (1,870 connections) is supplied with water from the dam located immediately south of the town on Tenterfield Creek. This concrete dam was built in 1930. The dam wall was raised by 1.8 m and the spillway lengthened in 1974 significantly increasing its capacity. Excavation of the southern storage banks in 2003 under a drought mitigation program provided a further 80 ML of capacity with total water storage of approximately 1,300 ML.

The dam is supplemented by a bore located in Shirley Park which can be piped into both the dam and WTP. The bore can provide a sustainable yield of up to one ML of additional water per day and is licensed to provide up to 160 ML per year.

Raw water is treated at the Tenterfield WTP, built in 1930 and upgraded in 1958 and 1985. Treated water is pumped by a 250 mm main to the primary concrete (2.1 ML) reservoir in East Street and by a series of mains to the western side of Tenterfield.

A supplementary supply for other users, including rural domestic consumers, is available on a fee for service basis via a standpipe located adjacent to the Works Depot in Riley Street and from the Shirley Park bore located in High Street. The Shirley Park bore standpipe is mainly used for stock feed or road watering. The Riley Street standpipe is used by rural customers for drinking and general domestic use and is collected in cubes and water trucks.

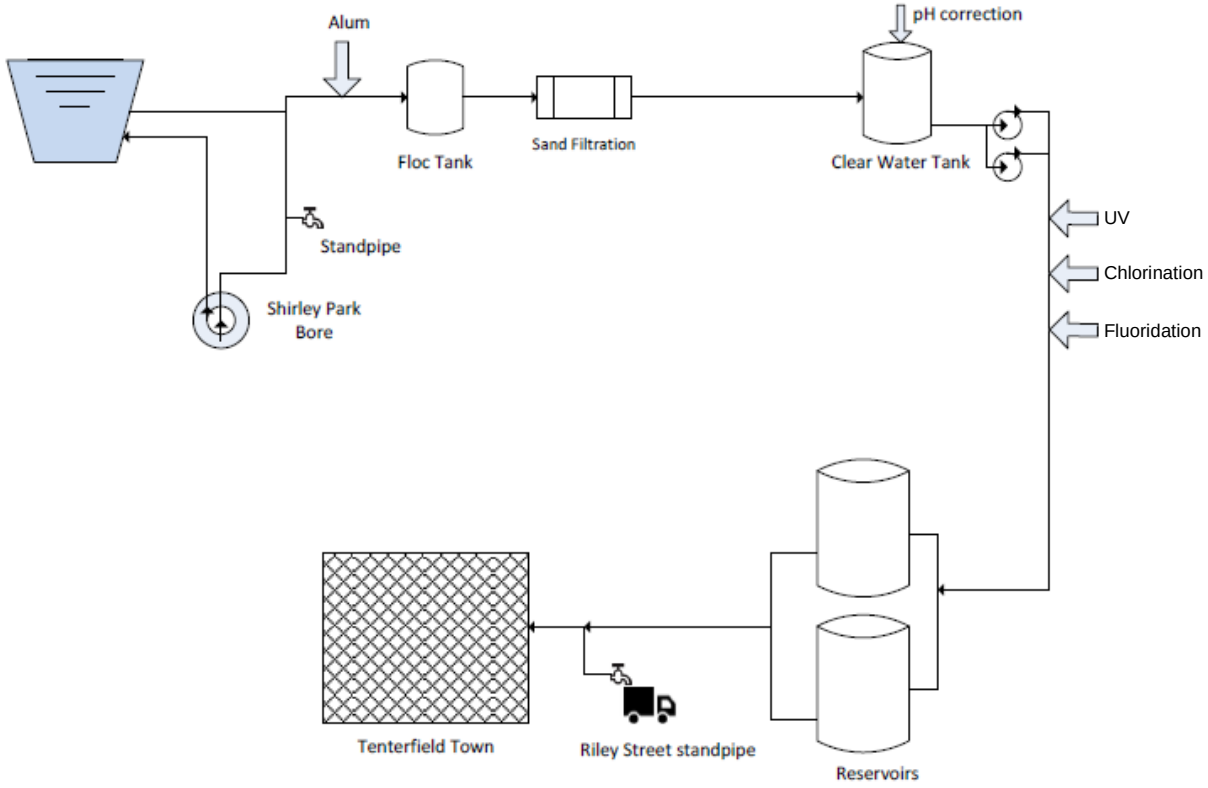

Figure 7: Tenterfield Water Supply System Flow Chart

Source: Adapted from Viridis Consultants (2013a)

Urbenville Water Supply

The Urbenville water supply scheme includes the Urbenville WTP, Tooloom Creek Pump Station, one service reservoir and 9.9 km of water mains (152 connections).

Raw water is sourced through the river intake pump station in Tooloom Creek approximately 4 km west of the village. Water is treated at the Urbenville WTP and then pumped to the Urbenville reservoir for distribution. Bulk water is also supplied to both Woodenbong and Muli Muli by pipeline under a water supply arrangement with Kyogle Council. Muli Muli and Woodenbong are approximately 9 km and 13 km north east of Urbenville respectively.

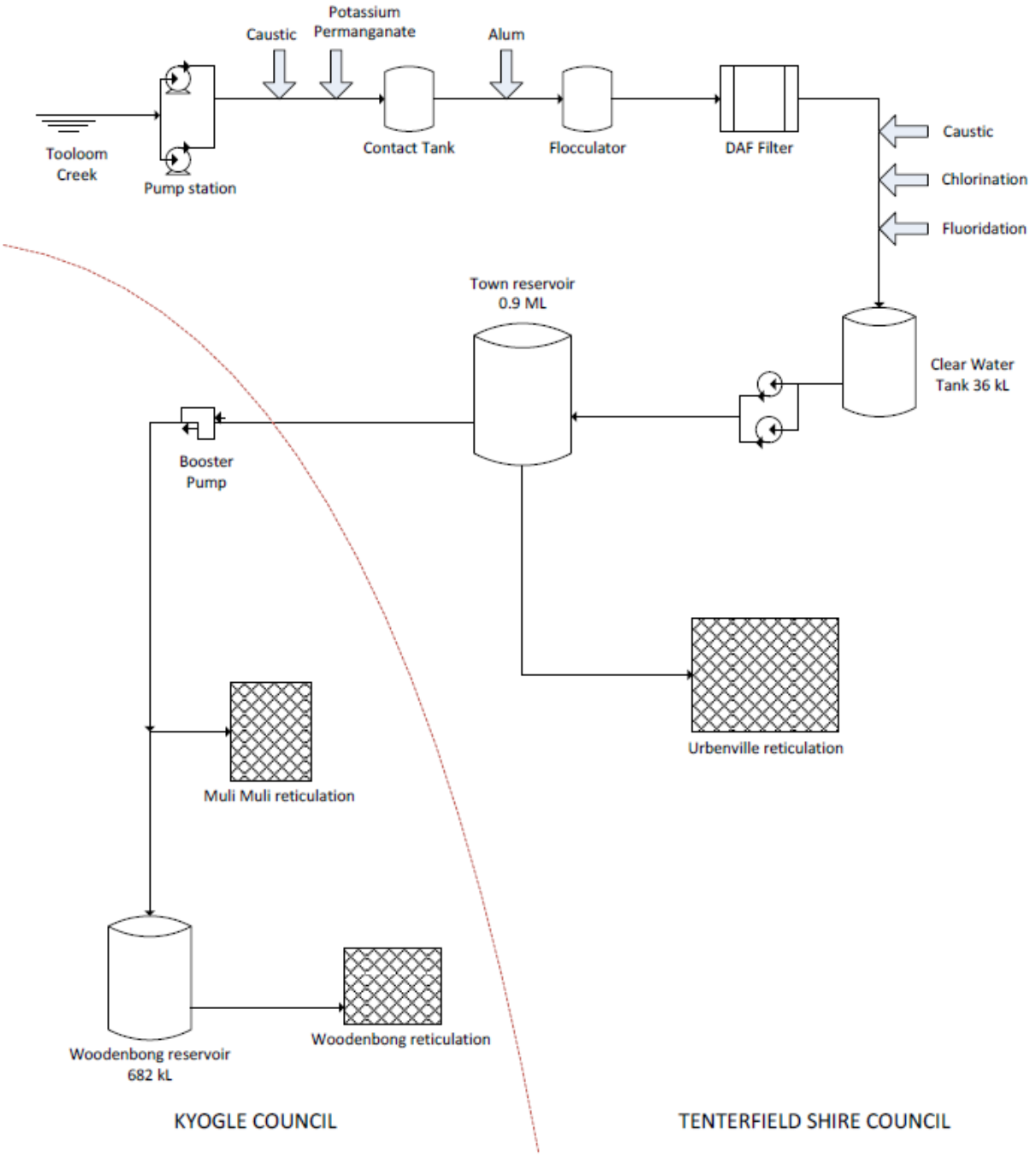

Figure 8: Urbenville Water Supply System Flow Chart

Source: Viridis Consultants (2013a)

Jennings Water Supply

Water is supplied to the Jennings community (84 connections) from the Wallangarra system in Southern Downs Regional Council (SDRC) area in Queensland.

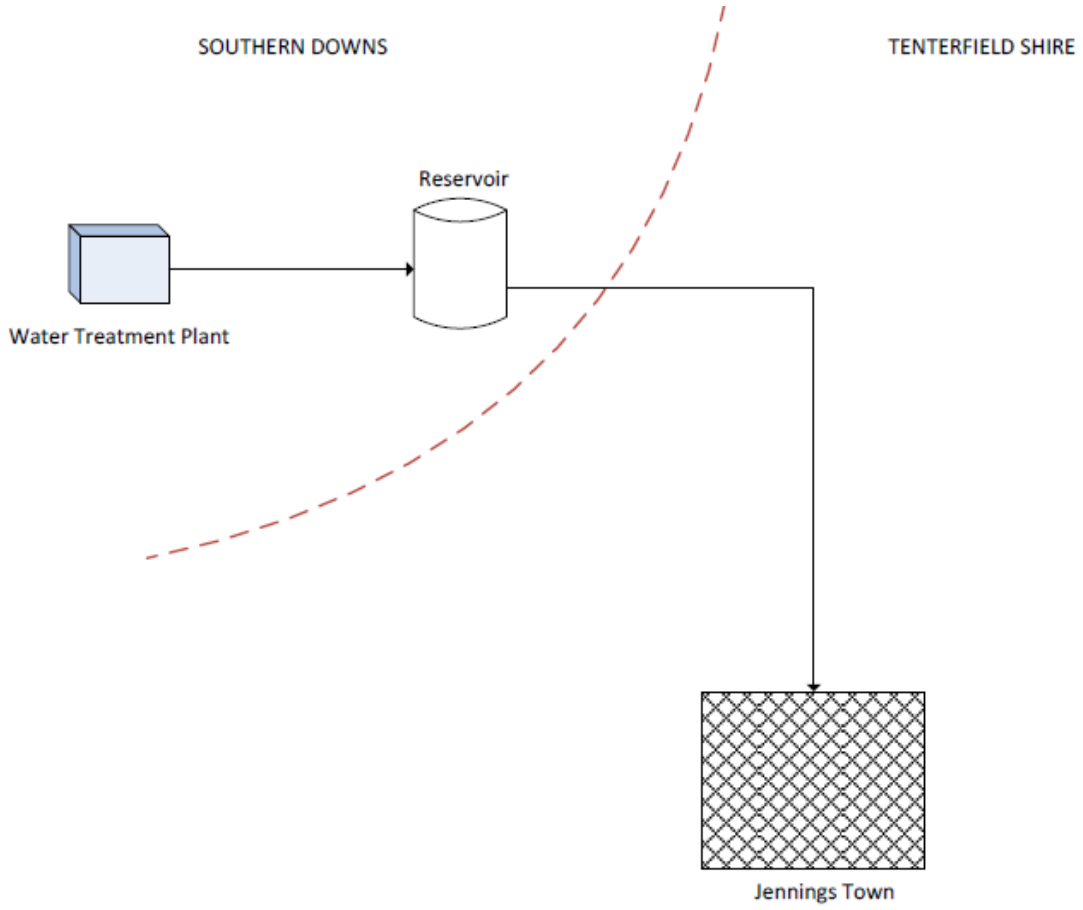

Figure 9: Jennings Water Supply System Flow Chart

Source: Viridis Consultants (2013a)

1.1.2 Sewerage Systems

TSC provides reticulated sewerage services to the main towns and adjacent areas of Tenterfield and Urbenville.

Tenterfield Sewerage

The Tenterfield sewerage system consists of a network of gravity pipes and five pumping stations. Tenterfield STP was upgraded in 2009 and is a 3,700 EP capacity Intermittent Decant Aerated Lagoon (IDAL) sewage treatment plant. The process includes fine mechanical screening with step screens, vortex grit removal, IDAL secondary treatment with diffused aeration, chemical phosphorus removal with alum and supplementary caustic dosing, chlorination with sodium hypochlorite and effluent storage. Approximately half the effluent is spray irrigated to land and the remainder discharges to Tenterfield Creek.

Urbenville Sewerage

The Urbenville sewerage system consists of two pumping stations and approximately 7 kilometres of sewerage mains. The Urbenville STP consists of a 500 EP Pasveer Channel treatment plant, two settlement ponds and two sludge lagoons.

2. OPERATING ENVIRONMENT REVIEW

2.1 Mission Statement

Tenterfield Shire Council provides local civic leadership and a wide range of community services and facilities. Our mission statement "Quality Nature, Quality Heritage and Quality Lifestyle" provides focus and direction in the manner in which we provide leadership and services.

Council's mission statement is a key driver of water supply and sewerage strategic planning. The key implications for the provision of water supply and sewerage services are:

- Council will provide water that meets the water quality standards and sewerage services that meet environmental licence requirements in order to protect the public health and the environment;
- Council will operate, maintain and administrate the water supply and sewerage systems efficiently and meet the proposed levels of service in order to provide value-for-money to all customers in the Shire;
- Council will incorporate ecological sustainable development principles into all planning and operations in order to become an environmentally responsible local water utility; and
- Council will engage the customers in decision-making process to provide satisfaction with the service provided.

This SBP enables TSC to achieve these requirements by identifying and allocating resources to actions that will ensure quality and cost-effective service to the community while carrying out Council operations in an environmentally sensitive manner.

2.2 Institutional Arrangements

2.2.1 Legislative Framework and Statutory/Regulatory Obligations

As a local government owned business, a water utility is subject to a number of legislative obligations and requirements. These are summarised in Appendix 1. In general, more regulation, stringent enforcement and fewer subsidies from government is imposing heavy burden on Council's management responsibilities and hence on its finances. In addition, recent government policies tend to transfer more regulatory responsibilities to Local Government that further burdens Council's limited resources.

Water Sharing Plans and Extraction Licences

The *Water Management Act, 2000* requires the implementation of ten-year plans defining water sharing arrangements between the environment and water users. Water Sharing Plans set rules for sharing water between the water users and environmental needs of the river or aquifer, and also between the different types of water use such as town water supply, stock watering, rural domestic supply, irrigation and industry.

There are two commenced Water Sharing Plans governing water supplies within the Tenterfield LGA. They are:

- NSW Murray-Darling Basin Fractured Rock Groundwater, commenced 16 January 2012; and
- Tenterfield Creek Water Source, commenced 1 July 2004.

The *Water Management Act* governs the issue of new water licences and the trade of water licences and allocations for those water sources (rivers, lakes and groundwater) in NSW where water sharing plans have commenced (Table 3). The *Water Act 1912* governs the issue of water licences in other areas.

Table 3: Water Sharing Plans, Town Water Sources and Water Access Licences

Water Sharing Plan	Water Sharing Plan Area/ Source	Town Water Source/ Storage	Water Access Licence	Share Component (ML/yr)	Extraction Component
NSW Murray-Darling Basin Fractured Rock Groundwater	New England Fold Belt groundwater source	Shirley Park bore	WAL31091	160	Subject to conditions (monitoring, reporting and maximum allocations) water may be taken at any time or rate.
Tenterfield Creek Water Source	Tenterfield Creek (zone 1)	Tenterfield Dam	WAL6491	824	Water may be taken at any time or rate from river, lake or surface water runoff. During periods of very low flow or low flow water may be taken (subject to announcements by the Minister) when the outflow equals or exceeds the inflow to the dam, or when there are no inflows to the dam.

Water Sharing Plans are reviewed after ten years. The *Tenterfield Creek Water Sharing Plan* (2004) is currently being reviewed by NSW Office of Water and is likely to be incorporated into the macro *Water Sharing Plan for the NSW Border Rivers Regulated River Water Source* (2009). TSC has a water licence for town water supply from Tenterfield Dam (under the Tenterfield Creek Plan) and NSW Office of Water has advised that town water supply licence conditions are unlikely to be modified in the review.

A new macro water sharing plan is being developed for the Clarence Unregulated and Alluvial Water Sources. Council's existing *Water Act 1912* licence for the Urbenville water supply from Tooloom Creek will be converted to a water access licence under the *Water Management Act, 2000* once this new plan is commenced.

Environment Protection Licences

Council holds Environment Protection Licences for Urbenville and Tenterfield STPs as well as water supply operations (Table 4).

Table 4: Environment Protection Licences

Licence No.	Premises
4306	Urbenville STW (discharge to Beaury Creek)
4305	Tenterfield STW (discharge to Tenterfield Creek)
7661	Tenterfield Water Supply Dam (chemical control of algae, non-scheduled activity)
4304	Tenterfield WTP (discharge of backwash water)

Drinking Water Management System

The *NSW Public Health Act 2010* and associated Public Health Regulation 2012 require all water suppliers to prepare a quality assurance program in the form of a Drinking Water Management System (DWMS). TSC's DWMS (2013, refer Section 2.4.2) has been developed in accordance with the 12 elements of the Australian Drinking Water Guidelines (ADWG) and with reference to the *NSW Guidelines for Drinking Water Management Systems* (2012).

This DWMS applies to the drinking water service within TSC's responsibility:

- Tenterfield scheme from catchment to tap;

- Urbenville scheme from catchment to tap (except the communities of Muli Muli and Woodenbong in Kyogle); and
- Distribution of water from the Wallangarra WTP (operated by SDRC) to the Jennings community.

2.2.2 Other Obligations

A joint water supply agreement between Kyogle and Tenterfield Councils has been adopted and updated in July 2012. The agreement relates to the funding, construction and operation of the Urbenville, Woodenbong and Muli Muli water supply system.

The arrangements between TSC and the bulk water supplier for Jennings (SDRC) have historically been relatively informal. The DWMS identified the need for a water supply agreement with SDRC to define responsibilities, communication protocols and levels of service.

2.2.3 Organisation Structure

Council delivers services to the community through three departments and the General Manager's Office. Water and sewer services are provided through the Engineering Services department. The Water and Sewer Services organisation chart is shown in Figure 10.

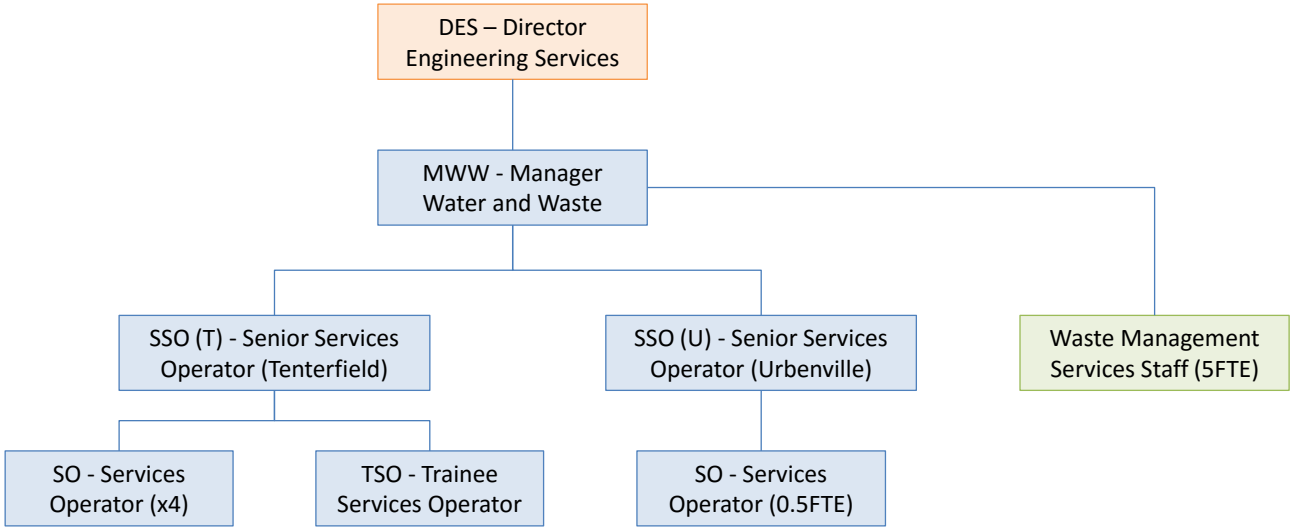

Figure 10: TSC Water and Sewer Services Organisation Chart

2.3 Situation Analysis

Compliance with the above aspects of TSC's operating environment is reported through:

- Eight yearly reviews of the IWCM Strategy and this SBP;
- EPL Annual returns; and
- Annual Performance Indicator reporting.

2.3.1 Compliance with Legislative and Contractual Requirements

TSC complies with all legislative and contractual requirements discussed in Section 2.2.1 and Appendix 1.

2.3.2 Compliance with Environment Protection Licences

Compliance with the sewerage system licences between 2009/10 and 2011/12 was discussed in the 2013 IWCM Strategy.

Licence limits (90 percentile) for pH in the effluent discharge from Tenterfield STP have been exceeded due to increased algal growth during warm weather.

Licence limits (90 percentile) for total suspended solids in the effluent discharge from Urbenville STP have been exceeded due to very high rainfall and/or presence of algae in the maturation ponds.

Council will continue to liaise with NSW EPA regarding licence compliance.

2.3.3 Compliance with Best-Practice Requirements

The NSW Government encourages best-practice by all NSW Local Water Utilities (LWUs). The purpose of best-practice management is:

- To encourage the effective and efficient delivery of water supply and sewerage services; and
- To promote sustainable water conservation practices and water demand management throughout NSW.

Through the NSW Government's *Country Towns Water Supply and Sewerage Program*, sections 283 to 322 of the *Water Management Act 2000*, and sections 56 to 66 of the *Local Government Act 1993*, the Minister for Water is responsible for overseeing the performance of LWUs.

The *Best Practice Management of Water Supply and Sewerage Guidelines* (DWE, 2007) were prepared to encourage continuing improvement in performance and identify criteria for best practice management of water supply and sewerage.

TSC's current compliance with the BPM Guidelines is discussed in Table 5 and Table 6.

Table 5: Compliance with BPM Criteria: Water Supply

Criterion	Compliance	Comments
(1) Complete Current Strategic Business Plan and Financial Plan	Yes	This document
(2) Pricing (full cost-recovery, without significant cross subsidies)		
(2a) Complying Residential Charges	No	Revenue from residential usage charges should be ≥50% of total residential revenue. Refer Section 5.5
(2b) Complying non-Residential Charges	Yes	
(2c) DSP with Commercial Developer Charges	Yes	The DSP was adopted in 2010.
(3) Complete Performance Reporting Form (by 15 September)	Yes	Completed
(4) Sound Water Conservation Implemented	Yes	Refer Section 5.2
(5) Sound Drought Management Implemented	Yes	Refer Section 5.3
(6) Integrated Water Cycle Management Strategy	Yes	Refer Section 2.4.1

Table 6: Compliance with BPM Criteria: Sewerage

Criterion	Compliance	Comments
(1) Complete Current Strategic Business Plan and Financial Plan	Yes	This document
(2) Pricing (full cost-recovery, without significant cross subsidies)		
(2a) Complying Residential Charges	Yes	Refer Section 5.5
(2b) Complying non-Residential Charges	Yes	
(2c) Complying Liquid Trade Waste Fees and Charges	Yes	Refer Section 5.5
(2d) DSP with Commercial Developer Charges	Yes	The DSP was adopted in 2013.
(2e) Liquid trade waste approvals and policy	Yes	Liquid Trade Waste Policy adopted in 2009.
(3) Complete Performance Reporting Form (by 15 September)	Yes	Completed
(4) Integrated Water Cycle Management Strategy	Yes	Refer Section 2.4.1

2.3.4 Performance Indicators

The NSW Office of Water collects and analyses performance data for water and sewerage schemes in NSW (Triple Bottom Line (TBL) reporting). Data is collated by TSC for submission to the Office of Water after each financial year. The data address utility characteristics, social, environmental and economic aspects of water supply and sewerage businesses. The performance reports for TSC water supply and sewerage (2013/14) are included in Appendix 2.

This SBP includes a review of TSC's performance as documented in the TBL reports. A summary of improvement actions is given below.

Table 7: Required TBL Improvement Actions - Sewerage

Indicator		Result (2012/13)	Result (2013/14)	Ranking (2013/14)[1]	Comment/Action
5	Connected property density	26 per km of main	26 per km of main	Lower than state-wide median of 40.	This result reflects the small customer base within the urban area.
8	Employees	1.8 per 1,000 properties	2.3 per 1,000 properties	Lowest ranking (5, 4)	This result reflects the small customer base within the urban area. There was an anomaly in previous reporting with the Technical Officer (0.5 FTE) not previously counted
14	Non-residential sewer usage charge	101 c/kL	104 c/kL	Low ranking (4, 4)	Council will consider the impact of increasing the usage charge. Refer Section 5.5.

Indicator		Result (2012/13)	Result (2013/14)	Ranking (2013/14)[1]	Comment/Action
22	Service complaints	35 per 1,000 properties	53 per 1,000 properties	Lowest ranking (5, 5)	As assets deteriorate, the number of system failures and service complaints is increasing. Mains relining is being undertaken to reduce infiltration (through joints) and root ingress causing chokes and overflows. Refer Section 6.2.2.
36	Sewer main breaks and chokes	91 per 100 km of main	138 per 100 km of main	Lowest ranking (5, 5)	
37a	Sewer overflows to the environment	0 per 100 km of main	3 per 100 km of main	Low ranking (4, 3)	As above. During 2013/14, some larger chokes resulted in overflows.
50	Operating cost (OMA)	$550 per property	$507 per property	Lowest ranking (5, 5)	This result (high recurrent cost per property served) reflects the small customer base within the LGA.
52	Management cost	$207 per property	$216 per property	Lowest ranking (5, 5)	
53	Treatment cost	$248 per property	$201 per property	Lowest ranking (5, 5)	
54	Sewer main cost	$48 per property	$46 per property	Low ranking (4, 3)	

1. (Ranking relative to similar size LWUs – 1,501 - 3,000 connected properties, ranking relative to all LWUs in NSW). The rankings are based on quintile groupings, with the top 20% of LWUs for each indicator being ranked 1 and the bottom 20% being ranked 5 (e.g. LWUs in the range 40% to 60% are ranked 3).

