# DRAFT Infrastructure Strategy 2021-2051

# Infrastructure Strategy

## Background

### Why have an infrastructure strategy?

Infrastructure is one of the most significant elements of council planning and expenditure. Most council services rely on having fit-for-purpose infrastructure to support that service and infrastructure is a significant driver of council costs.

New Plymouth District Council (NPDC) currently has infrastructure assets worth almost $2.3 billion and is expecting to invest a further $943 million over the next 10 years in renewing, upgrading or adding to our infrastructure assets. In addition, it costs approximately $50m each year to maintain and operate these assets which represents 30 per cent of NPDC's total operating costs. A key part of the long-term plan process is ensuring that NPDC is making timely and well informed decisions on these investments - as the consequences of those decisions will be with the district for many years, in some cases generations, to come. The Infrastructure Strategy is complemented by the Financial Strategy which considers the financial and funding impacts of these decisions and sets out the impacts on both the council finances and the direct implications for ratepayers.

The Local Government Act 2002 requires all councils to prepare an Infrastructure Strategy as part of their three-yearly long-term planning process. The Infrastructure Strategy must cover a period of 30 years and identify:

- the key infrastructure issues facing the Council;
- the principal options for managing those issues; and
- the implications of the various options.

Over the next 30 years the environment in which these decisions are made will continue to change. We need to provide for ongoing population growth (currently expected to grow by over 20 per cent over 30 years) and where new housing and employment areas will be situated to cater for that growth; an ageing population and what that means for much of our infrastructure; ongoing growth in tourism – which we expect to bounce back post Covid-19; the effects of climate change (e.g. coastal infrastructure at risk, managing increased flooding events and conversely improved water supply for droughts).

### Who provides infrastructure?

Delivering New Plymouth's infrastructure requires coordination across a number of public and private organisations depending on the type or scale of infrastructure. Typically:

- Government provides state highways, railway lines and some social infrastructure, such as schools and hospitals. It also subsidises other transport infrastructure.
- NPDC provides arterial roads, water supply, wastewater and stormwater networks and social infrastructure such as community facilities and parks. NPDC also, through our Council Controlled Organisation Papa Rererangi i Puketapu Ltd, provides the New Plymouth Airport.
- Taranaki Regional Council own Port Taranaki, Yarrow Stadium, regional gardens and provides public transport, significant flood protection on the Waitara and Waiwhakaiho rivers, and river management.
- Developers initially construct local streets and pipe networks which are then vested with NPDC to own and maintain.
- Energy and communications infrastructure is typically supplied by private utility companies.

Most of our major resource consents for water and wastewater have more than a decade left before they expire. The new water source and the Urenui/Onaero wastewater projects will be the main projects that require significant new consents. Also universal water metering and water conservation are both viewed as essential prerequisites before we can get a new water source consented.

This strategy covers the critical infrastructure networks owned and operated by NPDC (water, wastewater, stormwater and flood control, roads and footpaths) as well as those key recreational and property assets where strategic decisions are identified within the 30 year period.

# Infrastructure Strategy

## Where we are heading

In order to make good decisions about future investments in our infrastructure assets, NPDC needs to have a clear vision of what it is trying to achieve. In July 2020 we confirmed our strategic framework:

**Vision**

**Sustainable Lifestyle Capital**

**Mission**

**To provide our people with an innovative and resilient district that restores mauri, protects our environment and supports a successful economic transition, while providing quality infrastructure and leadership through operational excellence**

**Goals**

**Partnerships**

Strengthening a treaty based partnership with tangata whenua and building partnerships with not-for-profit, private enterprise, and government to improve outcomes for all

**Delivery**

Understanding and balancing our people's needs and wants through prudent delivery of quality infrastructure and services

**Community**

Achieving wellbeing through a safe, creative, active and connected community while embracing Te Ao Māori

**Sustainability**

Nurturing our environment, mitigating our impact and adapting to climate change

**Prosperity**

Growing a resilient, equitable and sustainable economy where people want to work, live, learn, play and invest across our district

How we maintain, renew and invest in our infrastructure networks will be driven by delivering on this mission and goals. The level and speed at which we can achieve the mission will be constrained by the affordability of providing everything that the community and council may wish to. Our Financial Strategy sets out the limits within which we need to work in order to keep our spending affordable for the community. In setting out the options for each of these major infrastructure decisions in this document we have been guided by the limits set in the Financial Strategy.

Decisions about future investment in our infrastructure assets will be subject to ongoing legislative changes including the Freshwater Reforms, the Three Waters Review, the National Policy Statement for Urban Development, and the three new acts signalled under the resource management reforms.

To help us prioritise the investment in our infrastructure we have identified the following key drivers of our decisions:

1. Taking care of what we have. We need to ensure that we invest in maintaining, renewing or replacing our existing asset infrastructure to preserve and extend their useful life.

2. Resilience and responding to climate change. As we build new assets and renew our existing infrastructure we must ensure we build in resilience to issues from natural hazards including, volcanic and seismic activity, sea level rise, coastal erosion, flooding events and droughts along with the consideration of the predictions of climate change.

3. Planning for growth. Our district continues to grow and it is important that we manage that growth and provide the infrastructure in the appropriate areas to support new housing and employment areas.

4. Meeting the needs of our community and reducing our impact on the environment. As our community grows and changes we need to ensure our infrastructure responds to those changing needs and that we also respond to increasing standards to support public health and environmental protection.

These four drivers of decision making have been translated into some specific asset management objectives:

# Infrastructure Strategy

## Taking care of what we have

Taking care of our infrastructure assets means:

We understand that asset data and evidence based decision-making are critical to optimising costs and maximising the value our services bring to our customers.

We protect and enhance public health by providing quality services.

We own and operate infrastructure that is safe for our staff suppliers and customers.

## Resilience and responding to climate change

Resilience of our assets means:

Our infrastructure protects and enhances our built environment and creates amenity value.

We provide reliable services and infrastructure that is resilient to natural hazards and adapts to climate change.

We provide system redundancy and emergency back up systems to our critical infrastructure.

## Planning for growth

Planning and providing for growth means:

We work in partnership with Tangata Whenua when we plan for our infrastructure.

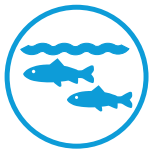
Our infrastructure is an enabler for economic activity and future growth.

We educate our community so they can make informed choices about how they use our services and manage demand on our infrastructure and services.

## Meeting the needs of the community and reducing our impact on the environment

Meeting the needs of the community and reducing the impact on the environment means:

We manage the consumption of energy and associated greenhouse gas emissions to mitigate our impact on climate change.



We protect and restore the health of our natural environment.

We manage the use of resources in a sustainable way, minimising waste and seek out opportunities to use wastes as a resource to be reused or recycled.

## Partnership with iwi

The Long-Term Plan (LTP) identifies the role that Māori play in relation to the decision making of NPDC in the section titled 'Working with Tangatra Whenua'. As set out in that section, there are a range of mechanisms at both the governance and management levels where iwi and hapū engage with NPDC and participate in the decision-making process.

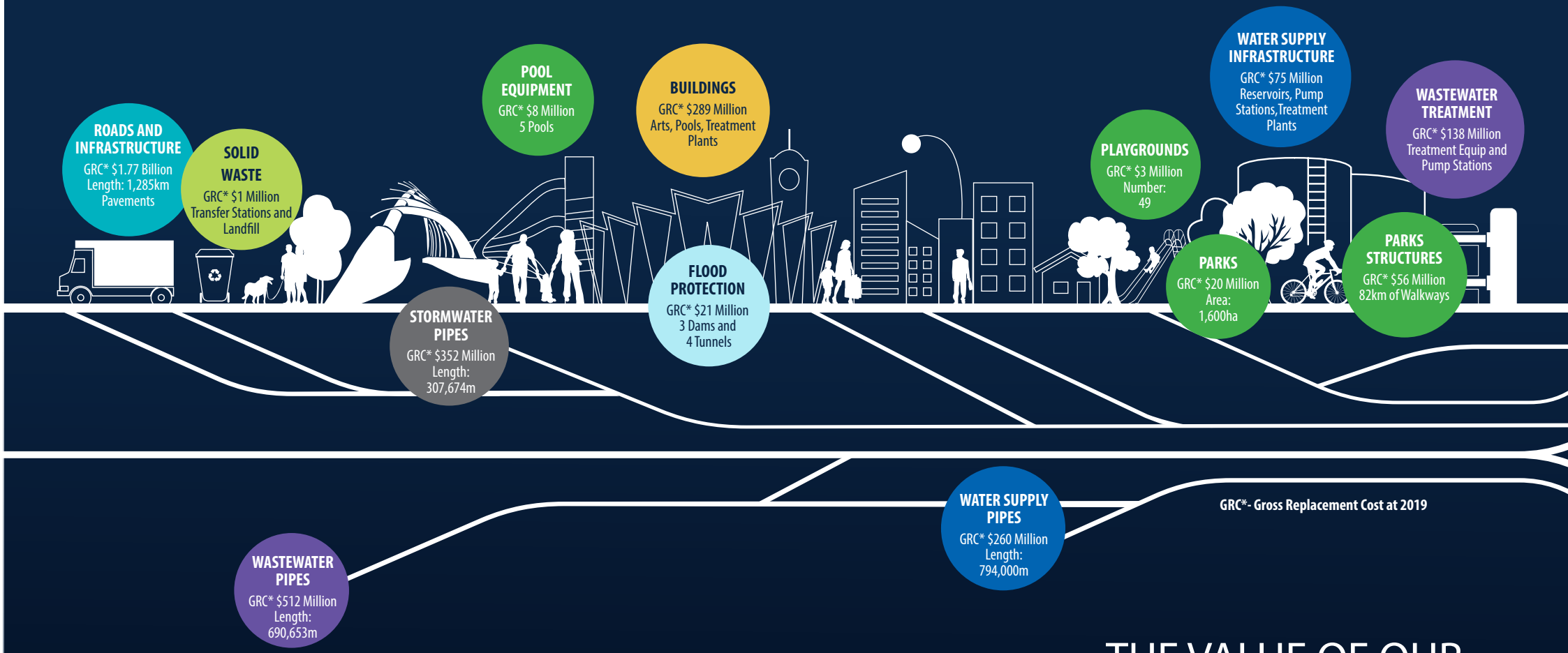
For large infrastructure investments NPDC is working more collaboratively with iwi to develop sustainable outcomes for the community. For example, a partnership is developing in relation to the development of a sustainable, long-term strategy for the district's three water systems (drinking water, wastewater and stormwater). The purpose of He Puna Wai is for NPDC and Ngati Maru, Ngāti Tama, Ngāti Mutunga, Te Atiawa and Taranaki iwi to work together in a spirit of partnership and collaboration to develop a long-term framework for the management of the district's water resources.

NPDC is moving its engagement model to the front-end of planning processes to better recognise tangata whenua's connection to place. Building on the success of the *Te Hono* New Plymouth Airport Terminal, the Waitara to Bell Block Coastal Walkway Extension will be co-designed with hapū. This approach will better ensure that the footprint of tangata whenua is recognised in the delivery of infrastructure projects.

# Where we are now

## Our current assets

NPDC's infrastructure assets are valued at almost $2.3b. This diagram illustrates the value of each major group of asset infrastructure.




GRC*- Gross Replacement Cost at 2019

# THE VALUE OF OUR INFRASTRUCTURE

# Infrastructure Strategy

## Our current challenges

In the 'Where we are heading' section above, we outlined the four key drivers that will help determine the prioritisation of NPDC's investment in infrastructure.

1. Taking care of what we have

   Looking after the very significant investment that has been made over many years in New Plymouth's infrastructure is a high priority. Much like looking after a house, it is important we maintain the condition of our infrastructure assets to make sure they perform, that they are safe and that they have as long and useful life as possible. We do this through:

   - Maintenance programmes – keeping an asset in good repair. This would be comparable to regularly painting your house and cleaning your gutters.
   - Renewals - replacing all or part of an asset to extend its life. In the house analogy this would be comparable to replacing the roof.

   Maintenance is part of our normal operational expenditure. In the past few years renewals have been funded from reserves, set aside annually from rates and evened out over a 10 year period. Because in this LTP we are proposing to catch-up on previous under-expenditure, we propose to fund renewals from a combination of the rate funded reserve and debt (for longer life assets). This approach will be phased out as we catch-up with the renewal programme. For more information see the Financial Strategy.

Since the Global Financial Crisis in 2007 we have had a period of economic turmoil and fiscal constraint the world over. In response to this, and the impacts on its Perpetual Investment Fund, NPDC made significant cuts to renewal budgets over a number of years, in order to reduce the level of rates charged to the community.

Due to the better understanding we now have of the condition of our assets and the impacts of underfunding, it is estimated that there is now a backlog of approximately $126m of assets that have reached the end of their operating lives. Our current renewals budgets average $28m per year and we estimate to address the backlog of deferred renewals, and fund the ongoing forecast renewals requirements, budgets will need to increase to somewhere between $45m (low option) and $61m (high option) per year for the next 10 years. Where in this range NPDC chooses to fund its renewals programme, will depend on the level of risk we are prepared to take balanced with the affordability to the community.

As NPDC's asset management capabilities continue to mature, more sophisticated techniques are being introduced to improve the accuracy and reliability of our renewals budget forecasting. This includes the introduction of Monte Carlo risk simulations. These simulations are mathematical statistical techniques used to understand the impact of risk and uncertainty in financial forecasting models. This allows for critical assets, where the consequence of failure is high, to be proactively replaced in order to minimise risk. Conversely, non-critical assets with a low consequence of failure can be allowed to "sweat" by delaying their replacement in order to extract maximum value from these assets.

