



Appendix 3: Infrastructure strategy



GREAT LAKE TAUPŌ
Taupō District Council

**Taupō District Council's
Long-term Plan 2024-34**

Purpose and executive summary

1. Council manages significant three waters and transport infrastructure on behalf of the community. Most of this infrastructure has a long life, typically many decades. While the Long-term Plan provides Council's delivery plans for the near future¹, this infrastructure strategy ensures that this planning is done within the context of ensuring sensible, efficient and sustainable management of three waters and transport infrastructure for the long term.
2. The Long-term plan additionally sets out several community outcomes which our infrastructure assets are critical in supporting these outcomes can be found on page 08 of the LTP.
3. This strategy aims to demonstrate that Council is carefully managing these assets by setting out how Council will ensure it meets these objectives:
 - Assets are well looked after and in good condition for future generations [Page 5](#)
 - We are planning and investing to support growth and housing development [Page 12](#)
 - We are maintaining levels of service and improving public health and environmental outcomes [Page 22](#)
 - We are managing natural hazard risks to ensure our infrastructure is resilient [Page 33](#)
4. This strategy also sets out the major infrastructure challenges that we expect to face over the next 30 years, the options for addressing these, and when important decisions will need to be made. These are:
 - Identifying a northern access solution [Page 16](#)
 - Managing wastewater north of the Waikato River [Page 19](#)
 - Improving the disposal of wastewater in Tūrangi [Page 29](#)
5. This strategy also sets out 30-year planned revenue and expenditure. [Page 35](#)

¹ The next 1 - 3 years in some detail, and then indicative plans looking out 10 years.



Scope is limited to three waters and transport infrastructure

6. This strategy sets out how Council will manage the community's infrastructure relating to:
 - Water, wastewater, and stormwater **Including treatment plants, pipe networks, and disposal systems**
 - Transport **Including local roads, bridges, footpaths, streetlights, cycle paths, road signs and bus shelters, and roads that are used for stormwater management.**
7. For the areas of solid waste, parks and reserves, and community buildings and facilities, the long-term plan sets out the objectives and investment plans for the next 10 years, and we have long-term asset management plans for each area that underpins these investment plans.

Alignment between financial and infrastructure strategy

8. Prudent asset management and prudent financial management go hand in hand. Identifying investment needs must be paired with identifying appropriate and sustainable funding arrangements.
9. Our financial strategy includes several measures to ensure sustainable and prudent financial management to support the additional investment identified in this infrastructure strategy. Additional investment is being driven by increased renewals and maintenance requirements, higher growth expectations, improvements to meet new legislative requirements, and improvements to ensure the resilience of our essential services. Measures identified in the financial strategy include:
 - Funding 100 percent of depreciation.
 - Using development contributions and development agreements to fund growth projects (noting there are still debt impacts)
 - An increase in Council's debt allowance from 225 percent to 250 percent of annual revenue, to recognise increased growth.
 - Signalling higher levels of rates increases for the short term, and funding voluntary debt repayments and depreciation reserve top-ups throughout the 10-year period, to ensure future generations are not funding the eventual replacement of the assets used by current ratepayers.

- Rationalisation of Council’s discretionary capital projects, a focus on increasing third party funding opportunities, and improved management of financial assets.
 - Planning for unexpected events by ensuring financial sustainability over the long term, maintaining sufficient debt headroom, and prudent management of Council’s investments. Council uses the assets of the TEL Fund as self-insurance for underground assets, avoiding the challenges of underground insurance and significant insurance premiums on these assets. Council also maintains a disaster recovery reserve as another element of planning for unexpected events, such as natural disasters.
10. Council’s budget is under pressure. The effects of the prolonged period of inflation and subsequent interest rate rises, looking after community infrastructure and paying for things like insurance mean that the services our community relies on us for are costing more than ever.
 11. Council in its long-term plan has made some hard calls on what to deliver in the next 10 years. We have thought carefully about the challenges we face and agreed we must prioritise our core services - providing safe drinking water, protecting our environment and looking after our infrastructure so our children and their children aren’t unnecessarily burdened in the future.
 12. Our number one responsibility is do the essentials well. This means continuing to invest in our infrastructure so that our pipes, water networks and roads remain in good shape. We must also plan for future growth and build resilience for the effects of climate change. We’ll continue to take a partnership approach across the projects and activities that are important to iwi and hapū.
 13. We’re focusing primarily on the basics over the next few years. This means that the areas of focus for this infrastructure strategy remain priorities and have not been reduced to meet affordability constraints. Instead, our more discretionary investment plans - like some of the projects that will improve our places and spaces will have to wait until a bit later.
 14. One area where we have to make an adjustment from the original goals was for water pipe renewals. Affordability concerns, particularly with debt levels, and the levels of funding available in depreciation / renewal reserves for water, means that council has revised its water renewal programme over a longer timeframe, expecting it to take around 15 years to clear a backlog of renewals rather than 10.

Assets are well looked after and in good condition for future generations

TIMELY RENEWALS REMAINS A TOP PRIORITY FOR COUNCIL

15. Keeping on top of renewals and making sure that the community's assets are maintained in good working condition remains a core responsibility and top priority for Council.
16. We have a reasonable knowledge of the condition of our assets, and we have a plan to continue improving that knowledge over time. Our stormwater pipe network is relatively new and in good condition. Our wastewater network has some older asbestos cement pipes that need renewal. For these two areas, there is a stable programme of renewals planned to deal with the older parts of the networks. For our transport and water pipe networks, we have a major increase in renewals programme planned:
 - Despite condition assessments not identifying significant problems, frequent failures of asbestos cement water mains means that we are planning to replace all these pipes with a ramped-up programme of renewals over the next 10 to 15 years.
 - Our roads continue to hold up beyond their expected lives because we have free-draining pumice soils that support a longer pavement life. However, increased heavy vehicle traffic has put increased pressure on the network, and our roads remain at risk of micro-cracking allowing water to infiltrate the pavement, causing pavement failure. We have identified the need for a step change increase (doubling) in reseal renewals to protect our roading network and avoid more costly deterioration.
17. In total, our waters and transport renewal programme will increase from \$13.6 million a year (2023/24 Annual Plan) to \$24.1 million a year on average over the next 10 years.

ASSET MANAGEMENT PLANNING

18. Asset Management Plans (AMPs) have been developed for water, wastewater, stormwater, and transportation to inform Council's Long-term Plan. AMPs combine management, financial, engineering, and technical practices to ensure assets are managed in an affordable, efficient, sustainable and effective manner to deliver service levels at the lowest long-term cost to the community – including both current and future generations. AMPs demonstrate that Council is managing the community's assets responsibly by:
 - Demonstrating service level options and standards.
 - Identifying minimum lifecycle (long term) costs for an agreed level of service.
 - Providing and forecasting asset management options and costs.
 - Demonstrating the management of the risks of asset failure.
 - Improving decision making based on identifying the costs and benefits of investment and delivery options.
 - Providing clear justification of forward works programmes and funding requirements
 - Ensuring accountability over the use of public resources.

SUMMARY OF ASSETS

AREA	MAJOR ASSETS	EST. USEFUL LIFE	VALUE OF ASSETS ²	CONDITION	OVERALL ASSET DATA CONFIDENCE RATING ³
Transport (excluding land)	762 km of sealed road	3 – 20 years for seals (top surface) 45 – 65 years for pavement (base)	\$500 million	38% of chip seal roads are 16 years or older. The advanced age is due to deferred renewals based on limited funding and low signs of road distress. Pavement is in good condition, many that are past their expected design life are still in good condition and only those experiencing additional loadings are showing signs of failure.	Not assigned
	51 km of unsealed road				
	395 km of paths	30 – 80 years			
	19 road bridges	60 - 100 years			
	81 large culverts	50 – 80 years			
Water – pipes (reticulation)	645 km of pipe 376km PE and PVC 259km AC and Galv 9.5km Other	45 – 120 years	\$149 million	Water reticulation age and condition across the District is variable. There remains significant quantities of asbestos cement and galvanised pipelines estimated to be beyond their useful life. The current construction backlog value is estimated at approximately \$26M. Asset Condition Data is at a C confidence rating	A – B
	20 Pump Stations	20 – 60 years			
Water – treatment plants	18 Treatment plants	10 – 80 years	\$62 million	Treatment assets are continually assessed, and asset condition updated in a live document. Renewals programmes are updated based on this annual assessment. Overall asset condition for the treatment plants is Good. Asset Condition Data is at a C confidence rating	A – B
Wastewater – pipes (reticulation)	510 km of pipe	65 – 120 years	\$198 million	Average asset age is 37 years, Inflow and Infiltration is the primary issue across the network. Asset Condition Assessment is at a C confidence rating	A
	124 pump stations	20 – 60 years			
Wastewater – Treatment plants	11 treatment plants	10 – 80 years	\$130 million	Plants performing well, many need nitrogen analysers installed to be optimised further and some plants require increased capacity to meet growth demands. Asset Condition Data is at a C confidence rating	A – B
Stormwater	220 km of pipes	50 – 120 years	\$124 million	Majority of pipes are due for renewal in 26-30 years based on EUL. Based on condition assessments the network is overall very good and assets are expected to meet or exceed their designed life. Asset Condition Data is at a B confidence rating	A – B
	3 pump stations	20 – 60 years			
TOTAL			\$1,162 MILLION		

² Estimated replacement cost

³ Based on Audit New Zealand overall assessment of key infrastructure activities

Asset data confidence ratings are based on those provided in the International Infrastructure Management Manual. These categories are:

A	Highly Reliable	Data based on sound records, procedure, investigations and analysis, documented properly and recognised as the best method of assessment. Dataset is complete and estimated to be accurate $\pm 2\%$
B	Reliable	Data based on sound records, procedure, investigations and analysis, documented properly but has minor shortcomings, for example some data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate $\pm 10\%$
C	Uncertain	Data based on sound records, procedure, investigations and analysis, investigations and analysis which is incomplete or unsupported or extrapolated from a limited sample for which grade A or B data is available. Dataset is substantially complete but up to 50% is extrapolated data accuracy estimated $\pm 25\%$
D	Very Uncertain	Data is based on unconfirmed verbal reports and/or cursory inspection and analysis. Dataset may not be fully complete, and most data is estimated or extrapolated. Accuracy $\pm 40\%$
E	Unknown	None or very little data



COUNCIL'S CONDITION ASSESSMENT PROGRAMME

19. When our infrastructure assets get old or worn out, we need to replace them to keep services running, maintain service levels, and avoid failures. Undertaking these renewals at the right time, and not too early will maximise the use of assets, and the investment that we have in our infrastructure. Doing it at the right time, and not too late will avoid our infrastructure failing, interrupting services to the community, and resulting in expensive repairs.
20. Generally, there is an expected minimum useful life for an asset, however Council undertakes a condition assessment programme to identify the actual current performance and condition of assets, and the risk of asset failure, which are used to determine Council's asset renewal programme.



