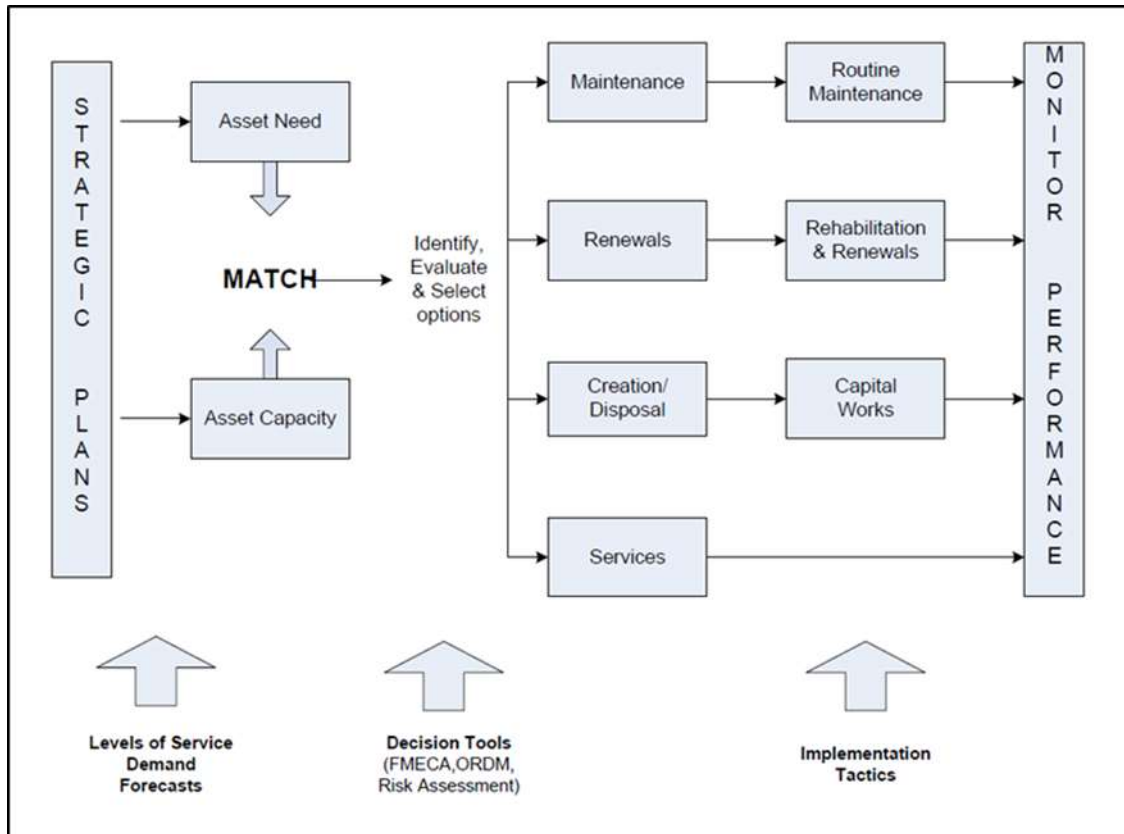


AMP Summary - Wastewater

Introduction

Taupo District Council provides wastewater services for 11 towns and communities in the District. This wastewater asset management plan enables Council to manage and demonstrate its stewardship of wastewater assets on behalf of its communities in order to provide those services cost-effectively, both now and into the future.

Figure 1: Asset Management Plan Process



Strategic issues

Council operates within the context of these strategic issues:

- Protecting public health – the primary purpose of Council owned wastewater systems are to protect the health of communities.
- Protecting our waterways from nitrogen flows and untreated wastewater. Council is responsible for reducing its nitrogen discharge into the Lake Taupo catchment by at least 20% by 2020, as part of the Lake Taupo Protection project.

Wastewater assets

Council's wastewater schemes include physical assets with a replacement value of \$182 million (August 2017). In addition, Council has 26 resource consents from Waikato Regional Council (WRC) to allow it to dispose treated wastewater, biosolids and control odour.