In 2020/21 we reinstated Closed Circuit Television (CCTV) inspections and employed a mechanical maintenance inspector to improve our understanding of the condition of our assets. These two initiatives will continue as business as usual within this LTP to ensure that we continue to improve our understanding of the condition of our assets. We have also included funding in this LTP to explore improved inspection methodologies.

Key to making best use of these new tools, and supporting our decision making on renewals, is good information on the condition of our assets. Without good information on condition and provision of sufficient funding we face the risk of asset failure such as the recent partial collapse of Waiwaka Terrace culvert. As a result of this issue, an unbudgeted $2.5m was required to prevent further collapse and risks to public safety and private property.

Good asset data and a well-informed renewal programme reduces the need, and consequent cost, for reactive maintenance when an asset fails or becomes high risk, such as the above example.

# Infrastructure Strategy

Based on current data, our assessment of asset condition shows:

| Activity | Condition data | Confidence | Current performance |
|---|---|---|---|
| Water Supply | 64% of water pipes are rated moderate or better condition. 22% are rated poor or very poor condition and 14% rated as unknown. | Moderate confidence | Aside from some unsatisfactory pressure management and Inglewood discolouration we are meeting required levels of service. |
| Wastewater | 51% of wastewater pipes are rated moderate or better condition. 35% are in poor or very poor condition and 14% are rated as unknown. | High confidence | Currently meeting required levels of service. |
| Stormwater | More than 50% of our critical stormwater assets have had condition inspections. Renewals for less critical assets are based on age and performance. | Moderate Confidence | Generally meeting levels of service with the exception of Waitara and some other discrete areas in the district. |
| Flood Protection | The network is in very good condition. | High confidence | Currently meeting required levels of service. |
| Transportation | The asset base is in good condition and has 57% of its original life remaining. | High confidence | Currently meeting required levels of service. |

Each asset category has a full programme of renewal projects. Some examples of these are:

| Project | Description | Cost | Timing |
|---|---|---|---|
| Water asset condition inspections | Undertaking a comprehensive review of key assets in water supply network to inform the renewal programme, thereby protecting water supply, public health and the environment. | $1.4m over three years | Commencing 2021 |
| Inglewood oxidation ponds and Pump Station upgrade project | Some components of the existing ponds and pump station are obsolete and can no longer be replaced. Current configuration results in discharges during rainfall events. Consents for discharges expire in 2033. | $5.2m | 2025/26 |
| Te Rewa Rewa bridge repaint | A repaint of the bridge is required within the next two years to prevent corrosion of structural steel (resulting in more expensive treatment being required at a later date). | $1.8m | 2021/22 |
| Junction Street bridge upgrade | The current bridge is not for fit for purpose and the attached pedestrian bridge is at the end of its life. | $2.8m | 2023/24 |

### Taking care of what we have

Our strategy for looking after our existing assets is to:

a) Improve our knowledge of the condition of our assets through inspection and data collection.

b) Prioritise funding to the renewals of existing assets.

c) Develop proactive maintenance schedules for all assets.

# Infrastructure Strategy

## 2. Resilience and responding to climate change

In February 2018 the ex-cyclone Gita event damaged a main water pipe resulting in significant water shortages across the district. This is a good example of why we have to improve our planning and provision of resilience for critical assets needed by the community in any form of natural disaster or weather event, such as water supply, wastewater services, critical transport routes.

Currently we are vulnerable to natural disasters because:

- Historically, some of our existing infrastructure has been constructed in areas subject to natural hazards i.e. along the coast, across rivers, on fault lines and in areas subject to volcanic activity.
- In the early years of development of our wastewater networks, expectations and standards were very different from today. When combined with increased pressure from ongoing growth this leaves us with risks of sewage overflows and difficulty in planning shutdowns for maintenance purposes.
- The layout of some of our transport network and our challenging natural topography, means that during a major event some communities could be isolated.

While climate change is an issue nationally, the Taranaki region is particularly susceptible to volcanic activity and earthquake events. Massey University research identifies that seismic activity is likely in the next 50 years with an 81 per cent probability of Maunga Taranaki erupting in that period. There are a number of active fault lines in the district and off-shore and a volcanic event could cause major disruption through lahars and ash fall.

In the face of these risks we need to ensure we improve our resilience. Resilience is more than just building robust infrastructure that can withstand natural disasters. It requires a multi-pronged approach which covers every aspect of the way we plan, build and manage our asset networks, as well as how we respond during and after an event, as illustrated by the diagram below.

Using this approach will enable us to:

a) Reduce risk by actions such as improving our knowledge of hazard zones, understanding risk and criticality of assets, and ensuring where practicable that future assets are not built in hazard zones. Where necessary remove assets and private property in hazard zones, strengthen assets that remain in hazard zones, or provide alternatives and duplication for critical assets.


b) Maintain readiness through maintaining assets to a high standard and remove manageable hazards (e.g. debris, trees creating risks). Along with targeted and well communicated response plans, education of the community for their own preparedness and provision of financial reserves for recovery actions.

c) Respond during an event by focusing on and prioritising what is critical. This is achieved by coordinating the response across multiple agencies, shutting down damaged assets and activating alternatives, communicating clearly and frequently with the community.

d) Recover from an event by building better than before (avoiding risk zones, providing alternatives and duplication), using the rebuild to develop skills and knowledge in the community.

# Infrastructure Strategy

Some examples of key projects we have identified to deliver on this strategy are:

| Project | Description | Cost | Timing |
|---|---|---|---|
| Water resilience – Ōākura No.1 reservoir | Investigation and remediation of vulnerability of Ōākura No.1 reservoir to seismic events to prevent loss of water supply and danger of flooding to neighbouring properties. | $1.1m | 2026/27 |
| Wastewater pipe bridge upgrade programme | Information on the condition of many pipe bridges and their vulnerability to natural hazards such as flooding is incomplete. Structural assessments will be undertaken followed by a programme of necessary upgrades. | $0.3m per year | Commencing 2027 |
| Waiwhakaiho River second viaduct | This project is key to providing resilience to the network through another crossing of the Waiwhakaiho River. It will also provide some additional capacity to the network. | $7.3m | 2032 to 2041 |
| Historic landfill erosion protection | Following storm exposure of a historic landfill site at Waitara a stocktake of all historic landfills for which the Council is responsible has been undertaken. Risks and mitigation strategies will be developed for eight high priority sites (includes three on the coast and five close to riverbanks). | $0.8m | 2021/22 |

### Resilience and responding to climate change

Our strategy to provide resilience and respond to climate change is to:

a) Develop a resilience framework and levels of service for critical assets.

b) Complete seismic and criticality assessments across the asset infrastructure network.

c) Upgrade and/or provide alternatives for critical assets in the network and ensure solutions are adaptive to climate change.

d) Communicate with our community to prepare them for a natural disaster.

## 3. Planning for growth

Our district is growing. In 2021, our population will be 86,700, equating to almost 70 per cent of the Taranaki region. The population is projected to grow to 93,800 over the next 10 years and to 104,900 by 2051 (an increase of 21 per cent).

To meet our strategic vision and support a sustainable and connected community, we must plan for future growth. Planning ahead and making the appropriate infrastructure investment means we can service a growing number of residents and businesses and ensure the district remains an affordable and desirable place to live and do business.

In 2008, the Council reviewed the district's land supply under the Operative District Plan and adopted its Framework for Growth. In response to the 2016 National Policy Statement Urban Development Capacity the Council signalled through the LTP 2018-2028 that growth related infrastructure would be led by the Council (as opposed to developer led) and that a new District Plan would improve urban growth outcomes by providing a strengthened approach to the identification and provision of adequate land for growth in the right location.

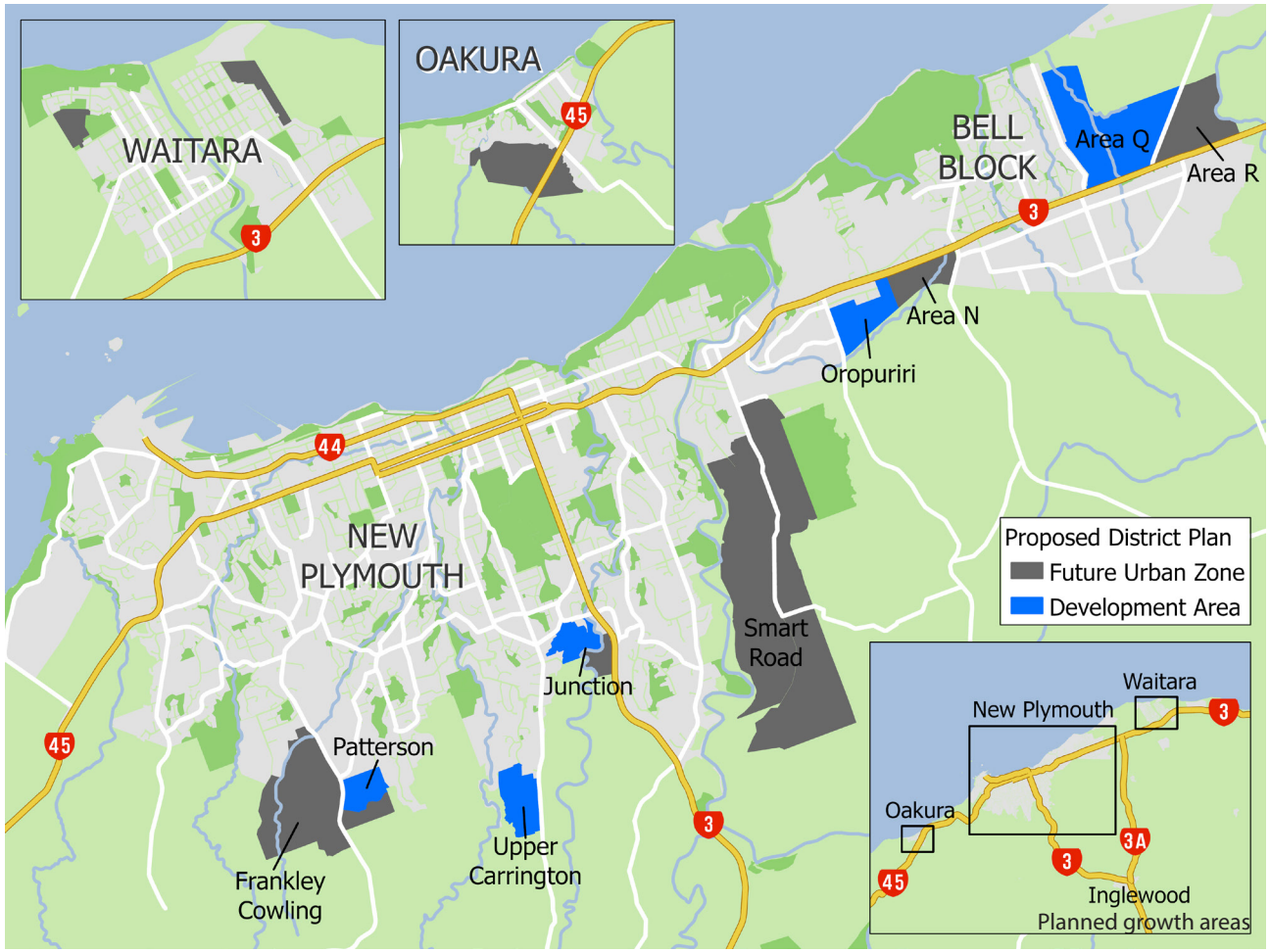
Notified September 2019, the proposed New Plymouth District Plan introduces structure plan development areas for identified zoned and infrastructure ready growth areas to ensure good quality subdivision and development

outcomes, as well as future urban zones which specifically recognise and identify suitable areas for residential and business (which includes industrial) growth in the medium to long term future. This approach is supported by a robust policy framework designed to include tangata whenua involvement in growth planning/land use and take into account community, social, economic, climate change and sustainability outcomes to ensure comprehensive, high quality development can occur in these areas. Importantly, this is all underpinned by the requirement that these areas must demonstrate they can be efficiently and appropriately serviced before they can be developed for urban use.

Key changes introduced in the Proposed District Plan are highlighted as:

- Short to medium term growth, over the next 10 years will be met within existing undeveloped structure plan development areas located in Bell Block, Junction Road, Carrington Street and Patterson Road. Infrastructure projects are provided over the next 10 years for these projects
- In the longer term (years 11 to 30) growth will expand into future urban zones located on the urban boundaries of parts of New Plymouth, Waitara, Ōākura, and Ōkato.

The map shows these areas.




The National Policy Statement on Urban Development (NPS-UD) was released in August 2020. The NPS-UD will continue to be taken into account in relation to our ongoing land use and infrastructure growth planning informing this Infrastructure Strategy, LTP 2021-2031 and the completion of the District Plan review.

Infrastructure assets for new growth is expensive and it is important that we understand and utilise the infrastructure we already have and explore the implications of infrastructure decisions we might make. We need to consider tools for managing demand on existing infrastructure rather than continuing to build for existing usage behaviours, such as reducing water consumption or changing travel choices.

Where additional infrastructure is required to support the growth enabled in the District Plan, the Council needs to plan and sequence our investment in line with the areas identified for growth.

Future growth will require investment in both network wide infrastructure, such as central processing plants, and in upgrading, or slightly extending, existing infrastructure on the boundary of our urban areas.