AGE AND CONDITION OF ASSETS

Transport

21. Over the last three years we have undertaken a thorough pavement condition assessment of our entire road network alongside our three-yearly Deighton Total Infrastructure Management System (dTIMS) modelling exercise. A key concern has been micro-cracking of the pavement surface which is not a trigger in dTIMS, but which can allow water in and swiftly deteriorate the road subsurface. A complete external validation through a visual assessment has been undertaken to identify our reseal needs, that were not previously picked up by traditional condition assessments focused on rutting, cracking, and potholes.
22. We have a strong understanding of our reseal and rehabilitation renewal needs over the next 10 years with a renewal programme built around high volume and critical routes and critical-risk, high-risk, medium-risk, and low-risk treatment sections. We have identified the need for a step change increase (doubling) in reseal renewals to protect our roading network and avoid more costly deterioration. Around 70 percent of our planned renewals programme is preventative reseals. This work is critical to prevent water ingress and to avoid higher costs of complete road rebuilds in future. Around 30 percent of our renewals programme is for rehabilitation due to road failure (where the substructures of the roads have already deteriorated).
23. While we have very good information on pavement renewal needs (our largest risk), over the next 5 - 10 years we will focus on improving our knowledge of the condition and renewal needs for:
 - road drainage and stormwater assets
 - roading structures (like bridges and retaining walls).

Water

24. We have progressively increased our water renewals funding over the last two Long-term Plans, but further increases are needed. We have a large backlog of water pipe renewals that need to be urgently addressed. Asbestos cement and galvanised water mains were laid in the 1950s, 60s and 70s and are at the end of their life. The asbestos in these pipes is not considered a health risk, however these pipe types are more fragile and prone to spontaneous failure (pipe bursts) when they get to the end of their life. We currently experience frequent pipe bursts and failures in affected areas. These older pipes represent approximately 40 percent of the network. We are planning a significantly increased programme of water pipe renewals to replace all these pipes and clear the backlog. This catch-up programme will take around 10 to 15 years to complete, after which we will be ahead of renewals – replacing pipes before they reach a high risk of failure.
25. Renewals spend requirements will reduce significantly once the asbestos and galvanised steel water mains are replaced. Operational budgets will also be able to be reduced due to the expected reduction in pipeline failures. Annual renewal budgets in the future will be able to be set proactively to target pipe replacements prior to end of life.
26. While we have good information on our water pipe network condition and renewal needs, over the next 5 – 10 years we need to focus on improving our knowledge of the condition and renewal needs for our water treatment plants, this data is currently incomplete and sits outside of Council's primary database (Assetfinda).

Wastewater

27. We have undertaken a programme of condition assessment for our wastewater pipe network, primarily using CCTV inspection and targeting our older areas of the network, such as Tūrangi and Mangakino (both hydro construction towns largely built in the 1970s and 1950s respectively). We have also undertaken a programme of relining works where required to extend the life of the network.
28. We have identified a reasonably steady programme of pipe renewals needed over the 20 years of around \$1.5 to \$2 million (today's dollars), there will then be a significant increase in pipe renewals around 2045 – 2050.
29. Continued collection of asset information on our wastewater pipe network condition remains a priority and targeted renewals will be completed based on the data collected. We also need to focus on improving our knowledge of the condition and renewal needs for our wastewater treatment plants, this data is currently incomplete and sits outside of Council's primary database (Asset Finda).

Stormwater

30. Council's stormwater reticulation network is a combined network of pipes, gullies and overland flow paths (including roads) which are relatively new as much of the district's urban growth has occurred within the last 30 – 40 years.
31. Most stormwater assets have an expected age of in excess of 100 years. Based on recent condition assessment of some of the older assets (35 percent of assets), it is anticipated that the majority of our stormwater assets will meet or exceed their anticipated design lives.
32. Additional condition assessments are required to further refine our renewal profile especially as the pipe networks within Tūrangi and Mangakino (both hydro construction towns) are nearing the end of their predicted life.



SIGNIFICANT RENEWALS PROJECTS, ISSUES AND MAJOR UPCOMING DECISIONS

Major renewals programmes to address aged assets⁴

33. This Long-term Plan provides funding for programmes of renewals works. The main options are how quickly we complete this work - balancing realistic implementation constraints against the risks of delaying renewals as discussed earlier in this section. Renewals are funded by depreciation reserves and supplemented with rates funding and borrowing when necessary.

• Water renewals	\$100.3 million	2024 - 2034
• Transport renewals	\$94.8 million	2024 - 2034
• Wastewater renewals	\$43.8 million	2024 - 2034
• Stormwater renewals	\$2.1 million	2024 - 2034
• TOTAL (\$24.1 million per year)	\$241.1 million	2025 - 2034

34. Timely delivery of the renewals programme will be a key focus for Council. We believe that the programme we are planning is deliverable, however we are limited by factors outside of Council's control, such as contractor and materials availability. Renewals will continue to be planned and managed on a risk-based approach, where the most important and urgent renewals are prioritised. The risk of delays to delivery of the renewal programme could lead to continued risk of failures and continued risks to service levels. Delays to preventive renewals and maintenance could also result in increased cost for subsequent repairs.

⁴ All figures are inflation adjusted.

ENSURING FINANCIAL PROVISION FOR FUTURE RENEWALS

35. Council's Financial Strategy includes that Council funds 100 percent of depreciation of its assets over the asset's lifecycle.⁵ This means that revenue is collected to cover the cost of depreciation to ensure that today's ratepayers pay their fair share for the council's assets that they consume, essentially through wear and tear.
36. Depreciation revenue is set aside in a separate fund (depreciation reserves), which is used to fund the asset renewal programme and to pay off debt associated with capital improvement projects. Should there be a shortfall in depreciation reserve funds, Council will need to raise debt to fund these renewal programmes to ensure that it meets the levels of service agreed with the community. Maintaining prudent financial management and credit is important to support future generations to be able to borrow for such renewals.
37. How renewals will be matched by funding is provided in the final section of this strategy: [Planned revenue and expenditure \(Page 35\)](#).

⁵ 49% for transport assets, reflecting NZ Transport Agency funding for 51% of renewals.

We are planning and investing to support growth and housing development

COUNCIL'S STRATEGIC APPROACH TO SUPPORTING GROWTH

38. Council has a growth management strategy, Taupō District 2050 (2018), which identifies the growth areas that Council is planning infrastructure for. The strategy can be accessed at www.taupo.govt.nz/council/plans-and-strategies/district-strategies
39. It provides for multiple growth areas (in the north and the south) in Taupō concurrently. While this has increased growth infrastructure costs compared to phasing development area by area, it aims to promote competition and choice, to support lower section and house prices.

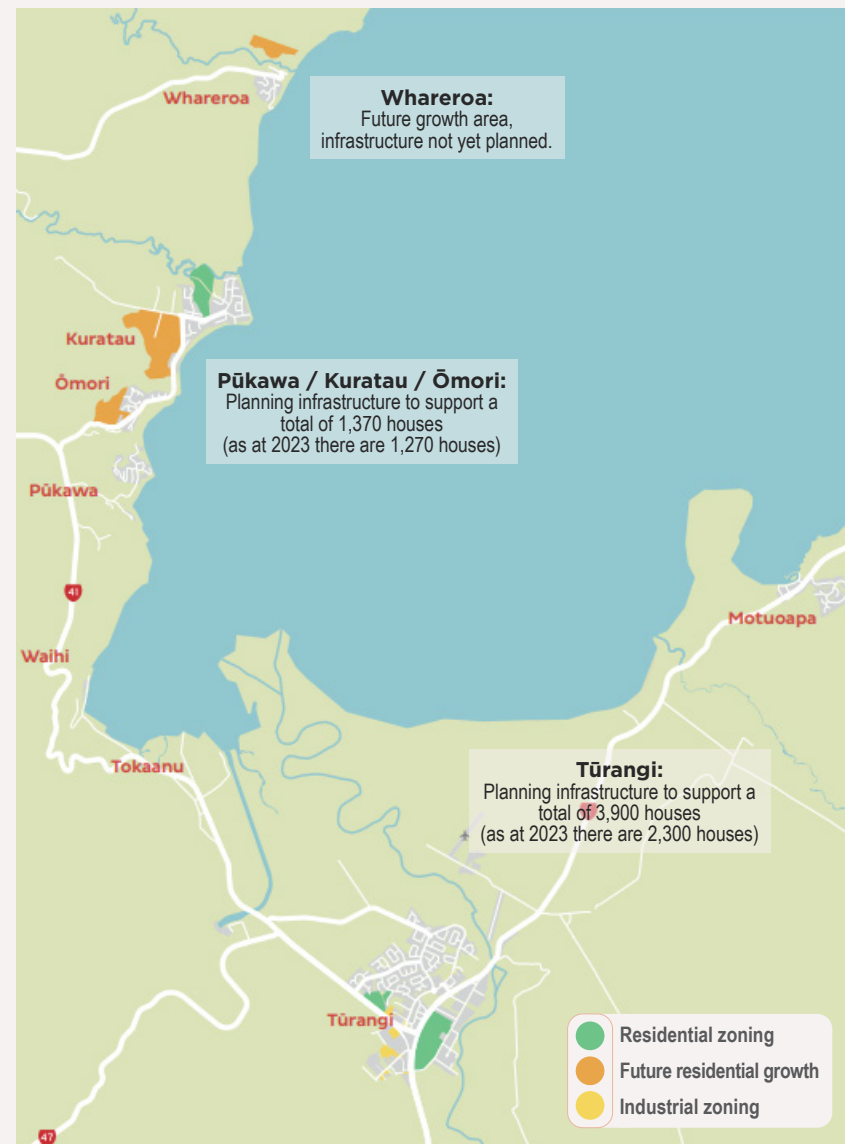
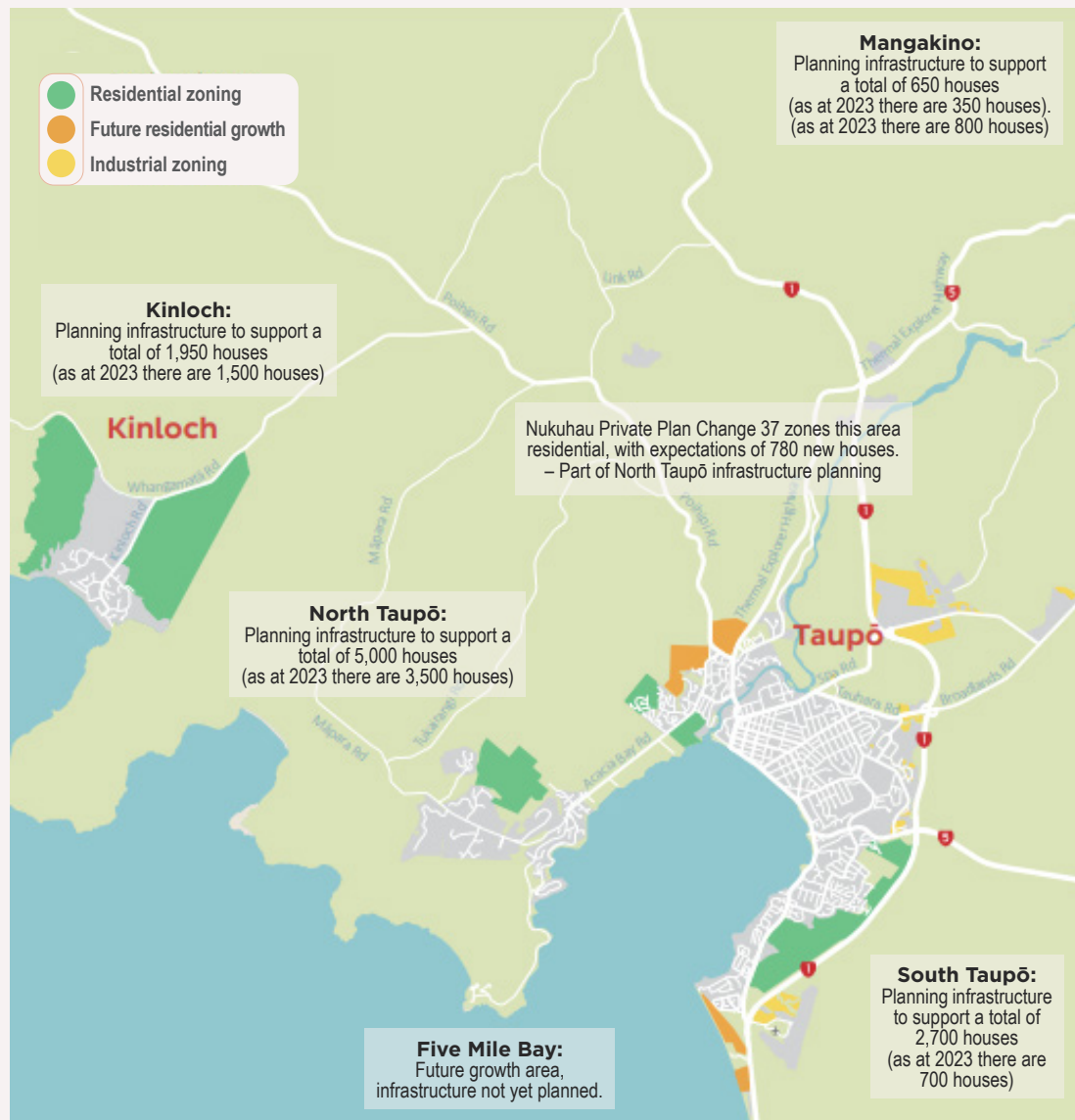
ENSURING THERE IS ENOUGH LAND ZONED FOR HOUSING AND PLANNING INFRASTRUCTURE FOR GROWTH

