Section 3c

Our infrastructure strategy
## Document status

<table>
<thead>
<tr>
<th>Ref</th>
<th>Version</th>
<th>Approving Director / Group Manager</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>232201</td>
<td>Working Draft</td>
<td>Bruce Nicholson</td>
<td>October 2017</td>
</tr>
<tr>
<td>232201</td>
<td>Working Draft</td>
<td></td>
<td>December 2017</td>
</tr>
<tr>
<td>2321989</td>
<td>Working Draft</td>
<td>Adrian de Laborde</td>
<td>January 2018</td>
</tr>
</tbody>
</table>
### Contents

- **Executive Summary** ............................................................................................................ 1
  - Our infrastructure .................................................................................................................. 1
  - Key infrastructure issues ....................................................................................................... 3
  - Funding .................................................................................................................................. 6
  - Overall position .................................................................................................................... 6
  - Summary ............................................................................................................................... 8
- **Introduction** ......................................................................................................................... 9
  - Purpose of this strategy .......................................................................................................... 9
  - Hauraki District context ......................................................................................................... 9
  - Overview of our infrastructure ............................................................................................. 11
  - Strategic Principles .............................................................................................................. 13
  - Strategic infrastructure linkages ......................................................................................... 13
  - Identified issues .................................................................................................................... 14
  - Key planning assumptions .................................................................................................... 15
  - Uncertainty and implications ............................................................................................... 15
- **Water Supply** ......................................................................................................................... 17
  - Background .......................................................................................................................... 17
  - Significant issues and options ............................................................................................. 19
  - Water supply expenditure forecasts .................................................................................... 24
- **Wastewater** ........................................................................................................................... 26
  - Overview .............................................................................................................................. 26
  - Significant issues and options ............................................................................................. 27
  - Wastewater expenditure forecasts ....................................................................................... 30
- **Stormwater** ........................................................................................................................... 32
  - Overview .............................................................................................................................. 32
  - Significant issues and options ............................................................................................. 33
  - Stormwater expenditure forecasts ....................................................................................... 34
- **Land Drainage** ......................................................................................................................... 36
  - Overview .............................................................................................................................. 36
  - Significant issues and options ............................................................................................. 37
  - Land drainage expenditure forecasts ................................................................................... 39
- **Land transport - roads and footpaths** .................................................................................... 41
  - Overview .............................................................................................................................. 41
  - Significant issues and options ............................................................................................. 43
  - Transportation expenditure forecasts ................................................................................... 45
- **Financial summary** ............................................................................................................... 48
Summary of key financial assumptions
Financial forecasts
Decisions we expect to make
Funding implications

Tables
Table 1 Significant issues and options for water supply ................................................................. 19
Table 2 Significant issues and options for wastewater ............................................................... 27
Table 3 Significant issues and options for stormwater ............................................................... 33
Table 4 Significant issues and options for land drainage ............................................................ 37
Table 5 Significant issues and options for land transport ............................................................ 43
Table 6 Expected total operating and capital expenditure (Inflated values) ..................................... 48

Figures
Figure 1: Value of the Hauraki District Council’s infrastructure .................................................. 2
Figure 2: Total capital expenditure forecasts 2018-2048 .............................................................. 7
Figure 3: Total operating expenditure forecasts 2018-2048 .......................................................... 7
Figure 4: Total cumulative renewals and depreciation forecast 2018-2048 - uninflated ............... 8
Figure 5: Net debt forecast 2018-2048 ......................................................................................... 8
Figure 6: Water supply capital expenditure – renewals and levels of service ............................... 24
Figure 7: Water supply operating expenditure ............................................................................. 25
Figure 8: Water supply cumulative renewals and depreciation (uninflated) ............................... 25
Figure 9: Wastewater capital expenditure, renewals and levels of service ................................. 30
Figure 10: Wastewater operating expenditure ............................................................................. 31
Figure 11: Wastewater cumulative renewals and depreciation (uninflated) ............................... 31
Figure 12: Stormwater capital expenditure – renewals and levels of service ............................. 34
Figure 13: Stormwater operating expenditure ............................................................................. 34
Figure 14: Stormwater cumulative renewals and depreciation (uninflated) ............................... 35
Figure 15: Land drainage and flood protection capital expenditure – renewals and levels of service 39
Figure 16: Land drainage and flood protection operating expenditure ........................................ 39
Figure 17: Land drainage and flood protection cumulative renewals and depreciation (uninflated) 40
Figure 18: Roads and footpaths capital expenditure – renewals and levels of service .................. 45
Figure 19: Roads and footpaths operating expenditure ................................................................. 46
Figure 20: Roads and footpaths cumulative renewals and depreciation (uninflated) .................... 46
Figure 21: Total operating expenditure forecasts 2018-2048 ....................................................... 49
Figure 22: Total capital expenditure forecasts 2018-2048 ............................................................ 49
Figure 23: Total cumulative renewals and depreciation forecasts 2018/2048 (uninflated) .......... 50
Executive Summary

Our infrastructure strategy (our strategy) provides us with, along with our communities, our strategic direction for the provision of core infrastructure over the next 30 years. Core infrastructure includes our water supply, wastewater, stormwater, land drainage and land transport activities. This strategy outlines a 30-year view of strategic issues, expenditure requirements and significant decisions that will need to be made.

Our infrastructure

Our strategy covers infrastructure services provided by us (the Hauraki District Council) for water supply, wastewater, stormwater, land drainage, and land transport (roading and footpath) activities. These activities support economic activity, protect private property and the environment, and support public health.

Our vision guides what we deliver and how.

*Our home, our future / Tō tātou rohe kāinga, Tō tatou ao tūroa*

‘Our home, our future’ means that we’re proud to live here and we want our future generations to be proud to live here too. We want to work with our communities to help shape our future rather than waiting for things to happen. That means creating opportunities for the now and also for future generations.

Ki a mātou ‘Tō tātou rohe kāinga, Tō tatou ao tūroa’ ka noho whakahī tahi tatou i tēnei wā, a tērā wā hoki o ā tātou uri whakatupu. Ko tō mātou hiahia kia mahi ngātahi tātou ka whakaritea tō mātou ao ki mua, ka taturi kē kia tutuki. Ka whakaritehia ngā āheinga ināianei, āpōpō hoki mō ngā uri whakatupu.

We own and manage $504 million of infrastructure assets across these activities, including:

- **633 kilometres of roads** (518 kilometres sealed, 115 kilometres unsealed)
- **145** bridges and major culverts and **114** kilometres of footpaths
- **Four** water treatment plants (five rural schemes have recently been decommissioned) supplying *nine urban and three rural reticulated schemes* with approximately **550 kilometres** of pipes servicing **7,080 urban and rural properties**.
- **Seven** wastewater treatment plants servicing approximately **6,050 properties** via **166 kilometres** of pipes.
- **90 kilometres** of urban stormwater pipes and **40 kilometres** of open drains
- **650 kilometres** of *rural land drains* and **91 kilometres** of *stopbanks*
Our land transport activity represents over 50% of the value of our infrastructure asset network. An overview of the value of our infrastructure is shown in Figure 1 below.

**Figure 1: Value of the Hauraki District Council’s infrastructure**

In preparing our strategy we’ve identified 10 district-wide issues that need to be at the forefront of our infrastructure planning and decision-making. They are:

- Legislation and standards
- Treaty settlement arrangements and co-governance
- Climate change
- Geology
- Natural hazards
- Population growth
- Sea level rise and coastal erosion
- Economic profile
- Compliance
- Aging population
Key infrastructure issues

The following key issues have been identified for each of our infrastructure activities. Options to respond to the issues are identified in the relevant section for each of the activities.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Key issues</th>
</tr>
</thead>
</table>
| Water supply | • Drinking water quality standards  
• All of our resource consents will need renewing but we are uncertain about what the conditions will involve  
• Capacity for growth in the water supply network  
• Water network losses  
• Effect of climate change on water supply  
• The risk to water supply infrastructure from natural hazards  
• Asset condition and performance |
| Wastewater  | • Increased environmental compliance standards will need to be met  
• Projected population growth will exceed the capacity of existing wastewater treatment plants, particularly in Kerepehi, Waihi and Paeroa  
• Need to reassess the capacity of wastewater infrastructure to cope with climate change impacts – more intense and frequent rainfall  
• The impact of sea level rise, rising water tables and coastal erosion on public and private wastewater infrastructure  
• Understanding our leaky network catchments  
• Asset condition and performance |
| Stormwater  | • Increased environmental compliance standards will likely require the treatment of stormwater  
• The impact of more frequent and intense rainfall events as a result of climate change  
• We need to better understand the condition and performance of our older stormwater assets |
| Land drainage | • Impacts on land and property from sea level rise and coastal erosion  
• Impact of climate change on the land drainage network  
• Impact of natural hazards on the land drainage network  
• Asset condition and performance |
| Land transport | • Future level of funding subsidies is uncertain  
• Aging population and accessibility on levels of service and costs of providing that service  
• Impact of sea level rise and coastal erosion on roading and bridge infrastructure  
• Impacts on roading infrastructure from climate change  
• Our bridges are aging but we don’t know enough about their condition |
**Water Supply**

The recent release of the Phase 2 report of the Havelock North Water Inquiry has highlighted the need to undertake the delivery of safe drinking water to the highest possible standards. While we generally meet the Drinking Water Standards (DWS), we need to make improvements to some of our internal procedures in the delivery of safe water. We’ll need to assess any impact of potential legislative changes, changes to drinking water standards, and the requirement for treatment plant upgrades as a result of the Havelock North inquiry. We don’t think we’ll need to make significant changes to the treatment processes we currently have. Each treatment plant currently has multiple barriers including filtration, UV and chlorination.

Uncertainty also exists with the expiry of water supply resource consents. It is expected that our resource consent costs will increase over the period in which we require our consents to be obtained. There is also uncertainty around the potential for a reduction in water allocations and increased demand management requirements. Variation 6 of the Waikato Regional Plan provides an element of protection to our water allocation, and we also have both universal metering of our water supplies and a proactive water loss management programme. As well as this, there’s also uncertainty around the impact of governance from the Hauraki Treaty Settlement and the implications it will have on future Waikato Regional Plan changes by the Waikato Regional Council. These matters will continue to be monitored.

The water loss management programme will have implemented a water meter replacement programme, proactive risk-based renewal programme and will undertake integrated growth management to understand the future demand on water supply needed to service the district and inform its applications for resource consents.

We currently have sufficient excess capacity to accommodate the growth projections, but any significant increase in demand from dairy or industry may require significant expenditure for upgrades of the treatment capacity to deal with this demand.

**Wastewater**

The National Policy Statement on Freshwater (NPSFW) is driving significant changes to the quality of water discharges to water bodies. This includes both wastewater and stormwater discharges. We discharge all of our treated wastewater to rivers within the district.

Over the first five years of our long term plan, we’ll be required to renew all of our discharge consents for our wastewater treatment plants. The Waikato Regional Council (WRC) is required to ensure that the intent of the NPSFW is implemented when issuing discharge consents.

In addition to this WRC is in the process of undertaking Plan Change 2 to its Waikato Regional Plan which will determine the standards for discharge to the Waihou and Plako River catchments. These changes will require upgrades to all seven of our wastewater treatment plants. These upgrades will need to start in 2024 and will continue through to 2032.