NPDC intends to lead any large scale infrastructure projects in the district. We will recover a portion of expenditure required to service new growth areas from developers of those areas, in accordance with

our Development and Financial Contributions Policy. Property developers are responsible for smaller scale and less complex infrastructure upgrades at the time they undertake their developments.

In addition, new legislative requirements have been recently introduced through the NPS-UD that direct the Council to provide zoned, feasible, serviced land to meet our projected population growth. The NPS-UD will continue to be taken into account in relation our ongoing land use and infrastructure growth planning informing this Infrastructure Strategy, LTP 2021-2031 and the current and future District Plan review processes.

Some examples of key projects we have identified to deliver on this strategy are:

| Project | Description | Cost | Timing |
|---|---|---|---|
| Water conservation programme including universal water metering | Water conservation measures that incentivise users to reduce their demand, will enable deferral of major capital works that would otherwise be required to cater for growth. It also reduces the amount of water taken from natural water sources and increase the ability to be resilient in drought conditions without additional water sources. | $18m for water meters and $5m opex over 10 years for other water conservation initiatives with overall net savings of $121m | Commencing 2021 |
| Cycling and walking programme | A programme of building more cycling and walking links so that it is safer and easier to travel around our city and district without using the car. | $7.5m over 4 years | Commencing 2021 |

### Planning for growth

Our strategy for planning for growth is to:

a) Improve our data and modelling tools for existing infrastructure capacity so we can future proof for growth.

b) Consider tools for managing demand on some infrastructure.

c) Plan and deliver necessary infrastructure projects in sequence with the growth of the district.

## 4. Meeting the needs of our community and reducing our impact on the environment

The nature of our community will change over time. We are predicting that the average age of the community will continue to increase. Currently 19 per cent of our population are over 65 years old. By 2031 this is expected to increase to 24 per cent and by 2051 to 27 per cent. With this ageing population comes increasing issues related to accessibility of assets and services which we need to take into account in our planning. The mix of ethnicities in the district is not expected to change significantly with European and Māori ethnicities remaining predominant with a small increase in the Asian population over the 30 year period.

In addition to our changing demographics, expectations of NPDC performance and service levels continue to evolve. These are driven by the community, our key partners and by central government legislation and regulation. These expectations extend to the way we manage our ongoing impact on the environment and restore degraded natural habitats. Central government legislation on climate change is rapidly evolving, with increased expectations from councils to report on climate change preparedness and produce emissions reductions plans for the organisation and community, as well as adaptation plans.

# Infrastructure Strategy

Some examples of key projects we have identified to deliver on this strategy are:

| Project | Description | Cost | Timing |
|---|---|---|---|
| Library redevelopment | The Puke Ariki and Community Libraries Strategy has identified the need to expand and/or upgrade our library network to meet the changing needs of the community and keep pace with growth across the district. This involves redeveloping the Bell Block and Waitara libraries in years 11 to 15 and Inglewood, Ōākura and Puke Ariki in years 16 to 20. | $31m | 2032 to 2041 |
| Commercial and Industrial Material Recovery Facility | A Commercial and Industrial Material Recovery Facility enables commercial waste to be consolidated and sorted to divert reusable and recyclable waste from landfill. It will extend progress towards the Zero Waste 2040 target, (commercial waste makes up more than 60 per cent of waste sent to landfill) and provide local infrastructure and solutions, increasing resilience for recycling options. | $1.7m | 2021/22 |
| Planting Our Place Climate Action Programme | A programme of Planting Our Place has been initiated in order to deliver on the carbon sequestration outcomes identified in NPDC's Climate Action Framework. This will also help to meet a 10 per cent indigenous fauna cover. We will deliver this in partnership with iwi and the wider community. | $3.4m over 20 years | Commencing 2021 |
| Intersection safety improvements | A number of intersections have been identified for safety improvements these include:<br>• Breakwater Road - Ngamotu Road - Centennial Drive.<br>• Brois Street – Govett Avenue.<br>• Devon St East - Currie Street.<br>• Gover Street - Liardet Street central block traffic calming.<br>• Hobson Street - Devon St East.<br>• Parklands Avenue - Mangati Road.<br>• Belair Avenue – Omata Road.<br>• Henwood Road bridge (over SH3) traffic signalisation. | $4.5m over 3 years | Commencing 2021 |

The priority areas for meeting the needs of the community and the environment are:

- Security and quality of water supply.
- Reduction in the risk of wastewater overflows which impact on public health and the environment.
- Reduced risk of stormwater inundation and/or flooding which impacts both on private property and water quality in the natural environment.
- Improved transport safety.
- Connecting communities through good transport network design.
- Increasing transport options to help people lower their transport related emissions.
- Putting in place plans and actions to reduce and mitigate our emissions.
- Ongoing reduction in waste to landfill and managing historic landfills.
- Developing lifestyle projects that provide for both growth and the changing needs of our community.

### Meeting the needs of our community and reducing the impact on the environment

Our strategy for responding to the needs of our community and reducing our impact on the environment is to:

a) Protect public health and safety through improvements to water wastewater, stormwater and transport networks.

b) Improve environmental outcomes by reducing and mitigating emissions, reducing wastewater overflows, reducing the waste stream and emissions, improving biodiversity and encouraging more sustainable practices in transport and water usage.

c) Improve provision of recreational facilities to meet the needs of a changing community.

# Infrastructure Strategy

## Key decisions

In this section we highlight the significant infrastructure issues we are likely to face over the life of this strategy within the following infrastructure asset groupings: water supply, wastewater, stormwater, flood protection, transportation, parks and open space, waste management and minimisation, Puke Ariki and community libraries and venues and events.

Within each grouping, we discuss the infrastructure issues related to that asset group and present the possible options for managing those issues in relation to our four key drivers and the strategies that we have outlined in the previous section:

Taking care of what we have

Resilience and responding to climate change

Planning for growth

Meeting the needs of our community and reducing our impact on the environment

In developing the options for decision making we have also taken into consideration:

- The overall affordability of the work programme in the context of the limits set in the Financial Strategy. The preferred options have been selected with a balance between affordability and speed of addressing the issues very much in mind.
- Our ability to deliver the full programme of works. We are addressing this by a "stepping in" of the programme over the first five years which enables us to grow our ability to undertake this work. Phasing the projects across multiple years provides time for planning, land acquisition and resource consents before construction. We also improved our processes and levels of resourcing to manage this work. Because a big chunk of our projects involve fixing our existing assets, we won't have as many delays with issues such as land acquisition and resource consents.

# Infrastructure Strategy

## Water Supply

NPDC operates four separate water supplies in the district, providing approximately 32.7m litres of water per day to just under 28,000 households and businesses. We develop, operate and maintain water treatment plants to meet water quality standards. We also manage pump stations, pipe networks and storage facilities such as reservoirs to ensure our community has a reliable and sustainable supply of fresh water. The costs of operating these networks is funded through a targeted rate on those properties that receive the service.

### Key Water Supply Issues

There are four key issues that are relevant to the planning and management of our water supply over the next 30 years:

1. **The condition of the water supply network.** We have a big backlog (estimated at $33m) of renewal work from several years of underfunding. Addressing the condition of the existing network is a priority through improved data collection on the condition of the network and increased funding for renewals.
2. **Capacity of the network.** At the current rate of water usage we are close to capacity in much of our network. Water conservation initiatives, in particular universal water metering and charging, will enable us to defer expensive investment in new water sources while catering for growth.
3. **Continuity of water supply in the event of a natural disaster.** Protection of our network from weather events, seismic and volcanic activity is a priority to ensure public health is safeguarded in these circumstances. To address this we intend to improve existing assets to withstand seismic activity and natural disasters, manage the risk of damage to the network from existing hazards and, where possible, provide duplicate assets as an alternative supply.
4. **The National Policy Statement for Freshwater Management.** This has a potential major impact on Council. Much of our water supply relies on the ability to take water from our rivers and changes to the standards of freshwater management could impact on our ability to take what we need. Water conservation initiatives will be an important factor in managing this impact.

# Infrastructure Strategy

## Options for decision

NPDC has considered the issues of water supply in the context of the four drivers of decision making and the strategies for those, set out earlier in this document. In that context the following options have been developed.

| The Drivers | The Options | |
|---|---|---|
| **Taking care of what we have** | In order to improve, or even maintain the existing condition of our water supply network, we need to increase our investment in renewals so do we:<br>1. Keep our average annual renewals expenditure the same as the LTP 2018-2028 for 2021 financial year ($5m) which will mean our network gradually deteriorates.<br>2. Increase our average annual renewal expenditure to $6.2m which will keep our network in the same condition as it is now (i.e. will not clear the backlog).<br>3. Increase our average annual renewal expenditure to $8m and clear the backlog over about 20 years.<br>4. Increase our average annual renewal expenditure to $12.5m and clear the backlog over 10 years. | **Preferred Option**<br>Our preferred option is **Option 3** – increase average annual renewal expenditure to $8m and clear the backlog over about 20 years. |
| **Resilience and responding to climate change** | There are a number of improvements we can make to our drinking water systems to make them more resilient to natural hazards and the effects of climate change. We could:<br>1. Invest up to $6.2m on adapting water infrastructure in order to lower the risk posed by natural hazards by making seismic improvements to our reservoirs, installing additional flow meters and supply zone isolation valves and protecting pipe bridges.<br>2. Spend up to $13.8m duplicating the main central, eastern and western feeder pipes in order to provide some network redundancy to these critical assets.<br>3. Manage the landscape in the catchments that feed our drinking water systems to reduce the risk to our water supplies by spending up to $700,000 to undertake a riparian planting programme.<br>4. Investigate options for a new water source and prioritise for further investigation those that also provide additional redundancy and excess capacity to allow for some headroom.<br>5. Improve our community's preparedness by developing natural disaster scenarios and using our network models to predict how long it will take to repair and restore water services after a major event. Then we will work with our community so that they have the information and advice needed to be well prepared to bridge the gap until Council services are back up and running. | **Preferred Option**<br>Our preferred option is:<br>• The combination of **Options1, 4 and 5** in years 1 to 10; then<br>• **Option 3** in years 11 to 20; then<br>• **Option 2** in years 21 to 30. |

# Infrastructure Strategy

| The Drivers | The Options | |
|---|---|---|
| **Planning for growth**<br><br>**Meeting the needs of our community and reducing our impact on the environment** | As our population grows we need to plan for upgrades to our treatment plants, reticulation networks and a new water source. However, this will be costly and have a large impact on our environment and may be difficult to get a resource consent, so before we do this we need to make sure we are being efficient with the water we already have consented. Reducing water consumption will also have the benefit of delaying or removing the need for some large upgrade projects and will save money over the next 30 years. To conserve water we can:<br><br>1. Carry on with the same minor water conservation programme we currently have. This will maintain the status quo and will not reduce water usage.<br><br>2. Increase our conservation programme by installing water meters so that people pay for what they use. This is expected to reduce water usage by 20 per cent, saving $61m over the next 30 years.<br><br>3. In addition to option 2, increase our community and commercial education programmes, reduce the pressure in some of our supply zones, and introduce a green plumber and other incentive tools. This is expected to reduce water usage by 25 per cent, saving $121m over the next 30 years.<br><br>4. In addition to options 2 and 3 above, significantly increase our community education programmes, also bill for wastewater by water meter, significantly expand our leak detection and repair programmes. This is expected to reduce water usage by 30 per cent, saving $120m over the next 30 years.<br><br>Note: the savings outlined above are net of the costs of implementation. | **Preferred Option**<br><br>Our preferred option is **Option 3** – reduce water usage by 25%, saving $121m over the next 30 years. |

## Wastewater

The wastewater reticulation network and pump stations collect domestic and industrial wastewater from more than 27,000 properties in urban New Plymouth, Bell Block, Waitara, Inglewood and Ōākura. We treat wastewater at the central New Plymouth Wastewater Treatment Plant (WWTP) before discharging the treated water via outfall to the sea. We also process the biosolids that result from the treatment process at the Thermal Drying Facility (TDF) into Bioboost fertiliser which we sell throughout the country.

The costs of operating these networks is funded through a targeted rate on those properties that receive the service.

### Key Wastewater Issues

The key issues of relevance to the planning and management of our wastewater network for the next 30 years are:

1. **The condition of the wastewater network.** As with other water assets, we have a backlog (estimated at $59m) of renewal work from several years of underfunding and need to address this as a priority through improved data collection on the condition of the network and increased funding for renewals.
2. **Continuity of the services in the event of a natural disaster.** To protect both public health and the environment we need to ensure that we safeguard key parts of the network. We intend to do this by improving existing assets to withstand seismic activity and natural disasters, managing the risk of damage to the network from existing hazards, identifying and reducing infiltration from stormwater and providing duplication of some key assets.
3. **Capacity of the network**. As well extending the networks to new growth areas, there needs to be capacity for the treatment and disposal of increased wastewater flows. A major factor in managing this is infiltration of the existing system from stormwater.
4. **Environmental impact of wastewater.** Standards related to the impact of wastewater management on public health and environmental protection have been strengthened by regulation over the years and are expected to continue to improve. Our most significant issue is the Waitara marine outfall which acts as an emergency discharge for sewage and there are also increasing concerns about the impact of poorly managed septic tanks on the environment.

