

Stormwater Summary

Introduction

Taupō District Council manages Stormwater to reduce the likelihood of harm to people and the environment. This asset management plan enables Council to manage and demonstrate its stewardship of Stormwater assets on behalf of its communities in order to provide services cost-effectively, both now and into the future.

Stormwater infrastructure provision in the Taupo district is different to most Councils as the stormwater network predominantly only drains roads with private property required to dispose on site up to a 1/10-year event.



Strategy

Council's Stormwater strategy is to manage flows for public safety and for environmental protection. From a strategic perspective, there are two major issues for Council to consider:

- 1 Councils are under increasing pressure from Regional Councils to improve stormwater discharge quality so that Stormwater does not have adverse effects on the environments where it falls and flows (especially outfalls to waterways). Stormwater is discharged – in some cases untreated – into our lakes, rivers and streams so the goal is to provide treatment where needed. Council commits resources each year to improving water quality to Lake Taupō and river environs, and we have sampling schedules and standards to test Stormwater for pollution from sewerage, heavy metals and other contaminants. In future, disposing of Stormwater directly to waterways without first improving its quality will be the exception rather than the norm.
- 2 Climate change is predicted to increase the severity of severe weather events including storms, so there will be more intense flows, more often. This increases risks to people, to communities and to the environment. Council's Stormwater Strategy (2009) took account of climate change impacts and addresses flooding, degradation of overland flow paths, degradation of Lake Taupō and aquatic environments, and public health and safety. For example, new property developments are now

required to have increased Stormwater capacity to ensure that additions to the system have sufficient capacity for increased flows.

- 3 The provision of accurate data on the condition of the underground pipe network is crucial to enable council to set the appropriate funding levels to maintain the current service levels.

Overarching Issues for stormwater

Stormwater discharge quality Improvement

Public safety /Over land flow paths

Changes to legislation

Comprehensive consent renewal

Three waters reform

Stormwater discharge quality Improvement

The avoidance of degradation of Lake Taupō and aquatic environments requires Council to make sure that Stormwater quality does not affect receiving environments. This is underpinned by conditions set in Councils comprehensive stormwater consent. (Section 30 Quality Improvement Program)

Stormwater quality will drive a large portion of Councils capital expenditure on Stormwater quality improvement devices, such as Enviropods and CDS units (Hynds Down Stream Defenders) and the use of best practise.

The long-term goal is to provide Stormwater quality improvement to all direct Lake and River discharges, and this will be achieved over time starting with the larger diameter outlets and working progressively through the network.

The current plan is to identify and treat Stormwater from pipe outlets 750 diameter and above as these outlets are discharging the largest containment load to receiving environments. Over time, this improvement program will focus on the smaller discharge points.

Stormwater quality from new developments is dealt with as part of the consent conditions by WRC, with developers now required to use a scoring matrix to make sure that there is enough improvement capability before Council receives the assets.

A large portion of the new development around the Taupo township with discharge road water only into a gully where ponds are used for detention and soakage, and large flows are able to slow bleed into the main gully. WRC are now also treatment at the road with the use of swales and rain gardens, it is yet to be proven if this approach will succeed in councils pumice soils.

Public Safety

The safety of the public has also set some design criteria around open stormwater systems for Council and developers in the future and has identified specific network reticulation issues such as inlets and outlets and their requirement for them to be safe.

Council will continue to monitor the reticulated network to identify manhole lids that are popping and look to either bolt them down or provide a grate on the top to allow flow to flow over land. This is to reduce the risk of people falling down the manhole after high rainfall events.

Councils comprehensive discharge consent also sets conditions that impact on how Stormwater services are delivered in the future, such as the requirement for Catchment Management Plans for green fields' developments as well as the ongoing monitoring program for stormwater quality.

Analysing the impacts of over land flow paths and providing possible solutions is also a key issue to ensure public safety. There are a number of projects listed in the AMP that identify

where properties are impacted and where additional analysis is required to determine possible solutions.

Funding for completing the overland flow path modelling is included in this Amp and will include modelling parts of the network that have an impact on overland flow paths.

Councils ongoing CCTV program enables real time updating of asset information with condition ratings determining future renewal and maintenance programs, as well as identifying any health and safety needs.

Changes to Legislation

The policy around Healthy Rivers, is still being developed, so this has not yet resulted in changes to maintenance, renewal or capital spend to date. But it is envisaged that rules around discharge quality could possibly change. Council, under the comprehensive discharge consent, undertake regular testing of discharge quality, and the breath of this testing may need to be increased to better support funding requirements in the future.

Also new contaminant discharge levels may require council to alter the current improvement program.

At this time, it is too early to determine what implications there will be from any legislation changes regarding discharge quality, so councils short to medium term planning will continue with the current quality improvement program.

