

Water Supply Summary

Introduction

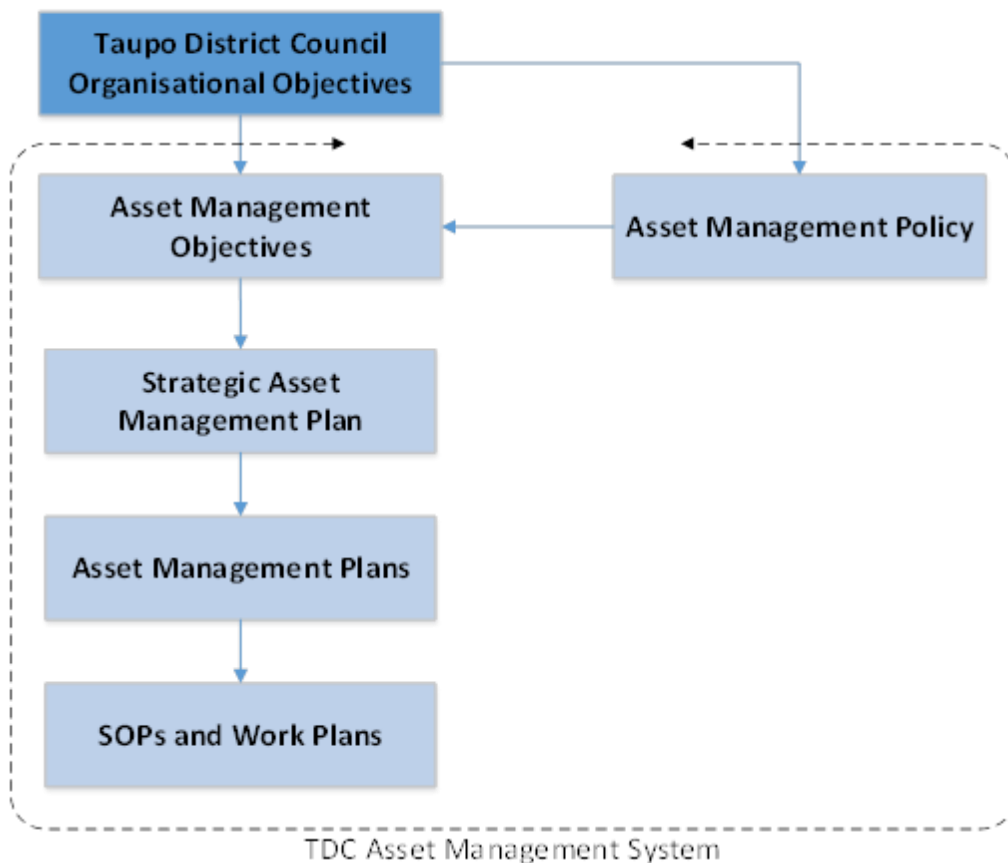
Taupo District Council provides water for use by individuals, households, commerce, industry and firefighting. This water supply asset management plan enables Council to manage and demonstrate its stewardship of water assets on behalf of its communities in order to provide services cost-effectively, both now and into the future.

Strategic issues

Council operates within the context of these strategic issues:

- Drinking water standards and the associated funding impacts (capex and opex) on communities
- Water allocation and water demand management
- The size and number of water schemes Council owns and operates, and the associated funding issues for Council.