40. Council developed a new growth model in 2022, based on the latest district data. Growth assumptions can be found in the Long-term Plan significant assumptions. Specific growth areas include Taupō, Kinloch, Tūrangi, Mangakino, with an allowance for growth in our rural areas and smaller settlements.
41. The *National Policy Statement on Urban Development (2020)*, provides a framework for ensuring that Council's zone land and build infrastructure to support growth. The below table uses this framework and Council's new medium growth projections to demonstrate that Council has zoned and is providing sufficient infrastructure to support housing and growth.

TIMEFRAME	DISTRICT PLAN ENABLED	INFRASTRUCTURE-READY	TAUPŌ URBAN AREA (INCLUDING KINLOCH)	
			PROJECTED GROWTH	CAPACITY
Short-term (within the next 3 years)	Zoned in an operative district plan	Adequate existing infrastructure in place	700 houses	1800-2000 houses
Medium-term (3 - 10 years)	Zoned in a proposed plan	Funding is identified in a Long-term Plan	1,900 houses	4,730 houses ⁶
Long-term (10 - 30 years)	In a development strategy	Identified in an infrastructure strategy (or AMP)	7,000 houses	Not yet planned

⁶ This number excludes infills which will provide additional capacity, some minor local infrastructure may be required to enable developments in Taupō North however major assets are already ready or will be ready through the Long-term Plan to meet medium term demand.

GROWTH AREAS WE ARE PLANNING FOR



MANAGING PEAK POPULATION

42. Taupō District is a holiday, visitor, and events destination. We have a large proportion of holiday houses. On long weekends, event weekends, and holidays the population of the district can increase dramatically. Our infrastructure must be able to cope with this increase in demand, in particular water, wastewater and transport.
43. Council growth and capacity planning focuses on providing sufficient services to cater to all houses, and commercial accommodation – for when they are occupied in peak periods, even though many of these may not be occupied for much of the year. For this reason, planning based on houses and peak periods provides a better basis than planning based on usually resident population estimates and projections.
44. Using houses has some shortcomings, with the number of occupants at peak periods being unknown. We cannot always fully provide capacity for peak population, and at peaks times there will be a reduction in service levels, in particular:
- traffic congestion at peak times and peak period
 - gardening water use restrictions.

SUPPORTING MĀORI ASPIRATIONS FOR MĀORI LAND

45. Taupō District Council is currently working on a Future Development Strategy. This is a revision of our existing growth strategy, Taupō District 2050. Part of the requirements for Future Development Strategies is that development aspirations of iwi and hapū are outlined. We are currently in the process of working through articulating these aspirations with iwi and hapū partners. In the meantime, there is also specific project work underway through the District Plan including revision of papakainga provisions and the development of a Māori Purpose Zone. Planning assistance is also being provided to some specific Māori landowners to help work through appropriate development opportunities and options.

SIGNIFICANT GROWTH PROJECTS, ISSUES, AND MAJOR UPCOMING DECISIONS

46. Major planned growth projects are⁷:

• Northern Access solution	\$76.9 million	2029 - 2031 (construction)
• Kinloch and Taupō wastewater treatment plant and reticulation upgrades	\$14.1 million	2024 - 2027
• Water reservoirs	\$15.0 million	2024 - 2034
• Water meters	\$12.5 million	2027 - 2037 (for existing properties)
• Other water capacity upgrades	\$10.0 million	2024 - 2032
• Taupō North wastewater solution	\$10.5 million	2028 - 2031

⁷ All figures are inflation adjusted.



FUNDING FOR GROWTH

47. Council has a policy that growth pays for growth. The growth share of any project that provides extra capacity to support new housing development and growth is recovered from a charge on each new development. This policy supports Council to invest in infrastructure required to allow growth, without that cost and burden falling on the existing community. See Council's Development Contribution Policy for more details.

FUTURE SIGNIFICANT DECISION	APPROXIMATE SCALE OF COST	WHEN DECISION IS EXPECTED
<p>Measures to reduce high water use in Taupō</p> <p>Council has capacity to treat and provide up to 35 million litres per day of water to provide to the Taupō community. We currently use around 30 million litres per day and expect to reach our limit in the next 5 - 10 years. We are unlikely to be granted consent for any additional water. At this point, for the community to continue to grow we will have to improve our water use.</p> <p>Water meters are expected to be a key instrument to both:</p> <ul style="list-style-type: none"> • identify water leakages (with estimated water savings of up to 10 percent) • allow for charging for water so that water is used more efficiently and available for the most important uses (with estimated water savings of up to 27 percent of peak demand). <p>The alternative option would be for increases in plant capacity, which could increase water capacity but would not resolve limits on our water take resource consents. The cost and low likelihood of getting additional water take consent without demand management measures in place means that these are unlikely to be preferred options.</p>	<p>\$12.5 million, primarily funded through development contributions (with the objective of supporting growth).</p>	<p>Water meters are already installed with new builds.</p> <p>We are currently planning for the installation of water meters on existing houses between 2027 -2030. This plan would be confirmed, and any decision to charge for water would be identified as part of the next Long-term Plan in 2027.</p>

Infrastructure Challenge: Identifying a Northern Access solution

WHAT'S THE ISSUE?

48. Council has been planning a northern access solution, including a second bridge in Taupō town, for some time. In the last Long-term Plan (2021), the bridge was planned to be built in 2033, with funding set aside based on a very high-level cost estimate.
49. Since 2021, Taupō has experienced significant growth. Much earlier than anticipated, traffic volumes have already reached the level when a new bridge and supporting works were expected to be needed. This means that the current twolane Control Gates Bridge is already at capacity and performance already reaching Service levels E and close to F at peak times. Service level F is described as the free flow speed of a corridor reaching 100 percent of saturation flow or greater with potential for complete failure of the network to operate.⁸
50. Resolution of this issue is required to allow continued growth in North Taupō. Recently-zoned residential land for 780 houses has been granted permission to build only some of these houses until the problem further explored and resolved.
51. Since 2021, Council has also undertaken further modelling and assessment to:
 - identify the most likely bridge location options, and more advanced cost estimates.
 - identify subsequent intersection improvements needed to support increased traffic flows and prevent the congestion problem simply shifting to a new location.
52. There is still significant uncertainty, and a decision is planned on the final design and location of the bridge in 2027 to allow construction in 2030 - 2031. At this point we are at concept stage, and budgeting in the Long-term Plan for the more costly of the two mostly likely design and location solutions – so that when we are in a position to begin construction, we are financially set up to do so. We have asked for the bridge project to be included in the Waikato Regional Land Transport Programme, to make it eligible for NZTA funding. If approved for funding, it would be eligible for 51 percent funding, reducing Council's cost to 49 percent.
53. The Control Gates Bridge is a major arterial transport link in Taupō town, providing the primary connection across the Waikato River. Currently, the Control Gates Bridge is owned and operated by Mercury Energy as part of the Lake Taupō and Waikato River hydro power system. Taupō District Council owns the top surface of the bridge for transport purposes. The Control Gates Bridge was built in 1941. Council is planning to work with Mercury Energy in the next three years to identify the renewal and future plans for the bridge.
54. We are not pre-determining the solution in this Long-term Plan (2024). In the next Long-term Plan (2027) we hope to be able to confirm with some certainty the expected cost, location, and design of the bridge and associated intersection and network improvements. Between now and 2027, we will complete:
 - geotechnical assessment
 - detailed design and costings
 - discussions with consenting authorities
 - discussions with Mercury (landowners and the current owners of the Control Gates Bridge)
 - discussions with the NZ Transport Agency and Central Government over funding support.
55. We will also work with iwi and hapū on design options and their impacts to recognise their long-standing relationships with the waters that flow from Taupō Moana through the upper Waikato Awa and their deep interest in infrastructure planning for the existing and any new bridge.