# Infrastructure Strategy

## Options for decision

Options for dealing with these issues have been developed in the context of our four decision making drivers and the strategies outlined earlier in this document.

| The Drivers | The Options | |
|---|---|---|
| **Taking care of what we have** | In order to improve, or even maintain the existing condition of our wastewater network, we need to increase our investment in renewals so do we:<br>1. Keep our average annual renewals expenditure the same as the LTP 2018-2018 for the 2021 financial year ($4.4m) and accept the risk of pipe failures.<br>2. Increase our average annual renewals expenditure to $10.4m which will keep our network in the same condition as it is now (i.e. will not clear the backlog).<br>3. Increase our average annual renewals expenditure to $12.1m and clear the backlog over about 20 years.<br>4. Increase our average annual renewals expenditure to $17m and clear the backlog over about 10 years. | **Preferred Option**<br><br>Our preferred option is **Option 3** – increase our average annual renewals expenditure to $12.1m per year and clear the backlog over about 20 years. |
| **Resilience and responding to climate change** | There are a number of improvements we can make to our wastewater systems to make them more resilient to natural hazards and the effects of climate change. We could do any combination of the following:<br>1. Spend about $0.3m per year to run a programme of pipe bridge upgrades where our sewers cross rivers and streams so that they are more resistant to damage from natural hazards.<br>2. Use our new wastewater network model to predict what the impact of more intense rainfall will be on inflow and infiltration and plan future improvement projects (this is included in the $6m cost to build the wastewater network model) – see below.<br>3. Spend $45m (with $39m funded by Crown Infrastructure Partners) to upgrade the new Thermal Drying Facility to run on a blend of natural gas and hydrogen in order to reduce our carbon footprint and mitigate climate change<br>4. Upgrade our sewage pump stations so that they have emergency storage and backup power generation (at a cost of up to $80m).<br>5. Put long-term plans in place for some of our smaller community wastewater systems, particularly in Urenui and Onaero domains which are at risk from coastal erosion and sea level rise. This planning work could cost up to $1.5m. | **Preferred Option**<br><br>Our preferred option is **Options 2 and 3** first. Once complete, the wastewater network model can be used to better target future investment against all of the other options so that the cost of achieving the benefits is significantly reduced. |

# Infrastructure Strategy

| The Drivers | The Options | |
|---|---|---|
| **Planning for growth** | As our population grows we need to plan upgrades to our pipe networks and treatment plants so that we don't overload the system and cause sewage overflows so do we:<br>1. Continue with our minor upgrade programmes based on our current reactive process when the risk of sewage overflow becomes high. The cost of this option is unknown, but it is likely to have the highest cost of all the options.<br>2. Spend $6m to build a wastewater network model so that we can start to proactively plan upgrades before the risk of sewage overflow gets high and use it to undertaken inflow and infiltration investigations so that we can keep stormwater out of our wastewater system and free up more capacity for growth. | **Preferred Option**<br>Our preferred option is **Option 2** – build a network model and undertake inflow and infiltration investigations. |
| **Meeting the needs of our community and reducing our impact on the environment** | The Waitara sewer pumping system currently uses the marine outfall as an emergency overflow. Whilst this means that any overflow goes about 1.25km out to sea instead of directly into the Waitara River, we know that this is culturally offensive, particularly as sewerage is discharged near the Waitara reef which is important for Moana Kai. In addition, as the condition of the marine outfall continues to deteriorate we need to plan for its replacement which could cost around $16m. To address this we can:<br>1. Carry on with the current programme of work making minor improvements to the reliability of the sewage pumping systems and budget to replace the outfall pipe at an estimated cost of $16m.<br>2. Instead of spending money on replacing the outfall pipe, we could spend $5.4m to make major improvements to the sewage pumping system in Waitara with the aim of eliminating the need for the outfall pipe. Noting we would leave the existing outfall pipe in place until it reaches the end of its life, just in case the upgrades don't achieve this goal. There will be a further cost to remove the old pipe from the seabed but this will be significantly lower than its $16m replacement cost estimate. | **Preferred Option**<br>Our preferred option is **Option 2** – make major improvements to the sewage pumping system in Waitara. |
| | River water quality testing in Urenui has shown there are issues with the performance of private septic tanks contaminating the surrounding environment and storm water systems. In addition, the communal septic tanks servicing the Urenui Domain and Onaero campground baches are underperforming and the disposal fields are also at risk of coastal erosion. Work has started to investigate options; however, because this is in its early stages it is yet to identify a list of feasible options. At this stage, there is only one option available to address this issue:<br>1. Spend up to $0.7m and continue to investigate the issue and identify a list of feasible options. | Only one option available - spend up to $0.7m and continue to investigate the issue and identify a list of feasible options. |

## Stormwater

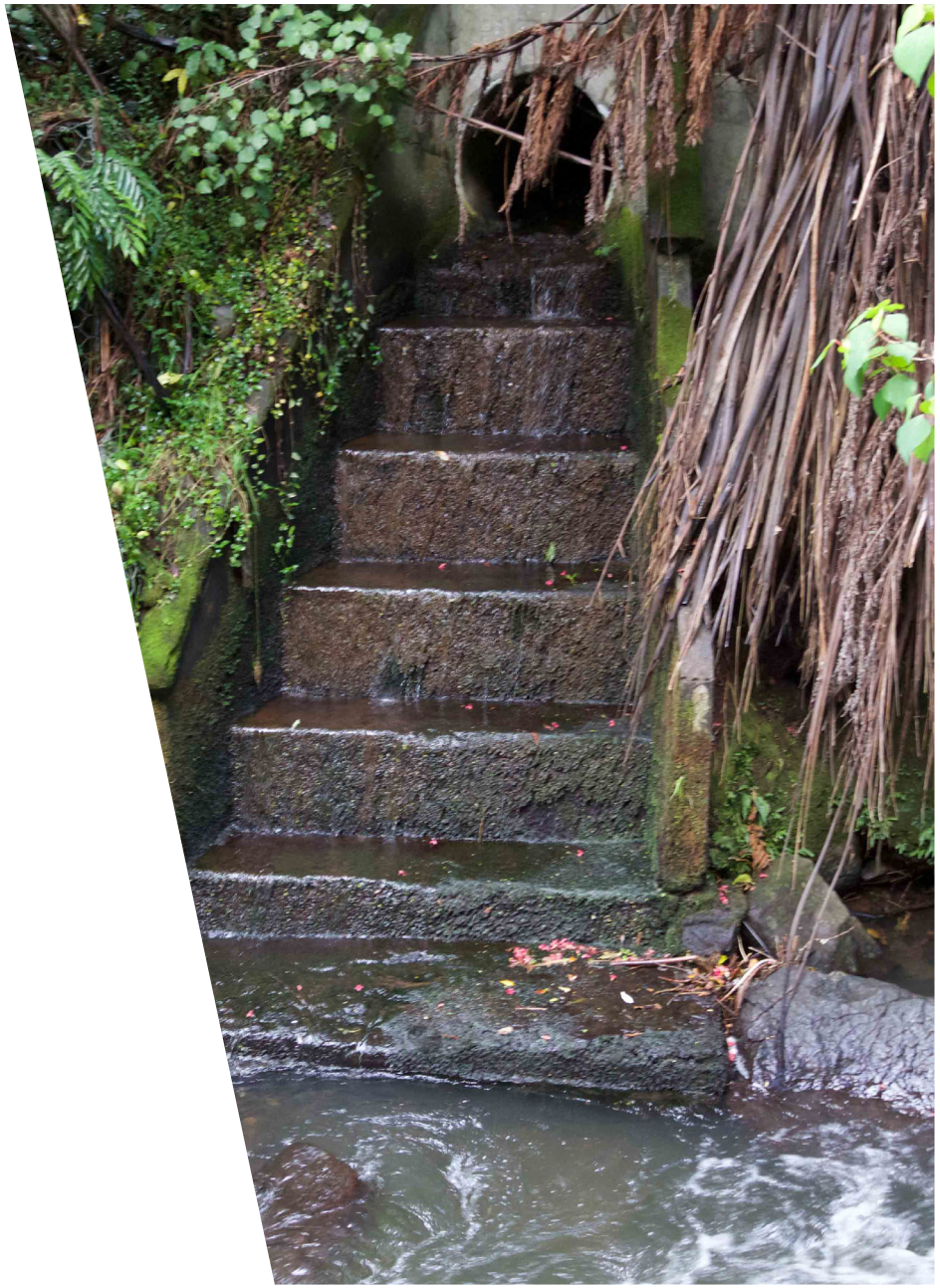
Over 300 rivers and streams cross Mt Taranaki's ring plain and run to the lowlands in a distinctive radial pattern. Following high intensity rainfall, water culminates in the various river catchments, draining quickly to the sea. Heavy rain has the potential to overwhelm stormwater systems draining to the rivers and streams and can cause localised surface flooding. These effects are usually short-term and related to a particular storm event. However, there are areas in the district that are more prone to these effects than others.

The predicted effects of climate change for more frequent severe weather events with increasing rainfall intensity would have a particular impact on the management of stormwater.

### Key Stormwater Issues

The three key issues for the stormwater network that will need to be addressed over the 30 years of this strategy are:

1. **A lack of up to date information, modelling and planning for the stormwater network.** This results in projects being carried out in a reactive and less than cost effective way. These issues are exacerbated by the predicted increases in severe weather events from climate change. It also means new developments cannot be properly planned with up to date information.
2. **The condition of the stormwater network.** The stormwater network has been significantly underfunded and needs urgent attention. More than 50 per cent of our largest and most critical assets have had visual inspections to check their condition. We recommenced a CCTV inspection programme and have prioritised our most critical stormwater assets to fill in the gaps in our asset condition dataset. We have a virtually complete record of the age of our assets (98 per cent) and this dataset has been used as a proxy for condition where we don't have condition ratings for stormwater assets. Performance and historic failures are also considered as part of renewals forecasting. There will be increased ongoing funding for CCTV inspections from Year 2.
3. **Waitara township flooding.** There are some areas of the district that have ongoing flooding issues. Some of these are minor and will be part of an ongoing work programme, but the most significant relates to the Waitara township where flooding is a significant problem that needs a long-term solution.



# Infrastructure Strategy

## Options for decision

Options for dealing with these issues have been developed in the context of our four decision making drivers and the strategies outlined earlier in this document.

| The Drivers | The Options | |
|---|---|---|
| **Taking care of what we have** | In order to improve, or even maintain the existing condition of our stormwater network, we need to increase our investment in renewals so do we:<br>1. Keep our average annual renewals expenditure the same as the LTP 2018-2028 for the 2021 financial year ($0.4m) and accept the risk of pipe failures.<br>2. Increase our average annual renewals expenditure to $1.8m which will keep our network in the same condition as it is now (i.e. will not clear the backlog).<br>3. Increase our average annual renewals expenditure to $4.2m and clear the backlog over about 20 years. | **Preferred Option**<br>Our preferred option is **Option 3** - increase our average annual renewals expenditure to $4.2m per year. |
| **Resilience and responding to climate change**<br>**Planning for growth** | Stormwater can cause flooding to people's property, particularly if development is allowed to occur in areas that are prone to flooding. As our climate changes, rainfall intensity and flooding patterns are likely to change and increase. To address this we could:<br>1. Continue with our current reactive practices and information about flooding areas. Because this is a reactive approach it is not possible to estimate the costs.<br>2. Move to a risk based approach where we develop catchment management plans and flood models that can be used to inform where development can or cannot occur and where we need to upgrade our existing networks. Developing catchment management plans and network models for all urban catchments is expected to cost approximately $11.6m over the next 10 years.<br>3. Develop a set of stormwater design guides, expected to cost about $0.3m, that help private developers manage storm water and encourage the use of more "soft" infrastructure such as rain gardens.<br>4. Do both options 2 and 3 above. | **Preferred Option**<br>Our preferred option is **Option 4** - a combination of Options 2 and 3, i.e. development of catchment management plans and stormwater design guidelines. |
| **Meeting the needs of our community and reducing our impact on the environment** | Waitara township has longstanding issues with flooding. NPDC has already committed $9m to start fixing these issues; however, from the catchment management planning work done to date it is clear that this will not be enough to address the issues. We could:<br>1. Continue with the current budget of $9m.<br>2. Stop the Waitara stormwater project to save money, noting our community will still pay to repair property damage from flooding.<br>3. Increase the budget to $20m over the next 10 years to reduce the risk of flooding and the cost our community pays in property damage. Additional budget of approximately $101m will also be needed over Years 11 to 30. | **Preferred Option**<br>Our preferred option is **Option 3** – increase the budget to $20m over the next 10 years and approximately $101m over years 11 to 30. |

# Flood Protection

Flood protection and control works protect urban areas in New Plymouth District when the river systems become overloaded in heavy rainfall. The service includes monitoring and maintaining existing flood protection schemes and planning of future flood protection measures.

The assets within this activity include three diversion tunnels, three dams and a weir.

## Key Flood Protection Issues

The key issue for flood protection is an increasing number of severe weather events as the impact of climate change continues to grow. This may require some raising of dam levels in the future to cope with increased levels of rainfall.