Taupo District Council Asset Management System



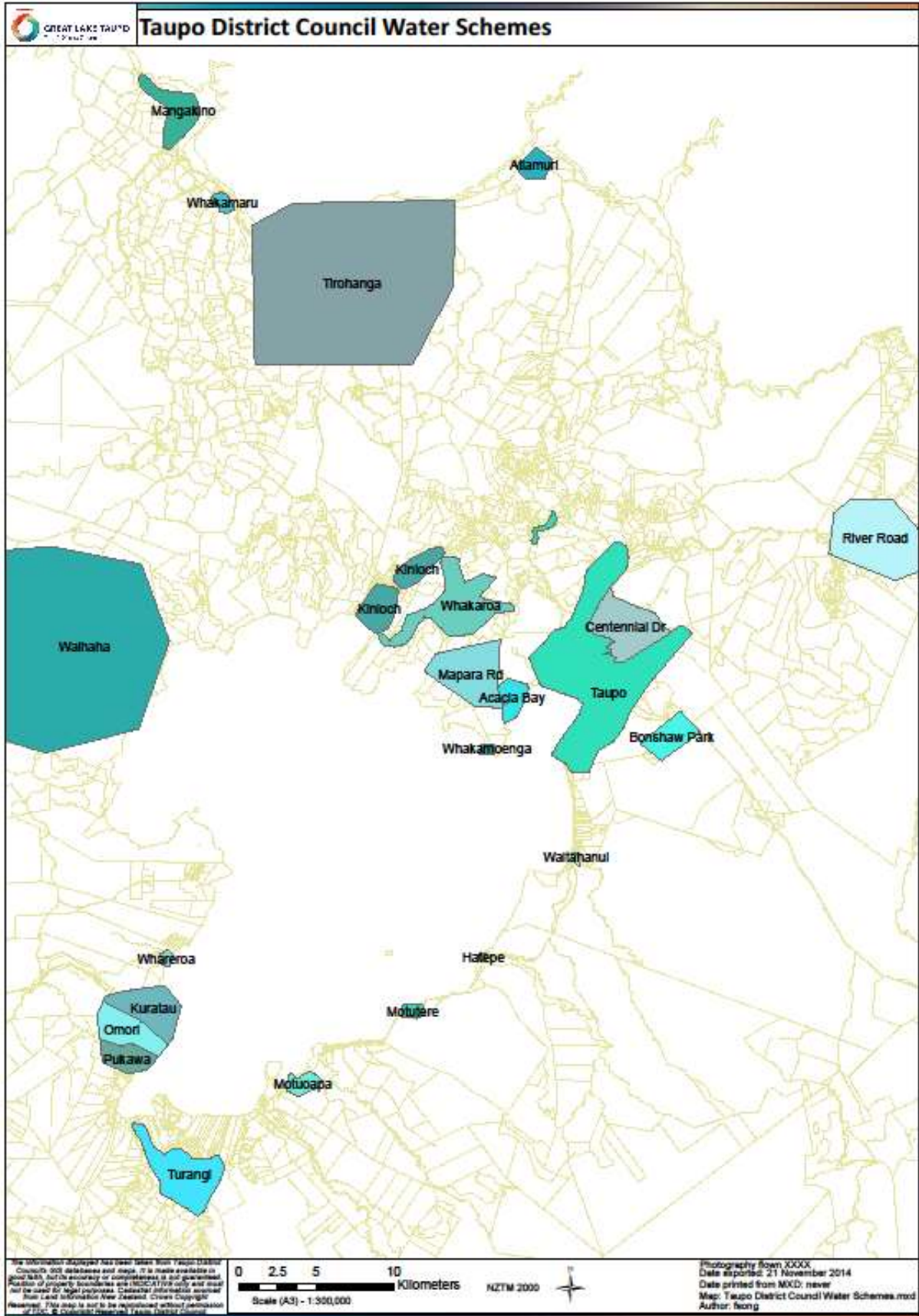
Water supply assets

Council operates 19 water schemes for communities, servicing most of the district's population. Collectively the assets for water supply have a replacement value of \$133 million (Aug 2017). The water supplies are:

Figure 1 Taupō District Water Supply Schemes

#	Scheme / Zone	No. of properties connected to water supply (21/11/2017)
1	Acacia Bay / Mapara Road	1,021
2	Atiamuri	69
3	Bonshaw Park (rural)	69
4	Centennial Drive	5
5	Hatepe	106
6	Kinloch / Whakaroa	984
7	Mangakino Township	674
8	Motuoapa	387
9	Motutere (campground only)	356
10	Omori/Kuratau/Pukawa	1,174
11	River Road	68
12	Taupō Township / Wairakei	10,823
13	Tirohanga (rural, incl. irrigation)	106
14	Turangi Township/Tokaanu	2,213
15	Waihaha (rural, incl. irrigation)	28
16	Waitahanui	37
17	Whakamaru	73
18	Whakamoenga Point	53
19	Whareroa	154
	Total	18,082

There are a further 1,138 properties who have connections installed but have not yet connected or using the supply.