Expected growth (residential and commercial / industrial) in the district may also drive the need to upgrade wastewater treatment plants. This is particularly relevant in Paeroa and Kerepehi where development is likely to drive the need to upgrade before the discharge consents requires us to do so.

The upgrades to the wastewater treatment plants will include a growth component. It is expected that about 10% of the upgrade costs will be attributable to growth.

We’ve undertaken investigations into the performance of our wastewater network and we’re starting to undertake similar work to determine its condition. Our network generally has significant infiltration and ingress (I&I) of either stormwater or groundwater. As with water, a proactive risk-based renewal programme will be implemented to secure critical assets and reduce the I&I.
The requirement to meet an increased level of service and planned renewals will increase wastewater debt from $8 million in 2017/18 to $22 million in 2027/28. Wastewater rates will also need to increase by 80% over the same ten-year period.

**Stormwater**

As with wastewater, the NPSFW is requiring improved quality of discharges to the receiving waters, and the Waikato Regional Plan Change 2 is likely to reinforce this. This will mean that we’ll have to improve the quality of our stormwater discharges to the rivers. We are taking a proactive, opportunistic approach to retrospectively fit infrastructure that assists with improving the stormwater quality. All new stormwater infrastructure is being built to meet the expected standards.

We will be required to renew our current stormwater discharge consents by 2024. It is expected that the stormwater discharge consents will further reinforce the need to actively improve stormwater discharge.

We need to improve our knowledge of the condition of the stormwater network. This work is currently underway and will continue into the first few years of this strategy.

We have proactively allowed for the future effects of climate change in determining pipe sizes and have provided for the recommended increase in rainfall intensities in our adopted designs.

**Land Drainage**

Climate change estimates are that the sea level rise we need to allow for is 0.8 metres above 1990 levels. Our primary stopbanks are at 3.0 metres based on the Tararu Datum. This means that by 2090 they will have to be progressively raised to 3.8 metres. This does not include any freeboard.

As a result of the consolidation of the soft underlying soils, routine work is required to raise stopbanks to design levels, i.e. the stopbanks settle and need to be raised on a cycle of 10 – 15 years to mitigate the settlement. The raising of the stopbanks to accommodate sea level rise predictions will be undertaken as part of this routine work. Over the thirty year period of this strategy, the levels of the primary stopbanks may need to be raised by approximately 0.4 metres above the current design level of 3 metres – but this is dependent on actual sea level rise.

**Land Transport**

An increase in renewals for roads is required as the current approach of reducing sealed road resurfacing (resealing) and rehabilitation (rebuilding) work to test pavement and surfacing lives has led to increase in roughness of the network and a corresponding decrease in customer satisfaction. We are proposing to increase future resurfacing to 53 kilometres (10% of the road network) between 2018 and 2021 to work towards getting up to a more sustainable level. Work is being undertaken to determine what the sustainable annual resurfacing should be.

We are seeking community views on this proposal. Please read our [We need to talk](https://weneedtotalk.hauraki-dc.govt.nz) consultation document to find out more.

We’re mindful of the potential impacts of climate change on our roads – particularly the peat underlying areas of the Hauraki Plains. Climate change scientists have indicated that we can expect more droughts and bigger rain events more frequently as the climate changes. The droughts can be particularly damaging to roads built on peat soils. Large rain events cause flooding and slips which may lead to increased maintenance costs for us and our ratepayers.

The requirement to meet increased levels of service and planned renewals will increase roading rates by 114% between 2017/18 and 2027/28.
Funding
We fund our infrastructure activities through a mixture of rates, subsidies and other fees and charges. The majority of funding comes from rates. We also use debt to spread the funding of large one-off costs, especially capital expenditure, over the useful life of the expenditure.

Overall position
The following graphs show the most likely scenario for total operating expenditure, total renewals versus depreciation expenditure and the total renewals for water supply, wastewater, stormwater, land drainage, and land transport.

Our financial position has changed from that forecast in our 2015-2045 Infrastructure Strategy.
- Better information has shown that reticulation and roading renewals need to increase over the planning period to keep our infrastructure performing.
- Forecast increased environmental standards will likely demand significant additional capital expenditure on our wastewater treatment facilities.
- Our previous forecast was for no population or rating unit growth in our communities. Current and forecast growth means we’ll need to upgrade some of our infrastructure.
- We also face risks from future climate change and natural hazards.

Our ability to fund our responses to the challenges above is affected by the incomes of our communities. We have a higher than average number of low-income households in our district. We want to ensure that our communities can afford to pay to use our services and their rates bill, but we also need to be in a good financial position to cope with the likely changes ahead. The amount that we spend and borrow in the short to medium term will shape how much flexibility we have to respond to these new challenges ahead.

There is a high degree of uncertainty for some of the expenditure that will be required to meet future growth and service level changes. We have responded by prioritising our ‘must-dos’ and cutting back on some of the ‘nice-to-haves’. We have also increased our rate and debt caps. The rate increases now forecast mean that we maintain a solid financial position, but further infrastructure cost increases may put this at risk.

Our financial strategy provides more detail.

The focus of capital expenditure in the first twelve years of the strategy is largely wastewater related, including $38.7 million for the upgrade of our wastewater treatment plants. There is a focus on land drainage and flood protection of the last six years. Roads are high spend items and we are forecasting increases in our land transport activity over the duration of the strategy. An ongoing water pipe renewal programme and the replacement of a raw water tank accounts for a high proportion of the capital expenditure in our water supply activity.
Sections three to seven provide an overview of the expenditure drivers for each of our infrastructure activities.

The largest increase in operating expenditure over the 30 years is in relation to water supply. The chart above clearly shows the impact of inflation on our expenditure.
We have a large amount of reticulation infrastructure coming to the end of its life in the later years of our strategy. While over the lives of our assets, forecast renewal spend will equal depreciation, the total amount of expenditure on renewals will exceed depreciation by 2025. We will need to fund this by either running operating surpluses or by borrowing.

Our net debt is expected to peak in 2032 at $63 million, steadily dropping to zero by 2046. The increases are driven by the increased renewals and levels of service. Once the peak of renewals is past, debt should start to reduce.

Summary
We've identified a number of infrastructure challenges over the next 30 years and our infrastructure strategy identifies the strategic approach to addressing these. The initial period of our strategy is focussed on water and wastewater infrastructure provision whilst the latter part of the strategy also has an increased emphasis on land drainage and flood protection. Roads and footpaths in our land transport activity continue to be our largest infrastructure asset.
Introduction

Purpose of this strategy

Our infrastructure strategy (our strategy) has been prepared in accordance with the requirements of section 101B of the Local Government Act 2002 (LGA). The purpose of our infrastructure strategy, as stated in the LGA is to -

• identify our significant infrastructure issues over the period covered by the strategy, and
• identify the principal options for managing those issues and the implications of those options.

In accordance with section 101B (6) of the LGA, our strategy includes infrastructure assets used to provide our services or services on our behalf, in relation to the following groups of activities:

• water supply
• wastewater (sewerage and the treatment and disposal of sewage)
• stormwater
• land drainage (flood protection and control works)
• land transport (the provision of roads, bridges and footpaths).

As well as the infrastructure we provide, flood protection and control works are also provided by the Waikato Regional Council. This infrastructure strategy only relates to those assets that we provide.

Our strategy does not include state highways. Planning for, providing and managing state highways is the responsibility of the New Zealand Transport Agency (NZTA).

The LGA also provides for other assets to be included in the infrastructure strategy at each local authority's discretion. At this time we have decided to focus on the five asset groups identified above, with a view to considering including additional asset groups in our next infrastructure strategy in 2021.

Hauraki District context

The Hauraki District covers an area of approximately 1,269 square kilometres. Our district spans from the Kaiaua (or seabird) Coast across the Hauraki Plains, through the Karangahake Gorge and over the Kaimai / Coromandel ranges before reaching the Golden Valley farmlands in the northeast, and the Pacific Ocean at Whiritoa.

Historically, the Hauraki Plains was a large swamp, but after extensive drainage work, it is now highly productive dairy land. Areas within the Hauraki Plains have an underlying peat layer and / or soft estuarine mud both of which are susceptible to increasing and decreasing water levels which have a direct impact on our infrastructure assets, particularly our roads and pipes. Natural hazards continue to pose a risk to our district, particularly the Hauraki Plains area which is either at or below sea level.

The three largest urban centres in the district are Waihi, Paeroa and Ngatea, however the district also includes a number of smaller townships including Kaiaua, Turua, Kerepehi, Mackaytown, Waikino, Whiritoa and Waitakaruru.

Industry

Our district is most well-known for its farming, mining and growing tourism industries. We have a strong farming history which is predominantly pastoral farming, with a significant number of businesses supporting and servicing the farming industry. A number of new industries have recently established in our district including an ice cream manufacturing plant at Kerepehi. The mines in Waihi, which include an open pit and several underground mines, are only a handful of mines in the developed world that operate within an established residential community. As such, a paramount link to the mine’s success and on-going development is its relationship with the surrounding community and the Hauraki District Council. Tourism has been growing with the Hauraki Rail Trail, Karangahake Gorge and the Seabird Coast, Ngatea Water Gardens, attracting people to visit the District. The increase in tourism numbers has placed an increasing demand on our infrastructure and facilities, as well as the New Zealand Transport Agency and the Department of Conservation facilities.
**Demographic context**

Over the last two years our district has experienced higher population growth than previously projected or planned for. In 2013 the resident population was 18,600, and it is now estimated that it will reach 20,650 by June 2018, 22,300 by 2028 and 23,695 by 2048. We estimate that in 2018 24% of the population will be aged 65+, with this increasing to 38% by 2048. While the recent growth and that forecast isn't high, it is a significant change from our previous infrastructure strategy, which was based on a stable or slightly declining population that was aging and already much older than the national average. This population growth will have a significant impact on our infrastructure as the network capacity has already been, or will soon be reached. Significant investment will be needed in upgrading or replacing infrastructure, securing the required land use outcomes and consents, and the ongoing maintenance of the assets.

While we have adopted the higher end of growth projections scenarios provided by our population experts, and these have been used in the development of this strategy, the main drivers for infrastructure development are currently legislative and regulatory.

**Dwelling and rating units**

An increase in population can result in demand for dwellings for either living or holiday purposes. In June 2016 our district had 9,715 dwellings and it is estimated that we’ll have 10,320 dwellings by 2018/19, increasing to 13,024 dwellings by 2048/49. It is estimated that the proportion of occupied dwellings will remain relatively stable, reducing from 88% in 2013 to around 82% in 2048.

Rating unit growth is driven by the economy, population and other changes in demographics, lifestyle patterns, and growth in neighbouring districts, including Auckland. In 2016/17 our district had 10,895 rating units, and is estimated to have 11,452 by 2018/19. It is projected that by 2028 the number of rateable units will increase to 12,576, and 14,492 by 2048.

**Social deprivation and annual household income**

Our district continues to experience higher levels of deprivation compared to other parts of the country. On a scale of one to ten (least to most deprived) our district as a whole scores 7.6, however, Waihi and Paeroa are assessed individually as having a value of 10 which means that they are in the most deprived 10% of areas in New Zealand. Kerepehi is also assessed as a 9.

Half of the children in the district aged between 0-14 live in the most deprived areas (9 and 10).