Table 8: Required TBL Improvement Actions – Water Supply

Indicator		Result (2012/13)	Result (2013/14)	Ranking (2013/14)[1]	Comment/Action
9	Renewals expenditure	0.3%	0.9%	Low ranking (4, 4)	TSC has increased renewals expenditure in recent years. Refer Section 6.4.1.
16	Residential revenue from usage charges	42% of residential bills	44% of residential bills	Lowest ranking (5, 5)	Tariff structures are reviewed annually to reflect required income in both wet and dry years. This result reflects the level of income required from access charges to ensure adequate income when demand is low.
25	Water quality complaints	7.4 per 1,000 properties	5 per 1,000 properties	Low ranking (4, 4)	This result reflects the age and deterioration of the

Indicator		Result (2012/13)	Result (2013/14)	Ranking (2013/14)[1]	Comment/Action
30	Number of main breaks	14 per km of main	16 per km of main	Low ranking (4, 4)	water network. A mains replacement program has been implemented. Refer Section 6.2.1.
51	Management cost	$204 per property	$194 per property	Low ranking (4, 4)	This result (high recurrent cost per property served) reflects the small customer base within the LGA.
52	Treatment cost	$174 per property	$202 per property	Low ranking (4, 4)	

1. (Ranking relative to similar size LWUs – 1,501 - 3,000 connected properties, ranking relative to all LWUs in NSW). The rankings are based on quintile groupings, with the top 20% of LWUs for each indicator being ranked 1 and the bottom 20% being ranked 5 (e.g. LWUs in the range 40% to 60% are ranked 3).

2.3.5 Service Provision Review

An analysis of TSC's performance within each of the key result areas (refer Figure 4) is given in Table 9.

Table 9: Service Provision Review

Key Result Area	SBP Reference	Current Position	Future Position
Levels of service	Section 2.4	The adopted levels of service reflect the current performance of the water supply and sewerage systems.	The levels of service will be reviewed as part of Council's ongoing asset management planning process.
Service Delivery	Section 4	The majority of operations and maintenance activities are undertaken by Council's in-house staff. Most major capital works are contracted out, including design, construction and commissioning. Generally transport system design and construction work are undertaken by Council. Where considered beneficial, TSC identifies and implements opportunities for sharing of resources and utilising joint contracts with other parts of Council and with neighbouring water utilities.	No major changes to the method of service delivery are expected.
Areas serviced	Section 5.1	Water supply and sewerage services are currently provided to approximately 3,700 residents (54% of the LGA population). Small towns, villages and rural areas rely on rainwater tanks, bore water supplies and on-site sewerage systems.	Water supply and sewerage services will be extended to new development areas adjacent to existing service areas as required. Council will continue to investigate options for sewering of Jennings and other villages.

Key Result Area	SBP Reference	Current Position	Future Position
Demand management	Section 5.2	Residential water demand (150 kL/property/a in 2013/14) is lower than the median of LWUs with 3,001 to 10,000 properties (204 kL/property/a) and the average of all NSW LWUs (166 kL/property/a). Demand management strategies have been adopted.	Future demand is predicted to increase with modest population growth. Demand per connection is expected to decrease with current and future demand management initiatives.
Pricing and regulation of services	Section 5.5	Water supply and sewer tariffs have been reviewed as part of this SBP. Development servicing plans for water supply and sewerage were adopted in 2012. Best-practice trade waste pricing has been implemented.	The pricing structure will be reviewed on an annual basis to ensure full cost recovery. Development servicing plans will be reviewed in 2017.
Customer/ community involvement	Section 5.6	TSC has adopted a Complaints and Unreasonable Conduct Policy and Customer Service Policy and Community Engagement Strategy. Community engagement forums were conducted between November 2012 and March 2013 to inform Council's strategic planning.	Council will determine the need for community consultation and techniques to be used for each project as they arise.
Environment protection	Section 5.7	Compliance with the requirements of sewerage system environment protection licences is generally achieved.	TSC will continue to maintain compliance with the sewerage system environment protection licences.
IWCM	Section 2.4.1	The IWCM Strategy was adopted in 2013. TSC has progressively implemented components of the IWCM strategy as well as ongoing strategic investigations. The results of these initiatives are being considered in Council's future strategic direction.	A review of the IWCM Strategy will be undertaken in 2019.
Operation	Section 6.2	Water supply assets have a total value of $39m (2013). Sewerage assets have a total value of $27m (2013). Asset condition was assessed in 2012 as part of the asset revaluation. Operating procedures for the key water and sewer assets are currently being developed.	Asset management plans will be reviewed and updated in 2017. Assets will be progressively renewed in accordance with the capital renewal program. Operating procedures will be developed for all key assets.

Key Result Area	SBP Reference	Current Position	Future Position
Maintenance	Section 6.3	Corrective maintenance is undertaken following complaints and as identified during routine inspections and CCTV surveys.	Asset management plans will be reviewed and updated in 2017.
Water Supply capital works	Section 6.4	TSC has developed a 30 year capital works program for water supply including renewals, works to improve levels of service and growth works that is reviewed annually. TSC has commenced a major upgrade of Tenterfield Dam wall. TSC is currently investigating options for upgrade or replacement of the Tenterfield WTP.	The capital works programs will be reviewed on an annual basis.
Sewerage capital works	Section 6.4	TSC has developed a 30 year capital works program for sewerage including renewals, works to improve levels of service and growth works that is reviewed annually.	The capital works programs will be reviewed on an annual basis. TSC will investigate options for sewering of Jennings.
Work Force	Section 7	The TSC Water and Wastewater Services Groups includes 7.5 FTE staff reporting to the Manager Water and Waste.	Workforce and training needs are reviewed on an annual basis.
Finance	Section 8	The TSC sewerage fund is financially stable with cash level of $1.13 million and debt of $2.248 million. The TSC water supply fund is financially stable with cash level of $1.12 million and debt of $340,000. Funding sources include annual water supply and sewerage customer charges, developer charges, loans and grants. A mixture of these sources is used to fund capital works. Developer charges and annual charges will generally fund works for growth. Government grants may be available for improving the levels of service. Loans are required if sufficient cash is not available.	Financial plans will be reviewed annually to ensure full cost recovery and financial sustainability.

2.4 Related Strategic Planning

2.4.1 Integrated Water Cycle Management

The 2013 IWCM Strategy identifies the actions which have been adopted by TSC in relation to each of the identified issues as well as any additional actions required. These issues will be addressed through minor additional capital works and strategic planning actions. The required response is detailed in the IWCM Strategy action plan. The proposed budgets in the Action Plan as well as ongoing asset management planning have been used to develop Council's expenditure program as part of its Integrated Planning and Reporting requirements.

Table 10: Status of IWCM Action Plan

IWCM Action Plan Item	10 year IWCM Budget (2013 $k)	Status of Action
Best-Practice Compliance		
Strategic Business Planning	75	This document and ongoing review
Financial Planning	45	This document and ongoing review
Pricing - Developer Charges	40	To be reviewed in 2017 and every 5 years
Pricing - Tariff Review	Included in management budget	Ongoing
Water Conservation Planning	60	Water demand management is addressed in Section 5.2 of this SBP.
Drought Management Planning	Included in management budget	Drought management is addressed in Section 5.3 of this SBP.
Performance Monitoring	Included in management budget	Ongoing.
IWCM Strategy Review	50	To be reviewed in 2021.
Drinking Water Management		
Tenterfield improvement program	130	Identified improvements from the DWMS (refer Section 2.4.2) have been progressively implemented as funding is available. TSC is currently investigating the preferred direction for upgrading of the Tenterfield WTP to address quality, quantity and WHS issues.
Urbenville improvement program	20	Identified improvements from the DWMS (refer Section 2.4.2) have been progressively implemented as funding is available.
Develop water supply agreement with SDRC	15	Council is currently liaising with SDRC to develop the agreement.
Asset management (water supply operation and maintenance plans)	Included in operating budget	To be prepared. Refer Section 6.2.
Tenterfield WTP replacement - concept design	100	TSC has commissioned a consultant to review options and develop a preferred concept for upgrade or refurbishment of the Tenterfield WTP.
Tenterfield WTP - potential modifications	200	Refurbishment options and costs are currently being considered.

IWCM Action Plan Item	10 year IWCM Budget (2013 $k)	Status of Action
Tenterfield WTP replacement - construction	4,500	The upgrade of the WTP is expected to be completed by 2021 (assuming a funding source can be identified).
Water Sharing Plans		
Liaison with Office of Water	Included in management budget	The Tenterfield Creek Water Sharing Plan is currently being reviewed by NSW Office of Water. The Water Sharing Plan for the Clarence Unregulated and Alluvial Water Sources is currently on public exhibition. TSC has reviewed the draft Water Sharing Plan and confirmed with NSW Office of Water that there will be no change to Council's entitlements or town water operations.
Recycled Water Management		
Tenterfield Golf Course Risk Management Plan	30	Currently being prepared.
Farm Risk Management Plan	20	Currently being prepared.
Biosolids Management		
Biosolids Management Strategy	30	Complete. Tenterfield STP biosolids are currently stored in a sediment pond at the STP (following settlement in sludge lagoons). Sludge from Urbenville STP will also be transported to Tenterfield STP for storage. A local farmer collects and transports dehydrated sludge for use as fertiliser.
On-Site Sewerage Systems		
Risk assessment	20	A strategy for sewering of Jennings was prepared in 1998. TSC is currently consulting with SDRC regarding the possibility of sewering Jennings with treatment at Wallangarra STP. Risk assessments for the remaining villages will be conducted over the next few years once data is available on on-site sewerage system performance.
Secure Yield		
Secure yield assessment - Tenterfield Water Supply	25	Complete
Secure yield assessment - Urbenville Water Supply	25	Complete
Climate Change/Flood Impacts		
Risk assessment	30	Council's Floodplain Risk Management Plan (Jacobs, 2014) found that future climate risk is unlikely to significant change the flood risk for Tenterfield. Discussion of flood damage risk is provided in Section 6.2.4.

IWCM Action Plan Item	10 year IWCM Budget (2013 $k)	Status of Action
Human Resources		
External Project Management Services	50	External consultants are used for project management of large capital works projects and strategic planning consultancies.
Asset Management (BAU Scenario)		
Mains replacement – Tenterfield	-	Council has included $250k p.a. for replacement of unlined cast iron pipes.
Mains replacement - Jennings	100	Ongoing
Flood repairs - Shirley Park bore	20	To be completed by 2017
Water meter replacement program - Tenterfield	200	Ongoing
Valve/hydrant replacement - Urbenville	10	Ongoing
Tenterfield Dam Safety Upgrade - design works, approvals and contractor procurement	460	Complete
Tenterfield Dam Safety Upgrade - integrated development approval	50	Development approval has been obtained
Tenterfield Dam Safety Upgrade - construction	4,500	In progress. To be completed by June 2017.
Tenterfield Dam Safety Upgrade - construction management	450	Ongoing
Sewer Mains - Maintenance and Rehabilitation - Tenterfield	800	Ongoing
Sewer Mains - Maintenance and Rehabilitation - Urbenville	150	Ongoing
Sewer Mains - Relining - Tenterfield	1430	Ongoing
Sewer Manholes - level alterations - Tenterfield	1340	Ongoing
Smoke Testing - Tenterfield	50	Ongoing
CCTV Inspections - Tenterfield	30	Ongoing
CCTV Inspections - Urbenville	10	Ongoing
Drummond St Flood Proofing	5	TSC has determined that the cost of flood-proofing is greater than the risk of repairs required following a flood.

Conditions of Approval

The NSW Office of Water provided Conditions of Approval of the IWCM Strategy in January 2015 based on the IWCM Strategy Checklist, July 2014. These are listed below with their status.

Table 11: NSW Office of Water Conditions of Approval for IWCM Strategy (January 2015)

Condition		Current Status
1	Implement the recommendations contained in the Dam Safety Inspection Report December 2013, NSW Office of Water (NOW) by the timeframe nominated in that report to ensure the continued safety and integrity of Tenterfield Dam.	On target
2	Complete the dam safety works as required by the Dam Safety Committee to ensure the continued safety and integrity of Tenterfield Dam. It is noted that in order to obtain government subsidy under the CTWS&S program these works must be completed by June 2017	On target
3	Shirley Park bore should be operational by the timeframe nominated in the report. Prepare a Wellhead Protection Plan in accordance with The NSW Groundwater Quality Protection Policy by December 2016.	The bore will be repaired during 2016/17 and a Wellhead Protection Plan will be prepared by December 2016.
4	Finalise the secure yield study for the Tenterfield Water Supply by incorporating NOW review comments and obtain NOW approval to Council's analysis. The secure yield study to be completed by December 2015 and the study findings incorporated into Council's Total Asset Management Plan (TAMP) as part of condition 14 below.	Complete.
5	Complete a secure yield study for the Urbenville Water Supply and obtain NOW approval to its analysis. The secure yield study to be completed by December 2015 and the study findings incorporated into Council's TAMP, as part of condition 14 below.	Complete.
6	Develop and Implement a quality assured program for recording data needed for legislative compliance, for strategic planning studies and for operational performance monitoring by December 2015. This would ensure that all data collected are accurate, adequate, verifiable and comparable. This data collection, monitoring and recording should include all unserviced towns and villages. In particular, address data needs as per identified data gaps on Table 3 and including identified lack of information on Table 4-1 (pages 58-61 of IWCM Strategy Report).	Table 3 from the IWCM Strategy refers to secure yield studies (completed) and the risk of asset damage, isolation and impact on levels of service due to climate change with reference to the potential increase in flood levels that may arise in future (addressed in Table 10). Outstanding data gaps from Table 4-1 (in Appendix 1 of the IWCM Strategy) are: • Groundwater vulnerability will be addressed through the Wellhead Protection Plan for Shirley Park bore; • Stormwater network investigations will be addressed through stormwater asset management planning; • Sewer asset condition is reported in the 2013 sewer asset management plan; and • Sewer network capacity – inflow and infiltration is being addressed through asset management strategies (Section 6.4).

Condition		Current Status
7	The information supplied by Council does not provide adequate substantiation of the need for replacing and/or upgrading the water treatment works and its size. Provide sufficient information in the form of a Paper that substantiates the need for the water treatment works replacement and/or upgrade by December 2015. Consult with NOW staff throughout the project investigation and development phase to ensure the adequacy of the proposed scope of works. This Paper should address the following as a minimum: a. Provide evidence (i.e. analysis) that supports the proposed population and tenement projections and the 30-year peak and annual water projections Including a demand persistence analysis with various water treatment works output and reservoir sizes; and b. Optimisation of water treatment works process and operations. In this regard consult with NOW staff prior to undertaking any optimisation studies such as changing of coagulants or undertaking any modifications.	TSC has commissioned a consultant to review options and develop a preferred concept for upgrade or refurbishment of the Tenterfield WTP.
8	Include an appendix summarising the key elements in developing and implementing your Drinking Water Management System in accordance with the 2013 NSW Guidelines.	Addressed as part of this SBP (Section 2.4.2).
9	Ensure appropriate service agreements are available between Council and Southern Downs Regional Council for the Jennings scheme and between Council and Kyogle Council for the Urbenville scheme. Forward a copy of the agreements to NOW for comment. The agreements are to be completed by December 2015.	Agreement for the Urbenville scheme is complete. TSC is currently liaising with SDRC to develop the agreement.
10	For the existing Tenterfield golf course and farm reuse schemes, complete the risk assessment and management plan and obtain NOW Local Government Act Section 60 approval. In this regard consult with NOW staff and refer to www.water.nsw.gov.au for the approval process. Extension to reuse scheme should only be considered if cost effective and sustainable in the long-run. All on-going Council costs associated with effluent reuse should be included in your 30-year TAMP and financial plan.	Recycled water management systems are currently being prepared for the reuse schemes. TSC has consulted with NSW Office of Water and will complete the requirements for section 60 approval.
11	Submit the biosolid reuse study to NOW for comment once completed. Reuse should only be implemented where it is cost effective and sustainable.	To be prepared during 2016.
12	Council needs to take immediate actions to manage and/or rectify the Work Health and Safety legislative non-compliance with both the management systems and physical assets relating to the water supply and sewerage services. All future actions and their costs should be included in your TAMP and financial plan, as part of condition 15 below.	All WHS audits have been actioned. A recent audit of the Tenterfield WTP is being addressed through the study on options for upgrade/replacement of the WTP.
13	Summarise the analysis and evidence of the performance of the on-site water services in each unserviced towns and villages including the feasible options to overcome identified issues. Such analysis could be economically completed along with Council's supplementary paper, as part of condition 14 below.	Options for sewering of Jennings have been assessed and will be reviewed in consultation with SDRC and the community. The performance of on-site systems in other villages will be assessed as part of Council on-site sewerage management strategy.

Condition		Current Status
14	Provide to NOW for concurrence a supplementary paper to the June 2013 IWCM Strategy clearly documenting the analysis specified in these conditions and the adopted IWCM Scenario by April 2016	To be provided by April 2016.
15	To ensure the long term financial sustainability and affordability of its services, Council should also prepare and provide to NOW its Total Asset Management Plan (TAMP) and Financial Plan and Report in accordance with Item 17 of the IWCM Check List. This should be completed by April 2016 along with the supplementary paper in condition 14.	A TAMP and financial plan are included in this SBP and will be reviewed annually.

Review of IWCM Assumptions

The next IWCM review in 8 years (2021) will confirm whether the actions in the IWCM Strategy have adequately addressed the identified issues. A review of the principal assumptions and risks underpinning the IWCM Strategy and report outcomes is given below:

Assumption 1 – potential unplanned increase in water demand due to a water intensive industry, large new development, etc.

No new large water users have been identified. The secure yield assessment for Tenterfield Water supply indicates that an additional 300 ML/a is available for new customers over the long-term (refer Section 5.2.3). Council's water access licences also allow for this level of increase in demand.

Assumption 2 – potential unexpected changes to existing water access/use licence regime

The new Water Sharing Plan governing Urbenville water supply will be gazetted in 2015 with no change in access conditions for TSC.

Similarly, any changes to the Tenterfield Creek Water Sharing Plan are not expected to alter Council's access conditions.

Assumption 3 – significant potential changes to raw water quality and/or non-compliance with ADWG 2011

There is not expected to be any change in land use that would affect raw water quality. More intense storms in future due to climate change may impact on raw water quality. Improvement actions have been identified in the DWMS to improve the response to changes in raw water quality (such as turbidity alarms). TSC is currently planning an upgrade of Tenterfield WTP which will address raw water quality risks.

Assumption 4 – unexpected major change in distribution system characteristics.

None identified. Deterioration of the distribution system assets is being addressed through the renewal program.

Assumption 5 – unexpected extension/provision of water service to a new area/urban centre.

New growth will be limited to infill of existing serviced areas.

Assumption 6 – potential unexpected increase in sewage load due to industry, large development, etc.

No new industry or large development has been identified.

Assumption 7 – unexpected changes in sewage transport system characteristics.

None identified. Deterioration of the transport system assets is being addressed through the renewal program.

Assumption 8 – potential unexpected changes to existing sewerage management licence regime.

The EPA has not foreshadowed any changes to licence conditions. The Recycled Water Management Systems are currently being prepared.

Assumption 9 – unexpected extension/provision of sewerage service to new area/urban centre.

New growth will be limited to infill of existing serviced areas.

2.4.2 Drinking Water Quality Management

The Australian Drinking Water Guidelines (ADWG) was developed by the National Health and Medical Research Council (NHMRC) and the Natural Resource Management Ministerial Council (NRMMC). The ADWG defines safe, good quality water and how it can be achieved and assured. The ADWG provides a framework for management of drinking water supplies, which will assure safety at point of use when correctly implemented.

The *Public Health Act, 2010* and *Regulation 2012* require water utilities to prepare and implement a risk-based drinking water quality management plan in accordance with the ADWG. The Framework for Management of Drinking Water Quality is a preventive management approach that encompasses all steps in water production from catchment to consumer. The Framework incorporates a preventive risk management approach including elements of the Hazard Analysis and Critical Control Point (HACCP) system, Australian and International Standards (ISO 9001 and AS/NZS 4360), but applies them in a drinking water supply context to support consistent and comprehensive implementation by suppliers.

The coverage of the framework includes all aspects of supply from catchment to consumer and all water products, systems and organisational responsibilities.

TSC has prepared a Drinking Water Management System (DWMS). Development of the DWMS included analysis of water quality data and risk assessments. The DWMS (Viridis Consultants, 2013b) identifies the preventive measures and residual risk and improvement measures (risk treatment) for each water supply system as follows:

- Tenterfield water supply: The unacceptable residual risks, after considering the barriers and preventive measures were from bacteria and protozoa. The hazardous events that can result in bacteria and protozoa being unacceptable residual risks are major run-off events, incorrect dose of alum, filter break-through, failure of UV system and stagnation in reservoirs.

  Improvement actions have been assigned to the unacceptable risks as follows:

  - Investigate online raw water and colour monitoring;
  - Investigate alternate coagulant and coagulant dosing equipment;
  - Investigate online monitoring for settled water pH and turbidity;
  - Investigate online turbidity meters on individual filters;
  - Conduct condition assessment of media and replace/replenish as necessary;
  - Investigate UV system performance;
  - Investigate improving turnover and mixing in reservoirs;
  - Formalise reservoir cleaning program; and
  - Rectify tree root issues and repair/line reservoir walls.

  The areas where further investigations are required to inform the risk for the Tenterfield scheme are stagnation of water at the reservoirs and potential for disinfection by-product formation in reticulation (no data).

- Urbenville water supply: The unacceptable residual risks after considering the barriers and preventive measures were from bacteria and protozoa. The hazardous events that can result in bacteria and protozoa having unacceptable residual risks are major run-off events, incorrect dose of alum and failure of the chlorination system.

  Improvement actions were identified to manage the unacceptable residual risks as well as to optimise the treatment processes as follows:

  - Set up alarms for water turbidity;
  - Raw water testing for manganese;
  - Investigate improving electrical circuitry for alum dosing;
  - Set up auto plant shutdown if high raw water turbidity occurs to enable jar testing and correction of chemical dosing; and
  - Establish communication protocol with Kyogle Council to optimise storage during rain events – currently in draft form.

  The areas where further investigations are required to inform the risk for the Urbenville scheme (uncertainty level being 'estimate') are the stagnation of treated water in the reservoir and the formation of disinfection by-products.

- Jennings water supply: The unacceptable residual risk for the Jennings scheme was from bacteria. The hazardous event relating to bacteria was receipt of out of specification water from SDRC.

  An improvement action to formalise the water supply agreement between TSC and SDRC, including communication protocols and water quality criteria has been identified. This is currently in draft form.

- Whole scheme: Improvement actions have been identified as:
  - Prepare operation and maintenance manuals for each scheme;
  - Develop water asset management plans including targets for levels of service;
  - Commission new standby generator;
  - Develop and adopt a drinking water quality policy;
  - Develop standard operating procedures;
  - Develop water quality incident and emergency response plan; and
  - Investigate one-off project to test for disinfection by-products with local public health unit (PHU)

The DWMS also specifies investigative studies and research monitoring including strategic programs designed to increase understanding of the water supply systems, to identify and characterise potential hazards, to fill gaps in knowledge and decrease level of uncertainty during the risk assessment process.

Many of the improvement actions relate to increased monitoring of the plant which is difficult to implement given the low level of resources, limitations of the SCADA system and required responses to monitoring. The WTP does not consistently achieve ADWG water quality requirements for turbidity. TSC has commenced a project to assess options and design the necessary WTP upgrade. As part of this project, prioritisation of improvement actions will be documented.

2.5 Principal Issues

The principal water supply and sewerage management issues are identified in the IWCM Strategy and this SBP. The following table summarises the issues and where they are addressed in this SBP.

Table 12: Principal Issues

Issue	SBP Sections
An upgrade of the WTP is required to address risks related to asset condition, workplace health and safety and treatment performance.	6
The age and deterioration of water supply assets may affect the ability to achieve the levels of service in future (e.g. water quality, main breaks). TSC has a large water supply infrastructure renewal backlog.	6
The age and deterioration of sewerage assets may affect the ability to achieve the levels of service in future (e.g. sewer overflows and treatment performance). During wet weather the sewer load is substantially increased due to infiltration and inflow to the sewers. TSC has a large sewerage system infrastructure renewal backlog.	6
Council's limited internal human resources (particularly engineering skills) affect the ability to deliver strategic planning, design and asset management tasks.	7
The Tenterfield Shire community has a limited capacity to absorb future increases in water and sewerage pricing.	8

2.6 Risk Profile

Council holds all required insurances related to the water supply and sewerage businesses including buildings and contents, public liability, professional indemnity, Councillors and officers liability, motor vehicles, environmental impairment liability and personal accident insurance.

3. LEVELS OF SERVICE

The Levels of Service (LOS) are the primary driving force for the water supply and sewerage businesses. They explicitly define the standards required from the water and sewerage systems and will largely shape Council's detailed operations, maintenance and capital works planning. The LOS are designed to reflect an optimisation of the desired service provision, what is affordable as well as the system capability. These considerations take into account legislative requirements, industry standards and customer demands. The desired LOS must be balanced against the cost of providing the service. Achieving the LOS is the primary objective. Minimum standards (regulatory requirements) apply for water quality, effluent discharge and biosolids management.

The LOS adopted in the previous (2001/02) Strategic Business Plans have been reviewed to reflect the current system performance as well as providing consistent targets across all service areas.

Council may need to revise the LOS in the future in accordance with customer demand and industry trends. The following issues may affect the Levels of Service:

- LOS in the water industry have been generally rising. It is likely that in the future customers would be willing to pay for improved LOS;
- Council's intention is to provide the same LOS to all customers; and
- The majority of customers are likely to demand LOS comparable with those provided by other water authorities.

The LOS for water supply and sewerage are listed in Table 13 and Table 14. The LOS are targets that TSC aims to achieve and are not associated with a customer contract.