Communities that do not receive Council water supply include: Waitetoko, te Rangiita, Orutaua, Motutere (except camping ground), Mission Bay, and some rural households with their own supplies. Council has no plans to expand its supply network to these communities at this stage.

A summary of the water assets is tabled below:

Figure 2: Water supply assets

Asset		Number
Water	Water take consents	20
Source	Bores	14
	Intake structures at lakes, springs, streams, rivers	20
Plant & treatment	Treatment sites	19
Reticulation	Reservoirs	62
	Reservoir Capacity	35,247 m ³
	Pipes	673 km
	Water connections	19,220
	Metered water connections	2,187
	Pump stations and buildings	47
Emergency	Fire hydrants	2,033

Levels of Service

Council owns and operates its water assets so that it can provide water to its various communities to the required level of service:

- Drinking water provided by Council is safe to drink (compliance with the drinking water standards)
- There is sufficient capacity to meet current demands and future growth
- The reticulation system is maintained (water loss analysis)
- System failures are addressed in a timely fashion (response times)
- Users are satisfied with water supply
- Demand will be managed to efficiently
- Water for fire-fighting in urban supply areas meets volume and pressure standards FW2

State of the assets

Water

Without water, pipes and plant are pointless, and Council's single-most important strategic asset is its water which is allocated by WRC, via consents. Council has 20 water take consents to abstract water from lakes, rivers, streams and bores within the district. Each consent has its own conditions, which must be met, monitored and reported.

Taupo District has relatively abundant natural water resources including rainfall averaging 1,100 mm/yr, the country's largest lake, significant rivers and easily tapped groundwaters and springs.

As water resources become fully allocated, there is a requirement to show water is being utilized efficiently. There will be increasing pressure to justify water take consents and increasing requirements to show the allocated water takes are being well managed.

Hence, with the growing regional and central government focus on efficient use of water resources, the responsibility falls on local authorities to demonstrate prudent management. Council has developed a Water Demand Management Plans (WDMP) as required under the Waikato Regional Plan.

Peak day water demand across the district is high, mainly because of floating population during events, tourists, irrigation (gardens, golf courses, other recreation), and leaks from the system, (which may be on private property as well as within the public network).

While current consents provide sufficient water for the district, increasing demand for fresh water across the country means that new consents or increases to water takes within consents may be more difficult to acquire and demonstration of efficient use will be required.

Water treatment

Central government has set drinking water standards, requiring communities to have demonstrably safe drinking water by managing contaminations risks.

In 2011/12, Council installed UV treatment to the Turangi and Mangakino treatment plants, with 65% of the capital cost funded by the Ministry of Health.

Council has also completed upgrade to the water treatment plant for Taupō in 2012.

Atiamuri water supply is also meeting the requirements utilizing the alternative compliance criteria for small supplies.

The Waitahanui water supply will soon be decommissioned once the supply is connected to Taupo.

The remaining 15 water supplies require upgrades to meet the requirements of the Health Act and drinking water standards. Council will need to consider funding options to meet the capital and operational cost for these schemes.

Water supply

The average age of our Council's water reticulation network is 34 years old which is relatively new compared to many others around the country. However there is a significant amount of aging asbestos and galvanized pipe that requires renewal over the next 15 years. This aging pipework is located primarily in Taupo, Turangi and Mangakino.

Demand forecast

The recent review of the Council's growth model (water) projects at Council will be supplying water to a further 1,254 properties in the next 10 years. As growth occurs Council is required to invest in the infrastructure to support this growth. In the past couple of years growth has exceeded expectations and may continue to do so. Therefore Council must act to meet these demands.