# Infrastructure Strategy

## Options for decision

Future planning for flood protection has been considered in relation to the key decision drivers and strategies outlined earlier and the following options developed.

| The Drivers | The Options | |
|---|---|---|
| **Taking care of what we have**<br><br>**Resilience and responding to climate change** | Over time climate change is predicted to increase the intensity of rainfall and flooding. This will mean that our flood protection dams will get pushed to their limit more frequently and our level of service will gradually erode unless we increase the height of the dams. This is a long-term issue that is likely to take several decades to occur so it isn't urgent that the Council acts immediately. Council has two options:<br><br>1. Upgrade the dams now. Because limited investigations have been undertaken it is not possible to estimate the likely costs.<br>2. Monitor the effects of climate change over the long-term on the level of service the dams provide and plan for their upgrade in about 20 or 30 years time. | **Preferred Option**<br><br>Our preferred option is **Option 2** - monitor over the long-term and plan for upgrade in 20 or 30 years time. |
| **Planning for growth**<br><br>**Meeting the needs of our community and reducing our impact on the environment** | The southern catchments of Inglewood are identified for residential urban development; however, some of this land is prone to flooding due to overland flow from the rural portions of the catchments. A concept has been developed to construct an interceptor drain to divert this flow into the streams and bypass the town and land that is to be developed. Council has several options:<br><br>1. Do nothing and restrict urban development in the southern catchments.<br>2. Continue to plan for the interceptor drain now but delay development and don't build it within the 10 years of this LTP. *<br>3. Plan for and build the interceptor drain within the next 10 years in order to allow development to occur in Inglewood.*<br><br>* Costs are not currently available for this option as it is in an early stage of development. Costs will be available before a decision to proceed is made. | **Preferred Option**<br><br>Our preferred option is **Option 2** - plan for an interceptor drain now but don't build it until after the first decade and when full costings are available. |

# Infrastructure Strategy

## Transportation

The transport network currently includes 1,285 kilometres of sealed roads, includes rural roads and urban streets. There are 166 bridges, 97 culverts, 521 kilometres of footpaths and 365 retaining walls. These transport assets are contained in close to 220,218 hectares of road reserve across the district.

In general, the district's transport assets are in good condition. Compared with other parts of New Zealand, our roads have relatively low traffic volumes so roading failure as a result of wear generally only occurs in high stress areas. This is typically where heavy vehicles turn at key intersections and along some key arterial and primary collector roads. Most road surface failure is the result of age related degradation.

### Key Transportation Issues

1. **Natural topography and layout of infrastructure.** The district's natural topography and the layout of infrastructure makes it more challenging to move east to west, creating network pinch points particularly at river crossings. The coastline and river valleys provide walking and cycling connections to central locations. However, our topography, provides challenges for our walkers and cyclists.
2. **The layout of our city and land use.** The city centre is dissected by state highways, making walking and cycling to our coast and outer suburbs more challenging. Freight from Port Taranaki is trucked through the city centre and residential areas, impacting the quality of these areas. Employment and residential growth in the city are focused to the east of the city. The layout and nature of our towns and city and our roading infrastructure encourages motor vehicle use which is a significant contributor to district wide emissions. There are limited public transport and rail options.
3. **The safety of the network .T**he number of serious and fatal crashes in the district has been increasing. Previously our focus has been on addressing specific crash types, however it is now recognised that due to the widespread nature and location of the crashes in the district a 'safe system' approach to address our complex network is required.
4. **The contribution of the transport network to the regional economy.** The transport network contributes to our regional economy and provides a vital link for employment and for significant industry across Taranaki. Investment to maintain these links is essential to ensure that economic opportunities are not lost through deterioration of the network.

# Infrastructure Strategy

## Options for decision

Options for dealing with the above issues have been developed in the context of our four decision making drivers and the strategies outlined earlier in this document.

| The Drivers | The Options | |
|---|---|---|
| **Taking care of what we have** | There are no major issues for decision on resilience of the existing assets. | |
| **Resilience and responding to climate change** | Transport networks are vital connections and one of the big risks to the resilience of our road network is severance caused by the loss of bridges that cross key rivers. This includes the Waiwhakaiho River. To address this we could:<br>1. Do nothing.<br>2. Plan for a second bridge across the river during the 10 years of the LTP and construct it during years 11 to 20 of the Infrastructure Strategy at a cost of $7.3m.<br>3. Plan for, and build, a second bridge during the 10 years of the LTP at a cost of $7.3m.<br>Note: The second bridge also addresses capacity issues caused by growth. | **Preferred Option**<br>Our preferred option is **Option 2** - plan for a second bridge across the river during years one to 10 and construct it during years 11 to 20. |
| **Planning for growth** | We know that parts of our transportation network are getting busier and starting to struggle with the volume of traffic. We have several options to address this issue and stop it getting worse as our population continues to grow:<br>1. Undertake a $2.3m programme of intersection upgrades (traffic signalisation and roundabouts) to tackle the known trouble spots.<br>2. Prepare a growth model of the district's transportation network so that we can be more proactive when planning road upgrades ahead of problems emerging (cost $0.7m).<br>3. Work more closely with the Taranaki Regional Council to support and promote the greater use of public transport.<br>4. Build on our Let's Go programmes and invest $7.5m in our cycling and walking networks so that our community has alternative travel options to using a car.<br>5. Do all of the above options.<br>6. Do a combination of options 1 to 4. | **Preferred Option**<br>Our preferred option is **Option 5** - do all of options 1 to 4. |

# Infrastructure Strategy

| The Drivers | The Options | |
|---|---|---|
| **Meeting the needs of our community and reducing our impact on the environment** | For a number of years Taranaki's road toll has been increasing with more and more serious and fatal accidents occurring. To address this we could increase our investment and do any combination of the following:<br>1. Make safety improvements to a number of key intersections across the district estimated to cost about $4.5m.<br>2. Undertake a speed limit review and lower speeds on many of our urban and rural roads. The cost of the review largely involves staff time that is already budgeted. The cost of implementing any speed limit changes is currently unknown as it depends on the outcome of the review. However, Council already has budgets for replacing speed limit signage.<br>3. Do both options 1 and 2. | **Preferred Option**<br><br>Our preferred option is **Option 3** - make safety improvements and undertake a speed limit review. |

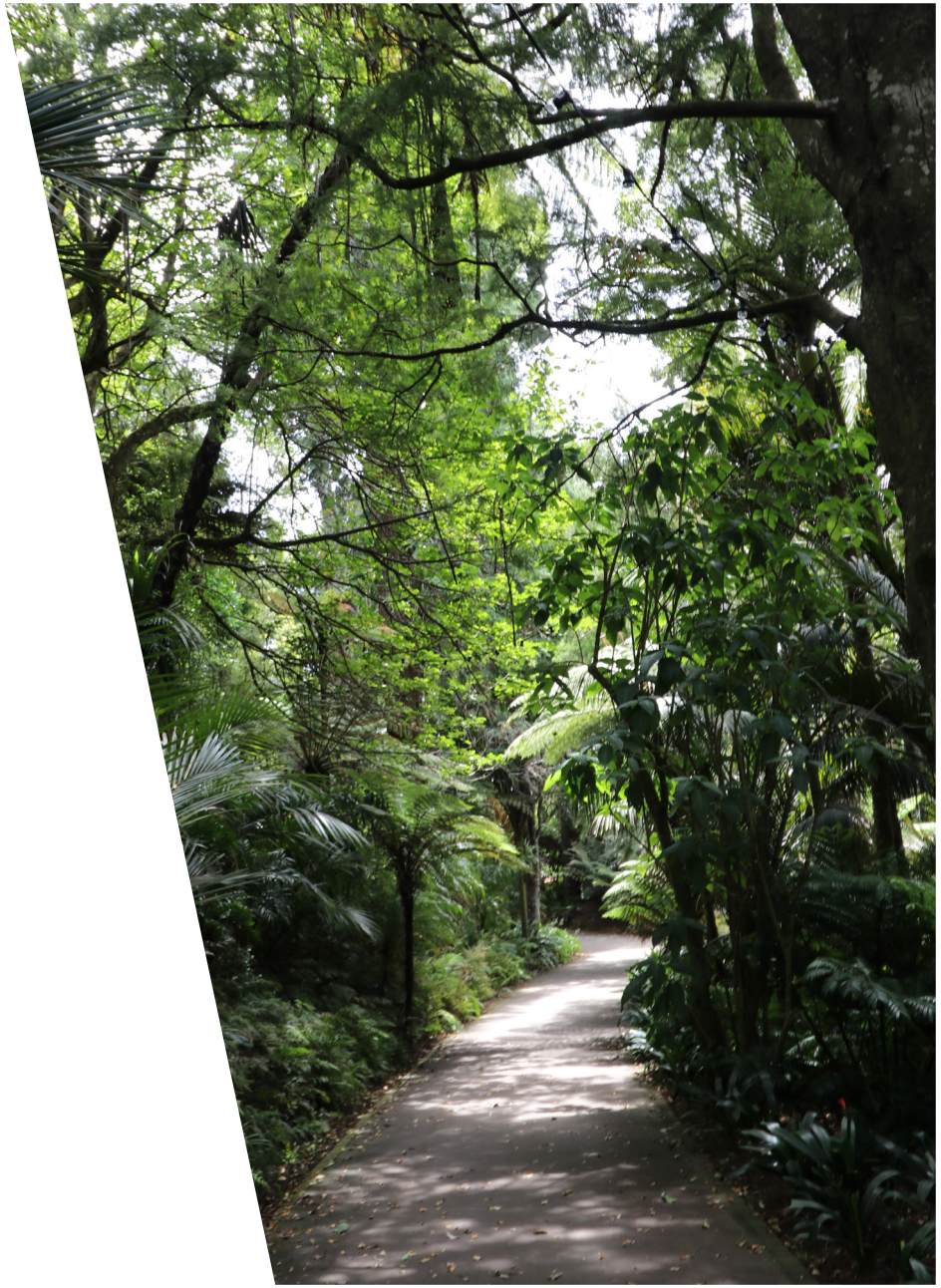
## Parks and Open Spaces

Parks and Open Spaces contribute to our Sustainable Lifestyle Capital vision by achieving our goal of well being through a safe, creative, active and connected community and by nurturing our environment under the sustainability goal. It also supports economic prosperity through the goal of providing places where people want to work, live learn and play.

Our parks and open spaces promote sustainability of the environment and strengthening of partnerships, through managing and protecting our natural landscape, untouched native forest (remnant stands and regenerating), and coastal environments. They also provide opportunities for people to be active, whether it be along our walkways, within sports parks, playgrounds or other uses. Sport and recreation activities are an essential part of many people's lives. Participation in recreation and sport contributes to a healthy community, provides ways for people to interact with each other and improves social cohesion.

New Plymouth District is unique for its diversity of recreation and open spaces including beaches, walkways, rivers and streams, recreational trails, neighbourhood parks, swimming pools, playgrounds, skate parks, sports parks, the mountain and cemeteries. The access that is available to these recreation and open spaces, to Maunga Taranaki and to the sea forms part of the district's identity. These are important features that attract people to New Plymouth.

Most of these facilities are directly planned for and managed by NPDC and include 1,600 hectares of local, historic, coastal, esplanade and recreation reserves and 82 kilometres of walkways, along with the associated playgrounds, public toilets and public art.  Pukekura Park and Brooklands Zoo are two of our major facilities that fall within this category of assets.

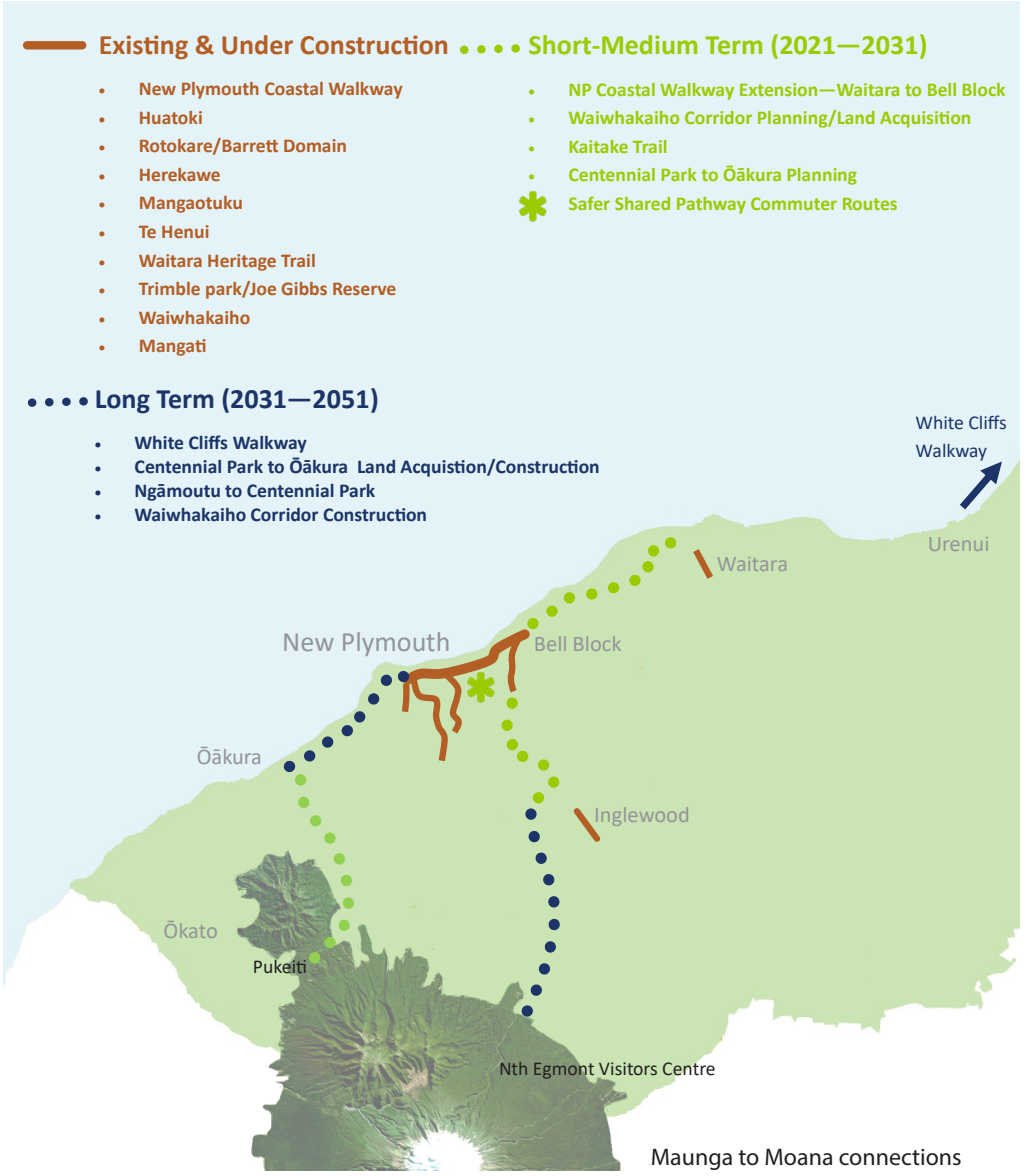


# Infrastructure Strategy

## Key Parks and Open Space Issues

New Plymouth wants to maintain and build on its unique diversity of recreation and open spaces. Our key issues for the future will be:

1. **Ensuring that we continue the provision of parks and open space in new growth areas.** While developers contribute to the provision of parks and walkways in the area of their development, we need to ensure that the provision is appropriately located, the public continues to have access to significant waterways and there are safe connections to and from open space areas.
2. **Taking care of our existing assets.** Most of the park and opens space assets are in reasonable condition but there is some deterioration in some park structures such as bridges, stock fencing and similar assets that will require renewal.
3. **Parks and open spaces contribute to community resilience.** Our parks play an important role in community resilience in times of stress such as natural disasters or pandemics. Parks and open spaces will be vulnerable with the predicted effects of climate change i.e. increases in severe weather events and rising sea level. This may cause potential increases in plant pests and diseases and damage to coastal infrastructure.
4. **Extending our network of walking tracks.** We have an extensive network of walking tracks and there is a desire to continue to improve these through extensions, additional connections and improved accessibility. A key area of focus is our Maunga to Moana connections as shown below.
5. **Meeting the changing needs of our community.** As some of our major facilities require renewal (e.g. Todd Energy Aquatic Centre, TSB Stadium and Bellringer Pavilion) there is an opportunity to reconsider the focus of the facility in the context of the changing needs of the community.
6. **The role of parks and open space in improving environmental outcomes.** Appropriate planting programmes and pest management in our parks and open space can play an important role in helping to mitigate climate change through the sequestering of carbon. Our parks also contribute to improving biodiversity. New Plymouth City is the most biodiverse city in New Zealand currently with 8.9 per cent of its urban area vegetated and is well placed to meet evolving national targets of 10 per cent.



Maunga to Moana connections

# Infrastructure Strategy

## Options for decision

Options for dealing with these issues have been developed in the context of our four decision making drivers and the strategies outlined earlier in this document.

| The Drivers | The Options | |
|---|---|---|
| **Taking care of what we have** | We have an extensive parks network with varied levels of investment over time. This is particularly the case for some of our assets, namely our bridges, structures and stock fencing. To address this we could:<br>1. Continue to spend the same as the 2020/21 financial year ($1.3m) and accept the risk that some of the district's older park bridges and structures will deteriorate and need to be closed.<br>2. Increase our average annual renewals expenditure to $3.9m so that we can properly maintain our parks assets and ensure public access to the community. | **Preferred Option**<br>Our preferred option is **Option 2** - increase our average renewals expenditure to $3.9m. |
| | The main lake in Pukekura Park was partially desilted in 2020 with approximately 9,000 cubic metres of silt and organic matter removed. Whilst this successfully improved the water quality there is still another 9,000 cubic metres of silt left in the lake and, over time, more silt will be washed down the streams that feed into the lake and add to this. The Council has a number of options available:<br>1. Spend about $2.5m to desilt the remainder of the lake.<br>2. Set up a reserve that the Council pays into each year so that there is a fund to undertake lake desilting every five years in order to keep the lake in good condition in the long-term.<br>3. Spend about $0.5m to improve the silt traps that will slow down the rate at which silt enters the lake as well as making other improvements to the lake's water quality such as constructing ecological habitats for the native species that live in the lake.<br>4. Do a combination of the above options. | **Preferred Option**<br>Our preferred option is **Option 4** - do both options 2 and 3. |
| **Resilience and responding to climate change** | There are no major issues for decision on resilience of the existing assets. | |
| **Planning for growth** | Council will continue to provide new parks and open space in development areas, working with developers. No specific options for decision. | |

# Infrastructure Strategy

| The Drivers | The Options | |
|---|---|---|
| **Meeting the needs of our community and reducing our impact on the environment** | **Tracks and Trails**<br>Council has a long-term aspiration of creating walking and cycling connections between the Maunga and Moana (refer to map on page 28). This will allow accessibility to key natural and cultural assets, linking to and leveraging existing attractions, open spaces and walking and cycling networks. The options are:<br>1. Increase focus on tracks and trails and continue with the full range of projects.<br>2. Prioritise projects that contribute to or complete the proposed maunga to moana (Taranaki Traverse) and provide links between townships in close proximity to New Plymouth such as Waitara and Ōākura and delay other projects to beyond year 10:<br>a) Years 1 to 10 - develop the Coastal Walkway extension to Waitara and Kaitake Trail and initiate planning for the Waiwhakaiho River link and allow for strategic land purchase ($36m).<br>b) Years 11 to 30 - develop remaining planned areas and commence development of the Waiwhakaiho River link and plan for the White Cliffs and Fort St George walkways ($30.1m).<br>3. Maintain existing range of tracks and trails but do not implement further extensions and connections.<br>4. Maintain existing range of tracks and trails in the first 10 years and then roll out full range of projects in years 11 to 30. | **Preferred Option**<br>Our preferred option is **Option 2** - prioritise implementation of the tracks and trails projects that contribute to a staged maunga to moana programme. |
| | **Planting our Parks**<br>Parks and open space can play an important part in sequestering carbon. Planting will also contribute to biodiversity outcomes as Council strives to have 10 per cent of its urban area planted with native vegetation. The 'planting our parks' programme has the following options:<br>1. Maintain existing urban vegetation cover but do not extend further (status quo).<br>2. Fund 34 hectares of Planting our Parks over 20 years at an operational cost of $0.17m per year from forestry reserve funding.<br>3. Roll out the programme over a shorter timeframe, i.e. 10 years at an operational cost of $0.34m per year from forestry reserve funding. | **Preferred Option**<br>Our preferred option is **Option 2** - Planting our Parks programme $0.17m per year for 20 years. |

# Infrastructure Strategy

| The Drivers | The Options | |
|---|---|---|
| **Meeting the needs of our community and reducing our impact on the environment** | **Facility improvements**<br>Brooklands Zoo attracts over 113,000 visitors every year and has consistently high levels of community satisfaction. However, some of the enclosures and facilities are ageing and will need to be replaced. There is an opportunity to provide an enhanced visitor experience, create space for a gift shop, improve back of house operational facilities, improve animal welfare standards and offer education on Taonga species and wildlife rehabilitation. We could:<br>1. Continue with the current arrangements for the Zoo undertaking like for like renewals of the facilities and enclosures at a cost of $1.1m.<br>2. Undertake a strategic review of the Zoo's operations to inform future investment of renewals at a cost $1.2m (includes $50,000 for review) with any new development delayed beyond the first decade.<br>3. Undertake a strategic review of the Zoo's operations to inform any further development and then implement the new development (high level estimate up to $6.5m). | **Preferred Option**<br>Our preferred option is **Option 3** - undertake a strategic review of the Zoo's operation to inform further development. |

## Waste Management and Minimisation

This service includes recycling, food scraps and landfill collection from more than 29,500 residential and school premises each year. It also includes transfer stations, the Resource Recovery Facility (which includes the Junction zero waste hub), closed landfills and behaviour change programmes to encourage waste minimisation in the district.

Council has an aspirational vision to achieve zero waste by 2040. The Waste Management and Minimisation Plan adopted in 2017 supports this goal. Many of the projects included below are focused on ensuring we continue to make progress towards the vision.

### Key Waste Management and Minimisation Issues

The key issues that need to be addressed for waste management and minimisation over the next 30 years are:

1. **Continuing to drive waste reduction and recycling activities.** We have committed to continuing to drive down the amount of waste to landfill and achieving this avoids having to find new landfill options as the district grows. There will be a particular focus on business and commercial activities and improving community engagement and participation in waste reduction initiatives.
2. **Managing historic landfills.** Events in other parts of New Zealand (e.g. the west coast of the South Island) have shown the consequences for the environment when historic landfills are impacted by storm events and erosion. We have a number of these historic dump sites and priority sites (particularly those on the coast and close to riverbanks) are being assessed for risk and to have mitigation strategies developed.
3. **Responding to national legislative changes.** Under the Waste Minimisation Act 2008 there will be increases and expansion of the landfill waste levy, and establishment of mandatory product stewardship on priority products such as electronic waste and tyres.
4. **Considering longer term options for alternatives to landfilling,** particularly as we progress our zero waste initiatives and need to find waste minimisation solutions for more difficult waste streams that produce high emissions.

# Infrastructure Strategy

## Options for decision

Options for dealing with these issues have been developed in the context of our four decision making drivers and the strategies outlined earlier in this document.

| The Drivers | The Options | |
|---|---|---|
| **Taking care of what we have**<br><br>**Resilience and responding to climate change** | There are a number of historic community dump sites in the district. Fourteen of these have been identified as being at risk of either coastal or river erosion. The historic dump site at Battiscombe Terrace in Waitara has already been exposed due to storm surges and coastal erosion. So some protection work will definitely be necessary at least at this site.<br><br>Work has already commenced to assess the risk and assess options for protection of individual sites if it is deemed necessary. Until this work is complete it is not possible to accurately budget for any necessary protection works.<br><br>1. Continue to assess the risk and needs of the sites and then seek additional funding once the scope of the protection works are known.<br>2. Continue to assess the risk and needs of the individual sites and budget $0.8m for some protection works, accepting the risk that this may not be sufficient to cover the cost of all of the required work and further funding may be needed. | **Preferred Option**<br><br>Our preferred option is **Option 2** - continue to assess the risk and needs of individual sites and provide budget of $0.8m for some protection works. |
| **Planning for growth** | Council will continue to implement its Waste Management and Minimisation Plan to offset the district's growth through reduced demand for disposal to landfill. | |
| **Meeting the needs of our community and reducing our impact on the environment** | Council's Waste Management Minimisation Plan sets a goal of zero waste to landfill by 2040. In order to achieve this, additional reuse and recycling services will be required on top of the zero waste education programmes and other services Council currently offers. The following options will contribute towards this goal:<br><br>1. Construct a commercial and industrial materials recovery facility, at a cost of approximately $1.7m to improve access to recycling services for commercial/industrial businesses in the district.<br>2. Build on the early success of stage 1 of the master plan for the Junction (formerly the community reuse and recycling centre) by building a permanent building and expanding the education services offered there for a cost of about $3.8m over 10 years.<br>3. Do both options 1 and 2. | **Preferred Option**<br><br>Our preferred option is **Option 3** - implement both options 1 and 2. |

# Puke Ariki and Community Libraries

Puke Ariki's central library, five community libraries, mobile library, museum and visitor information centre connect Taranaki residents and out of region visitors to a wealth of knowledge, exhibitions, experiences and resources. We protect and promote access to the heritage of the district and our country. We provide an accessible mix of print and digital lending and reference resources to meet the changing needs of our community.

## Key Puke Ariki and Community Libraries Issues

Council's strong network of libraries is serviced by the central hub at Puke Ariki, community libraries and associated community facilities at Bell Block, Waitara, Ōākura, Inglewood and Urenui. We also make the service more accessible to the community through our mobile library. Looking to the future of the service, there are a number of relevant issues:

1. **Providing for our growing population**. Our growing population will place pressure on our community libraries and facilities. For example, Bell Block will be a focus for growth over the next 10 years and a redevelopment will be required to service this community when it reaches it development potential.
2. **Libraries connect communities.** Libraries are people centred places that can provide more than just library needs. They are important anchors in our town centres and can provide many services to the community.
3. **Responding to technology and societal changes.** Technology is advancing at a rapid rate. Libraries can merge physical and digital excellence, technology and learning and foster innovation and social enterprise.

The Puke Ariki and Community Libraries Strategy prepared in 2019 as an internal document, identified the role of libraries in building vibrant and connected communities. The goals in this strategy that identify the key purpose of our libraries. The Puke Ariki and Community Libraries Strategy has identified the need for Council to consider:

1. Redeveloping Puke Ariki to better utilise the available space.
2. Providing new or expanded library facilities in the communities of Bell Block, Waitara, Ōākura and Inglewood, including considering wider customer service activities.