Table 13: Water Supply Levels of Service

Description	Units	Target Level of Service
Availability of Supply	-	All residential and non-residential properties within the defined service area.
Peak Day Demand	L/dwelling/day	2,000
Average Annual Demand	kL/dwelling/year	190
Fire Fighting	L/s	Water will be available from fire hydrants for fire-fighting at minimum flow rates determined by guidelines for specific types of development as set out in Local Government Regulations and the conditions established by the NSW Fire Brigade
Pressure (when conveying maximum instantaneous demand (6 L/min)):		
Minimum pressure	Metres head	12 except for existing high level zones at all times
Maximum static pressure	Metres head	90
Potable Water Quality	Compliance with ADWG 2011	

Description	Units	Target Level of Service
Consumption Restrictions in Drought		
Maximum frequency of restrictions	number of times per 10 years	5
Maximum duration of restrictions	months/10 year period	10
Ability to supply demand through the worst drought on record	% of water demand	90 (i.e. a 10% reduction in consumption).
Interruptions to Supply (per year per supply)		
Planned (95% of time)		
Notice given to domestic customers (between 9am and 4pm)	days	2 weeks
Notice given to industrial and commercial customers (times to be negotiated)	days	2 weeks
Unplanned		
Maximum duration	hours	<4 hrs
Maximum interruptions to supply	per 1,000 properties p.a.	40
Main breaks	per 100 km main p.a.	25
Service Provided		
Time to provide an individual, residential connection to water supply in serviced area	working days	5
Response Time (time to have staff onsite or to investigate a problem or answer an enquiry)		
Priority 1: A complete failure to maintain continuity of supply to large number of customers or critical user at critical time		
Possible Issues: Broken water main, broken service, jammed hydrant, no water, dirty water, leak creating a major issue. Typical Effects: Personal injury or risk to public health, loss of supply, major property damage, failure to maintain quality or quantity of service, large volume of water wasted, significant unplanned depletion of service reservoir, major environmental impact.		*Repairs to commence:* Within 0.5 hour (during work hours) Within 1 hour (after work hours)
Priority 2: Known fault, non-urgent		
Possible Issues: Service disconnection, faulty hydrant/valve, missing hydrant. Typical Effects: Need for preventative maintenance, minor customer impact.		Programmed Maintenance

Table 14: Sewerage Levels of Service

Description	Units	Target Level of Service
Availability of Supply	-	All residential and non-residential properties within the defined service area.
Acceptance of Commercial and Industrial Waste	-	In accordance with TSC *Liquid Trade Waste Regulation Policy* (2014)

Description	Units	Target Level of Service
Compliance with Environment Protection Licence Conditions	%	100
Service Complaints/System Failures		
Priority 1: A complete failure to contain sewerage within the Sewer System or any problem affecting many users resulting in one or more of the following occurring.		
Possible Issue: Blockage overflowing Sewer System, manhole overflowing, Broken Gravity/Rising Main, Pump Station failure, Missing Manhole Lid Typical Effects: Personal injury or significant risk to health, Surcharge inside/outside a building, Property damage e.g. subsidence of critical asset e.g. roadway, buildings, railway etc., Environmental impact e.g. trade waste spill, subsidence causing danger		*Repairs to commence:* Within 0.5 hour (during work hours) Within 1 hour (after work hours)
Priority 2: Non urgent fault but significant in the belief of the customer.		
Possible Issue: Minor subsidence, Restoration, Locations Typical Effects: No impact on the environment, Seepage investigation		Programmed Maintenance

Objective 1 – Levels of Service

Objective
Operation of the water supply and sewerage systems meets the adopted Levels of Service which take into account financial implications, statutory/regulatory requirements, customer desires and industry standards.
Performance Target
100% compliance with the Levels of Service.
Strategy
Monitor and report on levels of service being achieved. Address non-compliances. Review of adopted levels of service.

No.	Action	Responsibility	Timing	Cost ($k)
1.1	Review the Levels of Service.	MWW[1]	Sept 2017 and bi-annually.	Included in budget
1.2	Report to Council on compliance with licence STP requirements.	MWW	Monthly	Included in budget
1.3	Compile performance indicator (TBL) data.	MWW	By September each year	Included in budget
1.4	Develop actions plans in response to TBL Performance Reports in accordance with best-practice requirements and report to Council.	MWW	Within 3 months of receipt of TBL Performance Reports	Included in budget

1. MWW: Manager Water and Waste

4. SERVICE DELIVERY

The service delivery strategy is the means TSC uses to provide or deliver service to its customers. It applies to all three main areas of asset management: operations, maintenance and capital works. It also has significant implications for customer service, human resources and the financial plan. This section outlines options for the delivery of water supply and sewerage services.

The delivery of TSC water supply and sewerage services is the responsibility of the Manager Water and Waste (MWW). Further discussion is provided in the WORK FORCE PLAN in Section 7.

4.1 In-House Resources and External Contracts

The majority of operational and maintenance tasks for the sewerage and water supply schemes are undertaken by Council's in-house staff. General maintenance activities such as clearing blockages, tank pump station cleaning and mowing grounds at the treatment works are carried out by the operators and day labour Council staff. The number of services contracted out by Council has been gradually increasing, particularly in areas where specialist services are required. Council intends to contract out work where it is the most effective service delivery option.

Most major capital works are contracted out, including design, construction and commissioning. Council uses its own labour force for minor capital works items such as manhole construction and minor pipe extensions. Generally transport system design and construction and general mains work are undertaken by Council. Most strategic planning, asset management and specialist design services are undertaken by external consultants due to the lack of in-house engineering capability.

4.2 Resource Sharing

Where considered beneficial, TSC identifies and implements opportunities for sharing of resources and utilising joint contracts with other parts of Council and with neighbouring water utilities. Current examples include:

- Customer service and information technology services are provided to all Council departments by the TSC Corporate Services Department;
- Provision of bulk water to Kyogle Council;
- Purchase of bulk water from SDRC;
- Staff are shared with Kyogle Council for activities in Woodenbong when staff are limited (on a fee for service basis);
- Communication protocol with SDRC as opportunities arise; and
- TSC is participating in the Northern Inland Water Managers Group and may consider regional supply contracts in future.

4.3 Private Sector Participation

Due to the small scale of the planned new assets for TSC, the attraction and participation of private investors appears to be unlikely. Therefore Council does not perceive the opportunity for any private sector involvement in the near future.

5. CUSTOMER SERVICE PLAN

5.1 Areas Serviced

5.1.1 Existing Customers

The existing water supply and sewerage schemes are discussed in Section 1.1. Town water supplies are provided to Tenterfield, Urbenville and Jennings. Urbenville and Jennings also use rainwater tanks as a major source of water. Reticulated sewerage systems are provided in the majority of Tenterfield and Urbenville.

5.1.2 Growth

The Tenterfield IWCM Strategy presents the predicted growth in number of water supply and sewerage connections (0.9% p.a. for the next 20 years). The ABS Census data suggests the number of dwellings in Tenterfield (Urban Centre/Locality) has decreased by 0.5% p.a. over the last 5 years with the number of occupied dwellings decreasing by 1.0 % p.a. (Hydrosphere Consulting, 2013). Council has adopted a growth rate of 0.9% p.a. for strategic planning but will consider the impact of lower growth rates as part of financial planning (Section 8).

Any population growth will be accommodated within existing urban areas.

5.1.3 Unserviced Areas

Some areas of Tenterfield (infill and new development areas) that were not connected to the sewerage scheme are being serviced over the next 8 years.

There are approximately 1,550 rural properties in the LGA not connected to a Council water supply or reticulated sewerage system. These properties generally rely on rainwater tanks, groundwater supplies and on-site sewage treatment usually in the form of septic tanks and absorption trenches. Water supplies in the rural areas appear to be adequate.

The TSC on-site sewage management (OSSM) Inspection program commenced in October 2014 and 20 inspections were undertaken by February 2015. The primary focus of the inspections is those categorised as ‘High Risk’ which includes all systems in the Tenterfield Dam catchment area. Most of the inspected properties will be issued with an Approval to Operate with two of the inspected properties requiring works to be undertaken prior to the issue of an Approval to Operate. The remaining on-site systems within the LGA will be inspected progressively in accordance with the TSC On-site Sewerage Management Policy (2013).

The extension of water supply and sewerage services is dependent on a range of factors, mainly the environmental impact of the existing systems and the cost of providing Council services to these villages. Additional data on the adequacy of existing on-site systems and the feasibility of a centralised sewerage system is required. The OSSM inspections are expected to be completed over the next 3 years which will provide information on the potential risks to the environment and public health.

The available data on unserviced areas are provided in Table 15.

Table 15: Unserviced Villages

Village	Current Population (approx.)	Current Water Supplies	Current sewerage facilities	Known Issues	Proposed Approach
Jennings	210	Council water supply (from SDRC) to 91 connections	Septic tanks	The IWCM Strategy discusses potential issues with septic tank runoff, sullage water ponding and odours due to the poor absorption of the soils in Jennings. In 1988, Council offered the residents of Jennings an effluent collection drainage scheme, but it was rejected by the residents due to the cost (TSC, 2005).	A study was undertaken in 1998 (SKM, 1998) to investigate options for sewering of Jennings. Council is currently reconsidering the need for action and is consulting with SDRC regarding the possibility of connection to Wallangarra sewerage system.
Torrington	200	Rainwater tanks, groundwater bores	Septic tanks	There are no indications that existing systems are inadequate.	Inspections of on-site systems will be undertaken during 2015 and 2016. The data and characteristics such as topography and ground conditions, sensitive receiving environments, rainfall and water quality and soil testing will be assessed to determine the need for alternative servicing strategies.
Drake	150	Rainwater tanks, groundwater bores	Septic tanks	During community visioning workshops held at Drake in 2006, residents raised concern about the contamination of local waterways from on-site sewerage systems. There are no indications that water supplies are inadequate. A Strategy for provision of water supply to Drake was prepared in 1998 although this was not pursued.	
Legume	100	Rainwater tanks, groundwater bores	Septic tanks	There are no indications that existing systems are inadequate.	
Liston	50	Rainwater tanks, groundwater bores	Septic tanks	During community visioning workshops held at Liston in 2006, residents raised concern about the contamination of local waterways from on-site sewerage systems.	
Mingoola	20	Rainwater tanks, groundwater bores	Septic tanks	There are no indications that existing systems are inadequate.	

Since the Jennings Sewerage Strategy (SKM, 1998) was prepared, SDRC growth has been lower than predicted and there is expected to be sufficient capacity in the Wallangarra STP to service Jennings customers without upgrade to the treatment lagoons. The costs presented in the 1998 strategy for house drainage, collection and transfer to Wallangarra STP are $900,000 or $10,000 per ET (indexed to 2015$). There may also be an additional headworks contribution payable to SDRC to cover the cost of treatment at Wallangarra. The 1998 Strategy estimated annual costs of approximately $20,000 p.a. (indexed to 2015$).

Consultation with SDRC is required to confirm the final servicing approach and cost. TSC will review the sewer servicing strategy including current technologies and continue liaison with SDRC and the Jennings community.

Objective 2 – Areas Serviced

Objective				
Provide sewerage services to all areas where there are identified significant environmental and health risks, community desires and economic feasibility				
Performance Target				
Adequate water and sewer services are available to all areas by 2020.				
Strategy				
Examine the feasibility of providing services to all towns.				
No.	**Action**	**Responsibility**	**Timing**	**Cost ($k)**
2.1	Review data from on-site sewerage inspections and investigate the need, feasibility (economic, technical and environmental) and community desire for provision of sewerage services in Jennings, Liston, Drake, Legume, Mingoola and Torrington.	MWW [1]	2017	10
2.2	Review technical options for sewering of Jennings and continue liaison with SDRC and the community.	MWW	2017	30

1. MWW: Manager Water and Waste

5.2 Water Supply Demand

5.2.1 Demand Management Initiatives

Council adopted a *Water Conservation and Demand Management Plan* in June 2010. The Plan (TSC, 2010a) has been prepared to supplement the Drought Management Plan with measures that aim to reduce the community's total water usage levels during both drought and non-drought periods and increase the security of the water supply systems.

Initiatives aimed at reducing water consumption include:

- A user pays pricing structure introduced in 1995 which resulted in a decrease of over 30% in average annual consumption levels (TSC, 2010a);
- Permanent conservation measures were introduced in 2005. These were removed in 2011 but may be reinstated as discussed in Section 5.3.4;
- Rainwater Tanks Policy – Installation requirements where reticulated water is connected (TSC, 2012). This Policy was adopted to encourage water conservation by the installation of water tanks, connected

to household fixtures, through a safe and reliable method, to supplement the mains supply. The policy does not offer rebates for rainwater tank installation;

- Mandatory water conservation measures for any new homes or businesses and/or renovations (as part of BASIX);
- Management initiatives to allow for more effective means for tracking and reducing water consumption rates in the community have included:
    - Bulk water production metered and recorded on a daily basis;
    - All free standing and multi-unit residential developments (both strata and non-strata) are separately metered;
    - All Council premises (parks, toilets, ovals, cemeteries etc.) are separately metered and billed;
    - Customers are classified in accordance with the categories defined in the latest NSW water supply and sewerage performance monitoring report and consumptions are reported annually; and
    - In the event of high water demand periods, monitoring and recording of daily water levels is undertaken.

Water bills are provided on a six-monthly billing cycle with meters read in November and May each year. When pricing was first introduced, meters were read quarterly but income was not significantly affected by frequent readings and the more frequent readings were considered to be resource intensive. TSC considers the increased cost and administrative implications do not justify more frequent billing.

Tenterfield STP provides treated effluent for land-based irrigation of Tenterfield Golf Course and paddocks around the STP. In 2011/12, 52 ML of treated effluent (19% of sewage produced) was reused at the golf course. TSC is currently preparing Recycled Water Management Systems for the effluent reuse schemes. Urban stormwater is not reused in the LGA apart from household rainwater tanks.

5.2.2 Existing Water Demand

Data from Council's billing system (consumption and total connections where available) are shown in the following figures. The data indicate decreasing demand despite a slight increase in number of connections, particularly in Tenterfield.

Major water users are hotels and motels, caravan parks, bowling clubs, golf clubs and service stations. The top 10 users in Tenterfield, Urbenville and Jennings consume approximately 12%, 8% and 12% of the total demand respectively (Hydrosphere Consulting, 2013).

The consumption data for the communities of Urbenville and Jennings suggests that the water usage volumes are significantly lower than that of the Tenterfield community. This is predominantly due to the majority of houses in these communities using rainwater tanks as an alternate source of water.

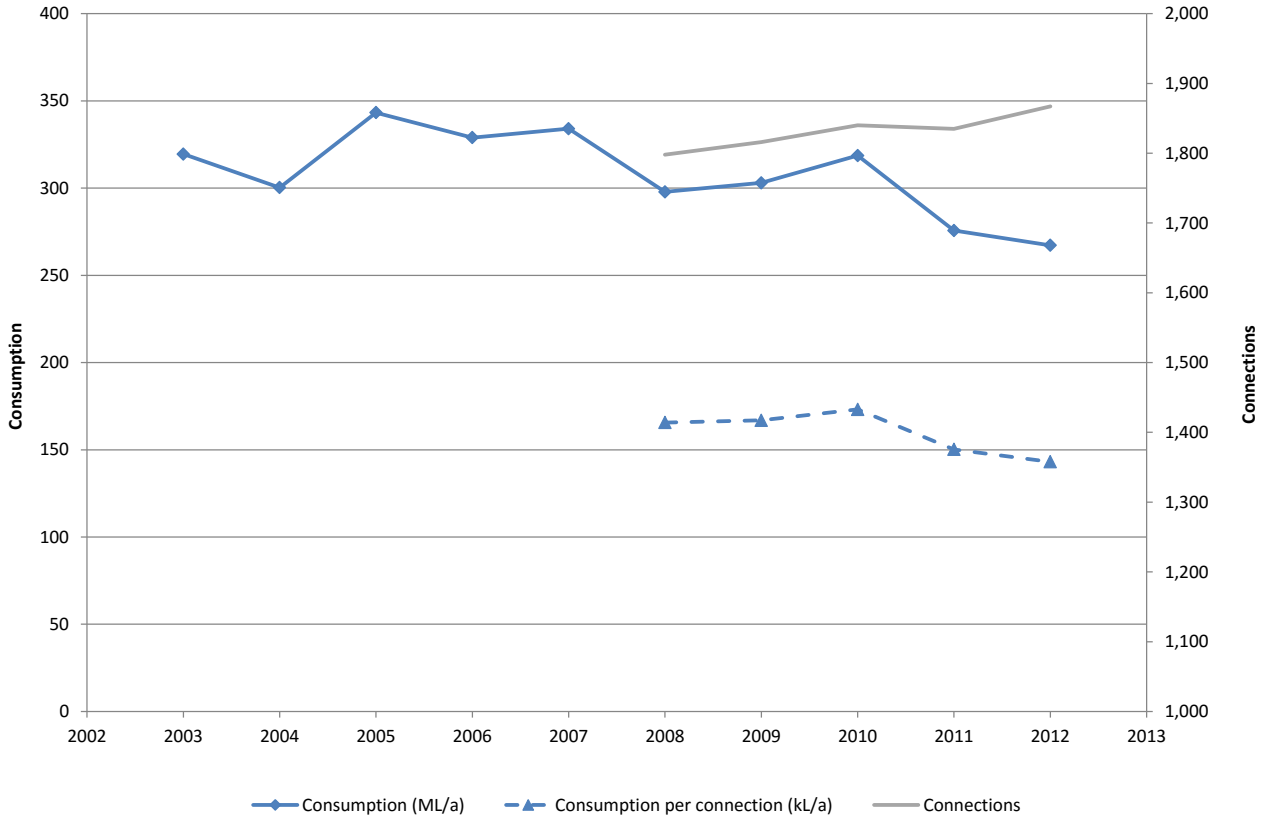

Figure A 1: Tenterfield water supply consumption and connections

Source: Hydrosphere Consulting (2013)

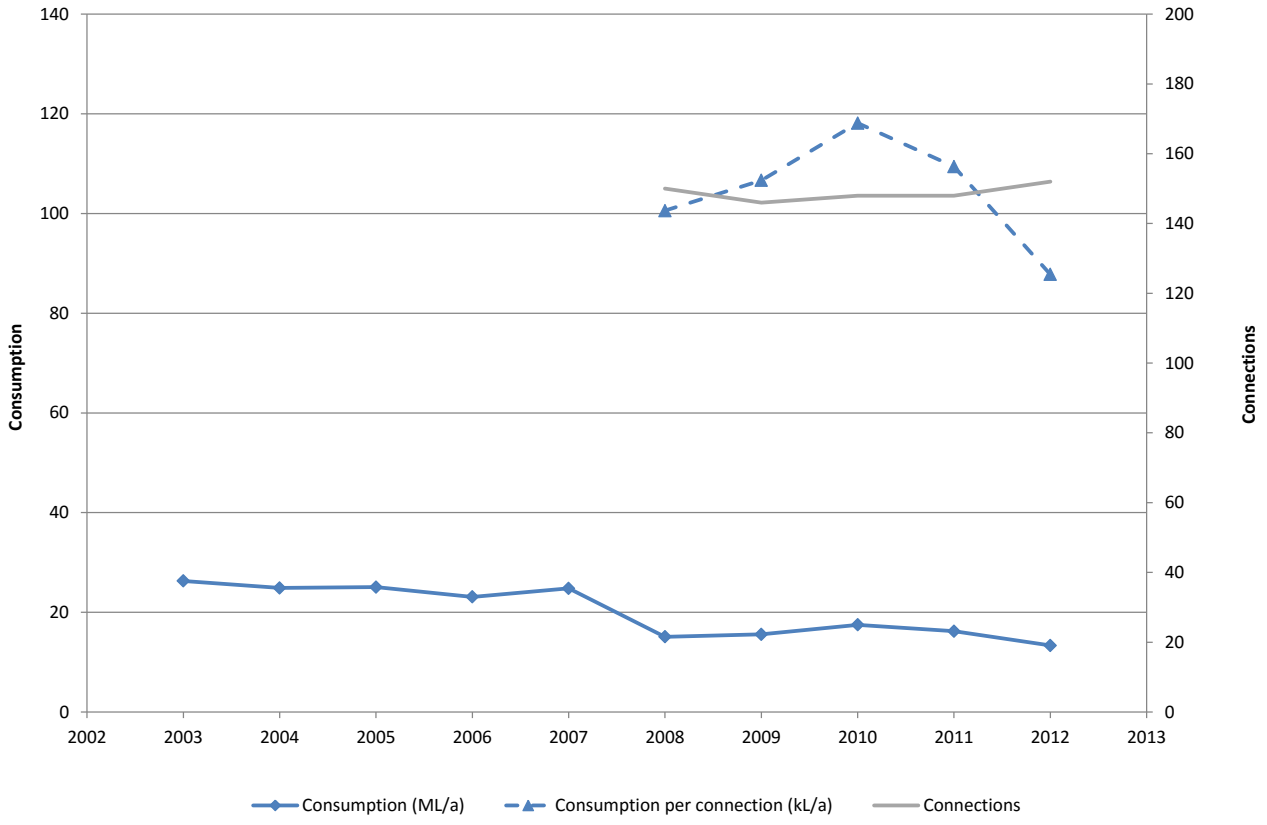

Figure A 2: Urbenville water supply consumption and connections

Source: Hydrosphere Consulting (2013)

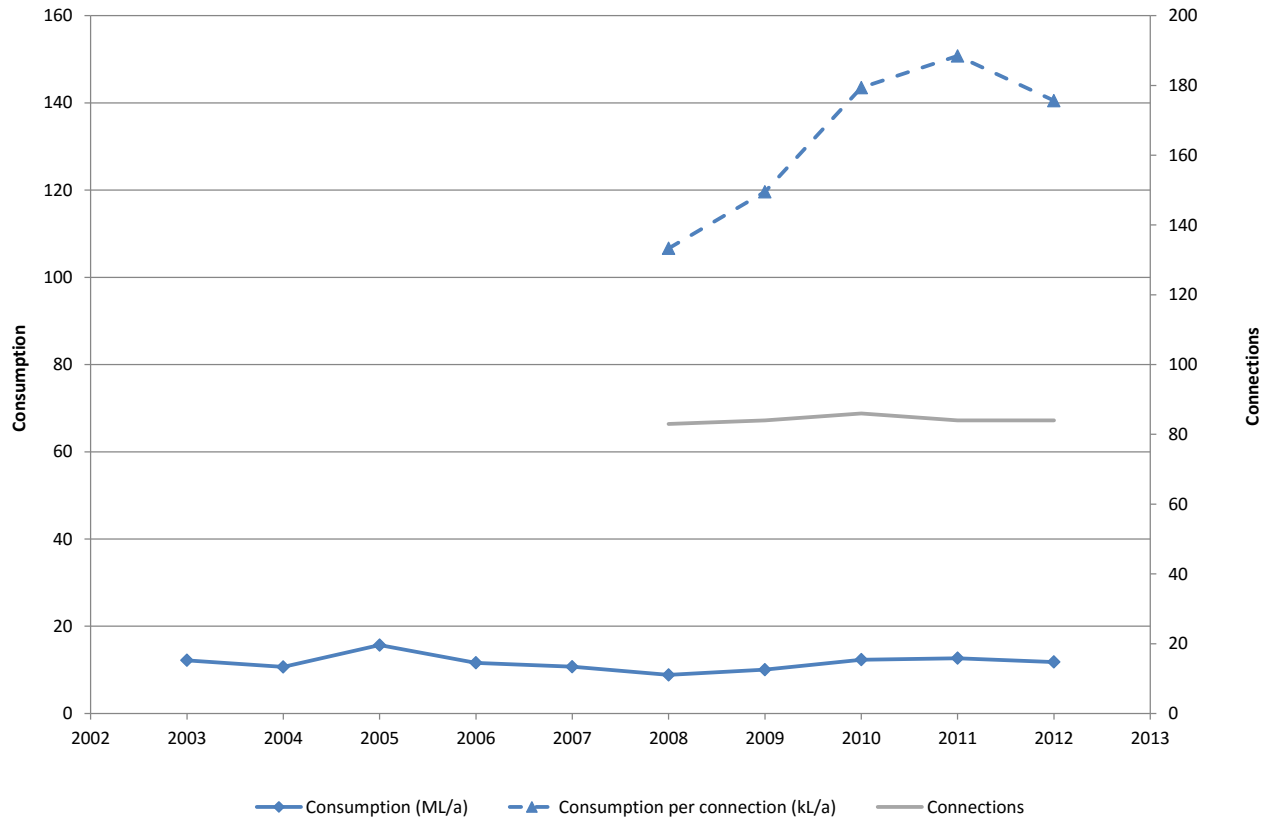

Figure A 3: Jennings water supply consumption and connections

Source: Hydrosphere Consulting (2013)

Demand Benchmarking

The average shire-wide TSC residential demand in 2013/14 was 150 kL/residential property with a five-year average of 155 kL/residential property. Demand data from the NSW Water Supply and Sewerage Performance Monitoring Reports are given in Figure 11.

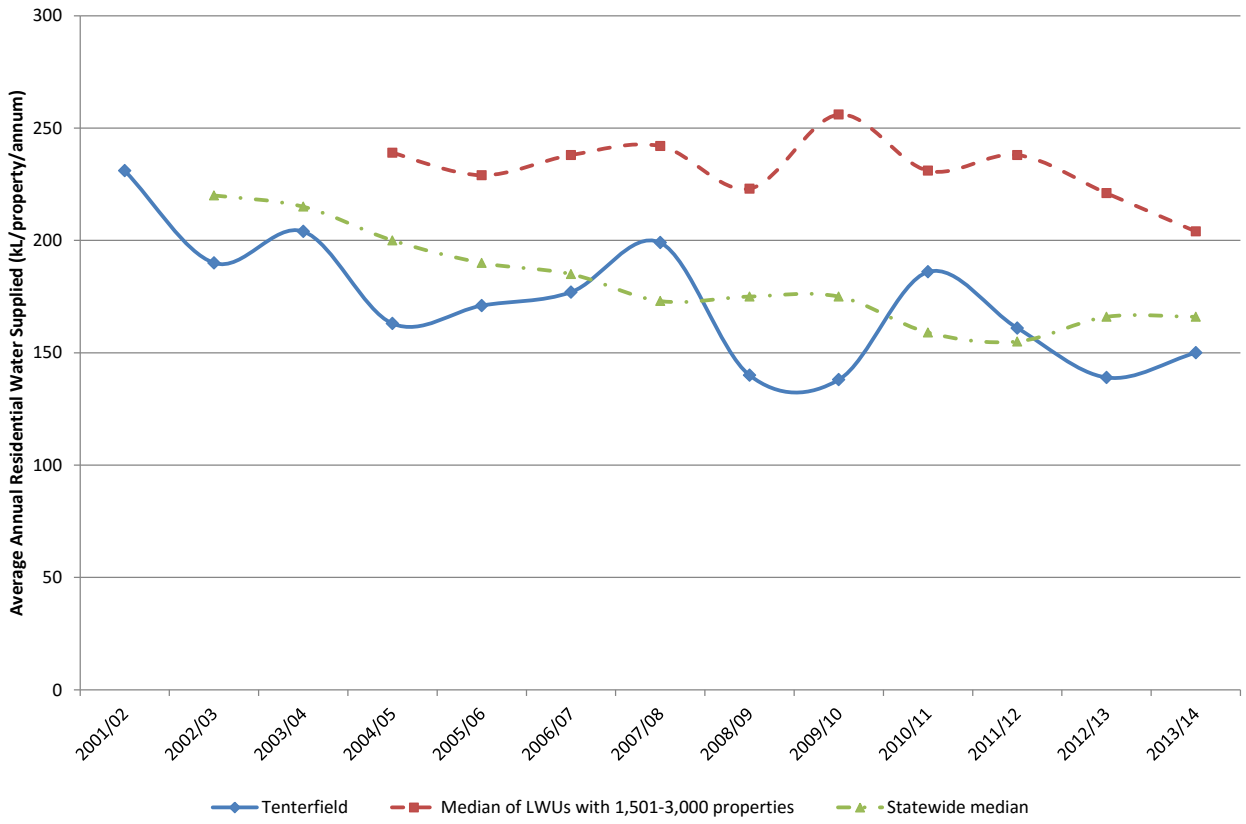

Figure 11: Residential Water Demand

A comparison of average residential water demand with other Councils in the region is given below. Tenterfield shire residents have low demand when compared to other Councils in the region and the state medians.