Our average annual household income was $66,838 in 2015 which is significantly lower than the national average of $91,198. Given that our district has a high proportion of the population over 65 years of age, a higher number will have income from superannuation and means tested benefits which will impact on the average household income for our district.
Overview of our infrastructure

We own and manages $504 million of infrastructure assets which can be summarised as follows:

**Land Transport – value $307 million**

We’re responsible for the planning, provision, development, operations and maintenance of our district’s land transportation network and facilities to ensure the safe and efficient movement of people and goods around the district. We have 633 kilometres of roads (518 kilometres sealed, 115 kilometres unsealed), 145 bridges and major culverts, and 114kms of footpaths. In addition to this we own the assets of the Hauraki Rail Trail across the three districts it travels through (Hauraki, Thames-Coromandel and Matamata-Piako Districts). The land transport activity represents more than half of the our infrastructure value with a 2017 replacement cost of over $307 million¹.

**Water Supply – value $85 million**

We provide safe drinking water to dwellings, commercial/industrial premises and many rural properties. The provision of safe drinking water is a public health priority. Four water treatment plants supply eight reticulated schemes with approximately 600km of pipes supplying 7,080 properties.

**Wastewater – value $55 million**

We collect, treat and dispose of treated wastewater from properties in the district. The safe disposal of wastewater is required for public and environmental health. Seven wastewater treatment plants service 6,150 properties.

**Stormwater – value $34 million**

Our stormwater network consists of 90km of urban stormwater pipes and 40km of open drains to manage the disposal of water from prolonged periods of rain to reduce risks to people and property.

**Land Drainage and flood protection – value $23 million**

We provide 650 kilometres of rural land drains and canals and 91 kilometres of stopbanks to collect runoff from rural catchments and to discharge it to river or sea outlets.

¹ Hauraki District Council Land Transport Asset Revaluation 2017, Beca
Achievements since the 2015-2045 infrastructure strategy was adopted
In the last three years, we’ve continued to maintain, repair and construct our infrastructure. We’ve also been investigating issues, progressing areas of improvement and undertaking strategic actions.

**Water supply**
We’ve developed and will begin to implement a water loss management programme that:
- sets a target to reduce the percentage of real water loss from our water supply network from 30-35% in 2015/16 to 15-20% in the next ten years
- will see the installation of zone meters to identify where in the network the most water losses occur
- includes an ongoing water meter renewal programme to improve water meter accuracy and to align renewals to industry accepted asset life.

All water supply schemes now comply with the New Zealand Drinking Water Standards.

We consolidated our water treatment plants down to four, and improved headworks:
- Waikino has been connected to the Waihi network. The headworks that previously supplied Waikino with water have been decommissioned.
- The Waitete stream intake for the Waihi water supply has become redundant. We will have to consider the value and disposal method for these assets.
- The Hurua intake for the Plains water supply is no longer used and the assets have been disposed of.
- The bores that supplied the Waitakaruru water treatment plant are no longer required due to the development of the Tetley's raw water storage. The bores need to be removed.
- Mackaytown and Karangahake networks were connected to the Paeroa supply in April 2017. Both of these sources are now redundant.
- We’re working with the Waikato Regional Council, our communities, and interest groups regarding the removal of the dams that supplied the decommissioned Waikino, Mackaytown and Ohinemuri schemes. Similar work is being undertaken for the removal of the Steen Road Dam that previously supplied water to the Waitakaruru treatment plant and the Waitete dam that provided Waahi with water.

A pipe renewal plan for aging asbestos cement and alkathene pipes has been provided for, as has a renewal plan for cast iron pipes which are now delivering reduced levels of service.

**Wastewater**
We continue to monitor dry weather overflows and enhance wastewater plant communication systems to avoid future overflows.

**Stormwater**
We’ve mapped the overland flow path network which will inform the development of a mitigation plan for high risk flow paths.

**Land transport**
We have entered into a shared bridge inspection contract with the Waitomo and Matamata-Piako District Councils which will involve developing a bridge replacement programme. We’ll develop a strategy to address issues resulting from this work.

**Land drainage**
An investigation programme into raising stop bank levels to cope with 100-year flood events and some additional freeboard has been proposed for approval as part of the 2018 Long Term Plan (LTP).
Strategic Principles

In essence this infrastructure strategy is looking to ensure the right asset is in the right place at the right time in our district. There will be competing needs, priorities, demands, resource availability and financial considerations that will need to be balanced as part of the infrastructure planning and decision-making process.

We have developed a set of strategic principles that will guide infrastructure planning for our district over the next 30 years. Financial sustainability is an overarching principle that crosses all of the other principles identified below:

- The proactive provision of critical assets
- Robust asset management practices
- An integrated approach in the integrated provision of infrastructure
- Capex over $100,000 requires a business case
- An integrated plan for district wide growth
- Make the best use of our existing investment

Strategic infrastructure linkages

Our vision guides what we deliver and how.

*Our home, our future*

*‘Our home, our future’* means that we’re proud to live here and we want our future generations to be proud to live here too. We want to work with our communities to help shape our future rather than waiting for things to happen. That means creating opportunities for the now and also for future generations. We are ready to push boundaries to make things happen.

It is our mission to:

- actively provide leadership to and advocate for the community
- provide good quality infrastructure, services and regulatory functions
- foster open-minded and two-way communication with the community
- ensure the sustainable use and management of resources
...for the benefit of all who live in, work in and visit the Hauraki District.

Our strategy delivers on our mission statement through the planning and provision of good quality infrastructure and the sustainable use and management of resources of our district for the next 30 years.

Community outcomes are clear aspirations or goals that we believe help to provide leadership and guidance in meeting our statutory purpose and role. We have developed six community outcomes for our district which are:

<table>
<thead>
<tr>
<th>Community Outcome</th>
<th>Outcome Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared Hauraki</td>
<td>We provide a range of services and facilities to meet our District’s needs and expectations for a safe environment</td>
</tr>
<tr>
<td>Progress Hauraki</td>
<td>We have a positive climate that encourages balanced and sustained economic growth throughout our District</td>
</tr>
<tr>
<td>Kotahitanga Hauraki</td>
<td>We take a collaborative approach with both Mana Whenua and Tangata Whenua in our District</td>
</tr>
<tr>
<td>Interactive Hauraki</td>
<td>We are a proactive Council that provides leadership and communicates effectively with all sectors of our District</td>
</tr>
<tr>
<td>Lifestyle Hauraki</td>
<td>We provide an environment that encourages vibrant communities and an enhanced quality of life</td>
</tr>
<tr>
<td>Sustainable Hauraki</td>
<td>We plan for the wise use and management of all land and resources for the continued benefit of our District</td>
</tr>
</tbody>
</table>
Our infrastructure is a key mechanism to achieve these community outcomes. Our water supply and wastewater infrastructure provide safe and reliable drinking water and disposal of wastewater in a sustainable manner, while land drainage protects land from inundation and water ponding. Land transport provides safe roads, bridges and footpaths for the community, businesses and visitors to the area.

The provision of the five infrastructure classes covered by the strategy all contribute to economic development of our district, enabling goods to get to market, supports public health and, protects land.

**Identified issues**

We have identified ten strategic issues that will impact on the provision of infrastructure over the next 30 years. They are:

<table>
<thead>
<tr>
<th>Strategic Issue</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legislation and standards</td>
<td>Planning for changes to legislation and standards that are known and unknown e.g. water supply and drinking water. There is also potential for changing consent requirements or standards for water supply and wastewater / stormwater discharges through a future Waikato Regional Plan Change 2 by Waikato Regional Council.</td>
</tr>
<tr>
<td>Population growth and funding</td>
<td>Previously the population of our district was projected to decline or remain static, but in recent years has grown and we have adopted the higher of three growth forecast scenarios for our district. We don’t yet know where this growth will be within the district and what this means for our infrastructure capacity in those areas. For increased infrastructure provision consideration will need to be given to how this is paid for.</td>
</tr>
<tr>
<td>Treaty Settlement arrangements and co-governance</td>
<td>The Hauraki Treaty Settlement will result in iwi having co-governance arrangements with the Waikato Regional Council and local councils and will have a greater role in governance and fresh water. The full impact and implications (including financial) of the Treaty Settlement are unknown and a watching brief will be kept on this.</td>
</tr>
<tr>
<td>Sea level rise and coastal erosion</td>
<td>We are required to plan for a progressive sea level rise to predicted level of 0.8 metres in 2090 (above 1990 levels) in accordance with the Waikato Regional Policy Statement. This will have direct and indirect implications on our infrastructure. There are also potential impacts on stopbanks and outfalls at Whiritoa and Kaiaua from coastal erosion. The impact of rising water tables may require more reticulated systems as septic tanks and disposal fields are no longer able to function.</td>
</tr>
<tr>
<td>Climate change</td>
<td>In addition to sea level rise, we expect to see increased intensity and frequency of storm events and droughts and the impact on the provision of infrastructure.</td>
</tr>
<tr>
<td>Economic profile</td>
<td>The impact on infrastructure capacity from economic development activity in the district e.g. an increase in agriculture, industry, manufacturing and the demand on infrastructure.</td>
</tr>
<tr>
<td>Geology</td>
<td>Areas of the Hauraki Plains have an underlying peat layer that impacts on underground infrastructure and roading as a consequence of water levels change through the peat layers each year.</td>
</tr>
<tr>
<td>Compliance</td>
<td>Resource consents will be required for water supply, wastewater and stormwater, and it is likely that conditions imposed on consents will be more restrictive in the future. There is uncertainty of what future Waikato Regional Plan Change 2 by the Waikato Regional Council will mean for infrastructure, costs of compliance and monitoring when renewing consents or building new infrastructure.</td>
</tr>
<tr>
<td>Natural hazards</td>
<td>Our district is subject to fault lines and liquefaction that has direct implications on our infrastructure</td>
</tr>
<tr>
<td>Sustainability</td>
<td>The ability to provide infrastructure to meet changing circumstances, requirements, and community needs.</td>
</tr>
</tbody>
</table>
Key planning assumptions

This strategy is based on the following assumptions:

- That our vision statement will apply for the duration of this 30-year strategy
- The New Zealand Transport Agency will continue to provide us with subsidised funding for the road transport network over the next 30 years
- Our district will continue to grow over the next 30 years as projected in the higher growth scenario that we have adopted, with an expected resident population of 23,695 by 2048.
- That by 2021 sufficient useable land has been identified to accommodate growth across the district (residential / business / industrial)
- Having a higher proportion of older people in our district will have an impact on levels of service for some infrastructure classes such as land transport over the lifetime of the strategy
- The Hauraki Treaty Settlement Deed will include provision for co-governance entities responsible for developing a strategic vision and direction for natural resource issues in the Waihou and Piako River catchments
- Future water supply, wastewater and stormwater consent conditions will be more restrictive and will cost more to comply with, implement and monitor
- Sea level rise, coastal erosion and weather events as a result of climate change will increase requiring better management of our assets
- Future Waikato Regional Plan Change 2 by the WRC will result in higher levels or standards of compliance for water supply and wastewater and water discharge may increase construction and/or monitoring costs
- The requirement of the Waikato Regional Policy Statement to give greater regard to reducing natural hazards will remain in place for the foreseeable future and until a National Policy Statement (NPS) on Natural Hazards is completed in 2018. The impacts of the NPS are unknown and the Council will keep a watching brief on the development of the NPS.
- We will continue to be responsible for these core infrastructure activities.
- We will provide services at the levels forecast in our asset management plans and 2018 long term plan.