⁸ [Abley, Taupō Future Road Network Assessment \(2019\)](#)

PROVIDED FOR IN THE LONG-TERM PLAN: Build a new Waikato river crossing in the next 10 years

What is proposed

A new Waikato River crossing would be built within the next 10 years to provide additional lanes to increase road capacity. The bridge can also improve the walking and cycling connections across the river. There would also need to be improvements to the Spa Road roundabout and other bottlenecks so that the problem isn't just shifted elsewhere.

Exact cost and location of the new crossing would be determined through investigation and design work over the next two years. We would look to fund up to 25 percent from charges on new development, and would approach central government for help with funding too (although there's no guarantee of success).

Advantages and disadvantages

- ✓ Relieves congestion in the next 10 years, a problem that is expected to continue growing.
- ✓ Supports growth on the northern side of the Waikato River.
- ✓ Improves walking and cycling connections.
- ✓ Provide a long-life (100 year) asset for future generations.
- ✗ Expensive, and would require a rates increase ahead of construction.
- ✗ Significant addition to level of council debt, leaves little room for further borrowing in future.
- ✗ Risk of encouraging more vehicles onto the road, resulting in congestion increasing back to original levels over time.



Cost and debt impact

Capital cost: \$76.9m

Debt funded: \$76.9m



Rates impact

\$163.06 (average per ratepayer from 2031/32)

TIMELINE

2025 - 2027

Geotechnical assessment, options assessment, detailed design and costings.

Work with iwi and hapu on design options and their impacts.

2027 - 2030

2027 Long-term Plan confirms final option, design, and cost.

Consenting

2030 - 2031

Bridge construction

Alternative options

56. We have not identified any viable alternative options to providing a second Taupō Town bridge:

- ✘ **Expand the current bridge:** The current bridge is not suitable to expand to provide additional lanes, meaning a second bridge structure is required.
- ✘ **Stop growth:** We cannot stop growth. Limiting the number of houses built will only exacerbate housing shortages, unaffordability and overcrowding. We also have obligations under the National Policy Statement on Urban Development to provide the infrastructure required to support zoned residential land, and land identified in our growth strategy in North Taupō.
- ✘ **Don't do it:** If we don't do it the problem will only get worse, growth will be prevented, and we won't be meeting our obligations under the National Policy Statement on Urban Development. While the time delay is currently relatively small and predictable, the stability of traffic flows is becoming at risk – meaning that delays may become unpredictably severe on some days.
- ✘ **Demand management:** We do not have any tools to stop people driving (when that's what they prefer). Tolls and/or congestion charging is not currently permitted by legislation on existing roads and may only be considered for larger cities. The size of the charge needed to shift behaviour, and the administration costs of managing such a charging system in Taupō are likely to also be significant barriers.
- ✘ **Providing better buses, and walking and cycling connections:** There are already reasonable walking and cycling options. We have recently made safety improvements to the crossing of Wairakei Drive, and there are good connections to Taupō-nui-a-Tia College. We have also improved walking and cycling access and crossing options into Taupō town along Tongariro St. Despite these options being available, walking and cycling are not popular enough to reduce traffic problems. A new bridge will also aim to achieve improved walking and cycling connections, especially for commuters and school students in northern Taupō suburbs.
- ✘ **Improving current road layout and making smaller improvements:** We have recently made improvements to the Norman Smith / Wairakei Drive intersection, and Spa Road / Tongariro roundabout. The main bottleneck is now the bridge itself.
- ✘ **Traffic management initiatives including promoting use of alternative entrances:** We will continue to do this for summer and holiday peaks and events, however this won't affect local daily traffic, which is by itself pushing the limits of the current two-lane bridge at morning and evening peak times.

Infrastructure Challenge: Managing wastewater north of the Waikato River

WHAT'S THE ISSUE?

57. Our wastewater connections in Taupō Town across the Waikato River are currently at capacity. Additional capacity is needed to support growth in Northern Taupō residential areas that have been recently zoned, and are identified as future growth areas in Council's growth strategy.
58. Improving resilience and reducing environmental impacts are also primary objectives. We want to make sure we keep our wastewater out of the pristine waters of Lake Taupō and the Waikato River, and reduce the nitrogen impact on Lake Taupō. This is a major concern for the whole community.
59. Council has been working closely with a steering group of local Iwi and Hapū on possible solutions to support these objectives. The steering group will continue to explore a solution in the long-term of a wastewater treatment and disposal system in the North of Taupō that avoids connections across the Waikato River.
60. In the medium-term (within the 10 years of this LTP), this is a costly and difficult solution, which also relies on finding suitable land, and ensuring that there are not environmental and water quality impacts by increasing wastewater disposal within the Lake Taupō Catchment.
61. In the short-term (next 1 – 3 years), additional resilience measures (storage tanks) are planned to provide increased options to managing high flow events and reduce the risk of overflows. The high-risk areas for overflows are the manhole covers on either side, rather than the connection across the Waikato River itself.
62. In the medium-term (within in the next 10 years) the Long-term plan sets aside funding for increasing the capacity of our wastewater connections in Taupō Town across the Waikato River. Very high resilience will be a key objective.
63. Council is committed to continue to work with iwi and hapū, through the established steering group, to identify the long-term solution (beyond 10 years) for managing wastewater on the Rangatira side of Te Awa o Waikato.

PROVIDED FOR IN THE LONG-TERM PLAN: Increase capacity of wastewater connections in Taupō Town across the Waikato River in the medium-term

What is proposed

Our wastewater connections in Taupō Town across the Waikato River are currently at capacity. Additional capacity is needed to support growth in Northern Taupō residential areas that have been recently zoned and are identified as future growth areas in Council's growth strategy.

Improving resilience and reducing environmental impacts are also primary objectives. We want to make sure we keep our wastewater out of the pristine waters of Lake Taupō and the Waikato River and reduce the nitrogen impact on Lake Taupō.

The decision to implement medium-term capacity improvements is being made as part of the Long-term Plan 2024 - 34. The timing of making a decision on a longer-term solution is uncertain, but we are continuing to work with iwi and hapū, through the established steering group, to identify the long-term solution for managing wastewater on the Rangatira side of Te Awa o Waikato.

Advantages and disadvantages

- ✓ Support growth in Northern Taupō.
- ✓ Improves resilience and reduces spill risks from current levels.
- ✓ Achievable within Council's prudential debt limits.
- ✓ Achievable within acceptable rates and development contributions limits.
- ✓ Ensures that treated effluent continues to be disposed of to land outside of the Lake Taupō catchment.
- ✗ Does not eliminate the carriage of untreated wastewater over the Waikato River.



Cost and debt impact

Capital cost: \$10.5m

Debt funded: \$10.5m



Rates impact

\$18.50 (average per ratepayer from 2031/32)

TIMELINE

2025 - 2026

Resilience improvements and storage tanks.

2029 - 2030

Increase capacity of wastewater connections across the Waikato River

Future long-term solution (beyond 10 years)

Continue to work with iwi and hapū, through the established steering group, to identify the long-term solution for managing wastewater on the Rangatira side of Te Awa o Waikato.

The timeframe for completing this work and implementing any required solutions has not yet been determined.

Alternative options (in the medium term – within the next 10 years)

64. In the medium term we have not identified any viable alternative options to increasing the capacity of our wastewater connections in Taupō town across the Waikato River.

- ✘ **A new treatment plant at North Taupō:** Council has been working closely with a steering group of local iwi and hapū on possible solutions to support growth, improve resilience, and reduce environmental impacts. The steering group will continue to explore a solution in the long-term of a wastewater treatment and disposal system in the North of Taupō that avoids connections across the Waikato River.. However, this is a prohibitively costly and difficult solution in the medium-term (within the next 10 years, the cost roughly estimated at \$85 million⁹ would breach prudent debt limits set out in the Financial Strategy), which also relies on finding suitable land, and ensuring that there are not environmental and water quality impacts by increasing wastewater disposal within the Lake Taupō Catchment.
- ✘ **Stop growth:** We cannot stop growth. Limiting the number of houses built will only exacerbate housing shortages, unaffordability and overcrowding. We also have obligations under the National Policy Statement on Urban Development to provide the infrastructure required to support zoned residential land, and land identified in our growth strategy in North Taupō.
- ✘ **Don't do it:** If we don't do it the problem will only get worse, growth will be prevented, and we won't be meeting our obligations under the National Policy Statement on Urban Development.
- ✘ **Demand management:** Council is already planning to invest in the short-term (next 1 – 3 years) on resilience measures and storage tanks that will provide increased options to managing high flow events and reduce the risk of overflows. The high-risk areas for overflows are the manhole covers on either side, rather than the connection across the Waikato River itself. There are limited other tools to manage wastewater demand. While water metering or charging for water may reduce water use to some extent, it is more likely to reduce discretionary water use, like finding water leaks, washing the car, and watering the garden, rather than reducing showering, washing the dishes, or flushing the toilet.

⁹ High level estimate that is very uncertain as location has not been identified. Stated in today's dollars (2024).

We are maintaining levels of service and improving public health and environmental outcomes

65. The three areas of performance that are a focus for this infrastructure strategy are:

- supporting the health and safety of our communities
- being environmentally responsible
- being culturally responsible (with growth and resilience covered in separate objectives)

COUNCIL'S STATED SERVICE LEVELS (IN THE LONG-TERM PLAN)

WATER	WASTEWATER
<ul style="list-style-type: none"> • We provide safe drinking water to communities connected to a Council drinking water scheme. • The drinking water that Council provides is safe and treated to the appropriate standards. • Our water reticulation network is efficient. • We respond to faults with our water reticulation network promptly. • We resolve faults in our water reticulation network promptly. • Customers are satisfied with the drinking water they receive. • Potable water is used sustainably. • There is adequate water for firefighting in urban areas. 	<ul style="list-style-type: none"> • We comply with the resource consents conditions relating to our sewerage systems. • We will maintain the reduction in nitrogen discharged from wastewater treatment plants in the Lake Taupō catchment • Our sewerage system is maintained to prevent sewerage overflows. • We respond to faults with our sewerage system promptly. • We resolve faults with our sewerage system promptly • Our customers are satisfied with the sewerage network.
TRANSPORT	STORMWATER
<ul style="list-style-type: none"> • The number of serious and fatal crashes on Council roads is falling. • That our roading network is adequately maintained and in good condition. • Footpaths are adequately maintained and in good condition. • We will respond to customer service requests. 	<ul style="list-style-type: none"> • We manage the stormwater network to protect public health and property without compromising the environment. • We will comply with our Resource Consent for discharge from our stormwater system.

HOW WE DELIVER OUR SERVICES

66. Council manages its infrastructure intensive services through both inhouse and external expertise. This ensures that Council retains critical staff like asset managers while outsourcing less frequent or highly labour intensive and specialised work to the respective sectors. This balances the cost of service provision and staffing while also supporting the delivery of the capital works programme.