Table 16: Comparison of average residential water demand in the region (2012/13)

LWU	No. of water supply connected properties	Average Residential Water Supplied (kL/property/a)
Tenterfield	**2,020**	**139**
Kyogle	1,900	134
Glen Innes Severn	2,950	133
Guyra	1,350	201
Inverell	5,450	183
Gwydir	1,470	295
Median of NSW LWUs with 1,501 – 3,000 properties		*238*
NSW State Median		*166*

Source: NSW Office of Water (2014b)

Water Losses

The National Performance Reporting Framework classifies water losses in the distribution system as either apparent losses (unauthorised consumption, retail metering errors) or real losses (leakage and overflows from mains, service reservoirs and service connections prior to customer meters). Non-revenue water (NRW) includes the water lost through unknown leakage, meter inaccuracies, theft, water provided for fire-fighting,

known and unavoidable leakage, use of unmetered standpipes plus water lost during emergency and planned maintenance of water mains. This is equivalent to the total sourced potable water less the water sold to customers. The “real losses” represent a wasted resource, reduce the effective capacity of a water supply system and may result in unnecessary operating costs.

Data on water treatment plant flows and customer consumption for Tenterfield water supply were given in the IWCM Strategy. Total losses in the Tenterfield water supply system are on average greater than 15% with average NRW of 14% between 2008 and 2012. Annual data for the other water supply systems were not available.

The NSW Benchmarking Report (NSW Office of Water, 2014) provides data on real losses. Real losses for Tenterfield LWU are reported as 30 L/d/connection or 0.8 kL/km/d in 2012/13 with NRW reported as 46 L/d/connection.

Leak detection and repair was undertaken in Tenterfield (85% of properties) in 2010 (as part of the Regional NSW Water Loss Management Program) which saved 35 ML/a.

No further opportunities for leakage reduction have been identified. TSC has implemented a water meter replacement program to replace ageing meters and reduce errors in monitoring consumption.

5.2.3 Future Water Demand

Tenterfield Water Supply

The long-term water supply demand in Tenterfield was estimated as part of the IWCM Strategy (Hydrosphere Consulting, 2013) based on 0.9% p.a. growth in connections over the next 20 years.

The current secure yield of the Tenterfield water supply is assessed as 970 ML/a using the current security of supply methodology (based on the 5/10/10 rule) (NSW Urban Water Services, 2014a). The potential future supply (including the impact of climate change with 1°C warming) is assessed as 735 ML/a (at approximately 2030). Future demand is predicted to be less than 400 ML in 2030. A comparison of future demand and secure yield is shown in Figure 12. This shows that the Tenterfield water supply is predicted to be secure for the long term.

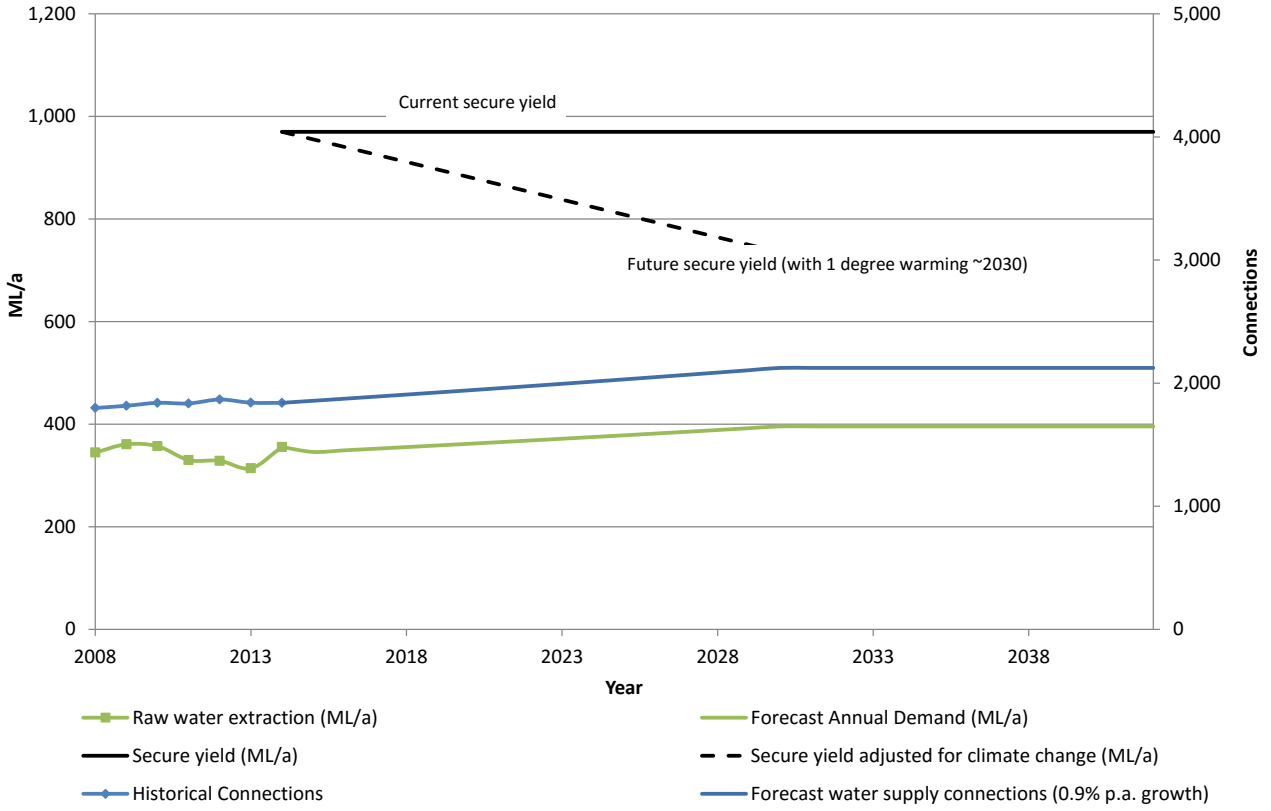

Figure 12: Tenterfield Future Demand and Supply Forecasts

Source: updated from Hydrosphere Consulting (2013)

A review of current and predicted future peak day demand and the capacity of Tenterfield WTP was undertaken as part of the study into options for upgrade of the WTP. The design capacity of Tenterfield WTP is 5.0 ML/d however the original 1930s plant is currently not in service and plant capacity has been reduced to 3.5 ML/day which is predicted to be sufficient for the planning horizon. TSC is currently investigating options for upgrade of the Tenterfield WTP.

The combined capacity of the Tenterfield reservoirs is 4.4 ML. This is also considered to be sufficient to satisfy peak day demand for the long-term.

Urbenville Water Supply

The long-term water supply demand in Urbenville, Woodenbong and Muli Muli is also based on 0.9% p.a. growth in connections over the next 20 years.

The current secure yield of the Urbenville water supply is assessed as 205 ML/a using the current security of supply methodology (based on the 5/10/10 rule) (NSW Urban Water Services, 2014b). The potential future supply (including the impact of climate change with 1°C warming) is assessed as 135 ML/a (at approximately 2030). Future demand is predicted to be less than 100 ML in 2030. A comparison of future demand and secure yield is shown in Figure 13. This shows that the Urbenville water supply is predicted to be secure for the long term. Urbenville WTP was upgraded in 2010 with a capacity of 1.5 ML/day.

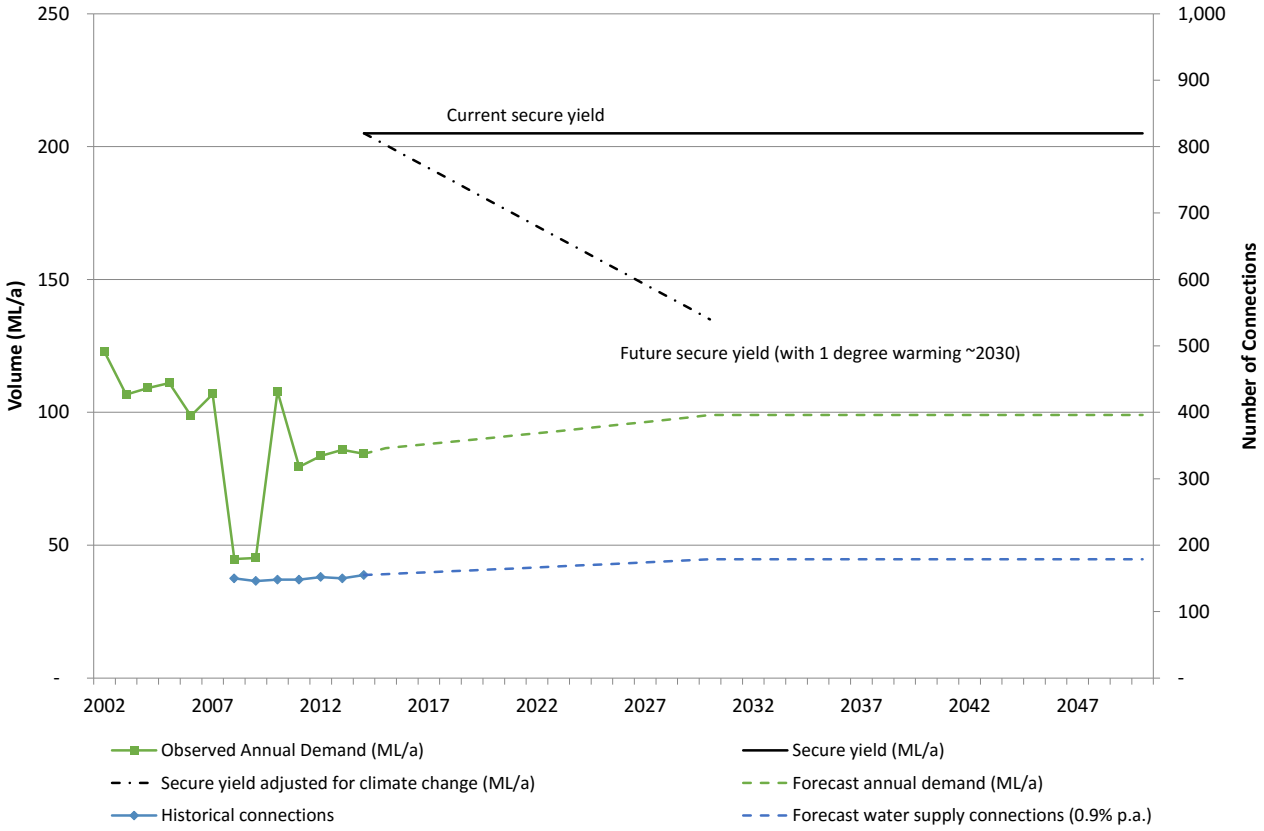

Figure 13: Urbenville Water Supply Future Demand and Supply Forecasts

5.2.4 Future Demand Management Measures

The current level of residential demand is considered to be at a sustainable level based on benchmarking against other LWUs. In addition, the assessed secure yield of Tenterfield and Urbenville water supplies suggest that there will be sufficient water available for the long-term. The existing demand management measures (BASIX, best-practice pricing) are considered to be appropriate.

The IWCM Strategy recommended short-term measures to reduce the peak day demand including:

- Ongoing monitoring of connection growth and peak day demands (particular during hot and dry periods) and comparison with WTP capacity – daily demand monitoring is being undertaken;
- Consideration of initiatives that can reduce peak demand such as:
    - Community awareness and education programs – these programs will continue during dry periods in accordance with the drought management plan, particularly until the WTP is upgraded (Section 6.4.2);
    - Residential rebates for rainwater tanks and grey water reuse systems – additional expenditure on rebates is not considered to be justified at this time; and
    - Compulsory covers for all pools within the Shire – this is not considered to be justified at this time. Management of pools is addressed through the Drought Restriction Policy.
- Review of the drought management plan and restriction policy and the success of the restriction policy in reducing peak demands (refer Section 5.3).

Objective 3 – Demand Management

Objective				
Efficient water use in all customer sectors.				
Performance Target				
Average annual residential demand is less than 170 kL/residential property.				
Strategy				
Implement best-practice demand management strategies. Review pricing annually.				
No.	**Action**	**Responsibility**	**Timing**	**Cost ($k)**
3.1	Annual review of water supplied, customer demand and losses for each scheme to identify any trends and inform future demand management planning.	MWW [1]	August each year	Included in budget
3.2	Annual review of demand as part of TBL Action Plan	MWW	Annual	Included in budget
3.3	Daily monitoring and reporting of demand during drought or periods of high demand.	MWW	Ongoing	Included in budget

1. MWW: Manager Water and Waste

5.3 Drought Management

5.3.1 Existing Drought Management Plan

TSC adopted its Drought Management Plan in 2010. Restriction levels for Tenterfield and Urbenville water supplies relate to the water level in Tenterfield Dam and Urbenville weir respectively. Restrictions on the use of water from SDRC water supply systems (including Jennings) are documented in the SDRC Drought Management Plan (2009).

Monitoring of Tenterfield water supply includes daily recording of pump hours, WTP flow, backwash water flow, dam level, environmental flow from dam, climate data, chemical dosing, bore hours, raw, treated and reticulated water quality, chlorine dosing and sludge disposal.

Monitoring of Urbenville water supply includes daily recording of WTP flow, backwash water flow, climate data, chemical dosing, raw, treated and reticulated water quality, creek level and chlorine dosing.

TSC imposed drought restrictions during recent drought periods (2002-2005 and 2006-2008) as follows:

- Level 3 restrictions were imposed in Tenterfield between 2002 and 2005 followed by level 2 restrictions until 2008. The Shirley Park bore was developed in 2003 with a licence for 160 ML/a. The perimeter of Tenterfield Dam was excavated in 2003 providing an additional 80 ML storage capacity;
- Level 2 restrictions were imposed in Urbenville between 2002 and 2005 followed by a brief period of level 6 restrictions in 2007 with supply dangerously close to depletion. Emergency works were completed in 2007 to allow an additional 80 ML of low level storage to be accessed; and
- Permanent conservation measures were introduced in 2005. These measures were enforced as part of the Level 1 restrictions but were removed in 2010.

5.3.2 Tenterfield Water Supply

The storage level in Tenterfield Dam since 2008 is shown in Figure 14 with the current restriction levels. Apart from permanent water conservation measures, restrictions have not been imposed during this period.

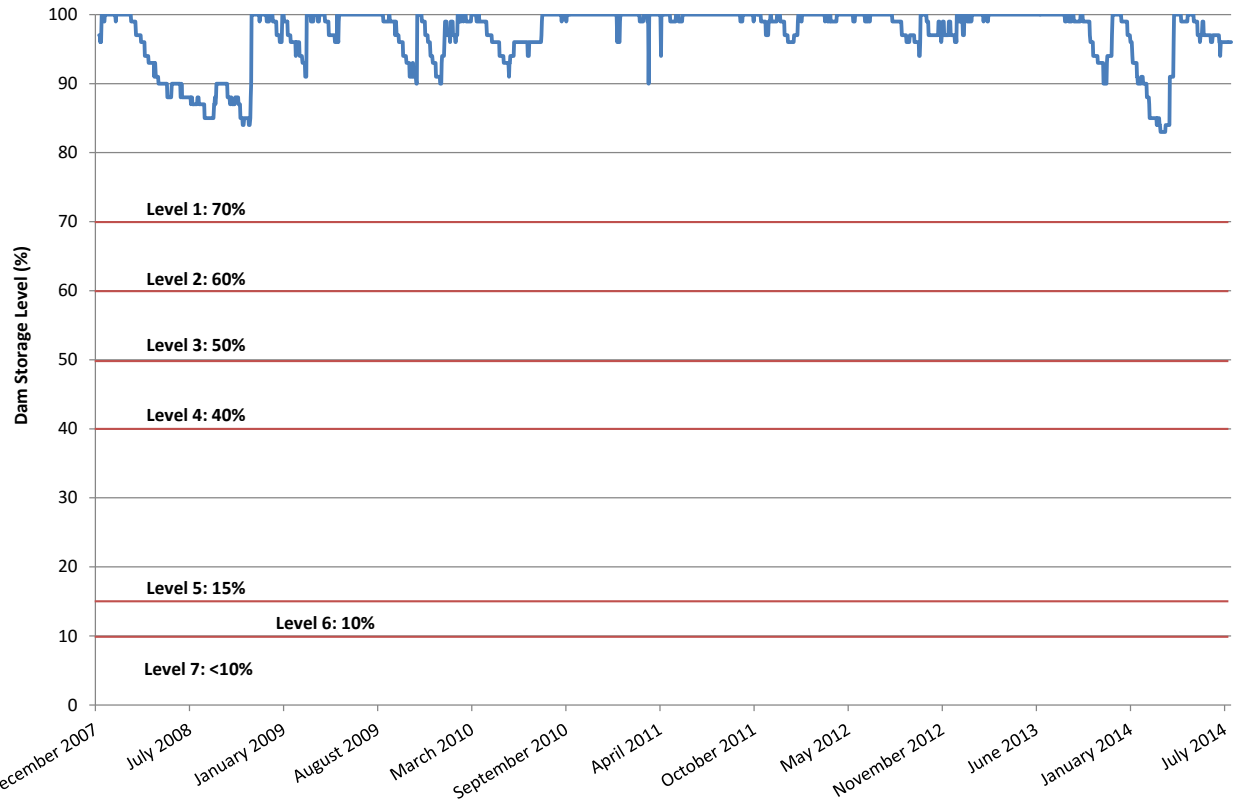

Figure 14: Tenterfield dam levels 2008 - 2014 and restriction levels (2010 Drought Management Plan)

The storage level in Tenterfield Dam and climate data (5 day rolling total rainfall and daily maximum temperature) since 2008 is shown in Figure 14. The dam level reduced to 83% during a period of low rainfall and high temperatures in March 2014.

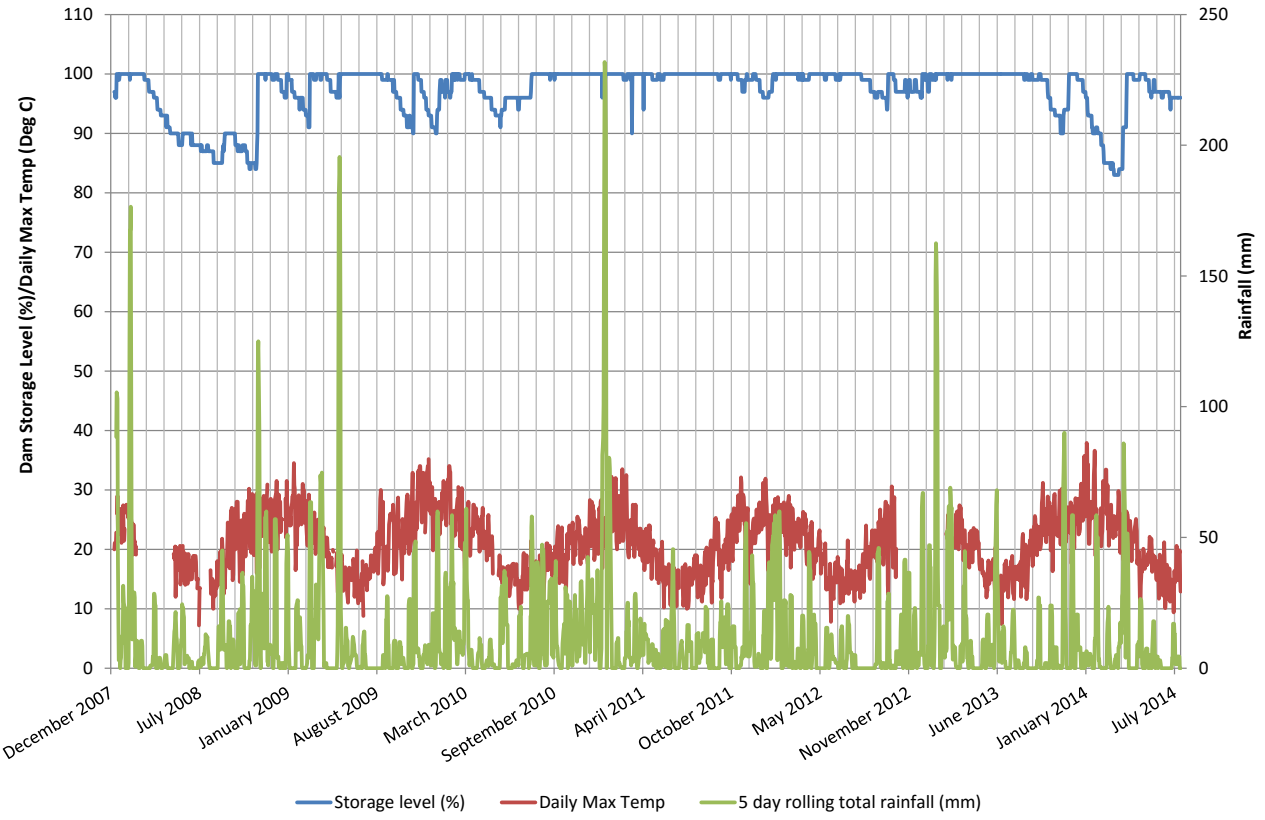

Figure 15: Tenterfield dam levels since 2008 and climate data

Rainfall recorded at WTP. Temperature recorded at BOM weather station, Federation Park, Tenterfield

Shirley Park bore is a secondary source of water for Tenterfield used as an emergency source of water during drought and/or failure of the supply from Tenterfield Dam. In January 2011, Tenterfield Creek overflowed and flooded the bore site. The perimeter fence, storage tank and two of the bore header pressure gauges were severely damaged. Council has undertaken some works to refurbish components of the infrastructure (e.g. pump and tank) but the bore and associated infrastructure has not yet been reinstated due to a lack of Council resources and funds.

Repairs to the bore will be undertaken during 2016/17 including:

- Reconstruction of the bore to a depth of 96m;
- Re-installation of the refurbished pump, storage tank and standpipe with consideration of future flood mitigation;
- New metering and monitoring/control equipment with consideration of future flood mitigation;
- New permanent power supply with consideration of future flood mitigation;
- Emergency generator; and
- Site infrastructure (fencing and landscaping).

This will result in a fully operational groundwater source that accesses an independent high quality water supply. The proposed refurbishment will provide an asset that has a nominal life-span of 25 years and provides higher reliability and durability in comparison to the previous installation.

5.3.3 Urbenville Water Supply

The level in Urbenville weir during the drought in 2007 is shown on Figure 16. The restriction levels imposed at the time are more severe than the current restriction policy due to the increase in storage provided by emergency works in 2007. Daily monitoring of weir levels commenced in 2013.