Comprehensive Consent Renewal

Councils current consent expires in 2027 and it is currently unknown as to what additional conditions may be applied through any new consent, or how difficult it might be to obtain a new consent. Our rivers and lakes need to be swimmable and this will no doubt bring requirements regarding discharge quality.

Without knowing what these conditions might be it is difficult to determine a different capital program than that which has been put forward for quality improvement in the short to medium term.

There are a number of other councils set to have to renew their consents before Taupo, so council will have some good indicators as to what a renew might look like.

Three Waters Reform

With Stormwater being included in the reform discussions, it is likely in the future that Council may not be responsible for the asset outputs or funding requirements of the asset.

The current stormwater AMP ignores any reform discussions and is based on current objectives and funding requirements.

Council manages physical Stormwater assets with a replacement value of \$85 million (June 2017). Our physical Stormwater assets are listed below:

Asset function	Asset Type	Quantity now
Reticulation	Pipes	215 km
	Catchpits / Cesspits	799
	Standard Manholes	3853
	Catchpit manholes	14
	Lamphole	9
	Inlets	44
	Raised Manhole - Pond Inlet with debris screen	13
Stormwater quality improvements	Attenuation / detention ponds	38
	CDS Units	7
	Enviropods	220
Disposal	Unknown Outlet type	369
	Pond outlet with debris screen	46
	Pond outlet with wingwall & debris screen	11
	Lake Outlet	74
	River Outlet	62
	Gully Outlet	225

Asset data is continually being updated as developers divest new assets from developments as well as council receives data from contractors as they undertake maintenance. Data is also obtained from surveys such as CCTV programs.

Levels of Service

Council is responsible for Stormwater flows from public land, and Stormwater flooding on crown land, where private property is the responsibility of the owners. Council owns and operates its Stormwater assets so that it can manage Stormwater flows for public safety and for environmental protection. It provides a level of service that meets all of these measures:

- the Stormwater scheme minimises flooding
- Stormwater schemes minimise erosion from the Stormwater network
- Stormwater discharges are of sufficient quality when they enter receiving environments
- Stormwater services do not cause health and safety problems
- Stormwater services minimise risk of health problems
- The Stormwater network is operated within its consent requirements

Consents

Council's Stormwater consents are of primary importance: without discharge consents, the physical assets are of limited value. Council's Comprehensive Stormwater Discharge Consents from Waikato Regional Council (WRC) require Council to focus on:

- Stormwater quality
- ongoing monitoring
- providing appropriate infrastructure

Physical assets

The main Stormwater management issues relate to

- the need to increase our quality improvement mechanisms
- the need to identify overland flow paths
- maintenance of outfalls especially into Lake Taupō when lake levels are high
- a change in practice from underground reticulated systems to above ground open systems, which are easier to maintain but have higher maintenance costs.
- Maintenance of the underground network to maintain performance
- Maintenance of ephemeral gullies and areas of possible erosion

Demand forecast

The growth model projects growth in new properties, with the majority in and around the Taupō Township.

Developers are responsible for providing Stormwater in new sub-divisions, so residential growth in the District would only have a major impact on demand for Council's Stormwater services if Council funding policy changed.

Developers must also provide for capacity of the downstream network when increasing the flow into the network.

New developments are encouraged to provide above ground solutions to Stormwater quality and velocity.

Lifecycle management tactics

New works

New works are planned to provide increased network capacity (overland and reticulated) and to improve the quality of Stormwater discharges to the Lake and rivers in the district.

Renewal

Council replaces assets when performance is unacceptable, based on criteria of: age, condition, service breaks, complaint volumes and criticality. Due to the age of the network and from observations through the CCTV program the network is in fairly good shape with only minor renewal works needed.

Operations and maintenance

The operational services team has a preventive maintenance programme to optimise the life of assets and reduce renewal costs. Maintenance services, including above and below ground assets, are provided by contract (currently Downers).

Council will continue to undertake condition and performance assessments of the underground and above ground network, which includes pipe cleaning, and the removal of sediment as well as inlet and outlet maintenance.