Financials

This section outlines the financial implications of the Council's response to the issues; which are outlined within this Asset Management Plan and Infrastructure Strategy.

The financial projections (most likely scenario) contained in the graph below for capital, renewal and operational expenditure are based on the following influences:

- Levels of service are largely maintained at current levels
- The need to upgrade water treatment plants to comply with the drinking water standards.
- Modest growth is likely until around 2038 when population will decline, with increasing population of older residents.
- More reliable forecasts of renewal profiles for underground assets will continue as more asset condition is acquired.
- Tables and graphs below allow for inflation projections that are in line with those forecast by BERL for LGCI over the 30 years.

The financial projections are shown in for the 30 years. The total projected spend over the next 30 years for wastewater is outlined in the following graph.

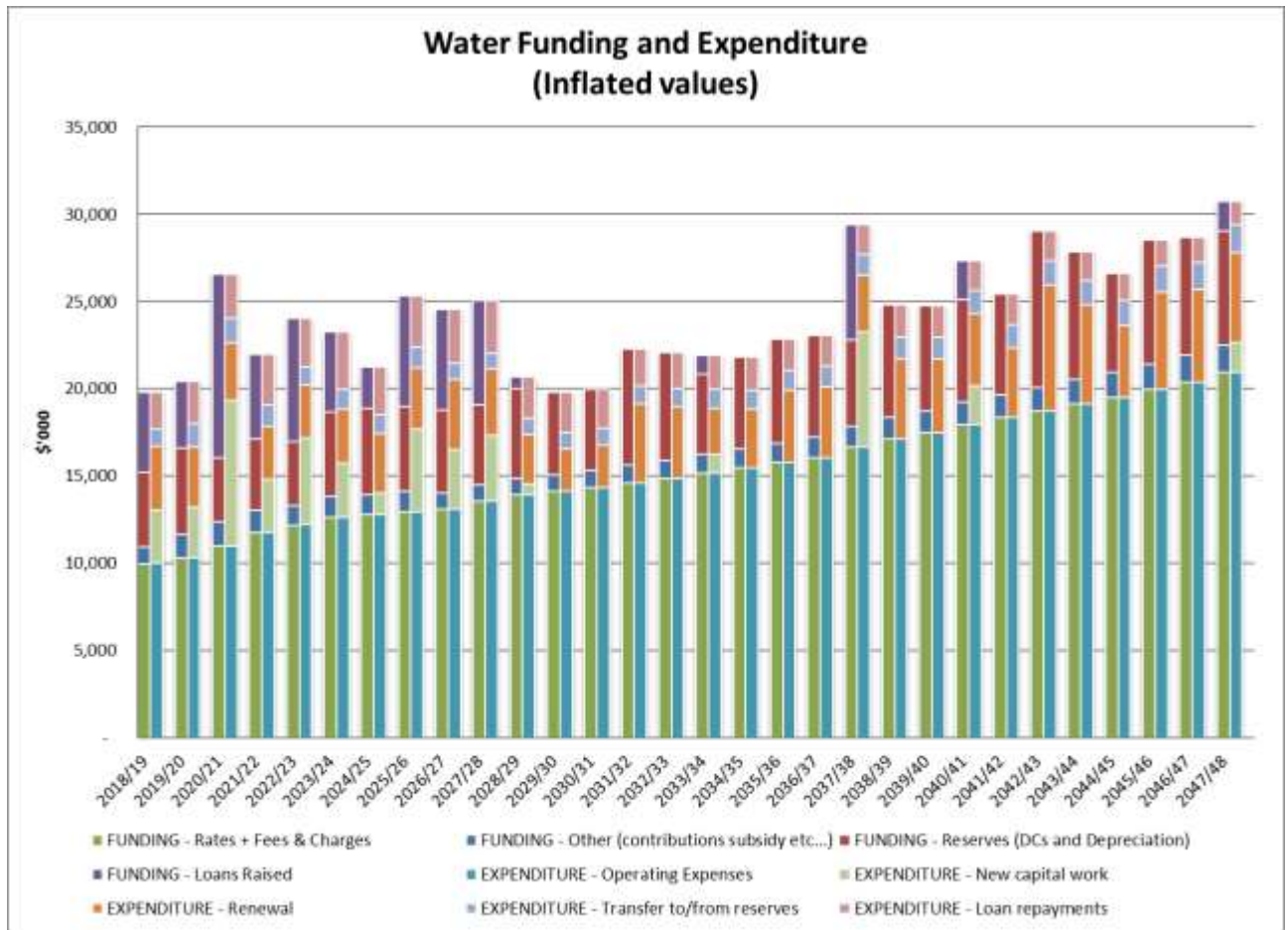


Figure 3 Water Funding and Expenditure (2018-2048)

New works

The significant portion of new works is associated with meeting drinking water standards compliance for 15 water supplies.

There will also be significant new works required to keep up demand on services due to growth. These type of projects include new reservoirs, treatment plant capacity upgrades, pipe works.

Renewal

Of the \$30.7 million dollars allocated to water renewals over the next 10 years approximately \$20 million is for water pipe renewals with the remaining being primarily treatment plants, and pump stations.

Operations & maintenance

Operations and maintenance costs are projected to average \$3.9 million per year for the next 10 years, which is 12% higher than the past 3 years. The increased operations costs are required to meet:

- Increased costs to operate and maintain more sophisticated treatment facilities.
- Increases in expenditure on network operations e.g. pipe flushing program and back flow protection checks.

Lifecycle Management Tactics

New works

All new works related to the treatment of drinking water to meet the Drinking Water Standards NZ (DWSNZ) has been moved outside of the 10 year funding plan due to financial constraints in last LTP. Council now has to reconsider the upgrade of the WTP at other water supplies within district.

Renewal

Council replaces asset when performance is unacceptable, based on criteria of: age, condition, service breaks and complaint volumes.

Operations and maintenance

The operational services team has a preventive maintenance programme to optimise the life of assets and reduce renewal costs.