ASSET CLASS	PLANNING & MANAGEMENT	OPERATIONS & MAINTENANCE	CAPITAL WORKS
Water	Inhouse	Inhouse / Outsourced	Outsourced
Wastewater	Inhouse	Inhouse / Outsourced	Outsourced
Stormwater	Inhouse	Inhouse / Outsourced	Outsourced
Transport	Inhouse	Outsourced	Outsourced

COMPLETING UPGRADES TO DRINKING WATER TREATMENT TO MEET NEW STANDARDS

67. Council's largest capital improvement investment programme is focused on upgrades to the treatment of drinking water to meet the 2022 upgraded New Zealand drinking water standards (DWSNZ). Council has 17 water treatment plants all of which needed significant upgrades to meet the new standards.
68. As at 1 January 2024, we have upgraded most of our large water treatment plants (Taupō, Tūrangi, Mangakino). There are eight more significant plant upgrades planned to be completed by 2026.
69. In the Taupō Volcanic Zone, there are elevated levels of arsenic in soils and waters as a result of geothermal activity. Some lakes and rivers have arsenic concentrations above the World Health Organisation's limit for arsenic in drinking water (0.01 mg/L).
70. Areas that are not yet upgraded have Water Safety Plans prepared to make sure that we are appropriately minimising the risk. The Ministry of Health audits Council to ensure that we are being compliant with these plans.



Treatment plant compliance

AREA	NUMBER OF PROPERTIES	PLANT UPGRADE COMPLETED TO ALLOW COMPLIANCE ¹⁰	PLANNED PLANT UPGRADES ¹¹
Taupō (including Acacia Bay / Mapara Rd, Wairakei, Waitahanui)	12,970	✓	
Tūrangi (including Tokaanu)	2,417	✓	
Kinloch (including Whakaroa)	1,348	✗	2025
Omori/Kuratau/Pukawa	1,239	✗	2025
Mangakino	765	✓	
Motuoapa	482	✗	2025
Whareroa	198	✗	2025
Hatepe	119	✓	2026
Tirohanga	106	✗	2025
Whakamaru	77	✓	
Atiamuri	76	✗	2024
Centennial Drive	75	✗	2026
Bonshaw Park	69	✗	No longer required - will be connected to Taupō in 2024
River Road	69	✓	
Whakamoenga Point	53	✗	No longer required - will be connected to Taupō in 2024
Waihāhā	31	✗	2024
Motutere (campground)	1	✗	2032

¹⁰ Plant has undertaken significant upgrades to allow compliance with drinking water standards. Other compliance issues may mean that full compliance is not achieved.

¹¹ Expected completion date of project

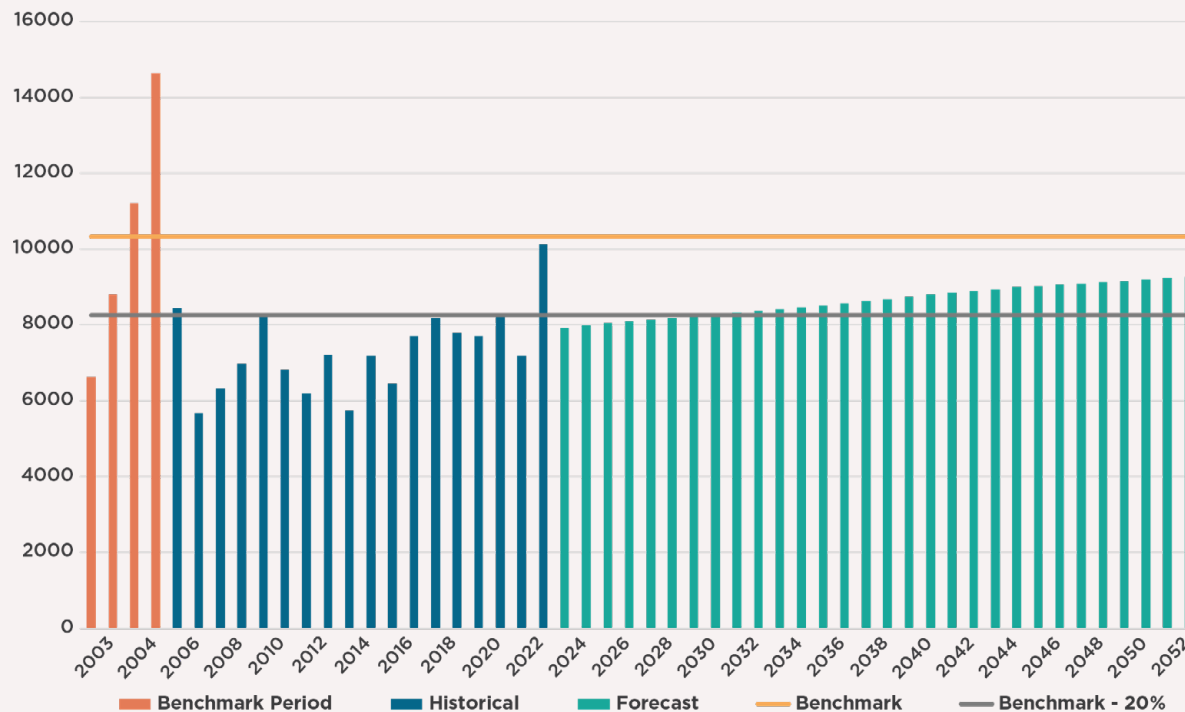
INCREASING ENVIRONMENTAL CONTROLS ON WASTEWATER AND STORMWATER DISCHARGES

71. With pristine rivers and lakes, managing the potential environmental and freshwater impacts of wastewater and stormwater is very important, and a costly exercise.
72. There has, and will continue to be, an increase in environment standards and discharge consent conditions as a result of:
 - Increased environmental and cultural expectations from our community
 - New legislation from central government, such as the National Policy Statement for Freshwater Management
 - The requirement for resource management documents to give effect to key policy documents which are aimed at improving water quality in some catchments. These documents include Te Ture Whaimana o Te Awa o Waikato - Vision and Strategy for the Waikato River for the Waikato River catchment, Te Ara Whānui o Rangitāiki – Pathways of the Rangitāiki for the Rangitāiki catchment, and Te Kaupapa Kaitiaki, a plan developed for the Taupō Catchment
 - Overwhelming evidence from the scientific community that the ability of our waterways to sustain the levels of pollutions is unsustainable.
73. In the past 20 years, Council has upgraded its largest wastewater plants (Taupō, Tūrangī, Mangakino), as well as some smaller plants (Motuoapa, Kinloch, Whakamaru) to reduce nitrogen discharges in the Lake Taupō catchment. Further upgrades to the Kinloch plant are planned and are expected to be completed in 2025/26.
74. Reducing nitrogen discharges is a greater challenge in areas where populations are growing and there is more wastewater to treat and dispose of.
75. Council holds regional council consents for wastewater and stormwater discharges. When these consents require renewals, it is likely that tougher conditions will be imposed, which will require Council to undertake upgrades and/or invest in technology which will come at a cost. Wastewater treatment plant upgrades are planned to meet stricter consent conditions to reduce nitrogen discharges when these plants are due for renewal.
76. Council is also coming under increasing pressure from both the public and Waikato Regional Council to improve the quality of stormwater discharges. Stormwater is discharged into our lakes, rivers and streams and we recognise the importance of keeping these clean and healthy and protecting our environment. To achieve this, we have developed a programme for the installation of Enviropods, which remove litter and debris from stormwater and treatment devices at stormwater outlets. However further improvements are likely to be required when our comprehensive stormwater consent is renewed in 2027.
77. A major focus of stormwater management for the next period will be around improvements to stormwater discharge quality and it is anticipated that there will be an increased capital spend installing treatment systems on the majority of our discharges especially in the years following the renewal of our current discharge consents in 2027.
78. We work closely with Waikato Regional Council to understand what likely standards and conditions will be imposed when we apply for discharge renewals. To support this process:
 - We monitor the quality of wastewater and stormwater discharges to provide evidence on actual discharge quality performance and risks
 - We engagement early with iwi/hapū for consent renewals
 - We forecast and plan to maintain our Nitrogen reduction targets.

REDUCING NITROGEN IN THE LAKE TAUPŌ CATCHMENT

79. Taupō District Council has committed to reducing the nitrogen impact from our wastewater treatment and disposal on Lake Taupō by 20%. This will continue to be a challenge to meet and maintain as the district continues to grow. In the longer-term additional plant upgrades to reduce nitrogen, or the purchasing of nitrogen credits to offset wastewater nitrogen may be needed.

FIGURE 1 - FORECAST NITROGEN (KGS) TO LAKE TAUPŌ CATCHMENT



Upcoming discharge resource consent renewals

RESOURCE CONSENT	CONSENSING ORGANISATION	DUE FOR RENEWAL
Mangakino wastewater disposal	Waikato Regional Council	Operating with permission under an expired consent pending renewal. Mangakino wastewater treatment plan upgrade is planned for 2026/27 - 2027/28)
Tūrangi wastewater discharge	“ “ “	Operating with permission under an expired consent pending renewal. Tūrangi wastewater disposal improvement options are discussed separately in this strategy
Atiamuri wastewater disposal	“ “ “	Operating with permission under an expired consent pending renewal. Atiamuri wastewater treatment plan upgrade is planned for 2025/26
District wide Stormwater discharge	“ “ “	June 2027
Taupō (View Road) wastewater disposal	“ “ “	2032
Taupō (Rickit Street) wastewater disposal	“ “ “	2032
Motuoapa wastewater disposal	“ “ “	2033
Acacia Bay wastewater disposal	“ “ “	2035
Whakamaru wastewater disposal	“ “ “	2036
Whareroa wastewater disposal	“ “ “	2039
Kinloch wastewater disposal	“ “ “	2039
Motutere wastewater disposal	“ “ “	2040
Taupō (Rakaunui) wastewater disposal	“ “ “	2043
Omori wastewater disposal	“ “ “	2044

WORKING WITH LOCAL IWI AND HAPŪ

80. Council has a strong relationship with local iwi and hapū; and recognise and respect the importance of, and connection between, iwi and freshwater (wai Māori).
81. Ngāti Tūwharetoa are the descendants of Ngatoroirangi and Tia and other tūpuna who have occupied the Taupō region since the arrival of the Te Arawa waka. Ngāti Tūwharetoa are linked by whakapapa to the lands and taonga (treasures) in this region. This connection establishes their mana whenua, kaitiakitanga, and rangatiratanga.
82. Tūwharetoa Māori Trust Board are the legal owners of Taupō waters. The term Taupō Waters refers to property including the lake bed, water column and air space of Lake Taupō and the Waihora, Waihāhā, Whanganui, Whareroa, Kuratau, Poutu, Waimarino, Tauranga-Taupō, Tongariro, Waipehi, Waiotaka, Hinemaiaia and Waitahanui Rivers and the Waikato River, from the outlet of Lake Taupō to a place known as Te Toka a Tia, downstream and inclusive of Huka Falls.
83. Ngāti Tūwharetoa are in a unique position holding legal ownership of most of the waterways and water bodies in the district as well as retaining ownership of most of the private land within the associated catchments.
84. In order for Tūwharetoa land owners to use their land productively and sustainably, adequate infrastructure and services need to be in place in order to effectively support the development of Māori land. Restrictive or lack of access to infrastructure is a significant barrier for iwi/hapū to increase the productivity of Māori land and is a key impediment to unlocking Māori land potential.