Disposal

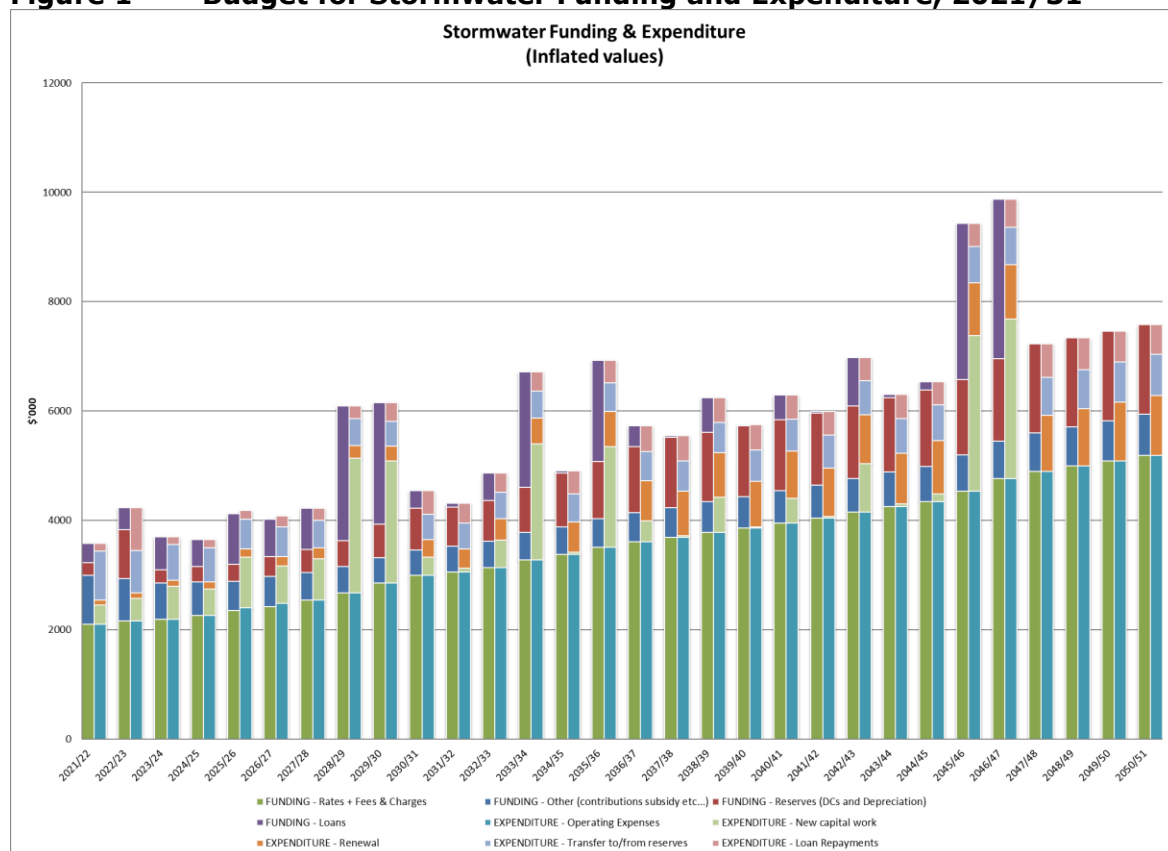
Disposal of assets is not expected to be required over the next ten years.

Financials

The thirty-year financial forecast for Stormwater services was determined by evaluating current maintenance and renewal plans for each set of components (pipes, outlets, ponds etc) and identification of new works. The ten-year projections are summarised in

Figure 1 below.

Figure 1 Budget for Stormwater Funding and Expenditure, 2021/31



New works

Capital expenditure averages \$933,000 per year over the ten-year period, for improvements to network capacity and discharge quality.

Renewal

Renewal costs vary according to the age and performance of the plant and network. Council has undertaken a comprehensive condition assessment program for the outlying districts and the pipe network while showing its age is in a generally good condition. Cleaning and pipe condition assessment are programmed to continue. Expenditure averages \$151,000 per annum over the ten-year period.

Operations and maintenance

Operation and maintenance costs are projected to have an average cost \$453,000 per year for the next 10 years.

Technical notes

Risk management

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

- Fire, causing electrical or structural damage to the system, including the reticulation network
- Volcanic eruption, with the pipe and overland flow path networks blocking
- Earthquake, damaging the reticulation network and reducing the capacity of the network
- Tomos, causing breaks in the reticulation system, or diverting overland flow paths
- External contractor failure, leading to failures in the network, service failures, or other consent condition failures
- Illegal disposal of contaminants into system, by firms or individuals
- Excessive costs to maintain, renew or create assets - Failure to comply with resource consents -
- Public safety matters such as open manholes or non-grilled inlets and outlets

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

Council has undertaken a criticality assessment to enable Council to identify the most critical Stormwater assets, which enables council to focus on where the Stormwater network will require additional maintenance and renewal expenditure.

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, asset database).

Council's new 'Three Waters' asset management system, Asset-Finda can incorporate asset condition, assessments, criticality, age as well as past maintenance history to help determine future maintenance and renewal funding.

Asset-Finda is also used to log system faults and determine monthly contract payments

Plan improvement programme

Councils are required to have plan improvement programmes to improve their asset management planning, and we will continue to implement our improvement plan.

International infrastructure management

The plan is an intermediate plan based on the requirements of the International Infrastructure Management Manual.