# Infrastructure Strategy

## Options for decision

The key focus areas for Puke Ariki and Community Libraries relate to the strategies for the drivers of planning for growth and meeting the needs of our community and reducing our impact on the environment.

| The Drivers | The Options | |
|---|---|---|
| **Taking care of what we have** | There are no major issues for decision on renewals of the existing assets. | |
| **Resilience and responding to climate change** | There are no major issues for decision on resilience of the existing assets. | |
| **Planning for growth**<br><br>**Meeting the needs of our community and reducing our impact on the environment** | New Plymouth is growing and there will be increased demand for library services. The needs of the community are also changing with technology and societal needs. The options for how we manage our libraries are:<br><br>1. Maintain the current network of libraries and undertake a like with like replacement programme.<br>2. Continue to deliver library services using our existing facilities in the next 10 years and plan for a long-term redevelopment investment programme for our libraries as follows:<br>a) Redevelop the Bell Block Library in years 11 to 15 to ensure it provides a fit for purpose facility for this larger community ($9m).<br>b) Redevelop the Waitara Library in years 11 to 15 to provide for additional growth and a community hub ($8.8m).<br>c) Redevelop the Ōākura Library ($2.6m), the Inglewood Library ($0.6m) and Puke Ariki ($10m) in years 16 to 20.<br>3. Accelerate a redevelopment investment programme for our libraries to maximise their potential as community spaces with the following priorities.<br>a) Redevelop the Bell Block Library in year 4 to ensure it can provide for the growing community ($9m).<br>b) Redevelop the Waitara Library in year 5 to provide for growth and add value to the local community ($8.8m).<br>c) Redevelop the Ōākura ($2.6m), Inglewood ($0.6m) and Puke Ariki ($10m) libraries in years 11 to 15. | **Preferred Option**<br><br>Our preferred option is **Option 2** - continue to deliver library services using our existing facilities in the next 10 years and plan for a long-term redevelopment investment programme.<br><br>$17.8m in years 11 to 15 and $13.2m in years 16 to 20. |

# Venues and Events

Venues and events includes a number of assets which support a wide range of community activities, i.e.

- TSB Stadium.
- TSB Showplace.
- TSB Bowl of Brooklands.
- Todd Energy Aquatic Centre.
- Four community pools.

We also operate the Yarrow Stadium which is owned by the Taranaki Regional Council.

These assets and the community activities that they support are significant contributors to the Council's goals of:

1. Community - achieving well-being through a safe, creative, active and connected community while embracing Te Ao Māori; and
2. Prosperity - growing a resilient, equitable and sustainable economy where people want to work, live, learn and play and invest across our district.

## Key Venues and Events Issues

The key issues for Venues and Events assets are:

1. **Capacity and fit for purpose.** As the district's population grows and changes, ensuring that the assets continue to meet the needs of the community.
2. **Remaining life of the assets.** Some of these facilities are coming to the end of their lives and decision needs to be made on renewing or replacing them.
3. **Sporting facilities.** There is a shortfall of fit for purpose sporting facilities particularly around indoor court space, movement facilities and specialist turf facilities and aquatic space. This will have wide impacts on community well-being.

### Multi-sport hub

Sport Taranaki have led the development of a Master Plan for a multi-sport hub on the New Plymouth Racecourse site. The Master Plan will provide for the community sporting needs of the district and look to increase the range of community recreation activities and participation. The multi-sport hub is phased for delivery relative to the highest sports needs starting with a hockey turf, to be followed by a hub building with six new courts and movement areas and then outdoor courts, fields and specialist turf areas.

The multi-sport hub has been planned alongside the continued use of the racecourse and is phased over the first eight years of the LTP. As this is a community driven project the Council has committed one third funding to the build of the project.

### Todd Energy Aquatic Centre

The future of the Todd Energy Aquatic Centre needs to be planned for in the long term. A concept plan was developed in 2017 for the existing site to redevelop a fit for purpose facility. This would better meet the needs for lane swimming and learn to swim facilities as well as casual swimming, all of which currently compete for space.

The extent and nature of any redevelopment needs to sit in the context of the district's and wider region's aquatic network. The outdoor pool has an estimated life of 10 years and a renewals programme is in place to ensure the facility continues to deliver for the community.

# Infrastructure Strategy

## Options for decision

In the context of these key issues and major proposals, the options for decision relate to planning for growth and meeting the needs of our community and reducing our impact on the environment decision drivers.

| The Drivers | The Options | |
|---|---|---|
| **Taking care of what we have** | There are no major issues for decision on renewals of the existing assets. | |
| **Resilience and responding to climate change** | There are no major issues for decision on resilience of the existing assets. | |
| **Planning for growth**<br><br>**Meeting the needs of our community and reducing our impact on the environment** | **Multi-sport hub master plan**<br>The current TSB Stadium is at capacity and over allocated with events use often competing with community sports.<br><br>A proposed master plan for a multi-sport hub will provide increased capacity for future growth and the changing needs of the community. The options for a multi-sport hub are:<br>1. Maintain the current TSB Stadium facility and review sporting needs and requirements in 10 years.<br>2. Develop the multi-sport hub at the New Plymouth Racecourse using a phased approach that delivers:<br>• A hockey turf in year 3.<br>• A hub building in year 6.<br>• Courts, fields and an artificial turf in year 8.<br>• Cost of $39.6m over years 1 to 10.<br>3. As for option 2 but deliver a hub building earlier in year 4. | **Preferred Option**<br><br>Our preferred option is **Option 2** - provide one third funding for a multi-sport facility with a hub building in year 6 at a cost of $39.6m in years 1 to 10. |
| | **Aquatic Centre Master Plan**<br>There is a network of aquatic facilities across the district where there is demand for improved levels of service.<br><br>The Todd Energy Aquatic Centre is not meeting community demand for lane swimming, casual swimming or learn to swim as there is competition for space.<br><br>The options for aquatic facilities are:<br>1. Maintain the current Todd Energy Aquatic Centre and review aquatic needs during the next 10 years and reconsider the proposed $36.1m Todd Energy Aquatic Centre redevelopment that sits in years 11 to 15.<br>2. Redevelop the Todd Energy Aquatic Centre in the first 10 years ($36.1m 2019). | **Preferred Option**<br><br>Our preferred option is **Option 1** - maintain the current Todd Energy Aquatic Centre and review needs during the next 10 years. |

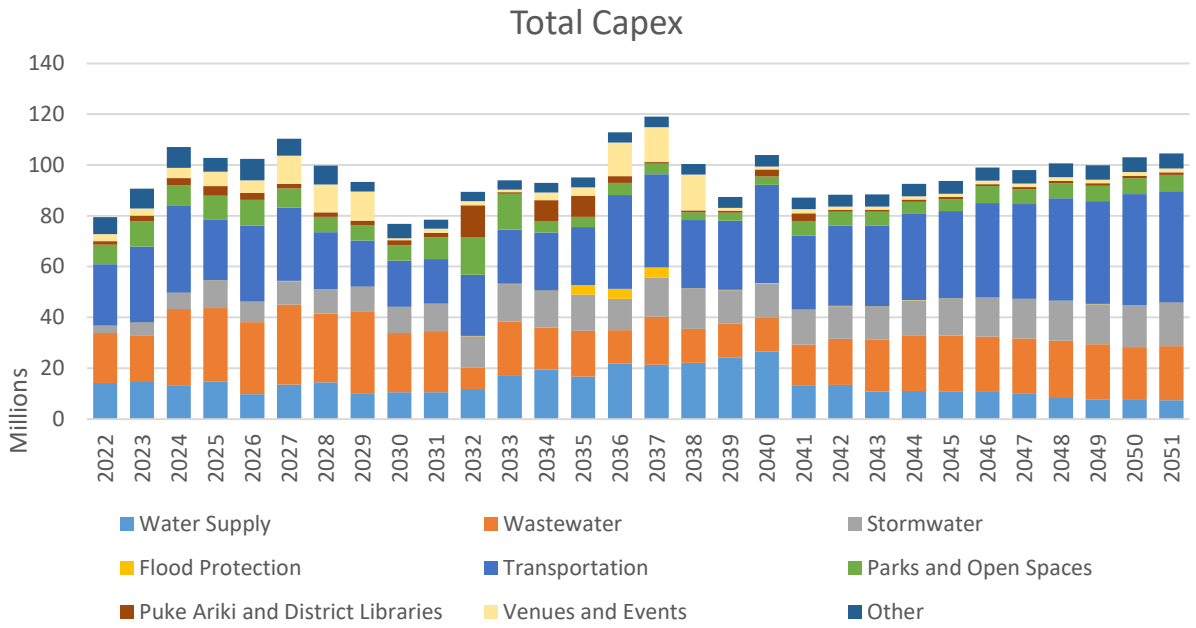
# Infrastructure Strategy

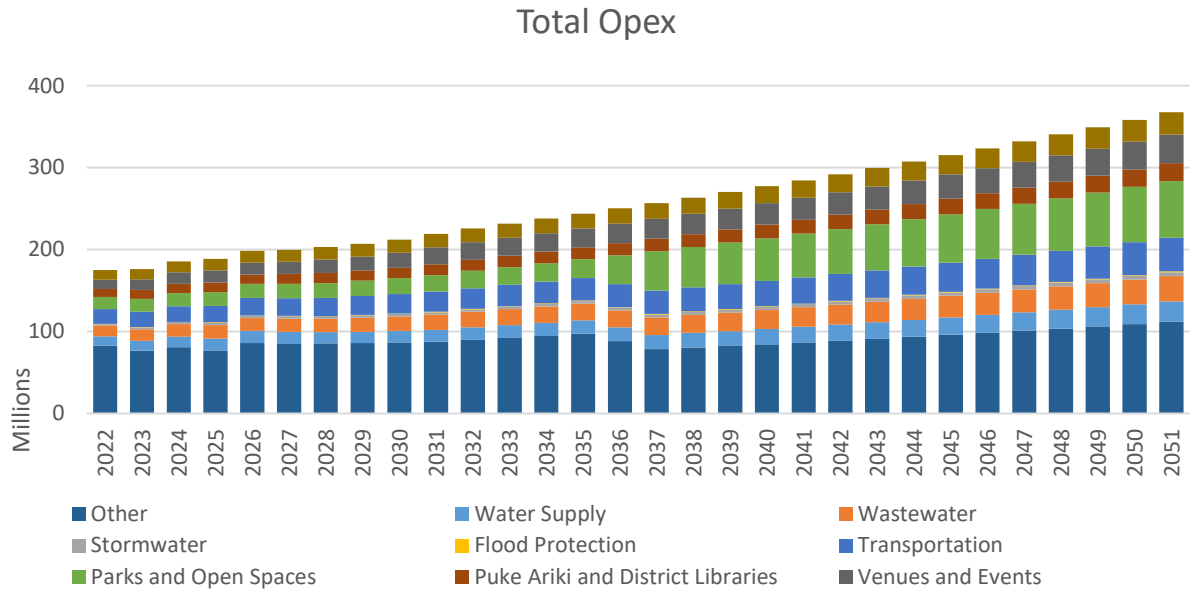
## Our Plan

Based on the preferred options outlined in the above section we have forecast our capital and operating expenditure over the 30 years of the Infrastructure Strategy and this is set out in the graphs below.

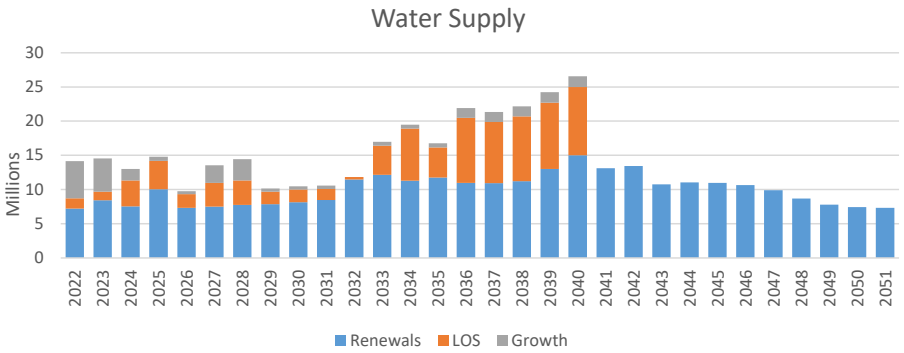
Capital expenditure is further analysed by type:

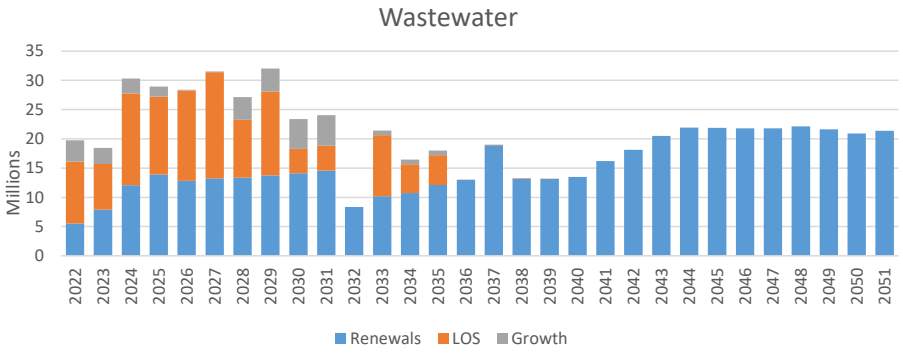
- Renewal – replacing or extending the life of our existing assets.
- Increased level of service – improving the level of service that we provide to the community.
- Growth – providing additional capacity for a growing community.