The success of effective, progressive and strategic infrastructure and service planning plays a fundamental role in achieving iwi/hapū social, cultural, economic and environmental aspirations. Active participation and engagement with decision making within their area of interest is an expression of kaitiakitanga, and enables Council to give effect to their legislative responsibilities to iwi/hapū.

PROVIDING FOR THE MĀORI WORLD VIEW

85. The Māori world view considers everything living and non-living to be interconnected. Māori traditionally have their own system of resource management to sustain people and natural resources for the future. For Māori, water is the essence of all life, akin to the blood of Papatūānuku (Earth Mother) who supports all people, plants and wildlife. Rivers are valued as a source of spiritual, physical, and mental well being and provide important mahinga kai, cultural materials, as access routes and a means of travel, and for their proximity to important wāhi tapu, settlements or other historic sites. Indicators of the health of a river system (such as uncontaminated water and species gathered for food, continuity of flow from mountain source to the sea) can provide a tangible representation of its mauri. Water is a connector from the tangible to the intangible, and has pride of place as both tapu, sacred, and noa, normal.
86. Te Ao Māori considers all natural, physical and spiritual elements of the world to be intrinsically connected. Whakapapa is the binding concept that describes and connects all living and non-living things as descendants from Ranginui and Papatūānuku. The natural domains of the taiao (environment) are the realms of their children in which tangata whenua (people of the land) have inherited rights and responsibilities to protect, preserve and maintain the environment through the active and enduring exercise of kaitiakitanga.
87. Tangata whenua and kaitiaki have responsibilities for the environment and for those that share the environment. Kaitiakitanga is not an obligation which iwi and hapū choose to adopt or to ignore, it is an inherited commitment that links all realms including the physical, spiritual, human and past and future worlds.

- 88. The relationships between iwi, taura here (Māori living in the district who may not affiliate to one of the iwi in this area) and the Council are significant.
- 89. There are a number of forums, collectives and agreements where Council collaborates with both iwi and Māori generally around key instruments like our long-term and annual plans, hosting Council meetings and also special interest matters.
- 90. These agreements are important for our infrastructure, because in many instances Council-owned infrastructure is located on land owned by iwi. Alternatively, there are instances where Council-owned infrastructure has the potential to have an impact on natural resources that are considered to be taonga by local iwi.
- 94. All New Zealanders have an obligation to achieve Te Mana o Te Wai whereby the water body has its own mauri and its own mana which must come first to protect the integrity of the river. This will be the basis for community discussions on freshwater values, objectives, and limits. The NPS-FM refers to Te Mana o te Wai as a core concept for freshwater management. Iwi have argued that Te Mana o Te Wai should be given priority in any freshwater planning mechanisms.
- 95. As we engage more effectively with iwi/hapū in the future, there will be increased expectations to consider the Māori world view as well as more accountability for how Council decision making reflects iwi/hapū. There will be significant cost implications to providing, improving and moving some infrastructure. We will have to prioritise and stagger these so that they are affordable.

Te Mana o Te Wai

- 91. Documents such as the National Policy Statement for Freshwater require Council to consider fundamental Māori concepts such as Te Mana o Te Wai.
- 92. Te Mana o te Wai is a concept that refers to the fundamental importance of water and recognises that protecting the health of freshwater protects the health and well-being of the wider environment. It protects the mauri of the wai. Te Mana o te Wai is about restoring and preserving the balance between the water, the wider environment, and the community.
- 93. Te Mana o Te Wai refers to the integrated and holistic wellbeing of a freshwater body. Te Mana o te Wai ensures that the first right to the water goes to the water. It also ensures that water is able to nurture and provide for people as a koha (gift) to enable sustainable use. Te Mana o te Wai reinforces iwi positions that 'I am the water and the water is me'. Protecting Te Mana o te Wai provides for the mauri of the water. This includes providing for te hauora o te taiao (health of the environment) te hauora o te wai (health of the water body) and te hauora o te tangata (the health of the people).

Infrastructure Challenge: Improving the disposal of wastewater in Tūrangi

WHAT'S THE ISSUE?

96. Taupō District Council provides wastewater services for 12 towns and communities in the district. All of these plants, except Tūrangi, discharge treated wastewater to land prior rather than discharging directly to water.
97. In Tūrangi the current wastewater system takes treated wastewater and discharges it to a wetland (the South Taupō Wetland), which leads into the Hangarito Stream which connects to Lake Taupō. The community has raised concerns over current disposal and its impacts on the waters of Lake Taupō which is a taonga for the whole community.
98. There has been environmental degradation of this wetland, however these issues are driven by other factors, and the environmental impact of wastewater discharge has been determined to be “less than minor”. However, there remain significant community concerns with the current discharge approach.
99. In 2018¹², Council agreed to work with local iwi and hapū to look at alternative options for a long-term solution that addresses these concerns. Historically Council has balanced these concerns by discharging to land which is the norm for the other 12 sites across the district.
100. A council / hapū steering group is still processing work to identify an alternative land discharge solution. Positive

¹² [Council meeting on 24 April 2018.](#)

progress has been made. This process will continue, and a recommendation will be presented to Council. However, Council needs a short- to medium-term solution (in the next few years) for the long-term plan. The current Tūrangi Wastewater Treatment Plant continues to operate with permission under an expired discharge consent pending renewal, and Waikato Regional Council are not providing any further time extensions.

101. There are several issues still to be worked through with any future land disposal options. These include concerns over the resilience of a large new pipe network, potential large running costs related to pumping, and securing a reasonable lease for disposal land. Council will also need to understand better if this option is simply shifting the problem rather than rectifying it. To do this Council will continue to work closely with iwi and hapū through the established steering group to develop and design the options and understand their impacts. These ideas will need further development in partnerships with iwi (over the next two years).

PROVIDED FOR IN THE LONG-TERM PLAN: Pursue a short to medium-term option for resolving wastewater risks in Tūrangi.

What is proposed

We've allowed \$6.8 million in the Long-term Plan, from 2028 to 2030, to improve our current treatment process and discharge from the Tūrangi Wastewater Treatment Plant. For example, using modern wastewater treatment techniques like creating a new wetland on current treatment plant site as primary discharge area.

We'll continue to work with iwi and hapū to find a suitable place to discharge treated wastewater to land in the longer term.

Advantages and disadvantages

- ✓ Further reduction in already low environmental impacts.
- ✓ Increased protection of exiting waterways and wetlands through natural wetland filtration.
- ✓ Lower ongoing operational costs
- ✓ More resilient than alternative option of significant pipe network and disposal site near the Tongariro River.
- ✓ Affordable within the budget constraints of Council's financial strategy - money is set aside.
- ✓ Addressed the environmental risks rather than shifting the problem to a new area (which is close to the Tongariro River.)
- ✗ Does not address community concerns over current disposal to the South Taupō Wetland, which leads into the Hangarito Stream which connects to Lake Taupō.



Cost and debt impact

Capital Cost: \$6.8 million

Debt Funded: \$6.8 million



Rates impact

\$39 (average per ratepayer in 2030-2031 due to site rehabilitation)

\$16 (average per ratepayer thereafter)

TIMELINE

2025 - 2028

Council will continue to work closely with iwi and hapū through the established steering group to develop and design the options and understand their impacts

2026 - 2029

Construct / implement preferred option and design

ALTERNATIVE OPTION: Dispose of Tūrangi wastewater to land

Alternative option

Identify a suitable land area to dispose to. Enter into a long-term contract to allow disposal of treated effluent for the long term. Install pipes and associated infrastructure to shift treated effluent to the new disposal location. Cease disposing to the South Taupō Wetland, which leads into the Hangarito Stream which connects to Lake Taupō.

The alternative option would be to not invest in the current Tūrangi wastewater discharge site and instead continue to look for a somewhere suitable to discharge the wastewater to land. While we're committed to this in the long term, the wastewater treatment plant's resource consent has expired so we need a short to medium term fix (in the next few years).

Advantages and disadvantages

- ✓ Discharge to land like other areas in the district.
- ✓ Aims to address community concerns over current disposal to the South Taupō Wetland, which leads into the Hangarito Stream which connects to Lake Taupō
- ✓ Affordable within the budget constraints of Council's financial strategy - money is set aside.
- ✗ Shifts problem and risk to a new area, rather than reducing them. New area is close to the Tongariro River.
- ✗ Significant pipe network needed that presents a resilience risk and significant operational (pumping) costs.
- ✗ Hinges on the ability to find a suitable location and willing landowner.
- ✗ Requires securing a long-term contract on suitable terms that guarantees the ability to dispose to the site for the long-term.



Cost and debt impact

Capital Cost: \$18.5 million

Debt Funded: \$18.5 million



Rates impact

\$58 (average per ratepayer)

TIMELINE

2025 - 2028

Council will continue to work closely with iwi and hapū through the established steering group to develop and design the options and understand their impacts

2030 onwards

Implementation dates unknown at this stage

SIGNIFICANT PERFORMANCE IMPROVEMENT PROJECTS, ISSUES, AND MAJOR UPCOMING DECISIONS

102. Major planned performance improvements projects are¹³:

• Water treatment plant upgrades to meet DWSNZ	\$30.2 million	2024 - 2026
• Transport - rural road safety investments	\$12.0 million	2024 - 2032
• Transport - accessibility, walking, and cycling improvements	\$14.9 million	2024 - 2034
• Transport - intersection improvements	\$10.5 million	2024 - 2034
• Mangakino Wastewater Treatment Plant upgrade to meet consent requirements	\$7.8 million	2026 - 2028
• Tūrangi wastewater discharge improvements	\$6.8 million	2026 - 2029
• Stormwater improvement devices	\$4.5 million	2024 - 2034

¹³ All figures are inflation adjusted.

FUNDING

103. Capital improvement projects are financed by borrowing, and funded over the lifetime of the assets through rates (as depreciation) once investment is completed.