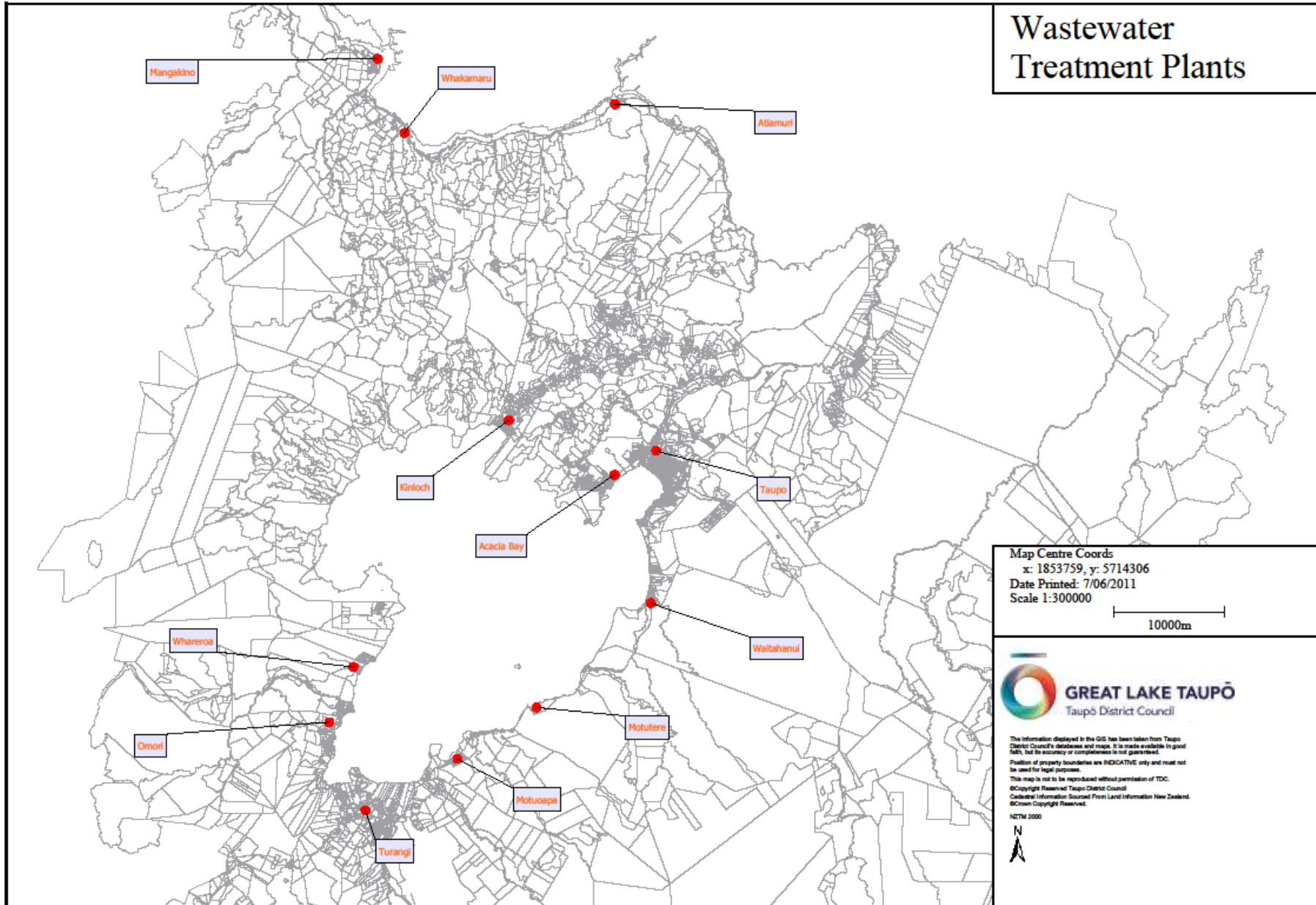
The schemes vary widely in size and age, and therefore in the technology they use. A list of the schemes is given below with a map showing their location on the following page.

Figure 2: Taupo District Wastewater Schemes

Scheme	No. of rateable properties (incl. empty sections)
Taupo Town	11,925
Turangi (incl Tokaanu)	2,318
Mangakino	772
Kinloch	1,133
Omori/Pukawa/Kuratau	1,193
Acacia Bay (incl Parawera Dr and Whakamoenga Point)	839
Motuoapa	539
Whareroa	200
Atiamuri	36
Whakamaru	60
Motutere motor camp	1

Snapshot of Wastewater assets data:

- 411 km of wastewater pipes
- Average age of wastewater pipes 32 years
- 118 wastewater pump stations
- 11 wastewater treatment plants
- 4 cropped land disposal systems
- Wastewater sludge disposal to vermicomposting process (worms)



Levels of service

Council originally owned and operated its wastewater assets as a public health service. More recently, environmental health and especially the health of lakes and waterways has been added as an objective of Council's wastewater services. Council provides a level of service that meets all of these measures:

- There is sufficient capacity to serve communities within current wastewater schemes
- Wastewater services do not cause public health problems
- Wastewater services are supplied continuously unless there is a system failure
- System failures are addressed in a timely fashion
- Odour control at treatment facilities requires certain upgrades in particular to Taupo, Acacia bay and Motuoapa WWTP to meet consent conditions.
- Users are satisfied with their sewerage disposal services
- Effluent discharge from treatment facilities meets WRC consent conditions

Council's objectives include preventing sewer overflows from pump stations and reticulation, preventing overflows into Lake Taupo, streams and rivers. Council has increased funding to provide more maintenance in this area and this discussion is included in the consultation document. The outcome of consultation may mean a review of the level of services related to sewer overflows.