Uncertainty and implications

In developing this strategy there are a number of things that we do not or cannot know. This has flow on effects on the identification of issues and options for dealing with issues and how the we can best respond. Areas of uncertainty we have identified are:

Years 11-30

There is a focus on years 1-10 of the strategy which aligns with the LTP. Further work is required to understand what years 11-30 look like across the infrastructure classes as at the moment information is not robust enough to give certainty of what the future is expected to look like.

Growth

It is not yet known where population and business growth will go so it is not yet possible to understand the real implications of growth on the capacity and provision and expenditure of infrastructure.

Funding for growth – financial contributions / development contributions

Our Operative District Plan provides us with the ability to take financial contributions for new developments that require connecting to our services. Changes to the Resource Management Act mean that we will not be able to charge financial contributions from 18 April 2022 and will need to identify our arrangements for collecting development contributions in a development contributions policy. We will be introducing a development contributions policy to replace financial contributions by 2022.

Regulatory changes

There could be future changes to legislation and standards including WRC’s development of future Waikato Regional Plan Change 2 addressing water quality in the Waihou-Piako and Coromandel catchments. This could restrict land use change, discharges, and contain regulatory interventions and consent and compliance costs with impacts for our district. We will continue to participate in any consultation/forum opportunities and keep a watching brief on this.
Legislative changes and changes to standards tend to have a long lead in time which enables us to be involved in the process and respond and plan as required. E.g. National Policy Statement on Natural Hazards.

**Reliability of information**

We have various levels of reliability of information across the five activities covered in this infrastructure strategy. There is little information to give certainty to what years 11-30 of the strategy looks like across the infrastructure classes as the focus has been on years 1-10 for the LTP. We are actively seeking to fill information gaps over the first three years of this strategy that will inform the 2021-2051 infrastructure strategy. Gaps have been identified in the following areas:

- The location of future growth, the impact on capacity of infrastructure and how it will be funded.
- Natural hazards information and mapping.
- Climate change and drought effects and mapping.
- Age of infrastructure and condition - because many assets are below ground it is difficult and costly to assess the condition of a pipe and as a result, condition assessments generally rely on opportunistic sampling.
- Predictability of performance of assets.
- Impact of rising groundwater levels on septic tanks in low-lying coastal areas e.g. Kaiaua.
- Hauraki Treaty Settlement
- The details and timing of the Hauraki Settlement and details of co-governance as it relates to freshwater are not known. We will keep a watching brief on this.

**Mining**

At the time of writing, mining in Waihi only has sufficient proven resource for mining to continue until the third quarter of 2019 unless additional resource is found in existing mines or new resource is identified that allows for further consent applications to be made. Significant exploration work is currently being undertaken to identify and prove possible future resource. Until the future of mining has been determined, we are not able to fully understand the long term impact of the mining (or any remediation) on our assets and infrastructure. However, any impacts are not expected to be major.
Water Supply

Background

We are responsible for the provision of safe, clean drinking water to domestic, commercial, industrial and agricultural communities as a matter of public health. Nearly 80% of the water we treat is consumed by rural communities for agriculture. It is not used for irrigation.

Our water supply network draws water from surface water bodies. There are four water treatment plants supplying eight reticulated schemes with approximately 550 kilometres of pipes supplying 7,080 properties. All resource consents for water supply will need to be renewed over the duration of this strategy.

Prolonged rainfall impacts the water supply in our district by raising river levels, and increasing the sediment carried by the rivers. This makes the treatment of water drawn from our rivers more difficult. Currently, the Kerepehi water treatment plant cannot effectively remove manganese in the water. However, a planned upgraded water treatment process is being considered which will resolve this issue in 2018. Periods without rain during summer months are also expected to become more prolonged as a result of climate change.

Our previous approach to water assets was to replace assets when they failed to meet service levels. This approach has led to higher reactive costs and more service failures. A change to a proactive and risk based approach will be implemented, gathering information on the condition of assets to better predict their useful age and provide more accurate data for financial planning.

Changes to the pipe renewals programme proposed within the next three years will be focussed on gathering and assessing information on the condition of assets to better predict the useful age and provide for accurate data for financial planning.

Some areas in the network have high levels of unidentified water loss. This is believed to be caused by a combination of older water metres, flushing, leaks and breaks in the network (the extensive nature of the mainly rural Hauraki Plains network makes leak detection difficult) and possible illegal connections. We have developed a water loss reduction programme with a target of reducing real water loss from the network from 30-35% down to 20-15% in the next 30 years. We are targeting a reduction to 30-20% in the first 10 years.

With our district experiencing unexpected growth, which is projected to continue, the spare capacity of the water treatment plants has been assessed. Capacity limitations have been identified and the implications of this are being considered as part of planning for growth and rezoning of land.

A combined review of the delivery of the water supply and wastewater activities was undertaken. The review found that an enhanced status quo (doing it the way we do but improving on some processes) was the best way to deliver these services to our communities. We currently deliver the services through the use of in-house teams, but make use of both external consultants and/or contractors for specialised works.

Havelock North Drinking Water Inquiry

In August 2016 there was a significant gastroenteritis outbreak in Havelock North with approximately 5,500 of the town’s 14,000 residents estimated to have become ill with campylobacteriosis. Sheep faeces were the likely source of the campylobacteriosis. The outbreak was traced to contamination of the town’s drinking water supplied by two bores on the outskirts of Havelock North which raised serious questions about the safety and security of New Zealand’s drinking water. A Government inquiry was launched, with a Stage 1 report released in May 2017 that focused on determining the facts and assessing the conduct of core participants in the water supply.

The report on Stage 2 of the inquiry was released in December 2017. We have reviewed the report and are assessing the potential impacts of the recommendations. In this respect, there is uncertainty in what the future water supply

---

2 Fulfilling the requirements of section 17A of the Local Government Act 2002.
legislative framework, standards, practices and procedures will look like, and what that means for the provision of a safe supply of drinking water for our district beyond 2018. However, we are confident that we can continue to deliver safe drinking water that meets the requirements of the Drinking Water Standards.
## Significant issues and options

Table 1 below identifies the significant district wide issues and the options facing water supply in our district.