Maintenance services for all three waters networks are provided by contract. The contractor is Downer and this contract is currently in year two of a possible 9 year contract.

Disposal

When assets no longer provide the required level of service, they are removed and, if possible, reused in Councils other schemes. For example, pumps that are no longer reliable under the pressure of providing water for Taupō township may still have useful life in a smaller water scheme.

Technical Notes

Risk management

Risk management is essential for management of Council assets so that essential services such as water supply can be provided consistently. Council imposes high health and safety standards for its plant and network, especially where water treatment plant or pump stations are built on low-lying land near lakeshores or riverbeds, or volcanic and/or seismically unstable areas lie just offshore. Using a likelihood and consequence matrix to assess risks, the following high risks have been identified:

- Public safety matters related to as inadequate water treatment
- Fire, damaging the reticulation network due to structural/electrical damage to the water treatment plants or pump stations
- Earthquake, damaging water treatment plants, and possibly also causing electrical or electronic failures, and/or structural and mechanical damage
- Flooding, making water treatment plants inaccessible or making them inoperative because of damage or tank contamination.
- Tomos, causing breaks in the reticulation system
- External contractor failure, leading to failures in the network, service failures, and /or drinking water standard failures

All of these risks have potentially serious consequences for the District's population, and for the District's economic wellbeing because they jeopardise the District's reputation and therefore, the visitor industry

Asset Management Practices

Council uses a range of decision making tools to establish its maintenance, renewal and new works expenditure, including: process, analysis and evaluation techniques for life cycle asset management; information systems to store and manipulate data; and data and information from a number of sources (technical, financial, customer service)

Plan Improvement Programme

Councils are required to have plan improvement programmes to improve their asset management planning. Council staff will continue to work through the various elements of the improvement plan.

International Infrastructure Management

The plan is an intermediate plan based on the requirements of the International Infrastructure Management Manual. This plan incorporates few recommendation in the last review carried out by Waugh Infrastructure Ltd.