104. For transport capital improvements, 51% funding usually comes from the NZ Transport Agency (through fuel taxes and road user charges). For years 1 – 3, not all projects received approval for funding from the NZ Transport Agency. Project costs have been reduced to reflect only Council’s share of funding. This has resulted in a shortfall on some projects. This will not significantly impact on Levels of Service. We will continue to pursue additional NZ Transport Agency funding. The annual plan process will be used to scope and prioritise these projects to match available funding.

105. For years 4 – 10 and beyond, we have the full costs of planned the projects, and the assumption of 51% funding being achieved.

We are managing natural hazard risks to ensure our infrastructure is resilient

NATURAL HAZARD RISKS

106. Much of Taupō district is in the Taupō volcanic zone, with natural hazard risks from:

- **Earthquakes:** Including shaking, fault rupture, and liquefaction. Taupō District has a medium seismic risk.¹⁴ It also has hundreds of fault lines mapped with the potential for ground surface ruptures in medium to large earthquakes of centimetre- to metre-scale steps and cracks.¹⁵ Liquefaction risks are greatest where there is a high water table (such as Tūrangi and Tokaanu), or on river or lake edges where there is the potential for lateral spreading.¹⁶
- **Geothermal:** Hot ground, subsidence. Taupō has mapped hot ground areas, where infrastructure must be designed to withstand increased ground temperatures. There are also known subsidence areas. There is a significant risk with the Waihi landslide area (Hipaua steaming cliffs), which has result in two devastating landslips since 1846.¹⁷
- **Volcanic:** Ashfall from volcanic eruptions can be carried for long distances downwind of the eruption site. Ash can cause health problems for humans and animals, compromise water supplies, damage infrastructure and disrupt supply chains.¹⁸ Ashfall from volcanic eruptions has the potential to affect a large portion of the district.

¹⁴ Building code, Z-values to determine seismic risk

¹⁵ GNS, Active Faults in the Taupō District, August 2020

¹⁶ Waikato Regional Council, Waikato Regional Hazards portal

¹⁷ www.waikatoregion.govt.nz/services/regional-hazards-and-emergency-management/landslides/hipaua-steaming-cliffs/

¹⁸ www.gns.cri.nz/Home/Learning/Science-Topics/Volcanoes/Eruption-What-to-do/Be-Prepared-Volcanic-Ash-Fall

Volcanic ash is abrasive, mildly corrosive and potentially conductive when wet. The impacts of ash fall will generally be disruptive rather than destructive, primarily affecting the function of infrastructure and services around the district. Only small amounts of ash are likely (less than 0.5mm for a 1 in 100 year event, and 2 – 3mm for a 1 in 500 year event).¹⁹

Climate risks and impacts of climate change

107. Taupō district can expect:

- **Hotter and drier summers:** Increased dryness, drought, and high fire risks in summer – with the potential number of dry days per year increasing by 5-15 days every year (~5% increase)²⁰. Number of hot days increasing from 24 per year to 38 – 40 by 2050²¹ Potential impacts on water supply shortages and increased irrigation demand. Freshwater impacts from lower river flows, increasing water temperatures, impacts on habitats and species, increased risk of poor water quality and toxic algae bloom.
- **Warmer, wetter winters and increased wind:** Increased rainfall in winter (4 – 7% by 2100)²². Increased erosion risks from higher rain, lake and river levels, and wind.

¹⁹ GNS, Earthquake and volcanic risks to assets of the Taupō district Council, May 2007

²⁰ For Waikato region, Precipitation below 1 millimetre/day, Waikato Regional Council, Waikato Regional Climate Change Risk Assessment Phase 1, September 2022

²¹ Greater than 25°C, for Waikato Region, Ministry for the Environment, Climate Change Projections for New Zealand, 2018.

²² For Taupō district, Ministry for the Environment, Climate Change Projections for New Zealand, 2018.

- Increased frequency and severity of intense rainfall and storm events:** Increased frequency and severity of intense rainfall. Up to a 39 percent increase in the annual likelihood of a 1in100year flood by 2100.²³ Ex-tropical cyclones will likely be stronger and cause more damage as a result of heavy rain and strong winds. Increased flooding risks from both urban stormwater, overland flow paths and gully systems, low-lying land, and rivers. Increased risk of power and communications outages from wind damage. Taupō has mapped flood areas for its rivers and lakes (which consider the potential impacts of climate change). Council also has internal flood mapping for urban stormwater, which can be used to assess the risks to community facilities, buildings, and infrastructure.

OUR AMPS IDENTIFY CRITICAL ASSETS

- As a member of the *Waikato Utility Lifelines Group*, Council has identified the components within the Council’s infrastructure network that may be vulnerable to natural hazards, the importance of these assets, and the impact of failure of these assets.
- Council’s asset management plan provides a detailed risk assessments for infrastructure. Below is a summary of general risks and high-risk assets and their importance.

²³ For Waikato region, Waikato Regional Council, Waikato Regional Climate Change Risk Assessment Phase 1, September 2022

Largest natural hazard risks

Earthquake	<p>A large earthquake including ground shaking, liquefaction in high water table areas, landslips, and potential fault ruptures has the potential to cause significant damage to horizontal infrastructure like pipes and roads. Even a smaller earthquake has the potential to cause some damage and disruption.</p> <p>There is limited protection available for road and pipes. We have plans in place for a swift response and repairs in the event of an emergency event. Our water pipe renewal programme will replace our most easily-broken older pipes with modern more resilient plastic equivalents.</p> <p>All bridges have been assessed for seismic vulnerability and retrofitted as necessary. All our new major water and wastewater plants, and water reservoirs are built to a high resilience standard (IL3 or IL4). We have identified some possible failure points in our Taupō wastewater and water treatment plants and have works planned to address these and increase resilience. We have a programme of improvements planned to our water reservoirs to improve their resilience.</p>
Major storms – flooding, wind, slips, power outages, access closures.	<p>We have flooding models that have identified potential flood risk areas, and most of our core infrastructure is well positioned.</p> <p>We have generators available in the event of power outages (although we have plans to purchase some more) and plans in place for a swift response and repairs in the event of an emergency event.</p> <p>We are planning a programme to identify and address vegetation, road cuttings, banks, and other slip risks.</p>
Volcanic Eruption, Ash fall, geothermal activity	<p>The effects are expected to be largely disruptive rather than destructive – with ash being high corrosive and conductive – requiring machinery to be stopped and cleaned.</p> <p>We have plans in place for a swift response, treatment and repairs in the event of an emergency event – including water blasting, vacuum trucks. In our major water and wastewater plants we have design features to allow for the event of ashfall (additional capacity in the grit chambers).</p>

SIGNIFICANT RESILIENCE PROJECTS, ISSUES, AND MAJOR UPCOMING DECISIONS

110. Major planned resilience projects are²⁴:

• Water reservoir resilience improvements	\$27.6 million	2024 - 2034
• Stormwater flood mitigation improvements	\$14.2 million	2024 - 2031
• Other resilience improvement works	\$6.3 million	2024 - 2030

FUNDING

111. Capital improvement projects are financed by borrowing, and funded over the lifetime of the assets through rates (as depreciation) once investment is completed.

Links to asset management plans

Council's asset management plans can be found at: www.taupo.govt.nz/council/plans-and-strategies/asset-management-plans

Planned revenue and expenditure

112. The following chart sets out the indicative capital and operating expense required to manage Council's three waters and transport infrastructure over the next 30 years. These are based on the most likely scenario for managing the infrastructure assets, reflecting the preferred options and assumptions highlighted in previous chapters, including:

- Renewals plan and life cycle of assets assumptions
- Growth
- Planned improvements to levels of service.

113. Additional assumptions are:

- Funding levels and service levels agreed within the Long-term Plan are maintained across the first 10 years of the strategy.
- Levels of service are maintained for years 11 – 30.
- Tables and graphs below allow for inflation projections that are in line with those forecast by BERL for LGCI over the 30 years.
- NZTA financial assistance rates will remain at the current level for the period of the strategy, and NZTA will fund the full required share (the funding gap in transportation is unfunded depreciation representing the NZTA subsidy on renewals).
- There is no change to the method used to deliver services or the management of services.
- The appropriate resources and contractors are available to tender and complete the projects and services that have been identified in this strategy.
- There are no new unfunded mandates from central government.

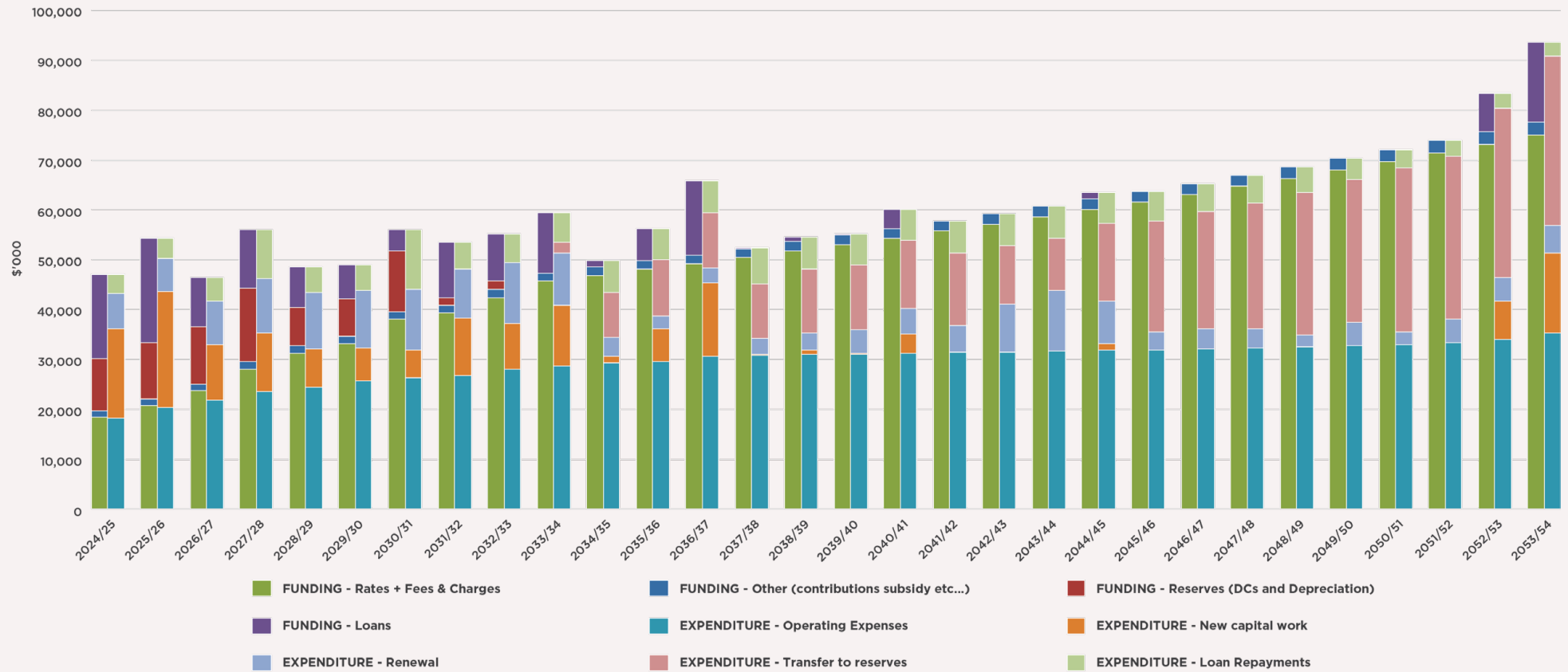
²⁴ All figures are inflation adjusted.