### Table 1  Significant issues and options for water supply

<table>
<thead>
<tr>
<th>Significant issue</th>
<th>Principal options for managing the issue</th>
<th>Implications of the option</th>
<th>Years 1–10</th>
<th>Years 11–20</th>
<th>Years 21–30</th>
<th>Risk (H/M/L)</th>
</tr>
</thead>
</table>
| Drinking water quality standards. There may be changing requirements to address public health/safety requirements from the Havelock North Drinking Water Inquiry and the costs to us in meeting any changes in standards and legislation proposed. | Maintain a watching brief on the legislative and regulatory outcomes of the Havelock North Drinking Water Inquiries. | • Implications at this stage are uncertain. There may be changes to address public health/safety.  
• This will be resourced through existing budgets. | ✓ Low cost from existing resource | Un-known | Un-known | Medium  There will be changes but the effects are likely to be minor due to the recent significant investment in upgrading all our water treatment plants. |
| | Increase monitoring of drinking water quality and staff expertise. This involves getting appropriate systems set up. | • We will be more prepared to respond to changes in water quality management.  
• Budget implication in the tens of thousands of dollars, rather than hundreds of thousands. The monitoring process should be largely automated. | ✓ Low cost from existing resource | | | |
| All of our resource consents will need renewing but we are uncertain about what the conditions will involve. | Allocate funding and resourcing to secure new resource consents and monitoring of conditions. | • The requirements to prepare a resource consent may increase (for example completing environmental impact assessments).  
• The resource consenting process may require changes to the amount of water we can take for supply.  
• Additional operational and capital expenditure may be required to meet consent conditions. | ✓ $50,000 per annum for consent monitoring  
$100,000 Waikou intake consent | | | Low  We have time to identify and respond to changes. |
<p>| Resource consents for water supply takes expire between 2019 and 2034. Renewals or variations will need to commence from 2017. Details of the Hauraki Treaty Settlement which may affect future water consent conditions and future Regional Plan Change 2 are | Progress investigations into unaccounted for water loss through the water loss management programme to understand actual | • This investigation will determine whether water is being lost from the system through leaks and breaks for example. Corrective action may reduce the volume of water needed from the | ✓ Low cost from existing resources | ✓ | | Medium |</p>
<table>
<thead>
<tr>
<th>Significant issue</th>
<th>Principal options for managing the issue</th>
<th>Implications of the option</th>
<th>Years</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>both unknown and will influence resource consent applications, implementation and compliance and monitoring costs</td>
<td>amounts of water needed to be taken.</td>
<td>Water take.</td>
<td>✓</td>
<td>Low cost from existing resources</td>
</tr>
<tr>
<td>New consents might have restrictions on water take, however our rivers aren’t considered to be over allocated.</td>
<td>Identify preferred areas of residential and industrial land use change and existing infrastructure capacity and future needs.</td>
<td>Water supply needs to be coordinated with land use zoning and capital investment.</td>
<td>✓</td>
<td>Low cost from existing resources</td>
</tr>
<tr>
<td>Capacity for growth in the water supply network</td>
<td>Monitor demand and address when it becomes an issue. Focus attention on Waihi, Paeroa and Kerepehi where treatment plant capacity is considered to be limited.</td>
<td>Demand is more sensitive to agricultural and industrial changes and a change in population might not have a big impact.</td>
<td>✓</td>
<td>Low cost from existing resources</td>
</tr>
<tr>
<td>Areas where growth or industry change will be located have not yet been identified so the impact on water demand and capacity of the network cannot be properly considered at this time.</td>
<td>Consider proactively providing for additional capacity in and connectivity between Paeroa and Kerepehi.</td>
<td>It is estimated that cost would be high and give rise to major affordability concerns. As such this is not a preferred option at this time and has</td>
<td>✓</td>
<td>Low cost from existing resources</td>
</tr>
<tr>
<td>Significant issue</td>
<td>Principal options for managing the issue</td>
<td>Implications of the option</td>
<td>Years 1–10</td>
<td>Years 11–20</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------------------</td>
<td>-----------------------------</td>
<td>------------</td>
<td>------------</td>
</tr>
</tbody>
</table>
| Water loss       | Measure network performance and undertake detection water loss reduction programme | • Extent of water being lost through leaks identified.  
• Water loss reduction capital programme can be identified. | ✓ Low cost from existing resources | ✓ Low cost from existing resources | ✓ Low cost from existing resources | Medium |
|                  | Set targets for reductions in unaccounted for water loss (to 15-20% in 30 years) as a result of an effective water loss management programme | • Reduced water take to meet current needs may be possible.  
• Greater capacity to service growth needs. | ✓ Compilation of costs noted elsewhere | ✓ Compilation of costs noted elsewhere | ✓ Compilation of costs noted elsewhere | Medium |
|                  | Upgrade to more modern meter technology and implement an appropriate renewal programme for water meters | • Accurate measurement of water used.  
• Water meters are replaced in accordance with accepted industry renewal timeframes. | ✓ $2 million over 10 years | ✓ $250,000 per year | ✓ $250,000 per year | Medium |
| Effect of climate change on water supply | Investigate an alternative water supply for Kerepehi due to potential saltwater intrusion as sea levels rise | • Modelling will be required to determine whether saltwater intrusion to the Kerepehi water source is a risk requiring mitigation and what those mitigation measures will be. This will be done during the resource consent renewal process prior to 2034.  
• Water supply continuity.  
• Cost of relocation. | ✓ Low cost from existing resources | ✓ Will be known after investigation is completed.  
If required it will be beyond the term of this strategy. | ✓ Will be known after investigation is completed.  
If required it will be beyond the term of this strategy. | Low |
| Higher demand might require an upgrade of treatment plants | | • Significant expenditure would be incurred.  
• Developers may be required to contribute to the cost of upgrading the treatment plants. | ✓ Significant expenditure | ✓ Significant expenditure | ✓ Significant expenditure | Low |
<p>| Cross-council assessment of climate change and natural hazard implications and adaptation program (planned for 2018-2021) | | • Water demand likely to continue to be heightened during hot, dry summers whatever option is pursued. | ✓ Low cost from existing resources | ✓ Low cost from existing resources | ✓ Low cost from existing resources | Low |</p>
<table>
<thead>
<tr>
<th>Significant issue</th>
<th>Principal options</th>
<th>Implications of the option</th>
<th>Years 1–10</th>
<th>Years 11–20</th>
<th>Years 21–30</th>
<th>Risk (H/M/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The risk to water supply infrastructure from natural hazards</td>
<td>Ensure that all treatment plants comply with latest earthquake standards</td>
<td>Replacing structures with earthquake proof structures including the raw water tank</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>High</td>
</tr>
<tr>
<td>Earthquakes could result in: Loss of treatment plant equipment</td>
<td>können der Wasserversorgung durch natürliche Katastrophen betroffen sein. Verlust von Behandlungsanlagen könnte zu: Mehrfachbrüchen im Versorgungsnetz führen</td>
<td>Approx. $2 million for raw water tank</td>
<td></td>
<td></td>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Multiple breaks in the supply network</td>
<td>Increase emergency supplies for pipe repairs – study required to determine number of faults to plan for.</td>
<td>The nature of some pipes on the rural line could result in a number of breakages in the case of earthquakes. The Council would need to install replacement pipes.</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>High impact</td>
</tr>
<tr>
<td>Multiple breaks in raw water lines</td>
<td></td>
<td>We have a proactive risk-based renewal programme to replace pipes made of brittle material.</td>
<td>✓</td>
<td></td>
<td></td>
<td>but low</td>
</tr>
<tr>
<td>Loss of storage structures (e.g. Kerepehi raw water tank is almost 70 years old and already showing signs of distress)</td>
<td>▶ We have $1.32 million for raw water tank</td>
<td>Approx. $2 million for raw water tank</td>
<td></td>
<td></td>
<td></td>
<td>likelihood</td>
</tr>
<tr>
<td>Asset condition and performance</td>
<td>Undertake condition sampling of the pipes to get more realistic data on asset condition and measure network performance.</td>
<td>We have 180 kilometres of asbestos pipes in the water network. The life of these pipes is less than previously thought which will have a significant resource, construction and expenditure implications for us.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Low to</td>
</tr>
<tr>
<td></td>
<td>können der Wasserversorgung durch natürliche Katastrophen betroffen sein. Verlust von Behandlungsanlagen könnte zu: Mehrfachbrüchen im Versorgungsnetz führen</td>
<td>können der Wasserversorgung durch natürliche Katastrophen betroffen sein. Verlust von Behandlungsanlagen könnte zu: Mehrfachbrüchen im Versorgungsnetz führen</td>
<td></td>
<td></td>
<td></td>
<td>medium,</td>
</tr>
<tr>
<td></td>
<td>können der Wasserversorgung durch natürliche Katastrophen betroffen sein. Verlust von Behandlungsanlagen könnte zu: Mehrfachbrüchen im Versorgungsnetz führen</td>
<td>können der Wasserversorgung durch natürliche Katastrophen betroffen sein. Verlust von Behandlungsanlagen könnte zu: Mehrfachbrüchen im Versorgungsnetz führen</td>
<td></td>
<td></td>
<td></td>
<td>however the</td>
</tr>
<tr>
<td>Implement pipe renewal programme (new proactive and risk based approach)</td>
<td>Current condition assessments signal a bow wave of replacements in the medium term and corresponding cost profile. We will look at levelling this bow wave through spreading work or funding over the time period.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Low to</td>
</tr>
<tr>
<td></td>
<td>können der Wasserversorgung durch natürliche Katastrophen betroffen sein. Verlust von Behandlungsanlagen könnte zu: Mehrfachbrüchen im Versorgungsnetz führen</td>
<td>können der Wasserversorgung durch natürliche Katastrophen betroffen sein. Verlust von Behandlungsanlagen könnte zu: Mehrfachbrüchen im Versorgungsnetz führen</td>
<td></td>
<td></td>
<td></td>
<td>medium,</td>
</tr>
<tr>
<td></td>
<td>können der Wasserversorgung durch natürliche Katastrophen betroffen sein. Verlust von Behandlungsanlagen könnte zu: Mehrfachbrüchen im Versorgungsnetz führen</td>
<td>können der Wasserversorgung durch natürliche Katastrophen betroffen sein. Verlust von Behandlungsanlagen könnte zu: Mehrfachbrüchen im Versorgungsnetz führen</td>
<td></td>
<td></td>
<td></td>
<td>however the</td>
</tr>
<tr>
<td>Water for firefighting</td>
<td>Complete an assessment of where we do and do not provide sufficient water pressure for firefighting purposes and then maintain the status quo, but notify Fire and Emergency New Zealand (FENZ) of the status of individual hydrants.</td>
<td>We are concerned that the presence of fire hydrants and a target to provide proximity to hydrants as a level of service target will imply that water for firefighting purposes can be provided.</td>
<td>✓</td>
<td></td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td>With changes to legislation (s74 Fire and Emergency New Zealand Act 2017), we need</td>
<td>können der Wasserversorgung durch natürliche Katastrophen betroffen sein. Verlust von Behandlungsanlagen könnte zu: Mehrfachbrüchen im Versorgungsnetz führen</td>
<td>können der Wasserversorgung durch natürliche Katastrophen betroffen sein. Verlust von Behandlungsanlagen könnte zu: Mehrfachbrüchen im Versorgungsnetz führen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>to undertake investigations into our flow and pressure of our urban water network to</td>
<td>können der Wasserversorgung durch natürliche Katastrophen betroffen sein. Verlust von Behandlungsanlagen könnte zu: Mehrfachbrüchen im Versorgungsnetz führen</td>
<td>können der Wasserversorgung durch natürliche Katastrophen betroffen sein. Verlust von Behandlungsanlagen könnte zu: Mehrfachbrüchen im Versorgungsnetz führen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant issue</td>
<td>Principal options for managing the issue</td>
<td>Implications of the option</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>confirm if it meets – or otherwise - the requirements the firefighting code of practice.</td>
<td>Most hydrants are likely to meet the code requirements.</td>
<td>provide additional tanker water.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complete an assessment of where we do and do not provide sufficient water pressure for firefighting purposes, and then make a decision on what level of service we will provide in future.</td>
<td>• Enables costs of any upgrades to be identified and a programme planned for. In the meantime, we'd temporarily withdraw the level of service it commits to providing in the LTP.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Costs of providing a level of service is unknown until an assessment has been done.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Could upgrade for firefighting purposes as replacements are made.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ Low cost from existing resource</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Water supply expenditure forecasts

Figure 6 and Figure 7 present the expenditure forecast for water supply which is based on the following assumptions:

- Legislative and regulatory changes will not require water treatment process changes.
- Capacity exists to accommodate forecast high growth figures.
- Existing legislation and service levels will be maintained.
- We will provide services at the levels forecast in our water supply asset management plan and 2018 long term plan.

Major capital expenditure items include:

- upgrades to more modern water meter technology ($2 million over 10 years and $250,000 per annum in years 11 – 30)
- replacement of asbestos pipes in the first 10 years ($5.5 million)
- a new ongoing pipe renewal programme ($19.5 million over 30 years), and
- the replacement of rural water reservoir and Kerepehi in 2030 (approximately $2 million).
Our forecast renewals are lower than depreciation as we have recently replaced our major water treatment plants.

**Funding this activity**

We fund our water services through a targeted rate comprised of annual charges and volume charges. As with all our activities, our policy on funding capital expenditure is to utilise sources of funds in the following order:

1. Grants and Subsidies
2. Financial Contributions/Development Contributions
3. Depreciation
4. Asset Sales
5. Reserves - Past Surpluses
6. Borrowing – Internal
Wastewater

Overview

We collect, treat and dispose of treated wastewater from domestic property and commercial / industrial premises on our reticulated wastewater network for seven urban townships in our district. Seven wastewater treatment plants service 6,150 properties via 166 kilometres of pipes.

Resource consents are required for discharging into six water bodies and onto planted forestry and are issued by WRC. The main purpose of a consent is environmental protection and is driven by the Resource Management Act. These consents are subject to requirements that restrict the volume of water that can be discharged, and stipulate the water quality parameters the discharged water must meet. We generally meet the current resource consent capacity limits, and with the exception of the occasional spike in some parameters, meets the water quality parameters as well.

As a result of the National Policy Statement for Freshwater Management, future conditions of consent that will be set by the WRC will require wastewater treatment plant upgrades. It is likely that all wastewater consents will require renewal within ten years of their consent being granted. This means that within the next 15 years all of our wastewater treatment plants will require an upgrade.

The wastewater network has a large portion of aged assets coming to the end of their design life. There is a known asset performance issue for networks with older infrastructure such as in Paeroa and Waihi. Our response is a renewal strategy to address unacceptable high levels of inflow and infiltration to ensure public health and environmental service levels are met.

A wastewater plant upgrade for Paeroa is planned to start in 2025/26. If growth occurs in Paeroa, an earlier upgrade will be required.

A combined review of the delivery of the water supply and wastewater activities was undertaken. The review found that an enhanced status quo (doing it the way we do but improving on some processes) was the best way to deliver these services to our communities. We currently deliver the services through the use of in-house teams, but make use of both external consultants and / or contractors for specialised works.