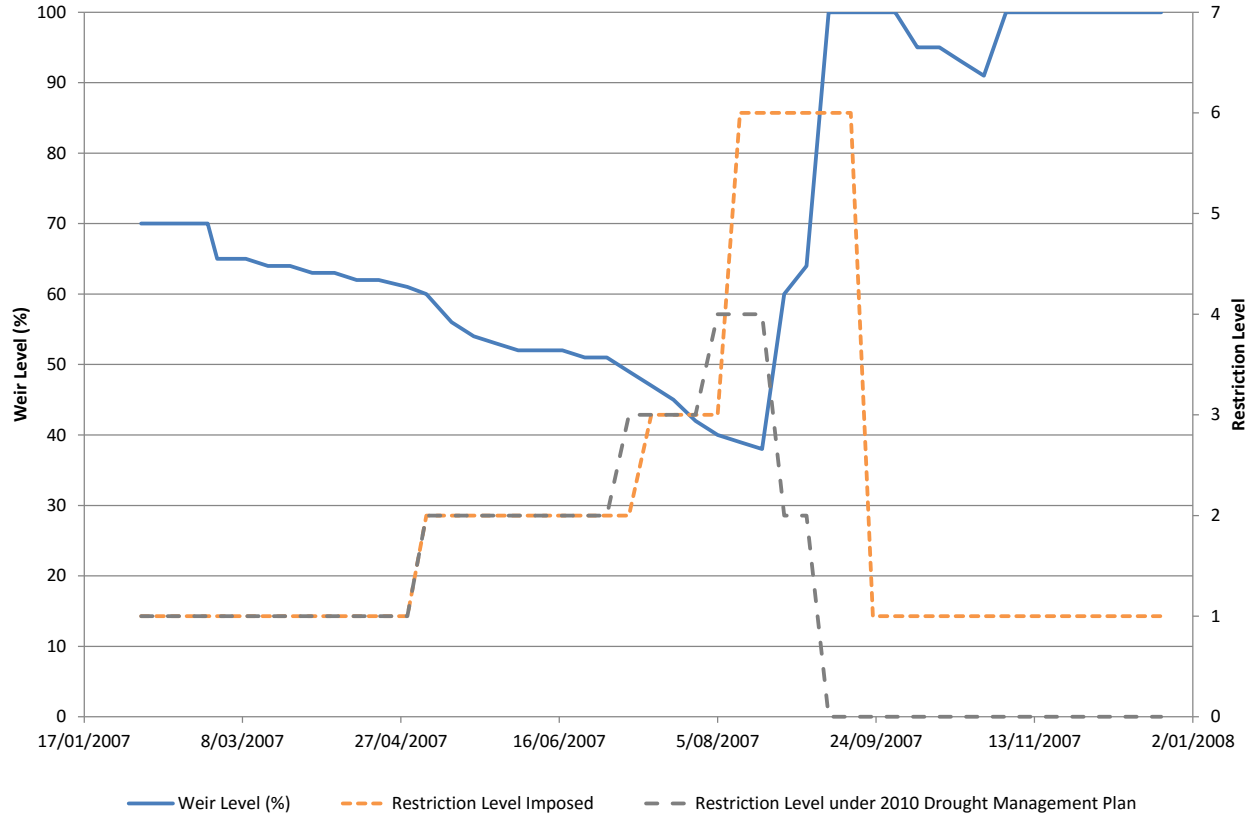

Figure 16: Urbenville Weir level during drought of 2007 and restriction levels (2010 Drought Management Plan)

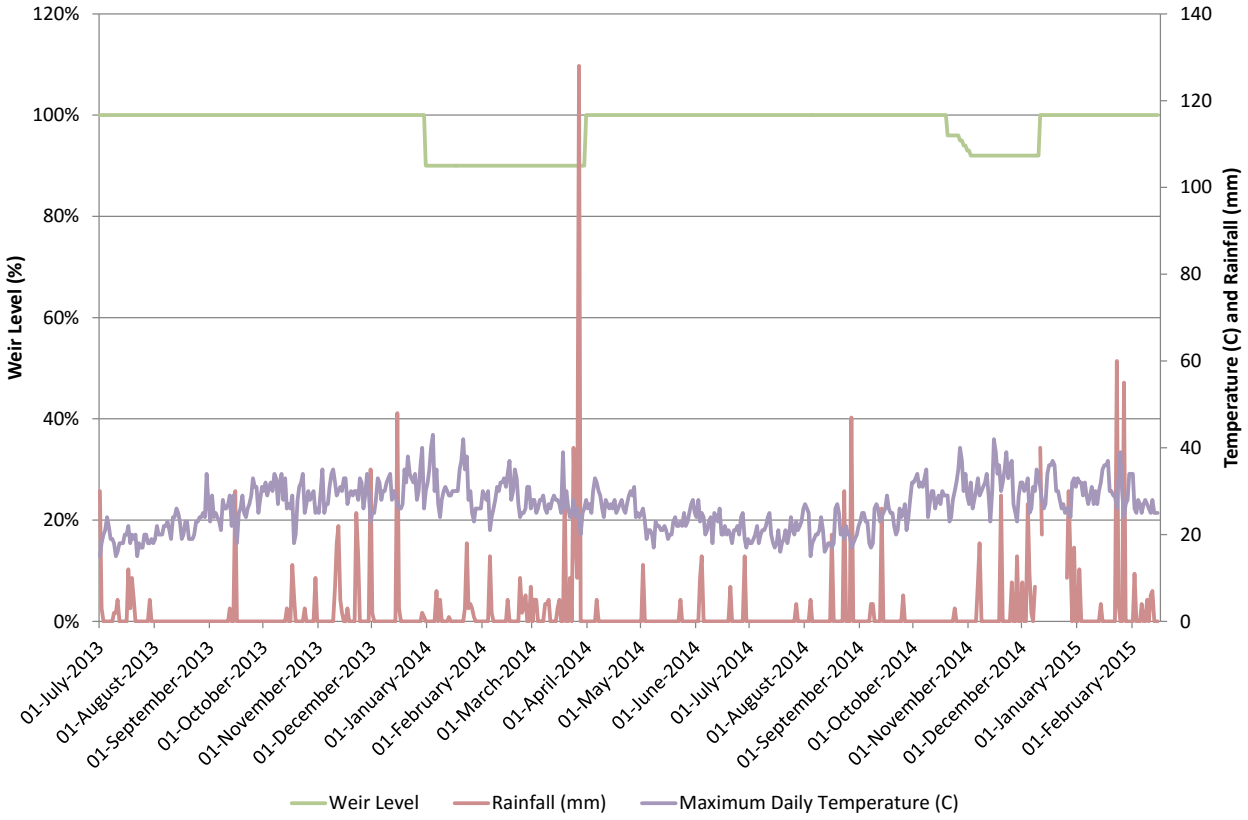

Figure 17: Urbenville Weir level since 2013 and climate data

Daily Rainfall and Temperature recorded at WTP.

5.3.4 Review of Drought Management Plan

During 2014, the north coast Councils reviewed restriction levels in the region with the aim of developing a consistent set of restrictions across the north coast. The agreed consistent water restriction levels are shown in Table 17. TSC will review the drought restriction policy and apply these restrictions levels to suit its water supplies.

Restrictions for non-residential customers are required to achieve the target reductions and these will mimic the above residential restrictions i.e. external use of potable water banned from level 4. This is expected to most impact the Council use of water for irrigation of parks and gardens.

Table 17: North Coast LWUs water restriction levels

Level	Restrictions – Residential Outdoor Component	Target reduction %
Water Conservation Measures	No unattended hoses between the hours of 9.00am to 4.00pm	N/A
1 Moderate	Micro-sprays and drippers/sub-surface can be used for a maximum of 15 minutes and hand held hoses can be used for 1 hour every second day, between the hours of 4.00pm and 9.00am on odd or even days matching house numbering system. Other irrigation and unattended hoses banned.	0 - 10%
2 High	Micro-sprays and drippers/sub-surface can be used for a maximum of 15 minutes and hand held hoses can be used for ½ hour every second day, between the hours of 4.00pm and 9.00am on odd or even days matching house numbering system. Other irrigation and unattended hoses banned.	10 - 20%
3 Very High	No irrigation permitted. Use of buckets any time, or hand held hoses for a maximum of 10 minutes, every second day, between the hours of 4.00pm and 9.00am on odd or even days matching house numbering system.	20 - 30%
4 Severe	All external use of potable water banned. Grey water use only.	30 - 40%
Emergency	As directed by the water supply authority.	40 - 50%

Source: NSW Office of Water (2014c)

The staging of restrictions for the Tenterfield and Urbenville water supplies, the level below the spillway and target reductions in demand based on the North Coast restriction levels are shown in the following tables. The available water supply at each level of restrictions has been estimated based on the following assumptions:

- Water storage data (level and volume) from the 2010 Drought Management Plan have been used to identify the available volume at each restriction level;
- The average demand during water conservation measures is based on the last 5 years of demand data (including 15% water losses);
- The minimum target demand is based on 50% reduction in average demand for all customers apart from Council parks and gardens irrigation which is expected to cease when the Level 4 Emergency restriction level is reached. The minimum total residential demand is 363 kL/d or approximately 100 L/d/person. This allows for residential consumption of:
    - Drinking – 4 L/person/day;
    - Cooking – 5 L/person/day;
    - Laundry – 7 L/person/day;

- Showers – 35 L/person/day;
- Toilets – 35 L/person/day;

The above consumption is greater than the minimum water quantity required for domestic use set by the World Health Organisation in *Technical Note No. 9: Minimum water quantity needed for domestic uses* (WHO, 2005) which allows for the effects of demand hardening;

- Evaporation has been estimated from the average pan evaporation (5.9mm) experienced at Tenterfield (from SILO data) and the surface area of the water sources at each restriction level as follows (based on data from yield studies):
  - Tenterfield Dam: $SA = 0.00382V^{0.651}$;
  - Urbenville Weir: $SA = 0.00838 + 0.00001V$;

  where SA is the surface area and V is the volume of the storage at each level.
- Inflows (streamflow and rainfall) are assumed to be zero.

The Shirley Park bore is expected to pump approximately 1 ML over a 24 hour period (12 L/s). The reported sustainable yield of the bore is 6 L/s (GHD, 1996). The longest period the bore has been operated by Council is for 70 days, with the longest period of continuous use being 20 days. Once the bore is repaired, yield tests will be conducted to determine the additional supply that can be provided at the Emergency restriction level.

Table 18: Proposed drought restriction levels, target demand and available water supply – Tenterfield Dam

Restriction Level	Level (mAHD)	Level below spillway (mAHD)	Dam capacity (ML)	Capacity (%)	Target Reduction in Demand (%)	Target Demand (kL/d)	Estimated Evaporation (kL/d)	Estimated supply remaining (weeks) [1]
Water Conservation Measures	878.36	0	1,393	100%	-	890	25	184
1 – Moderate	877.30	1.06	975	70%	10%	800	20	157
2 – High	876.90	1.46	836	60%	20%	710	18	149
3 – Very High	876.48	1.88	697	50%	30%	620	16	139
4 – Severe	876.10	2.26	557	40%	40%	530	14	99
5 - Emergency	874.17	4.19	209	15%	50%	445	7	32

1. Dead storage is assumed to be 5 ML

Table 19: Proposed drought restriction levels, target demand and available water supply – Urbenville Weir

Restriction Level	Level (mAHD)	Level below spillway (mAHD)	Weir capacity (ML)	Capacity (%)	Target Reduction in Demand (%)	Target Demand (kL/d)	Estimated Evaporation (kL/d)	Estimated supply remaining (weeks) [1]
Water Conservation Measures	98.50	0	240	100%	-	76	0.63	278
1 – Moderate	98.35	0.15	216	90%	10%	68	0.62	260
2 – High	98.20	0.30	192	80%	20%	61	0.61	234
3 – Very High	98.05	0.45	168	70%	30%	53	0.59	205
4 – Severe	97.90	0.60	144	60%	40%	46	0.58	163
5 - Emergency	97.75	0.75	120	50%	50%	38	0.56	76

1. Dead storage is assumed to be 79 ML

The proposed drought restrictions for Tenterfield and Urbenville are shown in Table 20. The Jennings community will continue to be subject to restrictions imposed by SDRC.

Table 20: Proposed drought restrictions

Restriction Level	Irrigation Restrictions	Other Restrictions
Water Conservation Measures	No unattended hoses between the hours of 9.00am to 4.00pm	None
1 – Moderate	Micro-sprays and drippers/sub-surface can be used for a maximum of 15 minutes and hand held hoses can be used for 1 hour every second day, between the hours of 4.00pm and 9.00am on odd or even days matching house numbering system. Other irrigation and unattended hoses banned.	None
2 – High	Micro-sprays and drippers/sub-surface can be used for a maximum of 15 minutes and hand held hoses can be used for ½ hour every second day, between the hours of 4.00pm and 9.00am on odd or even days matching house numbering system. Other irrigation and unattended hoses banned.	No filling of swimming pools. Washing of hard surfaces and vehicles with buckets only.
3 – Very High	No irrigation permitted. Use of buckets any time, or hand held hoses for a maximum of 10 minutes, every second day, between the hours of 4.00pm and 9.00am on odd or even days matching house numbering system.	Level 2 plus: No washing of hard surfaces or vehicles. No fountains or auto flush toilets/urinals. Council approved water cartage.
4 – Severe	All external use of potable water banned. Grey water use only.	Level 3 plus: No topping up of swimming pools. Ready mix concrete 8 hrs/day only.
5 - Emergency	As directed by Council.	As directed by Council.

Drought management and communication protocols will include:

- When level one water storage condition levels are reached, Council will assemble a Drought Management Team. The Drought Management Team will authorise the actions required including the activation / easing of restrictions, approval of exemptions, authorising investigation of alternative water sources, negotiation of acquisition of water supplies, etc.;
- The community will be made aware of the restrictions that have been imposed and educated on the effective means for reducing the amount of water required on a day to day basis to ensure that the drought management actions will succeed in its goal of minimising water usage in the region. Activities to promote community awareness will include television commercials, radio and newspaper advertisements, notices in public buildings (library, etc.) and in the local cinema, notices in local motels advising visitors of the situation the region faces, educational pamphlets and mail outs to residents;

- Notices will be published in the local newspapers prior to the introduction of the new restrictions and repeated fortnightly for level 1 and 2 restrictions and weekly for level 3 and above restrictions for the duration of the drought period;
- For level 3 and higher restrictions and to ensure maximum compliance, advertising of restrictions will also be placed with local radio stations. These advertisements will be run during community service periods and will also advise of Water Wise tips for around the house; and
- With the introduction of water restrictions, Council will liaise with other agencies include SDRC, Kyogle Council and other North Coast LWUs, NSW Office of Water (NOW), NSW Office of Environment and Heritage and NSW Health. The relevant agencies will be informed when significant impacts on the community, the environment or other stakeholders are expected as a result of actions arising from implementation of the plan.

Objective 4 – Drought Management

Objective				
Responsive, efficient and acceptable drought management strategies are implemented.				
Performance Target				
A feasible emergency and drought management strategy is developed. Water supplies are “secure”.				
Strategy				
Prepare and implement sound drought management procedures.				
No.	**Action**	**Responsibility**	**Timing**	**Cost ($k)**
4.1	Repair Shirley Park Bore and determine potential drought supply from the bore	MWW [1]	2017	20
4.2	Liaise with Kyogle Council regarding drought management for Urbenville	MWW	2016	Included
4.3	Develop a revised restrictions regime based on the proposed regime documented in this SBP and ensure compliance with best-practice requirements.	MWW	2017	Included
4.4	Review effectiveness of drought management procedures during drought conditions	MWW	During drought	Included

1. MWW: Manager Water and Waste

5.4 Sewer Load Management

Reducing hydraulic and biochemical loading on the system can:

- Effectively prolong the life of the existing assets;
- Defer new works programs;
- Make treatment processes more effective;
- Reduce siltation in the system and reduce pump wear;
- Reduce operation costs; and
- Improve environmental performance.

Issues with load management may occur due to liquid trade waste discharges, stormwater or ground water infiltration. The primary strategies for reducing inflow and infiltration are:

- Education of plumbers and general public regarding illegal connections;
- Inspection of sewers to find damaged areas;
- Smoke testing and CCTV to find illegal connections; and
- Sewer re-lining.

TSC undertakes CCTV inspections to identify priority sewer mains requiring relining. TSC also inspected sewer manholes to identify manholes requiring relining and resealing. This has resulted in a budgeted renewal program (refer Section 6.4). Smoke testing to identify illegal sewer connections may also be undertaken if required to further reduce wet weather flows.

The treatment system functions can also be jeopardised by high biological shocks or toxic chemical loading exerted by liquid trade wastes. Therefore, Council will monitor the current levels of liquid trade waste discharges by non-residential customers into the town sewer system. Council has adopted a liquid trade waste policy to control commercial/industrial discharges into the system (April 2014). As industry develops, the liquid trade waste policy will be reviewed to outline service expectations to developers, targeting chemicals, fuels and oils.

Objective 5 – Inflow and Infiltration

Objective				
Reduce sewer infiltration and inflow.				
Performance Target				
Targeted mains and manhole relining programs are implemented. Identified sewer defects are repaired.				
Strategy				
Complete sewer system repairs as part of renewal program.				
No.	**Action**	**Responsibility**	**Timing**	**Cost ($k)**
5.1	Implement mains relining program	MWW	Ongoing	150 p.a.
5.2	Implement manhole relining program	MWW	Ongoing	140 p.a.

Objective 6 – Liquid Trade Waste

Objective				
Effective management of liquid trade waste				
Performance Target				
LTW services agreements are applied in accordance with the adopted Policy				
Strategy				
Implement LTW Policy				
No.	**Action**	**Responsibility**	**Timing**	**Cost ($k)**
6.1	Review the register of LTW customers and services agreements.	MWW [1]	Annual	Included in budget

1. MWW: Manager Water and Waste

5.5 Service Pricing

Council's tariff structure (Table 21) addresses the following general principles:

- Resource allocation: pricing which properly reflects the costs of providing the service and promotes efficient investment in water supply and sewerage infrastructure;
- Equity: the user pays principle (it is considered equitable that people pay for the cost of the services they use);
- Financial: provision of adequate and predictable funding to meet operating costs and future capital works;
- Customers: provision of service of desired quality and reliability at a fair and reasonable price;
- Community service obligations: provision of services to pensioners, disadvantaged groups, and general community amenities consistent with Council policy; and
- Simplicity: a pricing structure that is easy to administer and is understood by customers.

Table 21: Water Supply and Sewerage Charges – 2015/16

Water Supply Consumption Charges		
All customers	Usage Charge (c/kL) (first 450kL) (> 450kL)	228.00 262.00
	Typical Residential Bill ($/assessment) based on 150 kL/residential property/a (Section 5.2.2)	780.00
Water Supply Access Charge ($)		
Residential Water Service	Residential/rural	438.00
	Strata	328.50
	Mt Lindesay Private Line	553.00
Non-residential Water Service	20mm	164.24
	25mm	256.63
	32mm	420.45
	40mm	656.96
	50mm	1,026.50
	80mm	2,627.84
	100mm	4,106.00
	150mm	9,238.50
	Voluntary and charitable organisations	87.00
	Services installed solely for the purpose of fire-fighting	No charge
Water Supply Developer Charge		
Tenterfield ($/ET)		5,400.00
Urbenville ($/ET)		5,500.00

Jennings ($/ET)	450.00

Sewerage Charges		
Residential	Sewerage charge ($)	877.00
Vacant	Sewerage charge ($)	877.00
Non-Residential	Sewerage charge ($)	SDF x (AC + UC x C) where: SDF = sewerage discharge factor, AC = access charge based on size of water service, UC = sewerage usage charge ($1.07 per kL in 2014/15) and C = water consumption (kL)

Sewerage Access Charge ($)		
Water Service	20mm	444.00
	25mm	693.75
	32mm	1,136.64
	40mm	1,776.00
	50mm	2,775.00
	80mm	7,104.00
	100mm	11,100.00
	150mm	24,975.00
	Voluntary and charitable organisations	175.50
	Services installed solely for the purpose of fire-fighting	No charge
Sewerage Developer Charges		
Tenterfield ($/ET)		6,600.00
Urbenville ($/ET)		2,200.00

Note: The minimum non-residential sewerage access charge will be the annual residential sewerage availability charge.

Trade Waste Charges TW = A + I + C x UC x TWDF Where TW = Total annual trade waste fees and charges ($) C = Customer's annual water consumption (kl) TWDF = Trade waste discharge factor		
A - Annual fee ($)	Category 1	130.00
	Category 2	130.00
	Category 3	591.00
I - Re-inspection fee ($)	All categories	80.00
UC - Usage charge ($/kL)	Compliant	1.49
	Non-compliant	14.89

Council is required to comply with the Best Practice Management Guidelines (refer Section 2.3.1) which stipulate the types of tariffs and developer charges required to comply with best practice pricing. A summary of current compliance is included in Table 22.

TSC will consider the following changes to the tariff structure to increase compliance with best-practice requirements:

- Increase Step 2 water usage charge (>450kL) to 150% of Step 1 usage charge; and
- Increase the non-residential sewerage usage to approximate the OMA cost (currently $3.03 per kL).

Council will apply for deemed compliance with best-practice pricing as part of the 2015 Performance Reporting in accordance with LWU Circular 11.

Table 22: Compliance with Best-Practice Pricing Requirements

Component	BPM Indicator	Compliance
Water Supply Tariff	Appropriate water usage charge/kL based on long-run marginal cost.	✓
	Access charge relative to a customer's capacity requirements.	✓
	No land value based charges (i.e. rates).	✓
	Any large increases in non-residential customer bills phased in over 5 years.	✓
	To encourage water conservation, high water consuming residential customers should be subjected to a step 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/a per household.	× Second step pricing is <50% above first step
	At least 50% of residential revenue generated through usage charges.	× Residential revenue from usage charges was 42% of residential bills in 2012/13 and 44% in 2013/14.
Sewerage Tariff	Appropriate residential tariff.	✓
	No land value based charges (i.e. rates).	✓
	Non-residential: Two-part tariff, appropriate sewer usage charge/kL, access charge that is reflective of the cost of providing these sewerage services, any large increases in non-residential customer bills phased in over 5 years.	✓ The impact of increasing the non-residential usage charge is discussed in Section 8
Liquid Trade Waste	Annual trade waste fee for all liquid trade waste dischargers	✓
	Trade waste usage charge for dischargers with prescribed pre-treatment	✓
	Excess mass charges for large dischargers and industrial waste	✓
	Liquid Trade Waste approvals issued	✓
	Liquid Trade Waste Policy adopted and implemented	✓
Developer Charges	Development Servicing Plan (DSP) in accordance with Developer Charges Guidelines, with commercial developer charges	✓

Objective 7 – Service Pricing

Objective				
Pricing system is equitable and reflects the actual cost of service provision				
Performance Target				
Best-practice pricing structure is achieved				
Strategy				
Review and update tariffs and charges				
No.	**Action**	**Responsibility**	**Timing**	**Cost ($k)**
7.1	Obtain feedback on pricing structure through public exhibition of Revenue Policy	MWW [1]	Annually	Included in budget
7.2	Annual review of tariff structure and best-practice compliance.	MWW	Annually	Included in budget
7.3	Review the impact of increasing the Step 2 water usage charge	MWW	2016	Included in budget
7.4	Review the impact of increasing the non-residential sewerage usage charge	MWW	2016	Included in budget
7.5	Apply for Deemed Compliance as part of 2015 performance reporting	MWW	Oct 2015	Included in budget
7.6	Review and update Developer Servicing Plans	MWW	Dec 2017	10

1. MWW: Manager Water and Waste

5.6 Customer and Community Involvement

Effective communication provides a strong foundation upon which Council can more effectively develop and maintain the community's assets. If aligned with Council's operating goals and plans, effective communication can increase the speed at which these goals are achieved. The TSC Communication Plan was adopted by Council on 19 December 2012 and assists Council in working towards these goals.

The following main customer involvement principles apply:

- Customers need to be appropriately involved in, and aware of the water supply and sewerage scheme development and overall operation; and
- The level of satisfaction is expected to be higher when customers are involved in the decision-making.

Council is committed to consulting the water supply and sewerage customers regularly to keep them informed of current developments and to get feedback on major projects.

Customers in Jennings and the wider community will be consulted in relation to the development of sewerage facilities at Jennings, particularly with regard to affordability and willingness to pay.

Consultation regarding pricing of water and sewerage services will be undertaken through the annual public exhibition of the proposed revenue policy.

TSC aims to be responsive to complaints raised by the community. Council adopted a revised Complaints and Unreasonable Conduct Policy in 2014 which provides a policy framework which will ensure that complaints are dealt with in a consistent, systematic and effective manner. This Policy aims to improve Council's efficiency and effectiveness in handling complaints, improved service delivery and strengthening public support. TSC

also adopted a Community Engagement Strategy in 2013 (TSC, 2013a) for the purpose of discussing issues of interest to the community and in reviewing the Community Strategic Plan.

Objective 8 – Customer and Community Involvement

Objective				
Gain community ownership of major asset management decisions and ensure affordability and marketability of the project outcomes.				
Performance Target				
All major projects (greater than $1 million construction cost) and decisions are subject to a community consultation process.				
Strategy				
Provide accurate information to the community to create awareness of the issues, receive community input into decision-making processes including willingness-to-pay for asset development and create a sense of community ownership.				
No.	**Action**	**Responsibility**	**Timing**	**Cost ($k)**
8.1	Provide information on the feasible options for sewering of Jennings including financial impacts.	MWW	Ongoing	Included in budget

Objective 9 – Customer Satisfaction

Objective				
Achieve customer satisfaction in water and sewerage services.				
Performance Target				
The majority of customers are satisfied with Council water and sewerage services.				
Strategy				
Communicate with customers and measure customer satisfaction.				
No.	**Action**	**Responsibility**	**Timing**	**Cost ($k)**
7.1	Communicate important initiatives with customers.	MWW [1]	As required	Included in budget
7.2	Include questions in customer surveys to determine satisfaction with water and sewerage services.	GM [2]	Annually	Included in budget
7.3	Advertise SBP and invite submissions.	MWW	Mar 2016	Included in budget

1. MWW: Manager Water and Waste

2. GM: General Manager

5.7 Environment Protection and Sustainable Development

Council holds Environmental Protection Licences for the Tenterfield and Urbenville sewerage systems, the Tenterfield Dam and the Tenterfield WTP. Compliance with the requirements of these licences is generally achieved. Pollution Reduction Programs (PRPs) are attached to the Environmental Protection Licences for the sewerage systems. Council will be actively pursuing the implementation of these PRPs in order that the environmental objectives are achieved.

In response to the Pollution Reduction Program (PRP100) included on the sewerage system Environment Protection Licences, Sewer Overflow Investigation Reports were prepared for the Tenterfield and Urbenville sewerage systems (Echelon, 2007a; Echelon, 2007b). The reports assess the location and likelihood of overflows and the evaluation of environmental and public health impacts. Management priorities and action plans are also presented.

The NSW Environmental Protection Authority (EPA) issued a notice under the *Protection of the Environment Administration Act 1991* to all NSW councils early in 2012, requiring each council to develop a Pollution Incident Response Management Plan (PIRMP) for each licence held. TSC has prepared PIRMPs for the licensed treatment works in accordance with the Environmental Guidelines: *Preparation of Pollution Incident Response Management Plans*. The purpose of the PIRMP is to provide a vehicle for identifying potential pollution incidents, understanding and evaluating the likelihood of occurrence, identification of mitigation techniques and a clear “who to advise” register.

Pre-construction planning is undertaken for all asset development including environmental assessment where required to identify and address any environmental issues associated with the projects.

Council has recently installed solar panels at the Tenterfield STP and at Tenterfield and Urbenville WTPs to reduce energy consumption from the grid and greenhouse gas emissions.

Objective 10 – Environmental Management

Objective				
Water and sewerage activities are environmentally sustainable				
Performance Target				
100% compliance with Environment Protection Licences and statutory obligations				
Strategy				
Assess and manage environmental risks				
No.	**Action**	**Responsibility**	**Timing**	**Cost ($k)**
10.1	Report on compliance with Environment Protection Licences	MWW [1]	Annual	Included in budget
10.2	Publish pollution monitoring data on Council’s website	MWW	Annual	Included in budget

1. MWW: Manager Water and Waste

6. TOTAL ASSET MANAGEMENT PLAN

The aim of total asset management is to provide, operate, and maintain physical assets over their whole life cycle to achieve the Levels of Service at the least cost while still satisfying statutory and regulatory requirements. The key elements of a total asset management approach are:

- Operation Plan;
- Maintenance Plan; and
- Capital Works Plan.

The total asset management plan components are shown in Figure 18 and discussed below.