SUMMARY OF ASSUMPTIONS WITH HIGH LEVEL OF UNCERTAINTY

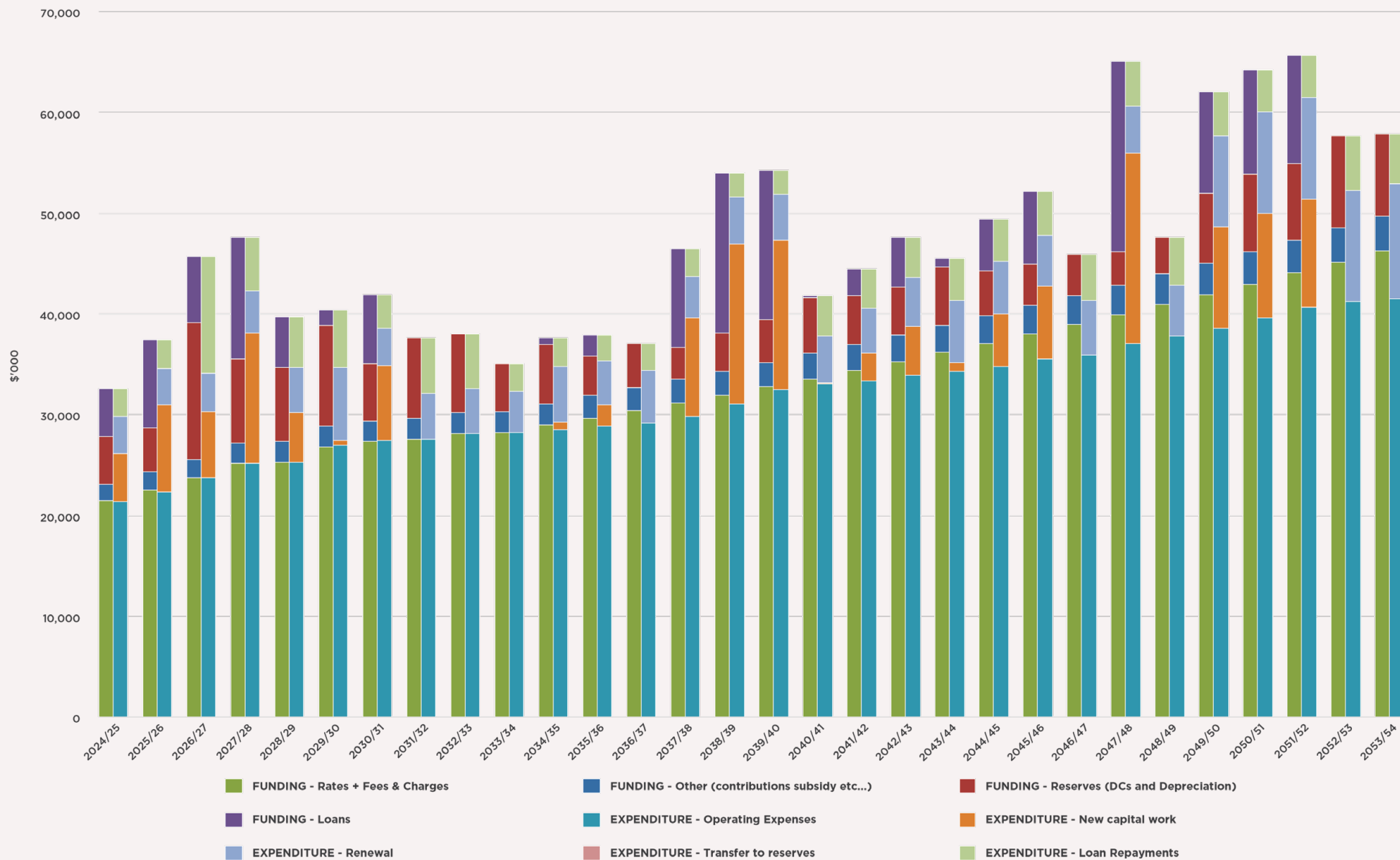
UNCERTAINTIES	NATURE OF UNCERTAINTY AND POTENTIAL EFFECTS
<p>Long term growth and demand uncertainty</p>	<p>Resident population growth is highly influenced by national migration, which is a central government policy matter and inherently unpredictable. The revised growth model Council uses to plan its growth infrastructure needs is on the higher end of the possible growth range. This should ensure that we are planning growth infrastructure sufficiently in advance of need. If growth is slower than anticipated the delivery of these projects can be adjusted.</p> <p>In addition to uncertainty in resident population growth, in Taupō District Council demand for council services and required infrastructure capacity is significantly impacted by seasonal peaks and events through both commercial accommodation and a large number of holiday houses. To manage this effect, Council takes a conservative approach to determining its capacity needs based on providing sufficient capacity for peak season assuming demand from all accommodation units and holiday houses.</p>
<p>Asset life uncertainty</p>	<p>We have gained a strong knowledge of the asset life and renewal needs of our water and wastewater pipe networks, and our road networks. There will continue to be water service failure risks until we complete our backlog of asbestos cement and galvanized pipe replacements.</p> <p>There remains significant uncertainty around the renewal needs for our major plant, and transport structures. We plan on improving this knowledge over time. While major renewals are anticipated in the near future, regular monitoring and reviews have the potential to identify the need for major renewals in the short-medium term. No service impacts are anticipated, however, if significant unplanned renewals are identified, this could have a planning, delivery, and debt cost impacts, although overall costs should be recovered through depreciation funds.</p>
<p>Service levels</p>	<p>Our asset management planning, and this infrastructure strategy are focused on maintaining service levels across our infrastructure, with planned improvements in some areas, such as meeting drinking water standards, and improving the environmental outcomes from wastewater treatment and disposal.</p> <p>There remains uncertainty in both the requirements to meet drinking water standards, and to achieve future wastewater and stormwater discharge consent renewals. While we are working closely with the regulators to manage these risks and are collecting data to support our application and proposed approaches, there remains the risk of new requirements being imposed on us that require additional unforeseen investment.</p>

[A full list of the Long-term Plan assumptions are provided in Appendix 9](#)

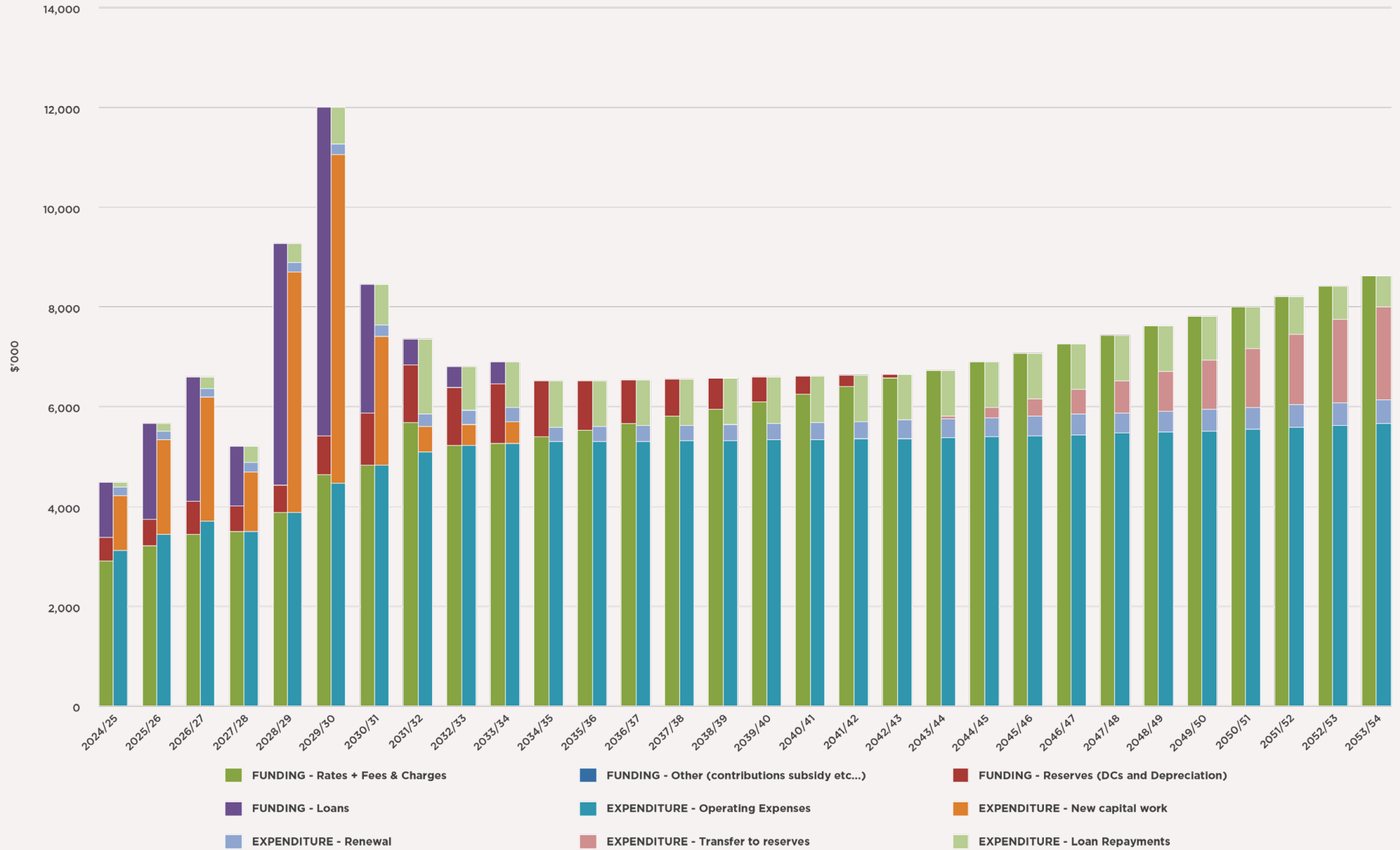
WATER FUNDING & EXPENDITURE (INFLATED VALUES)



WASTEWATER FUNDING & EXPENDITURE (INFLATED VALUES)



STORMWATER FUNDING & EXPENDITURE (INFLATED VALUES)



TRANSPORT FUNDING & EXPENDITURE (INFLATED VALUES)