State of the assets

Taupō Township

The Taupo township has adequate treatment capacity to cater for the current demands.

Council has recently upgraded the capacity of the Taupo Township's wastewater treatment plant (WWTP), beginning with a new trickling filter, a new digester and associated works (\$6 million - 2012). Any further upgrades will occur only when growth causes demand for services to exceed capacity or if resource consent requirements become more stringent.

Replacement consent applications for the emergency discharge (Taupo WWTP) and Rakaunui Road land disposal site; these new consents are yet to be finalised. The need to expand the disposal capacity needs to be maintained as growth occurs or consent conditions tighten.

Turangi

Council commissioned a substantial new wastewater treatment plant in Turangi in 2006. That system enabled Council to significantly reduce nitrogen discharges to the lake Taupo catchment. A significant effort has been made to improve the performance of treatment plant and full membrane replacement has occurred over the past few years. The discharge consent expires in 2018 and a new consent will be applied for in December 2017.

The network condition of the Turangi wastewater scheme is expected to be poor in certain areas. We are undertaking condition assessment work to help direct the future renewals program.

Mangakino

A large effort has gone into conditional assessment of the entire Mangakino wastewater reticulation system. The entire network was cleaned and condition assessment in 2017 and a significant short term renewal programme developed based on these inspections.

Acacia Bay

The Acacia Bay wastewater treatment plant was granted a new discharge consent in 2016 (20 year consent). The major requirement of the consent was to increase the soakage / disposal capacity at the site and this has been completed. The option to connect Acacia Bay to Taupo and decommission the plant was considered as an alternative. There are limitations with downstream capacity (control gate bridge siphon). The option to connect Acacia Bay to Taupo will be reviewed in the future. Any upgrade to the bridge siphon should consider the possible future connection of Acacia Bay to Taupo.

Kinloch

A new consent for the discharge of effluent from the treatment plant was issued in 2014. The permitted methods of effluent discharges to land include dripper irrigation lines and continued use of the existing trenches. There are several major projects scheduled for Kinloch over the new five years to keep up with growth and new consent conditions; effluent balance tank and pump station, drip irrigation and influent balance tank. There is also a requirement to improve storm water management to protect the treatment works during high rain fall.

Motuoapa

A new consent for the plant was issued in 2013 which has resulted into more stringent discharge conditions and requiring upgrade to the treatment facility. A new influent balance tank was commissioned in 2016 and is now working well after some initial commissioning challenges. There appears to be an issue with infiltration in to the network when the lake level is high and this requires further investigation.

Whakamaru

Following a new wastewater discharge consent being granted, a new wastewater treatment plant is scheduled to be commissioned in 2017/18. The new plant will reduce the mass of nitrogen being discharged from the site.

Others

Motutere, Omori and Whareoa all have active consent renewal processes at various stages of processing.

The Waitahanui wastewater treatment plant was decommissioned in 2016 with the waste now pumped to Taupo.

Demand forecast

The recent review of the Council's growth model (wastewater) projects at Council will receiving wastewater from a further 1,204 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.

Lifecycle Management Tactics

New works

A few new works are either completed or are at design stage to meet resource consent conditions and to provide for growth when it occurs or when public health factors mean a reticulated system is the most cost effective method for managing wastewater in a community.

Renewal

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

Operations and maintenance

Council has contracted out the maintenance of the wastewater networks (Downer). 2018/19 will be the third year of a 5 +2 +2 contract. CCTV is commonly used for identifying network issues and is being utilized more often. This activity also helps guide renewals planning. Operation and maintenance of treatment facilities is managed by TDC staff.

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
- A review of the level of service related to wastewater overflows has been signaled, additional funding is included draft LTP consultation document.
- The need to increase standards for wastewater treatment as resource consents expire.
- 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.