---

3 Fulfilling the requirements of section 17A of the Local Government Act 2002.
### Significant issues and options

#### Table 2  Significant issues and options for wastewater

<table>
<thead>
<tr>
<th>Significant issue</th>
<th>Principal options for managing the issue</th>
<th>Implications of the option</th>
<th>Years 1–10</th>
<th>Years 11–20</th>
<th>Years 21–30</th>
<th>Risk (H/M/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased environmental compliance standards will need to be met.</td>
<td>Continue working with WRC to negotiate the best way forward, including identifying where better outcomes would be achieved through other initiatives than the treatment upgrades and exploring different funding mechanisms (Adopted by Council resolution)</td>
<td>- The Paeroa plant is discharging at the limit of its consent for total nitrogen and phosphorus. There is no capacity for any additional connections beyond areas currently consented for development. Some works could be undertaken to improve the nitrogen and phosphorous levels, but this may be unnecessary if an upgrade is required. &lt;br&gt; We are concerned at the affordability of upgrading the wastewater treatment plants. &lt;br&gt; - Uncertainty of water quality contributions required. &lt;br&gt; - Risk of non-compliance if alternative initiatives are not agreed upon.</td>
<td>✓ $800,000</td>
<td>✓</td>
<td></td>
<td>High</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forecast upgrading all plants in the LTP but also continue to work with the WRC (as above)</td>
<td></td>
<td>- Upgrading the plants would occur over a 15 year period in line with current resource consent expiry timeframes at a total capital cost of $35.5 million &lt;br&gt; - In Ngatea specifically, the preferred option involves conveying effluent from the Ngatea Plant to the new Kerepehi Plant. This will require a new Ngatea pump station and rising main. These are both dependent on the new Kerepehi Plant to treat Ngatea and Kerepehi wastewater. &lt;br&gt; - The upgrades may not have substantial positive environmental improvements and be unaffordable for the district given limited funds available.</td>
<td>✓</td>
<td>✓</td>
<td>$18.45 million of capital expenditure would occur in years 11-20</td>
<td></td>
</tr>
</tbody>
</table>

Draft Infrastructure Strategy 2018-2028
<table>
<thead>
<tr>
<th>Significant issue</th>
<th>Principal options for managing the issue</th>
<th>Implications of the option</th>
<th>Years 1–10</th>
<th>Years 11–20</th>
<th>Years 21–30</th>
<th>Risk (H/M/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projected population growth will stretch the capacity of existing wastewater treatment plants, particularly in Kerepehi, Waihi and Paeroa</td>
<td>Identify preferred areas of residential and industrial land use change and existing infrastructure capacity and future needs. Consider and address capacity issues at the time of each scheme’s resource consent review.</td>
<td>• Growth may impact on capacity, particularly in the older parts of the wastewater network in Paeroa and Kerepehi and upgrades may be required. • In the meantime, we would deal with new developments requiring additional capacity on a case by case basis. Potential for financial contributions to be collected until a Development Contribution policy is adopted or entering into a development agreement.</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>High</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Within either years 1-20 or 11-20 and costs as per the plant upgrades above.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase treatment capacity at selected treatment plants through remedial works.</td>
<td>• Implement an I&amp;I reduction programme in Paeroa and Waihi. This will also address the District’s leaky network catchments. • Undertake desludging at Turua, Waihi and Whiritoa schemes to create capacity. • Reduce nitrogen and phosphorus discharges at the Paeroa plant to accommodate the existing consented development.</td>
<td>✓</td>
<td></td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• $2.5 million I&amp;I $0.3 million desludging $800,000 Paeroa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need to reassess the capacity of wastewater infrastructure to cope with climate change impacts – more intense and frequent rainfall</td>
<td>Identify an improvement programme for identifying groundwater infiltration and responses – refer above. Prolonged rainfall can increase groundwater levels which can increase the chance that groundwater will find its way into wastewater pipe network defects and use capacity within the network. This will lead to more wet weather overflows. A cross-council assessment of climate change and natural hazard implications and adaptation programme planned for 2018-2021.</td>
<td>• Increases capacity in existing schemes through stopping groundwater infiltration. • Forecast impacts better understood Adaptation options better able to target issue.</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• $3 million over 10 years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Low cost from existing resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant issue</td>
<td>Principal options for managing the issue</td>
<td>Implications of the option</td>
<td>Years 1–10</td>
<td>Years 11–20</td>
<td>Years 21–30</td>
<td>Risk (H/M/L)</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
<td>-----------</td>
<td>-------------</td>
<td>-------------</td>
<td>--------------</td>
</tr>
<tr>
<td>The impact of sea level rise, rising water tables and coastal erosion on public and private wastewater infrastructure</td>
<td>Develop a community plan for Kaiaua to address strategic issues and options before making investment decisions on infrastructure.</td>
<td>• While the Council isn’t responsible for resolving any future septic tank issues in Kaiaua, it could potentially contaminate ground water and become a health risk which needs to be considered as part of the development of the community plan. • Coordinates infrastructure decisions with future strategic goals and land use needs.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>A cross-council assessment of climate change and natural hazard implications and adaptation programme planned for 2018-2021.</td>
<td>• Forecast impacts better understood • Adaptation options better able to target issue.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Low</td>
</tr>
<tr>
<td>Asset condition and performance</td>
<td>Undertake condition sampling of the pipes to get more realistic data on asset condition and measure network performance</td>
<td>• The Council has 166km of pipes in the wastewater network. Over or underestimation of risk if the wrong assumptions are made for asset life • Sampling would result in a targeted renewals and replacement programme that would provide more resilience to the network and reduce possible failures and risk to health from failures</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Low to medium, however the cost would be high if critical assets fail</td>
</tr>
</tbody>
</table>
Wastewater expenditure forecasts

Figure 9 and Figure 10 present the expenditure forecast for wastewater which are based on the following assumptions:

- That the application of the National Policy Statement on Freshwater will require us to upgrade all of our wastewater treatment plants and not be able to offset the effects elsewhere.
- We will be required to fully fund the capital cost of all upgrades.
- Based on existing legislation, policy statements and regional plans and the increased levels of service required therein.
- Projected growth will be built into the required upgrades to the wastewater treatment plants. It is expected that 10% of the cost of the upgrades will be growth driven.
- That the required upgrade to Paeroa will be as a result of legislation and regulation and not growth. Should growth precede this then it may be the driver for change.
- We will provide services at the levels forecast in our wastewater asset management plan and 2018 long term plan.

Major capital expenditure items include:

- the upgrades of all wastewater plants in the first 20 years of this strategy ($35.5 million)
- increasing the capacity of the Paeroa, Waihi, Turua and Whiritoa through remedial works ($3.6 million in the first 10 years of this strategy), and
- an improvement programme for identifying ground water infiltration ($3 million in the first 10 years of this strategy).

![Figure 9: Wastewater capital expenditure, renewals and levels of service](image-url)
Our forecast renewals are lower due to the replacement of the treatment plants in the first 15 years of the plan. These replacements do not show in this renewal profile as the primary driver of the replacement is increased environmental requirements which is a level of service increase, rather than a renewal.

**Funding this activity**

We fund our wastewater services through a combination of a targeted pan charge rate (85-100% of our operational costs) and trade waste fees and charges (0-15%). As with all our activities, our policy on funding capital expenditure is to utilise sources of funds in the following order:

1. Grants and Subsidies
2. Financial Contributions/Development Contributions
3. Depreciation
4. Asset Sales
5. Reserves - Past Surpluses
6. Borrowing – Internal
**Stormwater**

**Overview**

Stormwater is the runoff of rain water from a rain event which requires management and disposal of using various drainage systems. We have 90 kilometres of urban stormwater pipes and 40 kilometres of open watercourses.

Four comprehensive stormwater discharge consents authorise the diversion and discharge of urban stormwater runoff and associated contaminants, for the townships of Waihi, Waikino, Karangahake, Mackaytown, Paeroa, Ngatea, Kerepehi, Turua, Kaiapua and Whiritoa. They also authorise the continued use of the stormwater outlets. The four consents were granted in 30 April 2003 and expire on 1 May 2023. $130,000 has been budgeted for obtaining consents in 2022/23.

There is the potential the quality of stormwater entering the environment will need to be improved, although the implications of the National Policy Statement on Freshwater are not yet known. Between 2018 and 2021 we will focus on investigating and assessing requirements and costs associated with carrying out retrospective upgrades to satisfy future increases in level of service and demand.

More frequent intense rainfall is expected to increase the occurrence of water ponding on land. Stormwater infrastructure constructed in the last 10 years will have the capacity to deal with the effects of an expected 2.1 degrees Celsius rise in temperature by 2090, however older infrastructure will need to be renewed by the time projected climatic variations are seen.

Our internal business unit undertakes stormwater operating and maintenance activities as part of our three waters activity management. Other contractors are used from time to time for specialist works. We haven’t undertaken a service delivery review under the provisions of the Local Government Act 2002 (section 17A) as we found that the cost would outweigh the benefit of doing so.
## Significant issues and options

### Table 3  Significant issues and options for stormwater

<table>
<thead>
<tr>
<th>Significant issue</th>
<th>Principal options for managing the issue</th>
<th>Implications of the options</th>
<th>Years 1–10</th>
<th>Years 11–20</th>
<th>Years 21–30</th>
<th>Risk (H/M/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased environmental compliance standards will require the treatment of stormwater. Implications from the National Policy Statement on Freshwater Management on the future discharge of stormwater</td>
<td>Continue to retrofit existing infrastructure to comply with treatment of discharge requirements.</td>
<td>• More cost effective option to retrofit existing pipes when renewed.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>• Implications of freshwater legislation/standard changes unknown, but may result in more changes to discharge standards when resource consents expire.</td>
<td>□ $0.79 million over 10 years</td>
<td></td>
<td>$100,000 per year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>As an interim measure provide budget in 2022/23 for obtaining new resource consents.</td>
<td>Impact on funding and resourcing.</td>
<td>□ $130,000 in 2022/23</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitor changes to stormwater discharge treatment requirements.</td>
<td>Implications will be assessed once known.</td>
<td>✓ Low cost within existing resource</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The impact of more frequent and intense rainfall as a result of climate change More frequent intense rainfalls are expected to increase the occurrence of surface water ponding. All stormwater infrastructure built in the last 10 years has the capacity to deal with the associated 2.1 degrees Celsius rise in temperature.</td>
<td>Retrofit older infrastructure to handle climate change events as pipes are renewed.</td>
<td>• Pipes will be increased in capacity to cope with projected climatic variations as they are replaced or new infrastructure is installed.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>□ $0.3 million total renewal budget</td>
<td>□ $1.45 million Replacement of end of life infrastructure to comply with new design requirements Renewal and treatment.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A cross-council assessment of climate change and natural hazard implications and adaptation programme will occur in first 3 years of this Strategy.</td>
<td>Forecast impacts better understood Adaptation options better able to target issue.</td>
<td>✓ Low cost within existing resource</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>We needs to better understand the condition and performance of our older stormwater assets</td>
<td>Investigate condition of stormwater assets older than 10 years</td>
<td>• Better identification of renewal needs for older assets and development of an appropriate programme</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>□ Low cost within existing resource</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Stormwater expenditure forecasts

Figure 12 and Figure 13 present the expenditure forecast for stormwater which are based on the following assumptions:

- The National Policy Statement on Freshwater, WRC Plan Change 2 and co-governance of the rivers will drive the need to improve water quality.
- We will be required to retrospectively install measures to treat stormwater to acceptable levels prior to discharging to the receiving water body.
- We will continue to replace end of life infrastructure with infrastructure sized to accommodate climate change.
- We will provide services at the levels forecast in our stormwater asset management plan and 2018 long term plan.

Major capital expenditure items include:

- continued retrofitting of existing stormwater pipes when they are renewed ($1.79 million in the first 20 years of this strategy)
- increasing the capacity of existing pipes as they are replaced or new pipes installed ($0.3 million in the first 10 years of this strategy)
- obtaining new resource consents ($100,000 in 2022/23).

![Stormwater Capital Expenditure](image1)

**Figure 12: Stormwater capital expenditure – renewals and levels of service**

![Stormwater Operating Expenditure](image2)

**Figure 13: Stormwater operating expenditure**
We expect that our stormwater pipe network will need few replacements in the next 20 to 25 years. After that, a large part of the stormwater network will need replacement. The impact of most of this replacement is beyond the 30-year timeframe of this strategy.