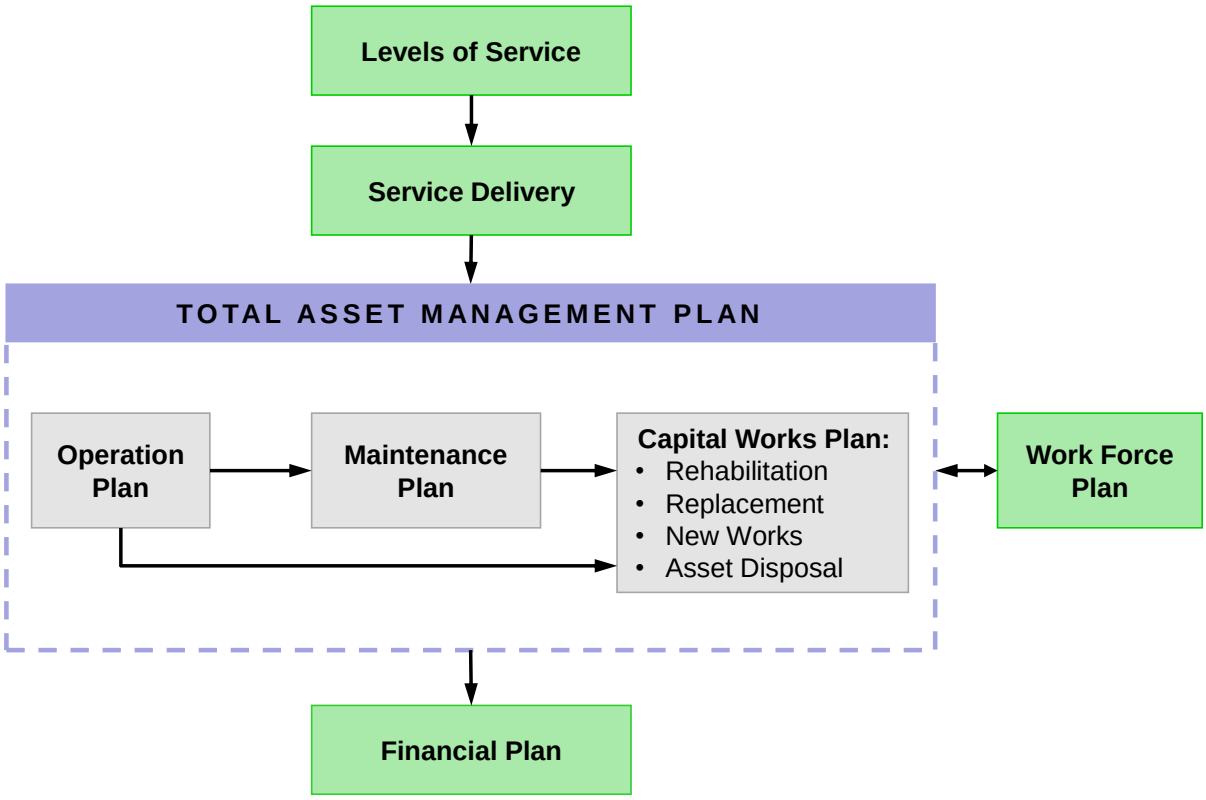

Figure 18: Total Asset Management Plan components

6.1 TSC Asset Management System

Asset Management Plans for water and sewerage services have been developed by Council to define levels of service, how the services will be provided and how much it will cost. The Plans also detail information about infrastructure assets (condition, age, life cycle, etc.) and actions required to provide the agreed level of service in the most cost effective manner.

The assessment of overflows within the Tenterfield and Urbenville systems indicates a low risk for both impact on sensitive urban waterways and potential for human contact (and hence public health issues). Council has a response protocol in place that minimises the impact of overflows, however the report recommended asset management strategies including CCTV surveys, additional chemical treatment and smoke testing to further assess the long-term condition of sewer infrastructure and development of a GIS system based on work-as-executed plans for easier location of system elements. The development and implementation of a trade waste policy to regulate the discharge from commercial and industrial discharges was also recommended and a policy has since been adopted.

6.2 Operation Plan

The purpose of the Operation Plan is to ensure that the service objectives are achieved at the least cost and that the impact of any breakdowns or outages is minimised.

6.2.1 Asset Register and Data

TSC's asset register lists all water supply and sewerage assets with basic physical data (location, material, size, age and remaining useful life) and financial statistics (depreciation and current replacement cost) for each asset. The assets were re-valued using the fair value methodology in 2012. The assets, their age and current replacement value are summarised in the Asset Management Plans.

6.2.2 Asset Condition Data

An assessment of asset condition was undertaken as part of the 2012 asset valuation. Asset condition issues can also be identified through reported asset failures. Relevant condition data and indicators from the NSW Office of Water Benchmarking Reports are given below.

TSC is implementing a sewer main relining program ($150,000 p.a. or approximately 1.5 km p.a.) which is resulting in a reduced number of chokes and overflows in sections that have been relined. The relining program was developed from CCTV inspections which have identified priority mains for rehabilitation.

Table 23: Asset Performance Indicators

Indicator	2010/11	2011/12	2012/13	2012/13 Median [1]	2013/14	Condition Data [2]
Water main breaks (per 100km of main)	6	9	14	8	16	The Tenterfield water reticulation system is 15% CI with slip-lined cement mortar in original lead-jointed pipe, with the balance being AC. Some of the AC is referred to as "corded fibro" (pre-WW2-era AC) and "Black fibro" (pre-1960) AC. Newer pipes are uPVC, with some "White uPVC" swapped back to Blue Brute. Recent targeted condition assessments undertaken by TSC suggest that replacement of the original pipework is required. The Urbenville reticulation is constructed of AC pipe. The Jennings water reticulation system is predominantly pre-1985 "White PVC" that substantially replaced the original AC reticulation system. It has performed so far without excessive faults.

Indicator	2010/11	2011/12	2012/13	2012/13 Median [1]	2013/14	Condition Data [2]
Sewer main breaks and chokes (per 100km of main)	86	77	91	38	138	Tenterfield sewers are a mixture of AC, concrete, uPVC, and PE pipes. All sewer rising mains are uPVC, and have no history of failures. The Urbenville gravity sewers are uPVC, and the sewer rising mains are uPVC with no service issues. The condition of gravity pipelines was determined using a CCTV style survey, consisting of cleaning the main and inspecting it using a camera device. Surveys were randomised to obtain a realistic profile of the network. The pipe network is showing reasonable condition for its age. Most defects are of a minor nature which can be addressed through programmed maintenance. However, the gravity mains constructed of concrete pipes are showing severe signs of surface pitting and exposed aggregate, which is typical where sulphide slimes colonise the upper inner pipeline walls, and corrode the pipe wall by removing calcium from it. This will eventually lead to exposure of the steel reinforcing where it is present and ultimately the collapse of the pipe.
Sewer overflows (per 100km of main)	0	0	0	2	3	

1. NSW LWUs with 1,501 – 3,000 properties. Source: NSW Office of Water (2014b)

2. CPE Associates (2012)

6.2.3 Operations Analysis

The *TSC Water Supply Asset Management Plan* (TSC, 2013b) identifies the following issues:

- Ageing Tenterfield WTP (initially built in 1930) needs to be considered for replacement in the short to medium term. The ageing back-up generator needs replacement – options for WTP upgrade are currently being considered;
- Tenterfield Dam wall safety upgrade to reduce risk to town and continuity of supply – this is currently in progress;
- High electricity usage at the treatment plants - Council has installed solar panels; and
- Ageing reticulation network – the assets are progressively being replaced as part of the Renewals Plan.

The *TSC Sewerage Asset Management Plan* (TSC, 2013c) identifies the following issues:

- In the older sewers, there is a high degree of stormwater infiltration into the collection system, resulting in severe over-loading at the Tenterfield STP during storm events. STP bypasses are limited to short duration with significant dilution;

- The STP at Tenterfield is a new 3,700 EP facility completed in 2009. However, it has limited capacity to handle future growth in Tenterfield – the current concerns regarding STP capacity relate to high wet weather flows which will be addressed through infiltration and inflow reduction programs; and
- The back-up generator and electrical control panel for the main pumping station in Drummond Street is vulnerable to flooding and needs to be raised above flood level – TSC has found that the cost of repairs to the generator is significantly lower than raising above flood level.

TSC prepared a Drinking Water Management System in accordance with the ADWG in 2013 (refer Section 2.4.2). Compliance with water quality requirements is summarised in the following table. The increase in water service complaints relate to deterioration of the ageing pipelines.

Table 24: Percentage Compliance with Water Quality Indicators

Indicators	2010/11	2011/12	2012/13	2013/14
Physical	100	92	100	100
Chemical	100	100	100	100
Microbiological	99	99	99	100
Water quality complaints (per 1,000 properties)	15	10	7	5
Water Service Complaints (per 1,000 properties)	3	3	3	20
Unplanned interruptions (per 1,000 properties)	-	10	7	13
Drought water restrictions (% of time)	100	0	0	0

In 2012/13, 100% of sewage treated was compliant, with all sewage treated to a tertiary level. In 2013/14, Council achieved 99% compliance with BOD and SS licence limits.

Council's current focus is improvement of water supply system performance, particularly dam safety, treated water quality and distribution system condition. The renewals program will also improve levels of service in other areas such as occurrence of main breaks.

6.2.4 Due Diligence

Due diligence implies that efforts should be made to anticipate hazards which may harm the environment and take all feasible steps to prevent, control and mitigate the potential of their occurrence. TSC's due diligence actions are discussed in the following sections.

Risk Management

TSC undertook an Emergency Risk Management project between 2005 and 2009 (Echelon, 2008). The project considered natural and technology hazards. The hazards and responses relevant to urban water services are:

- Dam Failure (Flood) - assessed as 'high risk' and requiring a multi-agency response;
- Infrastructure failure (Water) - Council, as water service provider has adequate back-up strategies; and
- Infrastructure failure (Sewerage) - Occurrence of the hazard could be managed by Council.

Of the above identified hazards, failure of Tenterfield dam was considered to be the only hazard requiring a significant and coordinated emergency response. The existing control measures to address the risk include the TSC Dam Safety Plan, Tenterfield Local Flood Plan, and the Local Disaster Plan (DISPLAN).

Council is currently undertaking the required dam stability works and will construct the works by 2016/17.

Emergency Response Procedures

Pollution Incident Response Management Plans have been prepared for all premises with environment protection licenses in accordance with the *Protection of the Environment Legislation Amendment Act 2011*.

Flood Risk

The Tenterfield Floodplain Risk Management Study and Plan (Jacobs, 2014) provides maps of flood hazard during various flooding events which indicate that the Petrie Street and Drummond Street sewer pump stations may be affected by 1:100 year AEP floods. The Drummond Street generator was damaged in the 2011 floods and Council has investigated the cost of raising the equipment above design flood level. As the equipment is only expected to be damaged in major floods, the cost of repairing the generator was found to be significantly lower than the raising option.

Standard Operating Procedures

TSC utilises the standard operating procedures and technical guidelines published by the Water Directorate as well as a sewage pumping station operation manual and operation and maintenance manuals developed as part of asset upgrades (e.g. Tenterfield Sewerage Augmentation, 2010).

TSC is also developing a register of testing and operation procedures for the Tenterfield WTP and Tenterfield STP.

6.2.5 Workplace Health and Safety

Workplace health and safety audits have been conducted for the WTPs and STP and all identified issues have been actioned. An audit of the Tenterfield WTP conducted in January 2015 is being addressed as part of the upgrade strategy (in preparation).

Audits of all Council assets and facilities will be conducted on a bi-annual basis.

Objective 11 – Operations

Objective				
Operate the water supply and sewerage assets in a safe and cost-effective manner which meets the required levels of service				
Performance Target				
Operations issues do not cause a failure to meet the levels of service				
Strategy				
Operate the schemes in accordance with documented system procedures, rules and due diligence programs				
No.	**Action**	**Responsibility**	**Timing**	**Cost ($k)**
11.1	Develop schedule for bi-annual WHS audits for all water and sewer facilities.	MWW [1]	Bi-annual	Included in budget
11.2	Develop and document asset/facility operating procedures for key water supply and sewerage assets	SSO [2]	June 2017	Included in budget

1. MWW: Manager Water and Waste

2. Senior Service Operators

6.3 Maintenance Plan

The purpose of the Maintenance Plan is to support the Operation Plan by ensuring that the actual outputs, reliability and availability of the individual sub-systems, facilities, and components, as specified in the Operation Plan, are achieved in the most cost effective manner.

Maintenance is generally undertaken in two ways:

- Scheduled (also known as planned or preventive) maintenance and is either:
    - Fixed-time maintenance; or
    - Condition-based maintenance.
- Breakdown (also known as corrective) maintenance.

6.3.1 Sewer Maintenance

Council carries regular network inspections to identify maintenance tasks and to review pipe and manhole conditions.

CCTV camera inspections of pipes to qualify conditions are carried out on the oldest assets as funds permit. The inspections provide a prioritised program of maintenance tasks that focus on the oldest assets.

Rectification of programmed maintenance tasks are completed within the inspection cycle. Prioritisation depends on the defect severity, risk rating and future damage probability if not repaired.

Pump stations are all equipped with telemetry which enables emergency response work to be carried out. In addition regular inspections and pump services are carried out.

The Urbenville STP has regular servicing of pumps and motors. The Tenterfield STP is SCADA controlled and provides automatic emergency response information. Routine maintenance is carried out with a regular service routine.

6.3.2 Water Supply Maintenance

Council carries out regular network inspections to identify maintenance tasks and to review valve and hydrant conditions.

A meter replacement program is carried out each year to retire the oldest meters from the system. Network inspections provide a prioritised program of maintenance tasks that focus on the oldest assets.

Treatment plants are all equipped with some level of telemetry which enables emergency response work to be carried out. In addition regular inspections and daily testing of water quality are carried out.

Routine maintenance is carried out with a regular service routine. Mains flushing is undertaken bi-weekly at Urbenville due to the low water usage and number of system dead ends.

Mains flushing in Tenterfield is undertaken as a result of customer request due to discoloured water. In the past Tenterfield had a scheduled mains flushing program, however it was found to lead to increased complaints of high colour, so the practice was changed to “as needed”.

Objective 12 – Maintenance

Objective				
Maintain the water supply and sewerage assets in a cost-effective manner which meets the required levels of service				
Performance Target				
Maintenance issues do not cause a failure to meet the levels of service				
Strategy				
Maintain the schemes in accordance with documented procedures				
No.	**Action**	**Responsibility**	**Timing**	**Cost ($k)**
12.1	Review Scheduled Maintenance Program and Breakdown Response Plan to confirm the ability to meet LOS	MWW	Bi-annual	Included in budget

6.4 Capital Works Plan

The purpose of the Capital Works Plan is to document the anticipated future capital works requirements and expenditures to meet the Levels of Service and provide a basis for financial planning and capital budgeting.

6.4.1 Asset Renewal

Asset renewal projects and ten year expenditure identified in the Asset Management Plans have been reviewed as part of the development of this SBP and Financial Plan.

Table 25: Renewal projects - Sewerage

Project	Expenditure	Comments/Basis of Expenditure
Tenterfield		
Manhole raising/ relining	$140k p.a.	TSC has commenced a manhole relining program to reduce infiltration to sewers. All manholes have been inspected and priority manholes (category 4 and 5) have been relined. Some square lid manholes need to be converted to round lid manholes prior to relining. Category 3 manholes will be reinspected before repairs are undertaken.
Mains relining program	$150k p.a.	Mains relining is being undertaken to reduce infiltration (through joints) and root ingress causing chokes and overflows. High risk mains were identified by CCTV inspection.
Repair/replace baffles in tertiary pond	$45,000 every 7 years	Programmed for replacement in 2016/17 and 2023/24

Table 26: Renewal projects – Water Supply

Project	Expenditure	Comments/Basis of Expenditure
Tenterfield		
WTP sludge removal	$5,000 every second year	Transfer of sludge to Tenterfield STP
Valve renewal	$30,000	2015/16 allowance
Air scour replacement	$50,000 every 3 years	Based on previous expenditure
Water main replacement	$250,000 p.a.	Recent condition assessments have identified the need to replace all sections of older mains in Tenterfield. The budget allows for replacement of 2km of main each year.
Water meter replacement	$20k p.a.	Rolling program
Pressure filter renewal	$30,000	2015/16 allowance
Shirley Park bore repairs	$20k	2016/17 allowance (currently on hold)
Water treatment plant upgrade	$7,000k	Council has commissioned a consultant to review options and develop a concept design and cost estimate for the preferred WTP upgrade.
Urbenville		
Valve/hydrant replacement	$20,000	2023/24 allowance
Water meter replacement	$20,000	2023/24 allowance
Air scour/pipe renewal	$10,000 every 3 years	Based on previous expenditure
Jennings		
Water main replacement	$10k p.a.	Based on previous expenditure

Project	Expenditure	Comments/Basis of Expenditure
Water meter replacement	$10,000	2023/24 allowance

6.4.2 Asset Upgrades

Asset upgrade requirements were identified in the IWCM Strategy and AMPs. These are discussed below.

Table 27: Upgrade projects - Sewerage

Project	Expenditure	Comments/Basis of Expenditure
Tenterfield		
Sewer main extensions	$1,500,000	Over 10 years
Sewer main augmentation	$50,000	2015/16
Biosolids processing plant	$250,000 in 2023/24	Proposed allowance for upgrade of STP to treat biosolids from Tenterfield and Urbenville
STP SCADA system upgrade	$30,000 every 3 years	Based on previous expenditure
Road upgrade	$10,000	Upgrade road to tertiary ponds
Urbenville		
Geotube for sludge removal	$10,000	2023/24 allowance
Sludge removal	$10,000 every 2 years	Transfer to Tenterfield STP
New shed	$20,000	2015/16 allowance
STP telemetry upgrade	$10,000	2023/24 allowance
Other villages		
Jennings sewerage system investigations	$30,000	Options will be further investigated and consultation with SDRC and the community will be undertaken to confirm approach, budget and timing.
Risk assessment – other villages	$10,000	Review of OSSM inspection data when available (2017)

Table 28: Upgrade projects – Water Supply

Project	Expenditure	Comments/Basis of Expenditure
Tenterfield		
Water main augmentation	$10k every second year	Based on previous expenditure
Flood warning system	$15,000 p.a.	Estimate
2WD ute	$25,000	2015/16 allowance
WTP chemical loading area	$15,000	2015/16 allowance
Amenities connection	$15,000	2015/16 allowance
Dam stability works	$7.35M	100% subsidy

Project	Expenditure	Comments/Basis of Expenditure
WTP study/design	$150,000	Consulting fees 2014/15, 2015/16, 2016/17
Water treatment plant upgrade	$7,000k	TSC has commissioned a study to confirm the preferred option and budget. Timing will depend on availability of subsidy.
UV disinfection	$20,000 every 5 years	Allowance based on previous expenditure
Repair Shirley Park bore	$25k	2016/17 allowance
Urbenville		
Main extensions	$20,000	2023/24 allowance
Partial enclosure Black Tank	$15,000	2015/16 allowance
Chemical storage shed	$15,000	2015/16 allowance

Objective 12 – Capital Works

Objective				
Adequate water supply and sewerage infrastructure is provided for present and future customers.				
Performance Target				
Infrastructure capacity and condition issues do not cause a failure to meet the levels of service				
Strategy				
Review and implement the capital works programs				
No.	**Action**	**Responsibility**	**Timing**	**Cost ($k)**
12.1	Review capital works program annually	MWW [1]	March each year	Included in budget

1. MWW: Manager Water and Waste

7. Work Force Plan

The water and sewer services organisation structure is given in Section 2.2.3. There are two senior services operators (SSOs) reporting to the Manager Water and Waste (MWW) with six services operators and one trainee operator (TSO). A Technical Officer position reporting to the Director Engineering Services (DES) also undertakes some water and sewer activities.

TSC's Workforce Plan (2013-2017) identifies some challenges that may affect delivery of urban water services:

- Council has an ageing workforce (50% of the workforce is over 50 years of age and 15% is over 60 years of age);
- Like many other regional local government authorities, it is difficult for Council to recruit and retain core professionals such as engineers, town planners and other technical specialists; and
- Community expectations of service delivery are increasing.

The Workforce Plan identifies a number of strategies to address these challenges relating to staff recruitment and retention, staff reward and recognition, reviewing staff performance, training and development, workplace safety and organisation development.

Other issues identified include:

- The TSC water and sewer services group does not include an engineering position which limits the ability of in-house delivery of strategic planning, design and asset management tasks. Unless a new engineer's position is created, TSC will need to continue to outsource water supply and sewer engineering services;
- The Manager Water and Waste role is shared approximately equally between water and sewer activities and the dual responsibility of waste management. This combined with the lack of technical support limits the ability to adequately undertake the management role; and
- There are difficulties with communications in remote areas due to lack of mobile reception which creates inefficiencies. Alternative forms of communication have been investigated but none is completely effective.

The SSOs and four of the SOs have completed the TAFE Certificate III in Water Operations. One SO and the TSO are currently undertaking the Certificate III.TSC has allocated $25,000 p.a. for ongoing staff training. Competency requirements are included in staff position descriptions.

Objective 13 – Human Resources

Objective				
Appropriate and qualified staff deliver the water supply and sewerage services in a safe manner				
Performance Target				
Sufficient and adequately trained staff can provide the levels of service. Zero WH&S incidents.				
Strategy				
Ensure all staff training is up to date. Create additional engineering position within Water and Sewer services. Review staff requirements (numbers and competency)				
No.	**Action**	**Responsibility**	**Timing**	**Cost ($k)**
13.1	Create and fill a full-time engineering position reporting to MWW	DES [1]	2017	100 p.a.
13.2	Staff training and competency review	MWW [2]	Annual	Included in budget

1. DES: Director Engineering Services

2. MWW: Manager Water and Waste

8. Financial Plan

8.1 Introduction

The aim of financial modelling is to:

- Meet the funding requirements of the capital works program and other life-cycle costs associated with system assets;
- Ensure an appropriate level of cash and liquidity; and
- Forecast the pricing structure over the long term.

These financial plans are a key component of Council's strategic business plans for water supply and sewerage. Thirty year financial plans have been prepared for water supply and sewerage. The NSW Financial Planning Model (FINMOD) has been used to prepare the plans.

The main output of the financial plan is the Typical Residential Bill (TRB) which is the annual bill paid by a non-pensioner residential customer using the average amount of water supply. The plans set out the long term price path (Typical Residential Bills) Council will need to levy in order to fund the recurrent cost and capital investment required for delivering the levels of service set out in the strategic business plan.

8.2 Data Input

Data used in the modelling are shown in Table 29.

Table 29: Initial input data

Item	Water Supply	Sewerage
Historical data	Historical financial statements for 13/14 and 14/15.	
Financial data	Inflation 2.5%, Borrowing interest rate 6.5%, Investment interest rate 5.5% for 30 years	
2015/16 TRB ($/assessment)	780	877
2014/15 Residential Assessments	1,683	1,446
2014/15 Non-Residential Assessments	266	263
Growth rate	0.9% p.a.	0.9% p.a.
Future residential developer charges ($/assessment) [1]	5,400	6,600
Future non-residential developer charges ($/assessment) [1]	7,389	9,032
30 year capital works program (CWP)	Refer Section 8.2.1	
Approved capital works grants	50% subsidy has been approved for the upgrade of Tenterfield Dam	None

Item	Water Supply	Sewerage
Recurrent costs	As a default, FINMOD assumes no change in the real operation, maintenance and administration (OMA) costs per assessment and increases the total annual OMA expenditure in line with growth. These costs are adjusted annually for inflation. These default values have been overridden to match Council's 10 year budget. The impact of increased expenditure has been investigated to address actions in this SBP, namely: • A new Engineer position (0.5FTE for water supply and sewerage each) from 2016/17 • SBP review - $20,000 every 8 years 2024 onwards • DSP review - $10,000 in 2017 onwards • IWCM review - $30,000 every 8 years 2020 onwards	
Existing loan payments	From TSC Loan repayment schedules	
Revenue Split[2]	The historical split between residential and non-residential customers has been assumed to continue for the next 30 years.	
Balance Sheet (2013/14) ($k)		
Cash	1,229	1,031
Debt	332	2,193
Replacement cost of system assets	43,081	33,415

1. Future developer charges are based on the 2015/16 developer charges. For assessing the developer charges for the new development it is assumed that each new residential assessment will be 1 ET (Equivalent Tenement) and on average, each non-residential assessment will be 1.4 ET (based on recent non-residential water usage).

2. The proportion of income from annual charges that will be provided from residential customers has a significant impact on the outcomes, as typical residential bills are affected by the contribution of non-residential customers to the total income from annual charges.

8.2.1 Capital Works Program

The 30 year capital works programs for water supply and sewerage are included in Appendix 3.

8.3 Model Outputs

The purpose of financial modelling is to identify the lowest TRB that will enable Council to fund the water and sewerage businesses. The TRB sets the price path to meet the proposed levels of service. TSC needs to develop a tariff structure that will provide the required TRB.

Where possible, the capital works programs and recurrent expenditure are funded through existing cash levels which are determined by the amount of revenue received from customers. Where planned expenditure exceeds the available cash levels, loans are required. Conventional 20 year loans have been assumed. A minimum cash level of $320k has been maintained for each fund.

FINMOD provides a 30-year projection of TSC's financial statements (income statement, balance sheet and cash flow statement) for each case modelled. The financial statements for the base cases are included in Appendix 3. All outcomes are expressed in 2015/16 dollars. Annual adjustments for inflation are required.

8.3.1 Water Supply Base Case

The base case for the water supply fund assumes 50% subsidy is available for the upgrade of Tenterfield WTP (to be completed in 2018/19). The TRB needs to increase by 10% p.a. for one year then 5% p.a. for the next year. A new loan of $3.7 million is required to fund TSC's investment in the WTP upgrade (in addition to the $4 million loans for the dam wall upgrade).