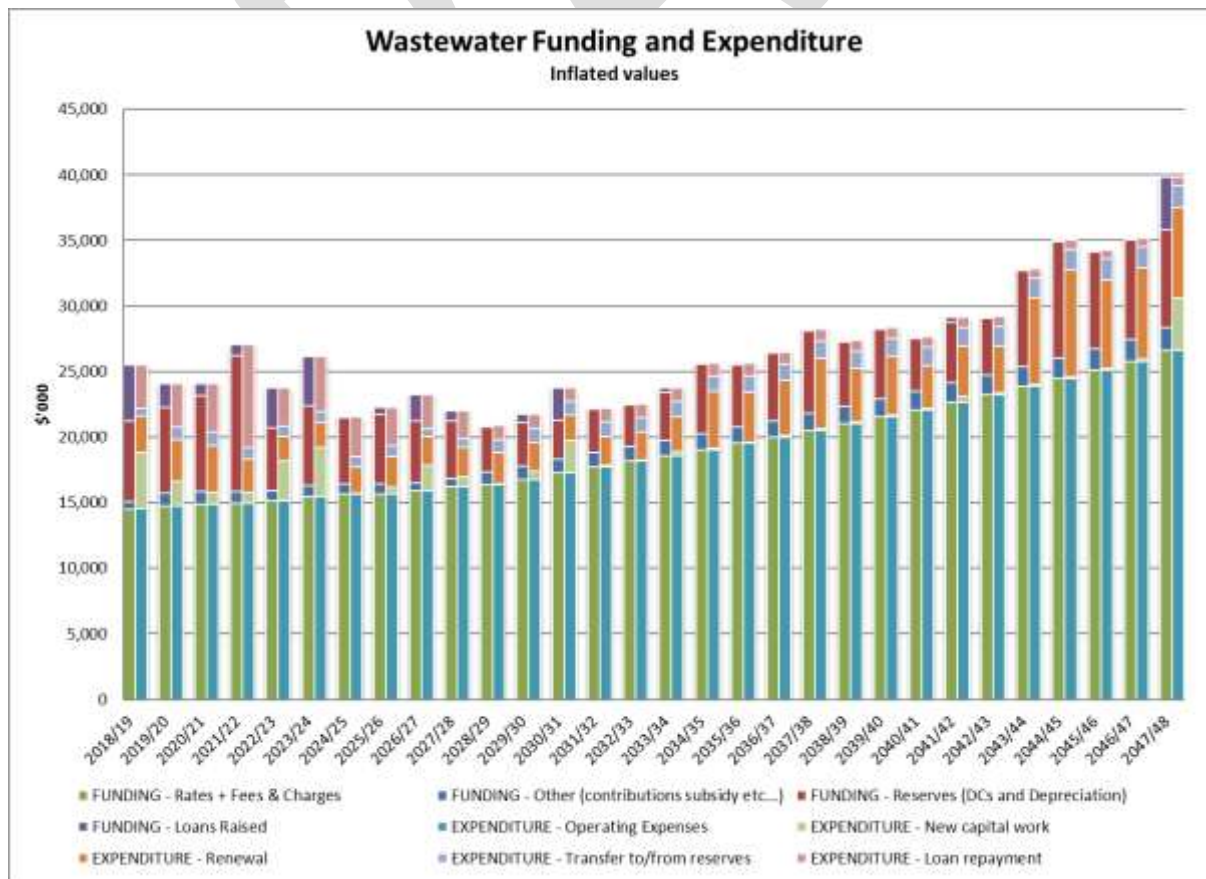


Figure 1 Wastewater Funding and Expenditure, 2018- 2048

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New Works

There are significant cost of new works over the next 10 years associated with servicing growth. Increasing capacity of wastewater treatment facilities and sewer mains.

There will also be significant new works required to meet resource consent conditions as environmental limits tighten: \$11.3 million.

Renewals

Of the \$22.4 million dollars allocated to wastewater renewals over the next 10 years approximately \$9.8 million is for wastewater network renewals that include majority pipework but also pumping stations. The more significant sum is \$12.6 million on wastewater treatment plant renewals.

Operation and Maintenance

Operations and maintenance costs are projected to average \$5.2 million per year for the next 10 years.

Technical Notes

Risk management

Risk management is essential for management of Council assets so that essential wastewater services can be provided consistently. Council imposes high health and safety standards for its plant and network, especially where wastewater 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:

- Fire – damage to the reticulation network or treatment system, due to structural or electrical system damage to pump stations, treatment plants or computer systems.
- Earthquake - damage to the treatment system due to failures such as electrical system failure, earth slip, mechanical failure, structural failure (e.g. buildings, control room, settling tanks, clarifiers, trickling filters, digester, belt press, etc.) and pipe fracture
- Caldera -
- Flood – making treatment plants inaccessible, and therefore, inoperable
- Tomos - damage to reticulation system
- Cyber attacks
- External contractor failure, leading to failures in the reticulation system, service failures, sewer overflows, and compliance failures
- Public safety matters such as open manholes, leaking pipes, inadequate wastewater treatment, exposure to open manholes, inadequate training

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 and data and information from a number of sources (technical, financial, customer service) 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. Council has replaced its AMS (AssetFinda) in 2016 to optimise the decision making process.

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 (IIM) Manual.