**Funding this activity**

We fund our stormwater services through a rates. The rates include a capital value-based district rate (15% of our operational spend) and a capital value-based targeted rate (85%). As with all our activities, our policy on funding capital expenditure is to utilise sources of funds in the following order:

1. Grants and Subsidies
2. Financial Contributions/Development Contributions
3. Depreciation
4. Asset Sales
5. Reserves - Past Surpluses
6. Borrowing – Internal
Land Drainage

Overview

Land drainage involves collecting runoff from the rural catchment areas of our district and discharging it directly to river or sea outlets. Drainage schemes are designed to ensure that water does not lie on the ground for more than three days for an even of 10% annual exceedance probability (AEP – the equivalent of a 1 in 10 year event). This is primarily to protect pasture. While most land drainage activities are undertaken by regional councils, we also provide land drainage services across four drainage districts. We are also dependent on the performance of the regional flood protection schemes which are not under our control.

We have 650 kilometres of rural land drains and 54 kilometres of primary stopbanks and 49 kilometres of secondary stopbanks. Settlements, or parts of settlements that sit alongside these land drains include Ngatea, Kopurahi, Kerepehi, Patetonga, Netherton, Turua, Oronga, Waitakaruru and parts of Paeroa. These settlements, or those parts of these settlements that sit alongside the land drains have a higher level of risk if the land drains are not able to meet capacity during storm events.

It is likely that climate change will impact on the land drainage activity over time and may affect future extensions to and/or maintenance of this asset. As the peat shrinks and the land contour changes, some re-orientation of the drainage network will be required. In addition to this the Waikato Regional Plan has adopted a sea level rise of 0.8 metres above the 1990 levels by 2090. Maintenance is undertaken to raise the stopbanks back to the required design level as the soft estuarine muds compress under the weight of the stopbanks thus causing them to settle. The primary stopbanks require maintenance work every 10 – 15 years. The stopbanks will need to be progressively raised when this maintenance is undertaken. The current level of 3 metres (Tararu Datum) will thus need to be increased to 3.8 metres. This will have the additional effect of increasing the settlement rate and will potentially reduce the timeframe between required maintenance works.

In the next three years we will be undertaking investigations into raising stop bank levels to cope with 100 year flood events (3 metres + sea level rise) with 0.5 metres freeboard to bring it up to the WRC flood protection level of service in our district. Results from this investigation will inform the 2021-2051 Infrastructure Strategy and the 2021-2031 LTP. Indicative figures only have been included in this strategy.

At the moment the land drainage activity does not require any consents. It is possible that in the future the Hauraki Treaty Settlement, future Regional Plan Change 2 or changes to the National Policy Statement on Freshwater Management may result in consents being required, or impose water quality standards on water discharged into river or sea outlets from land drainage schemes. We would need to consider land use and how and what can find its way into the land drainage network if we were required to obtain consents or treat water we discharge. The cost of obtaining consents could be significant, as well as the treatment of discharged water. A watching brief will be kept on this.

Our internal business unit undertakes land drainage operating and maintenance activities. Other contractors are used from time to time for specialist works. We haven’t undertaken a service delivery review under the provisions of the Local Government Act 2002 (section 17A) as we found that the cost would outweigh the benefit of doing so.

Edgecumbe flooding

In April 2017, the town of Edgecumbe was seriously flooded when stopbanks had been undermined and failed. An independent review of the Rangitaiki River scheme found that the risks to the community were overlooked while the river scheme was being upgraded and that evacuation plans in the event of the river flooding were inadequate. A review of the report will be undertaken to identify any information or findings that will enable us to better plan for and respond to flood events and the flood protection measures needed to protect people and property in the future.
### Significant issues and options

**Table 4  Significant issues and options for land drainage**

<table>
<thead>
<tr>
<th>Significant issue</th>
<th>Principal options for managing the issue</th>
<th>Implications of the option</th>
<th>Years 1–10</th>
<th>Years 11–20</th>
<th>Years 21–30</th>
<th>Risk (H/M/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Impacts on land and property from sea level rise and coastal erosion</strong></td>
<td>More pump stations and more pumping hours</td>
<td>• The use of land, property and economic sustainability of the District will continue if the amount of useable land is protected from sea level rise</td>
<td>✓ Low</td>
<td>✓ Low</td>
<td>✓ Low</td>
<td>Low</td>
</tr>
<tr>
<td>Large areas of the plains are below high tide levels and are more susceptible to increasing sea level and coastal erosion processes</td>
<td>Stopbanks will need to be raised regularly to keep in step with the rising sea levels. Investigate raising the stopbanks to cope with 100 year flood events (3 metres) as well as some additional freeboard levels.</td>
<td>• More pumps and pumping would be required as the water table rises. This will mean increased energy and operating costs. • Stopbanks will be high enough to serve purpose. • Flood gates will become submerged and ineffective.</td>
<td>✓ Low</td>
<td>✓ Low</td>
<td>✓ Low</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Monitor drainage flows to identify is ‘reverse flow’ is occurring where water is flowing back into the drainage system. Stop flow mechanisms may need to be installed.</td>
<td>• Avoid backflow into the land drainage network.</td>
<td>✓ Low</td>
<td>✓ Low</td>
<td>✓ Low</td>
<td>Low</td>
</tr>
<tr>
<td><strong>Impact of climate change on the land drainage network</strong></td>
<td>Increase the height of the stopbanks when maintained to keep ahead of sea level rise. Levels of service may also need to be increased to include a higher level of protection and freeboard.</td>
<td>• The stopbanks in the Waitakaruru area (owned by HDC) are designed to cope with a 2% AEP (1 in 50 year) event (whereas the Waikato Regional Council-owned stopbanks are designed for a 1% AEP (1 in 100 year) event. • Increased pumping due to increased storm events. • A drought will not impact land drainage</td>
<td>✓ Low</td>
<td>✓ TBC</td>
<td>✓ TBC</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>A cross-council assessment of climate change and natural hazard implications and adaptation programme is planned for 2018-2021</td>
<td>• Forecast impacts better understood • Adaptation options better able to target issue.</td>
<td>✓ Low</td>
<td>✓ Low</td>
<td>✓ Low</td>
<td>Low</td>
</tr>
<tr>
<td>Significant issue</td>
<td>Principal options for managing the issue</td>
<td>Implications of the option</td>
<td>Years 1–10</td>
<td>Years 11–20</td>
<td>Years 21–30</td>
<td>Risk (H/M/L)</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td>------------</td>
<td>-------------</td>
<td>-------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Impact of natural hazards on land drainage</td>
<td>Model what failure looks like to understand what mitigation measures may be required needed</td>
<td>• Provides for better mitigation measures to respond to the threat of natural hazard effects.</td>
<td>✓</td>
<td></td>
<td></td>
<td>High catastrophic impact but unlikely to occur.</td>
</tr>
<tr>
<td>Stop bank failure would be catastrophic on low lying and coastal settlements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asset condition and performance</td>
<td>Greater understanding is required of the land drainage network to ensure effectiveness and optimal performance. This includes a survey of drain depth and shape.</td>
<td>• Results in a refocus or better coordination of the current maintenance regime, increasing effectiveness.</td>
<td>✓</td>
<td></td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Land drainage expenditure forecasts

Figure 15 and Figure 16 present the expenditure forecast for land drainage which are based on the following assumptions:

- Climate change will result in a sea level rise of 0.8 metres above the 1990 level by 2090. The investigation into the raising of the stopbanks to cope with sea level rise will provide a more accurate understanding of a capital works programme and forecasts.
- Stopbank maintenance / renewal is required every 10 to 15 years. This is reflected in our capital expenditure forecasts below.
- We will provide services at the levels forecast in our land drainage asset management plan and 2018 long term plan.

Figure 15: Land drainage and flood protection capital expenditure – renewals and levels of service

Figure 16: Land drainage and flood protection operating expenditure
We expect that our stop banks will need topping up every 10 to 15 years. The top-ups shown in the capital expenditure chart are described as renewals, however they have an element of level of service increase as the topped up banks will be higher than the current banks.

**Funding this activity**

We fund our land drainage services through rates. The rates include a land-value based targeted rate (85% of our operating spend) and a capital value-based district rate (15%). As with all our activities, our policy on funding capital expenditure is to utilise sources of funds in the following order:

1. Grants and Subsidies
2. Financial Contributions/Development Contributions
3. Depreciation
4. Asset Sales
5. Reserves - Past Surpluses
6. Borrowing – Internal
Land transport - roads and footpaths

Overview

We provide 633 kilometres of roads (518 kilometres sealed and 115 kilometres unsealed), approximately 160 bridges and 112 kilometres of footpaths in our district. Our roads are generally in good condition but because of the underlying geology of a peat sub-base that the roads sit on, particularly in the Hauraki Plains area, the impact of water, whether it is increased or decreased is a significant challenge in the maintenance and construction of roads.

The effects of climate change, including sea level rise may damage elements of our roads (flooding, drought, slips, and erosion) particularly for the peat soils in the Hauraki Plains. In response we will be preparing a cross-council climate change and natural hazards adaptation programme and working with the regional council to prepare long term strategies for communities at risk between 2018-2021.

The age profile of bridges shows that the majority of our bridges are 35-64 years old, with over 50 of the 160 bridges being 45-54 years old. Bridge condition is not well understood and we are commencing a shared bridge inspection contract with the Waitomo and Matamata-Piako District Councils under RATA (Waikato Road Asset Technical Accord) which will involve developing a replacement programme, and we will develop a strategy to address issues resulting from this work. The inspections will be staged over a number of years.

Our footpaths mainly service urban areas and are in good condition, however the aging population may mean that changes to levels of service e.g. wider footpaths to accommodate mobility scooters, may be required to ensure accessibility in the future. Not all urban streets have footpaths on both sides. We’ll develop a programme of works to support the implementation of an accessibility study, commencing in 2021. As new assets are created they will impact on expenditure for maintenance and renewals.

A change to renewals for roads is required as the current approach of reducing sealed road resurfacing work to test pavement and surfacing lives has led to an increase in road roughness and in the backlog of reseal work and a decrease in customer satisfaction. We will increase future resurfacing to 53 kilometres (10% of the road network) between 2018 and 2021. Work is being undertaken to determine the required additional percentage to be resurfaced beyond 2021 to ensure that our programme is sustainable.

We are seeking community views on this proposal. Please read our We need to talk consultation document to find out more https://weneedtotalk.hauraki-dc.govt.nz.

The NZTA subsidy for roading is a critical factor in managing our roads. If this subsidy was no longer available there would be a significant impact on our expenditure and rates.

We are aware that technology is rapidly changing with autonomous and driverless car technology being at the forefront of changes to the way people travel. This may result in changes to our land transport infrastructure over the life of our strategy. At this point no specific response is required; however, we will keep a watching brief on technology changes.

It is not anticipated that there will be significant impacts on roads and footpaths. Most heavy vehicles for farming, quarrying, forestry and aquaculture use State highways. While growth is predicted to continue in these industries it is not anticipate there will be a significant impact on the assets. There are some seasonal holiday peaks for short periods which can put a strain on the road network, but these are usually only for a few days at a time.