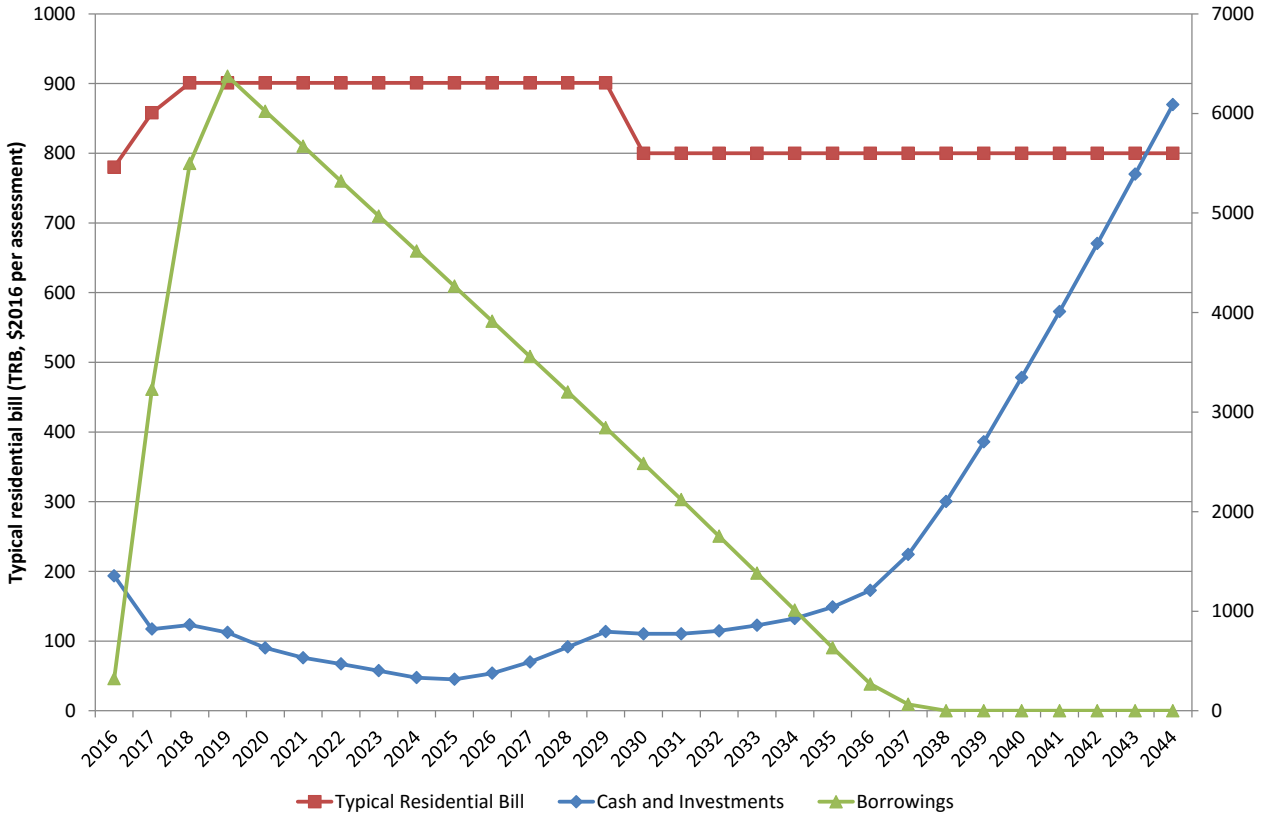

Figure 19: TRB, Cash and Investments and Borrowing Outstanding – Water Supply Base Case

Note: the long-term cash levels are dependent on future unidentified capital works and therefore there is limited confidence in cash levels beyond ten years.

Case 2 shows the impact on the TRB if no subsidy is available for the WTP. The TRB needs to increase by 10% p.a. for one year then 15% for one year then 10% for one year. The new loan would also need to increase to $7.0m to fund TSC's investment in the WTP upgrade without any subsidy.

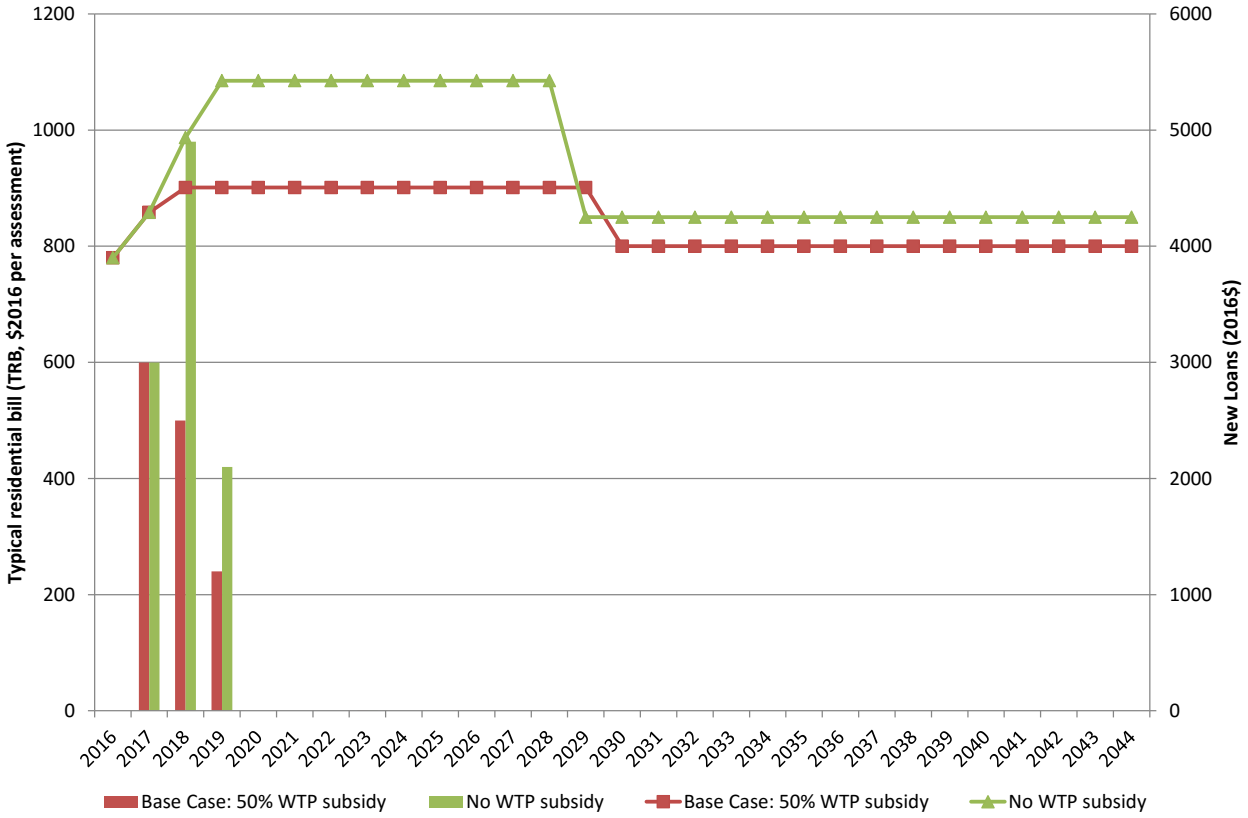

Figure 20: TRB and Loans – Water Supply Base Case and Case 2

8.3.2 Sewerage Cases

The base case for the sewerage fund assumes 50% subsidy is available for the Jennings sewerage scheme. The TRB needs to increase by 3% p.a. for one year and no new loans are required.

Case 2 shows the impact on the TRB if no subsidy is available. The TRB would need to increase by 3% for an extra year.

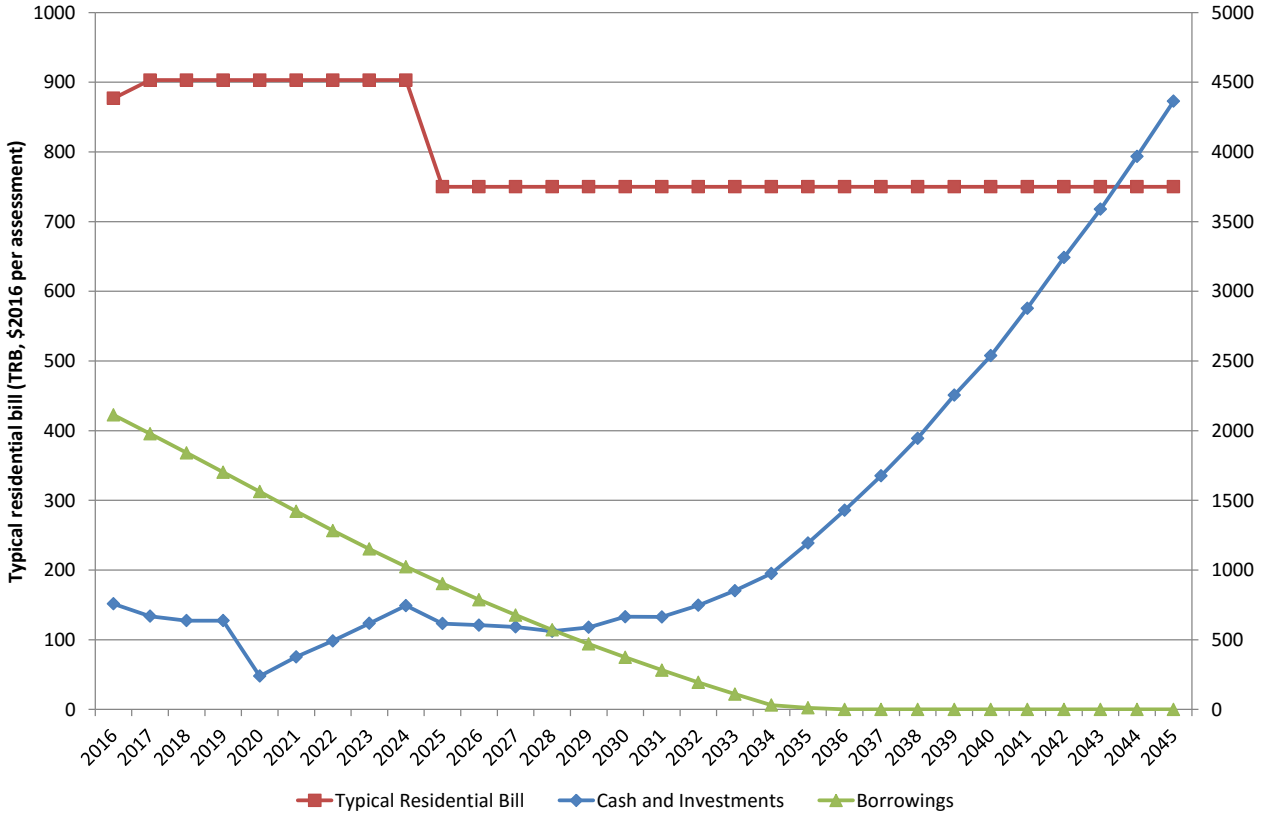

Figure 21: TRB, Cash and Investments and Borrowing Outstanding – Sewerage Base Case

Note: the long-term cash levels are dependent on future unidentified capital works and therefore there is limited confidence in cash levels beyond ten years.

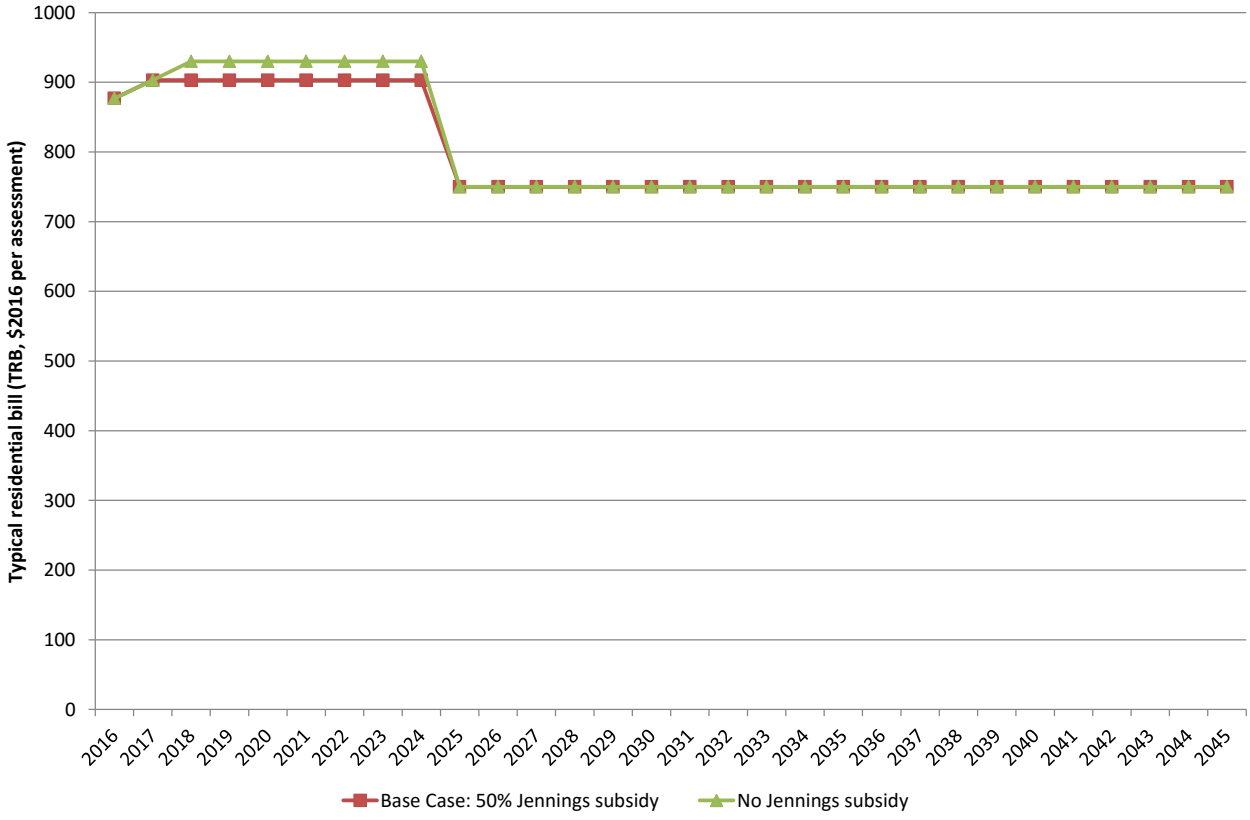

Figure 22: TRB – Sewerage Base Case and Case 2

8.4 Sensitivity Analysis

There is a significant level of uncertainty as to the future conditions that will affect the financial status of the water supply and sewerage businesses. TSC should allow for some of this uncertainty and reduce the need to deviate from the agreed path in the short-term.

Prior to selection of the appropriate price path, it is prudent to undertake a sensitivity analysis to determine the impact of various parameters on the required TRB. Key data inputs for the base cases (preferred cases) have been modified to reflect likely scenarios for the sensitivity analysis, namely:

- Growth rates;
- Capital costs; and
- Interest rates.

The sensitivity analysis scenarios and the outcomes of the analysis are discussed in Table 30. Results for the sensitivity cases are compared to the base cases in the following figures.

Table 30: Sensitivity Cases and Outcomes

Case		Description	Outcomes (compared to base case)	
			Water Supply	**Sewerage**
3	Lower growth rates	Growth rate is 0.5% p.a. for 30 years.	The TRB will need to increase at 10% p.a. for one year, then 5% p.a. for 3 years. Loans remain the same.	The TRB will need to increase by 5% p.a. for two years.
4	Increased capital expenditure	Base case with 20% increase in construction cost of WTP and Jennings Sewerage.	The TRB will need to increase at 10% p.a. for one year, then 5% p.a. for two years. Additional $0.8 million loans required.	The TRB will need to increase by 4% p.a. for one year.
5	Increased interest rates	Borrowing interest rate is 8.5% p.a. and investment interest rate is 7.5% p.a. for 30 years (2% higher than base case).	The TRB will need to increase at 10% p.a. for one year, then 5% p.a. for 3 years. Loans remain the same.	No change

All the sensitivity cases are possible so the yield should be set at a level which considers all foreseeable outcomes, allows for variability in the above parameters and provides a smooth transition to the required dollar yield.

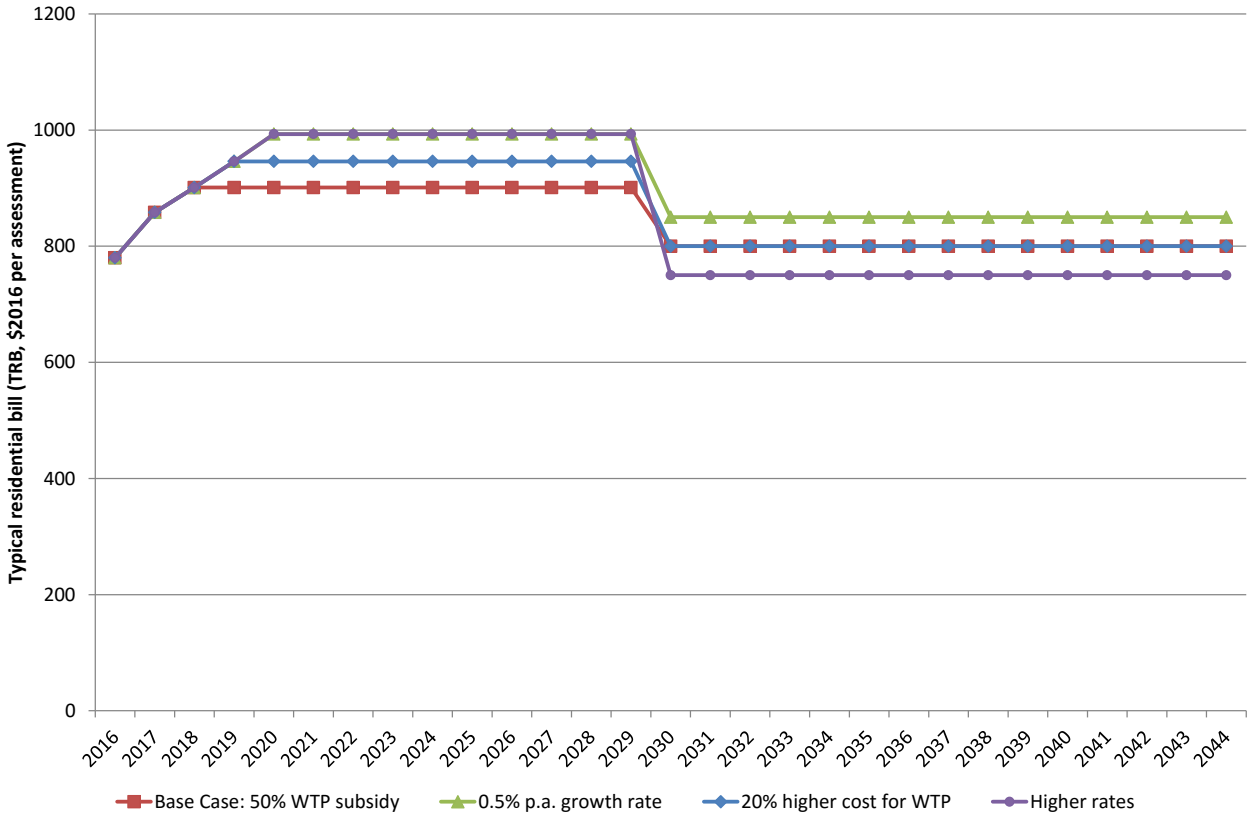

Figure 23: Water Supply TRB (Sensitivity cases)

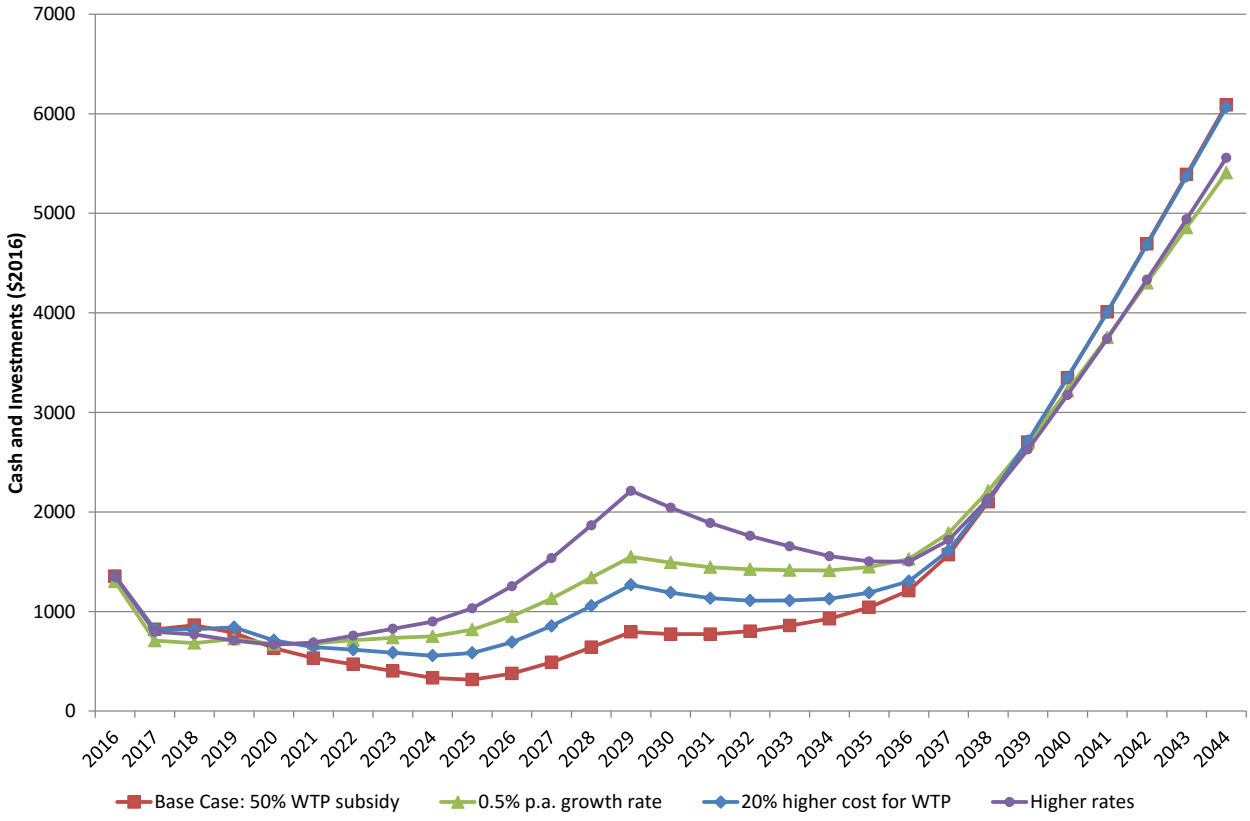

Figure 24: Water Supply Cash and Investments (Sensitivity cases)

Note: the long-term cash levels are dependent on future unidentified capital works and therefore there is limited confidence in cash levels beyond ten years.

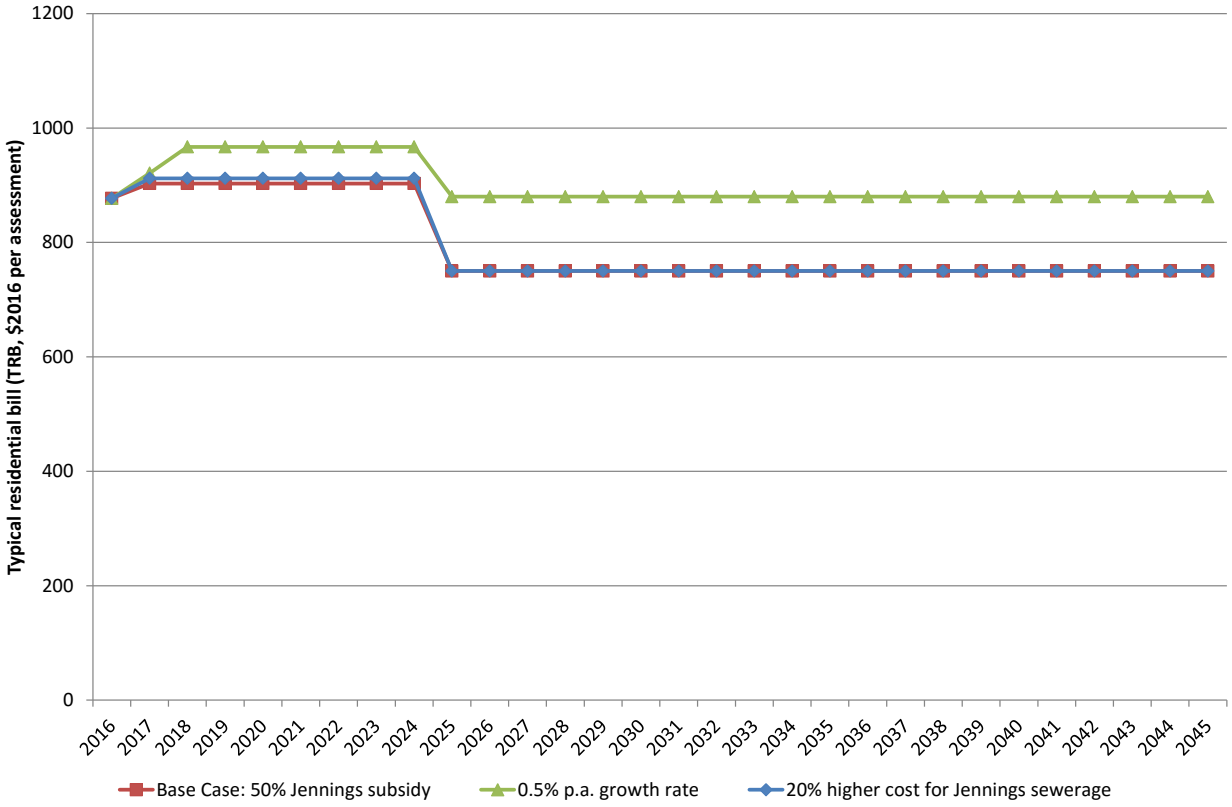

Figure 25: Sewerage TRB (Sensitivity cases)

Note: Case 5 is the same as the base case

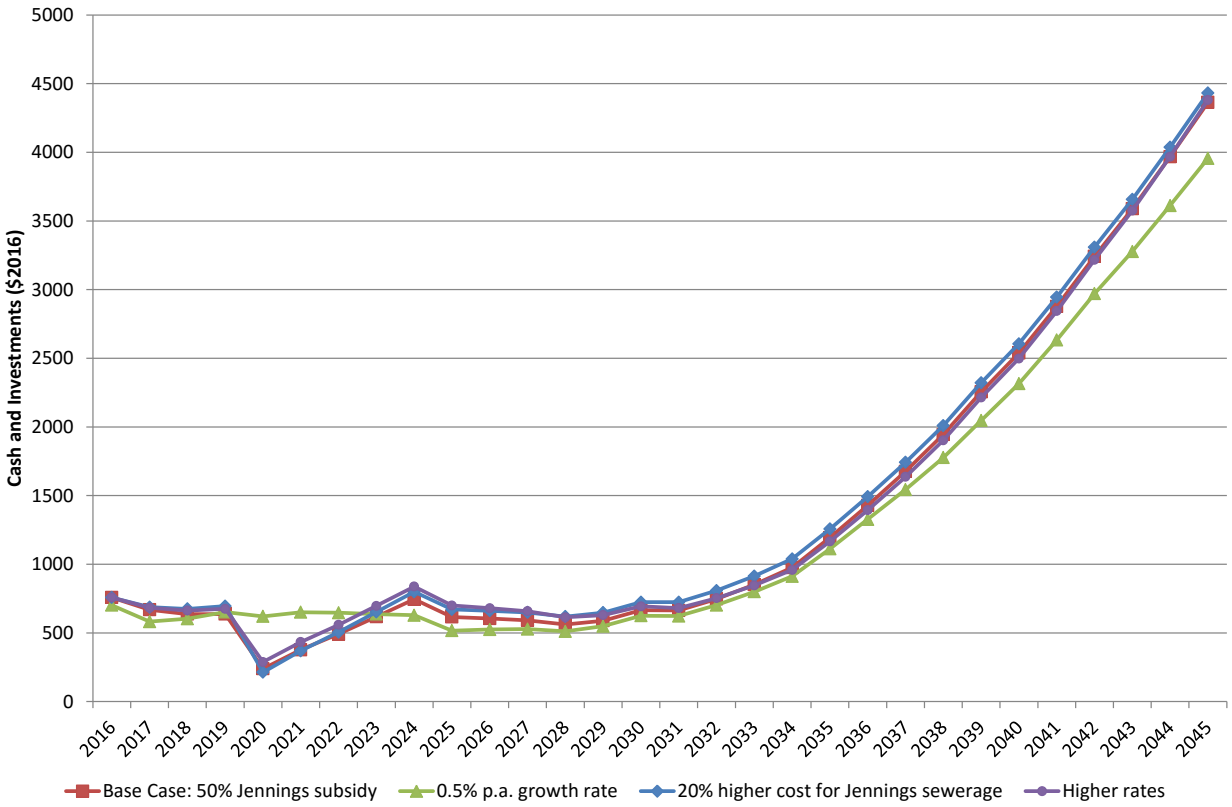

Figure 26: Sewerage Cash and Investments (Sensitivity cases)

Note: the long-term cash levels are dependent on future unidentified capital works and therefore there is limited confidence in cash levels beyond ten years.

8.5 Key Outcomes

Council's price path for the next 4 years should be based on:

- Water Supply – a 10% increase in TRB for one year and a 5% p.a. increase for the following 1-3 years
- Sewerage - a 4% p.a. increase in TRB for one year and a 2.5% p.a. increase for the following year

Annual adjustments for inflation are also required.

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TSC (2012e) *Urbenville Sewerage Treatment Plant PIRMP*

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TSC (2013b) *Tenterfield Shire Council Water Supply Systems Asset Management Plan*

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APPENDIX 1: LEGISLATIVE FRAMEWORK

Table 31: Legislative Obligations

Legislation	Summary of Related Requirements
Local Government Act, 1993 and Local Government (General) Regulation 2005	This Act provides the legal framework for the system of local government in NSW. The Act addresses: • Requirement to comply with DWE best-practice management criteria before making a payment of a dividend from the surplus of Council's water supply or sewerage businesses; • General pricing and headwork charges as well as developer charges for water supply and sewerage services and stormwater contributions; • Approval for private greywater and sewage treatment systems; • Inspection, assessment and licensing of on-site sewage systems; • Approval from the Minister of Land and Water Conservation (i.e. Office of Water) to undertake water supply or sewerage works (Section 60); • Accountable, effective end economical management; • Self-funding of water utility operations, and no cross subsidy with other Council activities; • Stormwater management service charge up to $25 per household; • Ministerial approval for undertaking water supply and sewerage new works and augmentation; and • Agenda 21 and ecological sustainability. Under the *Local Government Act, 1993*, the responsibility for provision of water supply and sewerage services in non-metropolitan NSW is delegated to local councils. TSC is the local water utility responsible for water supply and sewerage provision in Tenterfield Shire local government area (LGA). TSC provides bulk treated water to Kyogle Council from the Urbenville water supply. Southern Downs Regional Council (Queensland) provides treated water to Jennings. The Minister for Primary Industries has significant powers under the Act for construction and approval of water supply and sewerage works and emergency management works. The Minister also administers the Country Towns Water Supply and Sewerage Program including technical and financial assistance to local water utilities.
Local Government (Water Services) Regulation,1999	The Regulation supplements the provisions of the Local Government Act 1993 relating to the carrying out of water supply, sewerage and stormwater drainage works by councils and regulates the use of such works including: • The imposing of water restrictions, • The discharge of prohibited matter into sewers and drains, • The functions of councils in relation to water supply, sewerage and stormwater drainage (includes provisions for joint council works, installation of fire hydrants, inspection of pipes and drains, cutting off of water supply and connections to sewerage systems), • General requirements for the carrying out of water supply, sewerage and stormwater drainage work, • The installation, use and testing of water meters, • The use and misuse of water, and • The prohibition of joint sewerage services. The Regulation refers to the Plumbing and Drainage Code of Practice in relation to the laying of house service pipes.

Legislation	Summary of Related Requirements
Environmental Planning and Assessment (EP&A) Act, 1979	The Act requires that all proposals, activities and functions which are investigated, designed, planned, constructed and operated should be studied during all stages of their environmental impact on the basis of scale, location and performance. Environmental impact assessments may also be required to satisfy Commonwealth legislation processes. The Act provides the basis for the preparation of environmental planning instruments (refer Table 32);
Catchment Management Act, 1989	• Co-ordination of policies, programs, and activities as they relate to total catchment management; • Achievement active community participation in natural resource management; • Identification and rectification of natural resource degradation; • Promotion of the sustainable use of natural resources; and • Provision of stable and productive soil, high quality water and protective and productive soil and vegetation cover within each of the State's water catchments.
Soil Conservation Act, 1938	The Act addresses preservation of watercourse environments and the prevention of the destruction of trees and soil erosion on protected land.
Dams Safety Act, 1978	The Dams Safety Committee (DSC) operates under the Act. The DSC's statutory role is to ensure the safety of dams and their storage reservoirs in order to adequately protect the interests of the community. Dam owners are required to comply with the Australian National Committee on Large Dams (ANCOLD) *Guidelines on the Consequence Categories for Dams* (September 2012).
Public Health Act, 2010	This Act commenced in 2012, replacing the Public Health Act, 1991. The Act requires drinking water suppliers to establish and adhere to a quality assurance program that complies with the Regulation. The Act gives NSW Health powers with respect to the provision of safe drinking water. These include powers to: • Require the issuing of advice to the public on the safety of a drinking water supply; • Require the correction of any misleading information issued to the public; • Enter and inspect premises of a supplier of drinking water; • Require testing of drinking water; • Require production of information including the results of testing; and • Order the rectification or closure of a water supply. The Act was amended to mandate compliance with the "health critical" elements of the Australian Drinking Water Guidelines in regional NSW. Division 1 of the Act deals with safety measures for drinking water and requires that: • Drinking water must be fit for human consumption; and • A supplier of drinking water must establish, and adhere to, a quality assurance program that complies with the requirements prescribed by the regulations. The regulations may make provision for water testing, maintenance of records.
Independent Pricing and Regulatory Tribunal (IPART) Act, 1992	The Independent Pricing and Regulatory Tribunal Act establishes the Independent Pricing and Regulatory Tribunal and enables the Tribunal to determine and advise on prices and pricing policy for government monopoly services. IPART determinations may reform best-practice guidelines for local water utilities pricing and developer charges.

Legislation	Summary of Related Requirements
Protection of the Environment Operations Act, 1997	Councils and private businesses are required to exercise due diligence to avoid environmental impact. The Act addresses: • Penalties to individuals and corporations who cause pollution; • Council needs to develop operations emergency plans and due diligence plans to ensure that procedures are in place to prevent / minimise pollution; • A system is required to monitor operations, improve controls and reduce risks; • Council's officers, as well as the Council, may be liable for breaches of requirements; • Council has a duty to notify Office of Environment and Heritage of pollution incidents; • System licensing for sewerage systems (Scheduled Activity) including Pollution Reduction Program (PRP) requirements; and • Pollution from private systems - Local councils are the regulatory authorities for non-scheduled activities, except activities undertaken by a public authority which the EPA will regulate.
Water Management Act, 2000	This Act provides for the sustainable and integrated management of the water sources of NSW. The Act provides a framework for water sharing plans and environmental flows, sets out bulk water supply regimes, defines local water utility access licences and requires water utilities to levy developer charges.
Water Act, 1912	In those water sources (rivers, lakes and groundwater aquifers) in NSW where water sharing plans have not commenced, the *Water Act 1912* governs the issue of new water licences and the trade of water licences and allocations.
Water Industry Competition Act, 2006	The objectives of the Act and supporting Regulations are to encourage competition in the water industry and to foster innovative recycling projects and dynamic efficiency in the provision of water and wastewater services. The core reforms introduced by the Act are the establishment of a new licensing regime for private sector providers of reticulated drinking water, recycled water and sewerage services, provisions to authorise IPART to arbitrate certain sewer mining disputes and the establishment of a third-party access regime for water and sewerage infrastructure.
Fluoridation of Public Works Supplies Act, 1957	This Act, together with the Fluoridation of Public Water Supplies Regulation, 2002 and the Code of Practice for the Fluoridation of Public Water Supplies, 2002, requires NSW Health approval to add fluoride to a public water supply by a water supply authority. Under this legislation TSC is responsible for fluoridation of the Casino water supply. Rous Water is responsible for the fluoridation of its supplies.
Occupational Health and Safety Act 2000 and Rehabilitation Act 1987	The Acts places emphasis on risk management and consultation with staff to minimise work related accidents and health impacts. Council needs to train staff in safety issues and provide a safe working environment and supply equipment to ensure safety. Council and Council's officers may be liable for breaches of these requirements.
Competition Policy including Competition Policy Reform Act, 1995	Council is subject to prohibition on anti-competitive behaviour, according to the Trade Practices Act. The provision of services by a monopoly is subject to compliance with the National Water Commission (previously the National Competition Council) guidelines.
Fisheries Management Act, 1994	The objects of this Act are to conserve, develop and share the fishery resources of NSW for the benefit of present and future generations. Often works associated with water supply structures including dams, weirs, pipelines and extraction points involve works that trigger certain approval requirements under the Fisheries Management Act 1994, in particular: • S198-202 provisions relating to dredging and reclamation activities on and within water; • S218-220 provision relating to fish passage; and • Part 7A relating to threatened fish species.

Table 32: Environmental Planning Instruments

Instrument	Summary of Requirements
SEPP Building Sustainability Index (BASIX), 2004	BASIX was mandatory for new residential dwellings in regional NSW from 2005/06. It has now been extended to all residential developments valued in excess of $50,000. BASIX sets energy and water reduction targets for new homes and apartments. Rainwater tanks are now required for all new developments in NSW including new developments for swimming pools or spas that require a BASIX certificate. Water targets range from 40% to 0% across NSW, taking into account the significant variances in climate.
State and Regional Development SEPP, 2011	The system establishes two separate assessment frameworks for State significant development (SSD) and State significant infrastructure (SSI). Projects that fall within these categories will be assessed by the Department of Planning and Infrastructure and determined by the Minister, the Planning Assessment Commission or senior departmental staff. The SSD assessment system has been established to guide planning decisions on: • Large-scale industrial, resource and other proposals in 24 different development classes; or • Development in precincts identified as important for the State by the NSW Government. The SSI assessment system has been established to allow planning decisions on major infrastructure proposals, in particular linear infrastructure (such as roads, railway lines or pipes which often cross a number of council boundaries) or development which doesn't require consent but which could have a significant environmental impact (such as a port facility).
SEPP Infrastructure, 2007	Provides a consistent planning regime for infrastructure and the provision of services across NSW, along with providing for consultation with relevant public authorities during the assessment process.
Tenterfield LEP 1996	The LEP zones a range of areas for various urban land uses. It provides the main statutory basis for future development in the shire. The NSW State Government requires all councils to prepare new LEPs that comply with the Standard LEP Template prepared by the NSW Department of Planning and Infrastructure (DP&I). Council prepared a comprehensive draft LEP based on the Standard LEP and this was placed on public exhibition from 24 September 2012 to 2 November 2012. The Draft LEP 2012 will be forwarded to the DP&I with a request that the Plan be approved by the Minister.
Tenterfield DCP	DCPs indicate to developers what level of detail is required with certain types of applications and what standards are sought with the design of certain developments.

APPENDIX 2: TRIPLE BOTTOM LINE PERFORMANCE REPORTS (2013/14)

APPENDIX 3: CAPITAL WORKS PROGRAMS AND FINANCIAL PLANNING OUTPUTS

APPENDIX 4: INPUT TO INTEGRATED PLANNING AND REPORTING PROCESS

The Integrated Planning and Reporting (IPR) framework was introduced by the NSW Government in October 2009 to improve all NSW councils' long-term community, financial and asset planning. In response TSC has developed the following strategic plans:

- Community Strategic Plan 2013-2023;
- Our Community Engagement Strategy "Listening and Learning";
- Long-term Financial Plan 2014-2024;
- Workforce Management Plan 2014/2018;
- Asset Management Strategy and Asset Management Plans;
- Four Year Delivery Program;
- One Year Operational Plan 2014/15; and
- Annual Reports.

This SBP is Council's Resourcing Strategy for water supply and sewerage.

Outcomes from this SBP will be considered for inclusion in the next review of TSC's Community Strategic Plan as follows:

- Sustainable Water Supply and Sewerage Service:
    - TSC will review and implement the Water Supply and Sewerage Strategic Business Plans and Integrated Water Cycle Management Strategy in accordance with best-practice requirements.
    - TSC will actively pursue external funding sources for upgrade of Tenterfield WTP.
    - TSC will investigate the feasibility of provision of sewerage services to Jennings including potential funding sources.

Key actions from this SBP will also be considered for inclusion in TSC's Delivery Program and Operational Plan.

Following implementation of the actions from this SBP, TSC's annual report will include the following:

- 100% compliance with best-practice requirements;
- 100% compliance with ADWG requirements;
- Significant investment in water supply and sewerage system renewals;
- Status of major projects including Tenterfield Dam upgrade and Tenterfield WTP upgrade; and
- Other key achievements.

APPENDIX 5: STRATEGIC BUSINESS PLAN – CHECK LIST (NSW OFFICE OF WATER, 2014)

Topic		Outcome Achieved	Comment (Section in this SBP)
Strategic Business Plan			
1	Executive Summary	Covers all major issues, main actions, a summary of the Financial Plan Report, price path and a 30-year projection of the Typical Residential Bill in Year 2$. Includes a plan of the system.	Executive Summary
2	Operating Environment Review	A. Includes the mission statement with regard to your water supply and sewerage services B. All principal issues are addressed with appropriate strategy, actions and performance indicators in the Strategic Business Plan. C. A compliance monitoring and reporting system is in place. D. The regulatory and contractual compliance requirements have been identified. E. Includes all issues from an operating environment compliance situation analysis F. Includes a business and insurable risk profile analysis and a summary of the insurance policies.	Section 2
3	Performance Monitoring	A. LWU's latest TBL Performance Report and Action Plan included. B. In addition to addressing any areas of under-performance, the Action Plan 'closes the planning loop' with the utility's financial plan by: • Comparing the Typical Residential Bill (TRB) with the projection in the financial plan and documenting any necessary corrective action for implementation by the LWU. • Reporting results for the financial year for the key actions set out in the utility's strategic business plan or IWCM strategy, whichever is the more recent.	A - Appendix 2 B – The previous financial plan was prepared in 2005 when there were 3 separate water funds and 3 separate sewer funds. Section 2.4.1
4	Levels of Service (LOS)	A. Are clear, meaningful and measurable B. Target LOS has been identified. These LOS are also to be used in the IWCM Strategy, Water Cycle Analysis and Projection and Development Servicing Plan. C. Includes all issues from a LOS situation analysis D. Community consultation is essential on the proposed levels of service (LOS) in order to negotiate an appropriate balance between LOS and the resulting Typical Residential Bill.	Section 3
5	Service Delivery	A. Overall service delivery options examined and conclusions reported. B. Includes examination of project specific service delivery options for the measures included in the Total Asset Management Plan (TAMP). C. The utility is cognisant of 'demand risk' and avoids investing in assets which may become redundant, 'stranded' or oversized, e.g. as a result of a developer obtaining approval to provide water supply and/or sewerage services to a large release area (under the *Water Industry Competition Act 1994*).	Section 4

Topic		Outcome Achieved	Comment (Section in this SBP)
6	Customer Service Plan	Business objectives developed for each key result area	Section 5
6.1	Unserviced Areas	A. All unserviced towns and villages listed showing the population, whether the present facilities are satisfactory and the priority ranking of each town/village for option implementation from the IWCM Strategy. B. Proposals for serving unserviced towns and villages are included and discussed in your LWU's strategic business plan and capital works program.	Section 5.1.3
6.2	Regulation and Pricing of Water Supply, Sewerage and Trade Waste	A. Full Cost Recovery Full cost recovery for each of the water supply and sewerage businesses. The total annual revenue should be consistent with the financial plan. This generally results in a positive economic real rate of return (ERRR).	Section 5.5
		B. Water Supply: Residential Pay-for-use: appropriate water usage charge/kL with no water allowance; independent of land value. At least 50% of residential revenue from water usage charges [for utilities with under 4,000 connected properties]	
		C. Sewerage: Residential Uniform annual sewerage bill per residential property, independent of land value.	
		D. Water Supply: Non-Residential Two-part tariff with appropriate water usage charge/kL and access charge.	
		E. Sewerage: Non-Residential Two-part tariff with appropriate sewer usage charge/kL and sewer discharge factor.	
		F. Liquid Trade Waste Pricing Appropriate trade waste fees and charges adopted and implemented for all liquid trade waste dischargers. Appropriate trade waste usage charge implemented for dischargers with prescribed pre-treatment. Excess mass charges and non-compliance excess mass charges implemented for large dischargers and industrial waste.	
		G. Trade Waste Regulation Policy and Approvals Trade Waste Regulation Policy implemented. Trade waste approval issued to each liquid trade waste discharger. Annual report provided to NSW Office of Water listing all of the trade waste dischargers approved by Council for the year	
		H. Developer Charges Development Servicing Plan with commercial developer charges; disclosure of any cross-subsidies	

Topic		Outcome Achieved	Comment (Section in this SBP)
		I. Dual Water Supplies LWUs with a dual water supply i.e. a potable reticulated water supply for indoor uses and a separate non-potable supply reticulated for outdoor uses to over 50% of their residential customers need to comply with element 2(g) of Criterion 2 in Table 1 on page 25 of the Best-Practice Management Guidelines	Not applicable
6.3	Environmental Management	Summary of LWU's Environmental Management achievements is included.	Section 5.7
6.4	Water Cycle Analysis and Projection	A. Includes a summary of the adopted water conservation program and the key assumptions underpinning the program measures. B. For utilities with 4,000 or more connected properties, has 75%/25% split been achieved with water tariff? If not, update water supply tariff in accordance with Circular LWU11 of March 2011. C. Water & sewer pricing of all customer categories is best-practice, if not implement best-practice requirements.	A - Section 5.2.4 B, C – Section 5.5
		Also include review of the key assumptions and commentary on its current status. Report outcomes in the strategic business plan. Address matters such as:	
		D. Is bulk water extraction and production metered and recorded daily? If not, Implement daily metering and recording.	Yes
		E. Do all free standing residential premises have separate meters? If not, implement	Yes
		F. Do all free standing and multi-unit residential developments (both strata and non-strata) built after July 2007 have separate meters? If not, implement, where cost effective.	Yes
		G. Utilities are strongly encouraged to separately meter all new free standing and multi-unit residential and non-residential developments. In addition to encouraging efficient use of water services, this facilitates fair water supply, sewerage and trade waste pricing. Such metering is recommended by the August 2011 Productivity Commission Report No.55 (www.pc.gov.au).	Yes
		H. Is customer water consumption billed at least three times a year? If not, implement.	No. Bi-annual billing.
		I. Are all your LWU's premises (e.g., parks, ovals, toilets, cemetery, etc.) metered and billed? If not, implement.	Yes
		J. Review the effectiveness of the adopted demand management measures and summarise the outcomes and planned corrective actions.	Section 5.2.4

Topic		Outcome Achieved	Comment (Section in this SBP)
		K. Review the effectiveness of any leakage reduction program undertaken and summarise the outcome and the planned corrective actions.	Section 5.2.2
		L. Review the effectiveness of any sewer flow management program undertaken and summarise the outcome and the planned corrective actions	Section 5.4
		M. Briefly review the demographic projection and update as appropriate.	Section 5.1.2
		N. A scheme specific data collection and monitoring system and plan is in place.	Yes
		O. Review and update the adopted water cycle projection (water demands and sewer flows and loads) as appropriate	Section 5.2.3
6.5	Integrated Water Cycle Management (IWCM)	A. Includes a summary of the adopted IWCM scenario and the principal assumptions/risks underpinning the scenario	Section 2.4.1
		Also include review of the principal assumptions and risks underpinning the IWCM Strategy and report outcomes in the strategic business plan. Address matters such as: B. Assumption 1 – potential unplanned increase in water demand due to a water intensive industry, large new development, etc. C. Assumption 2 – potential unexpected changes to existing water access/use licence regime. D. Assumption 3 – significant potential changes to raw water quality and/or non-compliance with ADWG 2011. E. Assumption 4 – unexpected major change in distribution system characteristics. F. Assumption 5 – unexpected extension/provision of water service to a new area/urban centre. G. Assumption 6 – potential unexpected increase in sewage load due to industry, large development, etc. H. Assumption 7 – unexpected changes in sewage transport system characteristics. I. Assumption 8 – potential unexpected changes to existing sewerage management licence regime. J. Assumption 9 – unexpected extension/provision of sewerage service to new area/urban centre.	

Topic		Outcome Achieved	Comment (Section in this SBP)
6.6	Drought Management	A. Are all water supply sources suitably monitored (e.g. level, flow, relevant water quality) and recorded? If not, implement suitable monitoring and recording. B. Includes a graph of the water demand over time with super-imposed restriction periods, storage/ground water level and relevant climatic data since the last SBP Update. C. Includes a summary of water supply system performance since the last SBP Update and any management/emergency response actions undertaken. D. Review the adopted drought management plan, especially the schedule of trigger points for drought water restrictions and the level of water restrictions, and the associated measures. Update where warranted and include as an Appendix.	Section 5.3
6.7	Drinking Water Management System	A. Includes a Report on the complete review of your Drinking Water Management Systems. B. The update items identified in the Report are included in the SBP with appropriate actions and performance indicators. C. Community involvement and consultation has been undertaken	Section 2.4.2
6.8	Community Involvement	Includes a summary of community involvement completed since the last SBP Update	Section 5.6
6.9	Work Health & Safety	A. Includes a summary of LWU's work health and safety achievements against the adopted performance indicators. B. Includes a summary of completed audits and any planned corrective actions to achieve target	Section 6.2.5
6.10	Other Risk Management Measures	Summary of other risk management measures implemented by your LWU.	Section 6.2.4
7	Total Asset Management Plan (TAMP)	A. Summary of changes required to operation and maintenance (O & M) procedures (e.g. to operate new facilities) are reported, including impact on OMA (operation, maintenance and administration) expenditures.	Section 6
		B. Summary of outstanding Development Consent Conditions relating to capital works projects identified and reported, including impact on costs.	None
		C. Asset register completed and is up to date and the assets are valued in accordance with Reference 16 on page 16	Section 6.2.1

Topic		Outcome Achieved	Comment (Section in this SBP)
		D. Summary of best-practice operation plan is included. Also report: • Whether you failed to achieve microbiological compliance with ADWG in either of the last 2 financial years, the corrective action implemented and whether it was successful. • Any 'boil water alerts' issued in the last 18 months, the corrective action implemented and whether it was successful. • Whether the requirements of Circular LWU 18 of June 2014 have been addressed in order to assure the safety of your drinking water supplies.	Section 6.2
		E. Summary of best-practice maintenance plan is included. Also report your LWU's implementation of any NSW Office of Water section 61 recommendations (*Local Government Act 1993*) for corrective action with respect to water and sewage treatment works, dams, water recycling systems or biosolids recycling systems	Section 6.3
		F. Review and update the existing TAMP in your IWCM Strategy/SBP. New TAMP to show your LWU's 30-year capital works program which nominates each proposed project and its annual capital expenditure, including an evidence-based cost-effective asset renewals plan10. TAMP is integrated with the strategic business plan to meet the target levels of service. Template is available from NOW (page 16). Disclosure of the funding required for each of growth, improved standards and renewals is required for each project. TAMP has been updated in accordance with Items 6.4 and 6.5.	Section 6.4
		G. All major projects in the TAMP are discussed in the SBP and are consistent with the adopted IWCM Scenario and business objectives	Section 6.4
8	Work Force Plan	Organisation Chart is included. Work force requirements to meet the needs of TAMP, including items 6.4 to 6.7 have been incorporated.	Section 7
9	Input to Council's Integrated Planning and Reporting (IPR)	Provide water supply and sewerage inputs to your Council's: • Community Strategic Plan • 4-year Delivery Plan • Annual Operating Plan • Annual Report.	Appendix 4
Financial Plan			

Topic		Outcome Achieved	Comment (Section in this SBP)
10	Financial Plan Objective	A. The financial plan includes all foreseeable costs and income and achieves the lowest uniform level of stable typical residential bill (in Year 2$) to meet the levels of service negotiated with the community. B. Long-term financial sustainability is demonstrated to comply with National Competition Policy and the National Water Initiative.	Section 8
11	Financial Model	LWUs using the FINMOD software for their financial plan have used the latest version (FINMOD 2.1 or FINMOD 4.0)	
12	Timeframe	The financial plan covers a period of 30 years in accordance with the IWCM Strategy.	
13	Growth and Number of Assessments	A. Input accurate numbers of existing residential and non-residential assessments from the water cycle analysis and projection. B. New assessments for backlog water supply or sewerage projects are included in the growth projections. C. Growth projection input into your LWU's financial planning is consistent with the demographic and water cycle analysis and projections and SBP document	
14	Interest Rates	Appropriate values have been used. Such rates in July 2014 were: • Inflation 2.5% pa • Investment 5.5% pa • Borrowing 6.5% pa	
15	Grants	No capital works grants under the CTWSS program are assumed after about 2016/17.	External grants are required to fund major projects
16	Forecast Data	A. Forecast data, such as future operation, maintenance and administration (OMA) costs and the income split (between the annual residential revenue and the annual non-residential revenue), have been carefully considered as part of the LWU's total asset management planning (refer to Item 7 on page 10).	Section 8
		B. Increases or reductions to OMA costs have been discussed in the SBP document	Section 8
17	Residential Bills	The financial plan must provide a 30-year projection of Typical Residential Bills in Year 2$.	Section 8
18	Results	The input data, key output graphs and the full projected results and the annual financial statements (i.e. Income Statement, Balance Sheet and Cash Flow Statement) are included for the preferred case. Results are presented in Year 2 dollars (i.e. not in inflated dollars).	Section 8

Topic		Outcome Achieved	Comment (Section in this SBP)
19	Sensitivity Analysis	A. Sensitivity Analysis has been carried out and results are included. B. A description of the cases analysed, and the reasons for their selection have been included in the SBP document	Section 8
20	Financial Plan Report and Price Path	A. Financial Plan Report prepared to document your financial planning. B. Price path adopted for the typical residential bill over the next 4 years in Year 2$. This provides some price certainty to your LWU's customers	Section 8
21	Annual Update of Financial Plan	Following the annual review of your TBL Performance Report, you should review and update your total asset management plan and your long-term financial plan. B. Prepare a brief report to Council on your update of the financial plan	Ongoing
22	Publication of SBP and FP	LWU should publish the adopted Strategic Business Plan and Financial Plan on its website	