In the past three years there has been fluctuation in emergency road works which is an unpredictable expense. we have budgeted $150,000 annually to fund our share of emergency works.
We have a road safety performance target to reduce the number of fatal and serious injury crashes. Since 2015 there have been four fatal crashes in 2014/15 with four serious crashes in 2014/15 and 2015/16, and six serious crashes in 2013/14.

We have budgeted $150,000 of capital budget for new transport infrastructure attributable to growth within the district.

A combined review of the delivery of our land transport activity was undertaken in 2016/17. The outcome of this review saw us bring the professional services in-house and the subsequent establishment of a transport team. The team collaborates closely (as a member) with the Waikato Road Asset Technical Accord. Specialised services are still procured externally. The majority of physical works are undertaken via contract.

\*Fulfilling the requirements of section 17A of the Local Government Act 2002.
## Significant issues and options

### Table 5  Significant issues and options for land transport

<table>
<thead>
<tr>
<th>Significant issue</th>
<th>Principal options for managing the issue</th>
<th>Implications of the options</th>
<th>Years 1–10</th>
<th>Years 11–20</th>
<th>Years 21–30</th>
<th>Risk (H/M/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Future level of funding subsidies is uncertain. Changes to national and regional funding arrangements could have a significant impact on the ability of the Council to deliver its land transport programme.</td>
<td>Maintain a watching brief of funding reviews and submit to funding reviews where appropriate.</td>
<td>• The Plan includes a regional programme of activities proposed. Any changes to funding for projects within our district will have implications in our forecasting capex expenditure and delivering community outcomes.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Medium</td>
</tr>
</tbody>
</table>
| Ageing population and accessibility on levels of service and costs of providing that service | Allocate funding for improving non-vehicular transport routes including walking, cycling and mobility impaired forms of travel and prepare an annual programme of works to prioritise initiatives. | • Works will be prioritised.  
• Provides greater transport options.  
• Encourages linkages to future new subdivisions. | ✓ | ✓ | ✓ | Low |
| Impact of sea level rise and coastal erosion on roading and bridge infrastructure | A cross-council assessment of climate change and natural hazard implications and adaptation programme. planned for 2018–2021. | • Forecast impacts better understood  
• Adaptation options better able to target issue. | ✓ | ✓ | ✓ | Medium |
|                                                                                  | Prepare a comprehensive erosion management plan for the protection of the Kaiaua coastal roading corridor from the sea. | • Identifies protection interventions required.  
• Provides for greater resilience of road corridor.  
• Road erosion north of Kaiaua would prevent use of road and repair works would be significant ($millions). | ✓ | | ✓ | Some parts of the network have a higher risk |
<table>
<thead>
<tr>
<th>Significant issue</th>
<th>Principal options for managing the issue</th>
<th>Implications of the options</th>
<th>Years 1–10</th>
<th>Years 11–20</th>
<th>Years 21–30</th>
<th>Risk (H/M/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impacts on roading infrastructure from climate change</td>
<td>Continue to reactively respond to weather events causing road damage including droughts and slips.</td>
<td>• Drought damage responses can be significant ($1.8 million for last drought).</td>
<td>✓</td>
<td></td>
<td></td>
<td>Low cost within existing resource</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Droughts don't currently follow a foreseeable pattern.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• More slips are likely if recent rainfall events are indicative of annual occurrence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The Plains area is predominantly peat soils which are susceptible to increases and decreases in water which impacts on our renewals and maintenance plans as road surfaces need to be replaced more often</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our bridges are aging but we don’t know enough about their condition</td>
<td>In collaboration with RATA, undertake a staged inspection programme of aging bridges and develop a replacement programme.</td>
<td>• Provides for proactive inspections and enough time to programme in replacement needs.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Inspections low cost within existing resource. Programme TBD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Programme will be based on bridges needing improvements in condition rather than age.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Transportation expenditure forecasts

Figure 18 and Figure 19 present the expenditure forecast for roads and footpaths which are based on the following assumptions:

- The New Zealand Transport Agency will continue to provide us with subsidised funding for the road network over the next 30 years under the current rates and criteria
- We will continue to fund at the levels in the LTP and 10 year forecasts stated in our long term plan
- No account has been taken of the impacts related to the acceptance and implementation of the Risk Management Plan
- Revenue from financial contributions will be available as forecast until they are no longer able to be imposed from 18 April 2022
- We will provide services at the levels forecast in our land transport asset management plan and 2018 long term plan.

Major capital expenditure items include:

- $40.5 million to resell 10% of our roads (about 53 kilometres) each year for the next three years, and 8.8% (45 kilometres) each year from then onwards.
- Improvement of non-vehicular transport routes including walking, cycling and mobility impaired forms of travel ($2.1 million over the 30 years of this strategy).

Figure 18: Roads and footpaths capital expenditure – renewals and levels of service
Funding this activity

We fund our land transport services from a range of sources:

<table>
<thead>
<tr>
<th>Carriageways operating expenditure</th>
<th>NZ Transport Agency Subsidy (59-60%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rate – Capital Value Roading (remainder)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Footpath operating expenditure</th>
<th>Rate – Uniform Annual Charge – Ward (100%)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Safety operating expenditure</th>
<th>Land Transport Subsidy (59-60%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rate – Capital Value Roading (remainder)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Amenities operating expenditure</th>
<th>Land Transport Subsidy (59-60%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fees and charges 1%</td>
</tr>
<tr>
<td></td>
<td>Rate - Capital Value Roading (remainder)</td>
</tr>
</tbody>
</table>
As with all our activities, our policy on funding capital expenditure is to utilise sources of funds in the following order:

1. Grants and Subsidies
2. Financial Contributions/Development Contributions
3. Depreciation
4. Asset Sales
5. Reserves - Past Surpluses
6. Borrowing – Internal
Financial summary

Our strategy for our infrastructure is dominated by the impacts of the National Policy Statement for Freshwater and the associated infrastructure upgrades to increase current levels of service it will drive. Activities where there is an increase in costs but a maintaining current levels of service include water pipeline and meter renewals and road resurfacing and renewals (resealing). The upgrades to the wastewater treatment plants and various reticulation networks, while driven primarily by legislative and regulatory requirements, also include a growth component. This is to accommodate the increase in demand on our infrastructure that the expected growth will generate.

Summary of key financial assumptions

The most likely scenario for the District is as follows:

- Levels of service will remain largely unchanged, except for the upgrade to wastewater treatment plants and other infrastructure upgrades driven by the NPFSW.
- There will need to be significant expenditure in the long term to meet requirements for the management of freshwater.
- Performance data for assets is assumed to be accurate.
- We will continue to deliver services at the forecast costs.
- We will maximise the useful and economic lives of our assets.
- We will use risk management practices to maximise assets and the management of risk of a critical asset failing.
- There will be an increase in the demand for infrastructure services over the life of this Strategy.
- There will be increased costs for the acquisition, implementation, compliance and monitoring of resource consents.
- The New Zealand Transport Agency will continue to provide subsidised funding to the Council for the road network over the next 30 years under the current rates and criteria.
- Revenue from financial contributions will be available as forecast until they are no longer able to be imposed from 18 April 2022.
- A development contributions policy will be developed by June 2021.

Financial forecasts

All financial information presented in our strategy includes inflation, except for the graphs which present the renewal and depreciation expenses.

In delivering the infrastructure services and addressing the identified issues outlined throughout the Strategy, we expect to spend the operating and capital expenditure as set out in Table 6 over the 30 year period.

Table 6  Expected total operating and capital expenditure (Inflated values)

<table>
<thead>
<tr>
<th>Infrastructure Activity</th>
<th>Operational Expenditure ($million)</th>
<th>Capital expenditure ($million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water supply</td>
<td>316</td>
<td>64</td>
</tr>
<tr>
<td>Wastewater</td>
<td>180</td>
<td>73</td>
</tr>
<tr>
<td>Stormwater</td>
<td>34</td>
<td>7</td>
</tr>
<tr>
<td>Land drainage</td>
<td>52</td>
<td>21</td>
</tr>
<tr>
<td>Land transport</td>
<td>364</td>
<td>184</td>
</tr>
<tr>
<td>Total</td>
<td>946</td>
<td>349</td>
</tr>
</tbody>
</table>
Figure 21 and Figure 22 present the anticipated operating and capital expenditure broken down over the 30 year period.

**Figure 21: Total operating expenditure forecasts 2018-2048**

**Figure 22: Total capital expenditure forecasts 2018-2048**
Decisions we expect to make

We will have to make a number of large decisions over the duration of our strategy. Some of these decisions will be significant to our district and some won’t. We consider that a decision will be significant if making that decision will affect our ability to continue providing our activities without major implications for debt, rates and other funding requirements. Decisions that are lower in cost but have a major impact on a large portion of our district community may also be significant (these and other criteria are set out in our Significance and Engagement Policy).

We consider our decision on the future changes to our wastewater treatment plants to improve discharge quality to be significant.

Based on known information, we undertook a business case review of the upgrade options for our wastewater treatment plants. These upgrades are needed to comply with the National Policy Statement on Fresh Water. The options considered include:

- **Our preferred option** would entail designing all plants for the higher of our growth scenarios, disinfection of wastewater, and reducing contaminant loads to 75% of current loads. Our treatment plant at Kerepehi would be upgraded to treat wastewater from Kerepehi and Ngatea townships and potential industries in Kerepehi. All other plants would be upgraded individually.

- **A less ambitious option** involves designing all plants for the medium of our growth scenarios, disinfecting wastewater and maintaining the current loads of contaminants. As per the option above our treatment plant at Kerepehi would be upgraded to treat wastewater from Kerepehi and Ngatea townships and potential industries in Kerepehi. All other plants would be upgraded individually.

- **A more ambitious option** involves designing all plants for high growth scenario, disinfecting wastewater, and reducing contaminant loads to 75% of current loads. Our treatment plant at Kerepehi would be upgraded to treat wastewater from Kerepehi, Ngatea and Turua townships and potential industries in Kerepehi. All other plants would be upgraded individually.

Our preferred option provided the most cost effective and good quality option as defined by the Local Government Act 2002 (section 10) and thus we resolved to adopt this option.
The decisions to be made over the duration of this strategy will be on the actual design – and resulting cost implications – of each wastewater treatment plant. We'll start working towards a more concrete decision on this in 2023 to 2024. We don’t know what the scale of costs of any design options might be yet but estimates so far tell us that it may be a total of approximately $35.5 million and that’s what we’ve provided for in our budgets.

We consider this to be significant because the financial consequences are high, and will affect both our capacity to deliver our range of existing services without significantly impacting on our debt levels and our rates funding requirements. This would affect ratepayers across the district financially through higher increases in wastewater rates.

Other matters which may require decisions in future but that we can’t identify yet include:
• defining our response to the identified implications of sea level rise, rising water tables and coastal erosion – implications on the district, low lying areas and settlements including Kaiaua and the affordability of our options.
• responding to the results of our various infrastructure study programmes on completion and their implications for assets and financial planning,
• once known, identifying the implications of the capacity our current network infrastructure for providing for future demand including the costs of doing so and our response.

Funding implications
There are significant funding implications from capital expenditure doubling and renewals expenditure exceeding depreciation by 2025. We are proposing significant rates increases over the next ten years, particularly a 114% increase in roading rates and an 80% increase in wastewater rates. This will have a significant impact on the affordability of rates for a number of our ratepayers. This is discussed in more detail in our Financial Strategy.