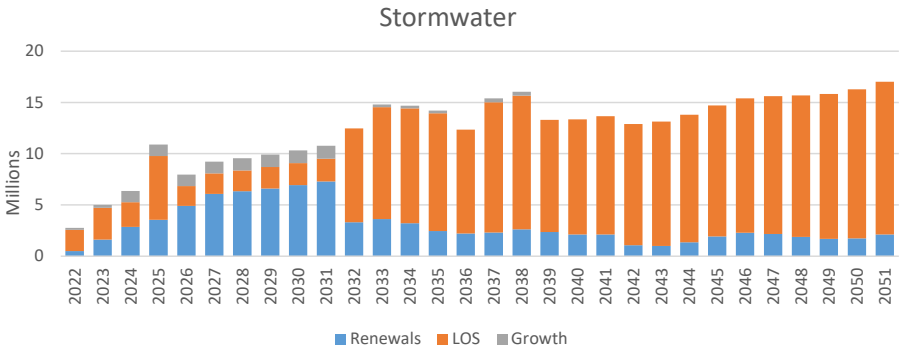


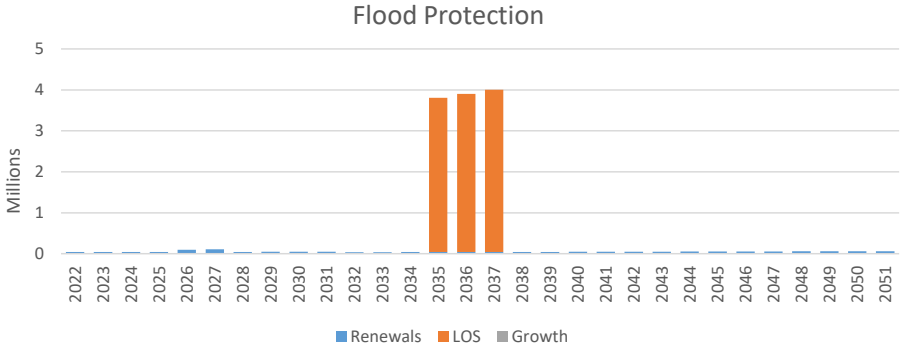



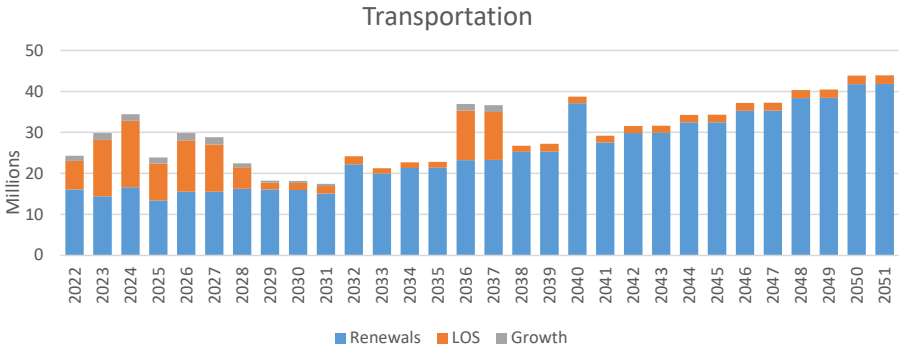
# Infrastructure Strategy

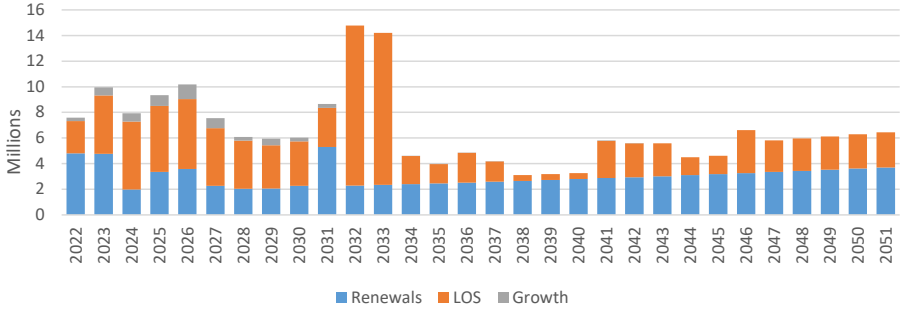


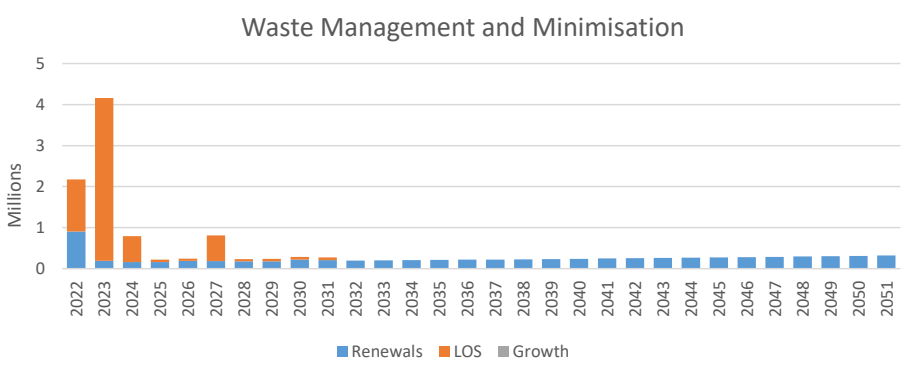



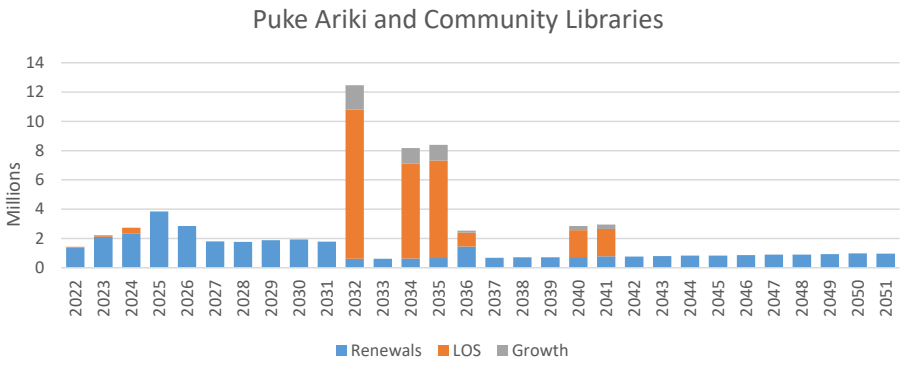



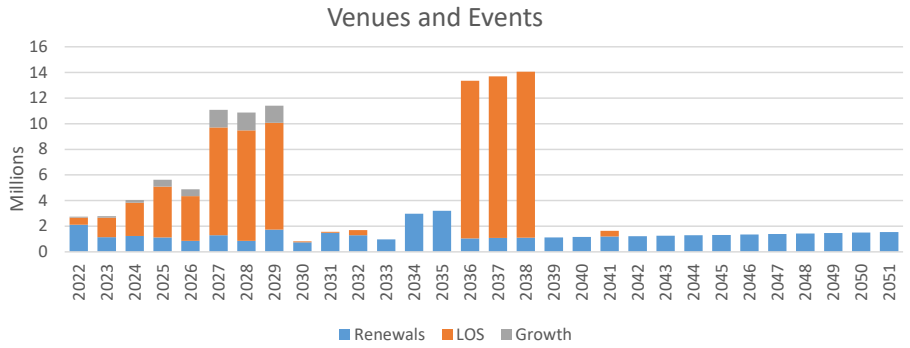



# Infrastructure Strategy



# Infrastructure Strategy

## Assumptions

This Infrastructure Strategy is based on the following assumptions about the life cycle of significant infrastructure assets.

| Assumption - Life cycle of assets | Uncertainty/Risk |
|---|---|
| **The Three Waters – water supply, wastewater and stormwater**<br>• Water and wastewater treatment plants. These assets (excepting some mechanical equipment and pumping stations – see below) have a long life cycle (80 years) and all of the current assets are within the first half of this life cycle. It is therefore, not expected that any replacement will be required within the 30 year timeframe of this strategy.<br>• Mechanical equipment. These assets are subject to more wear and tear and therefore have a shorter design life. Renewal programmes will be based on more sophisticated assessment of condition and run times of equipment rather than just age.<br>• Wastewater pump stations. The design life cycle of these pumps will extend through the 30 year timeframe, however, with new expectations of performance it is likely that many of the existing pump stations will no longer be fit for purpose and require upgrade before the end of their lives.<br>• Reticulation networks. Due to several years of underinvestment in renewals, the average age (from a condition perspective) of the network is getting older and the condition deteriorating. Increased investment is proposed to address this. | There is a high degree of certainty on all of these assets, except wastewater pump stations which are considered medium-high certainty.<br><br>The associated risk is an increased cost of reactive maintenance from unanticipated failure of the assets, as well as not meeting the community expectations of levels of service. |
| **Flood protection**<br>These assets are earthworks based and have a long life cycle. Business as usual renewals is all that is required to maintain the effectiveness of the assets over the 30 year period. | There is high level of certainty on the life of these assets and no significant risk identified. |
| **Transportation**<br>• Bridges. Most of the road bridges in the network were built around the same time. As a consequence about 40 bridges will come to the end of their design life in the next 10 years and about half of our bridge stock will have reach the end of their design lives within 20 years. There is an opportunity to implement a programme of large component replacement to extend the life of some of these bridges rather than demolish and rebuild, but this is not viable for all bridges.<br>• Roading network. Local roads are largely in good condition and the renewal programme will be reduced to a more appropriate level, releasing capacity to increase renewals of arterial roads.<br>• Rural roads. Short term, high use activity on specific rural roads (e.g. logging of a particular area for a short period) will be monitored and renewals carried out at the conclusion of such activity. | There is a high level of certainty on the overall roading network, but moderate on the condition of the bridges. The risk associated with bridge renewals is that more fundiing than currently forecast may be required.<br><br>Note: The rural road renewal programme is based on the current forestry harvest programme. Any change in that programme will require changes to the renewal expenditure profile. |
| **Waste Management and Minimisation**<br>The Bonny Glen landfill has a 30 year agreement in place to take the landfill waste of the district. Land has been secured for a further landfill should this required. | The level of certainty is high and the risk would be needing to find an alternate approach earlier. |
| **Other asset groups**<br>There are no significant issues related to other assets for life cycle planning. Routine renewals or upgrades for growth and level of service changes will be considered as necessary. | |

# Infrastructure Strategy

Demand for services is driven by a range of factors. The assumptions for these factors are covered below.

| Assumption - Demand for services | Uncertainty/Risk |
|---|---|
| **Population change**<br>Over the 30 year period of the strategy, population is expected to grow by 21 per cent. The rate of growth is expected to be slightly higher in the first 10 years and decline slightly in the remaining years. The population will continue to age with 27 per cent aged over 65 by the end of the period versus 20 per cent currently. Overall, the population is expected to continue to predominately be European and Māori, however there will be a small drop in the number of Europeans and similar increase in the Asian community. | There is a low level of uncertainty for ethnicity and age changes, but overall population growth has a medium level of uncertainty as it is driven by net migration as well as natural population growth (births and deaths).<br><br>The key risk is with provision of infrastructure for residential development. |
| **Economic activity**<br>A conservative growth track going into 2022 has been assumed, with growth holding just below the one per cent per quarter level. The growth is expected to continue into 2023/24 before dropping back to pre Covid-19 pandemic levels of around 1.9 per cent to 2.7 per cent per annum. International tourism is expected to recover to pre Covid-19 forecast levels by 2027/28 and domestic tourism to be stronger in the first two years before returning to normal growth patterns. | There is a medium-high level of uncertainty due to the impact of national and global economies and politics. Closure of the borders by the Covid-19 pandemic puts international tourism in the high uncertainty category. The predominant risks are:<br>a) Improved infrastructure provision for increased activity (e.g. roading) – this can be managed through monitoring changes in activity.<br>b) New infrastructure for development areas. |
| **Rate and location of residential and commercial development**<br>Residential development is driven by both population growth and change in household size. A decline in average household size in New Plymouth is expected, driven by an ageing population, growing life expectancy and societal trends. The average household size in New Plymouth is projected to decline from an estimated 2.4 individuals per household in 2021 to 2.3 individuals in 2051. Commercial development will be driven by the level of economic activity. The District Plan identifies areas of new growth for both residential and commercial development and has new growth areas as well as some inward growth to deal with the expected growth over the period of the strategy. | There is a medium level of uncertainty with the speed of growth as reflected in the population growth and economic activity assumptions. Infrastructure provision for new growth areas will only happen in sequence with growth. |

# Infrastructure Strategy

This strategy is assumed to deliver existing or improving levels of service across our infrastructure assets. Reductions in levels of service are not planned for. The key focus of investment varies in each asset category depending on the current condition and challenges faced.

| Assumption - Levels of service | Uncertainty/Risk |
|---|---|
| **Water supply**<br>Investment focused on renewals and resilience will ensure water quality and consistency of supply service levels can be maintained. Capacity for growth will primarily be created through demand management. | There is a medium level of uncertainty for the levels of service assumptions. They rely on the levels of expenditure being maintained over the long-term and this is subject to review every three years. |
| **Wastewater**<br>Investment focused on renewals and resilience will ensure continuity of service levels can be maintained. The impact of wastewater on the environment will be improved through investment in projects to reduce wastewater overflows. | |
| **Stormwater and flood protection**<br>Investment in stormwater is focused on improving levels of service through renewals and resilience projects and addressing those areas most vulnerable to flooding. | |
| **Transportation**<br>Service levels for transportation will be improved in the areas of safety (particularly at intersections), resilience (though the second crossing of the Waiwhakaiho River) and demand management (through increased provision of walking and cycling infrastructure). Other service levels will be maintained at existing levels. | |
| **Other infrastructure assets**<br>All other asset categories are expected to maintain or improve service levels. Improvements are planned through projects such as:<br>• Upgrading the Brooklands Zoo.<br>• Increasing biodiversity and plantings in parks.<br>• Continuing to strive toward the zero waste target.<br>• Implementing the Puke Ariki and Community Libraries Strategy.<br>• Upgraded of the Todd Energy Aquatic Centre.<br>• Support of a multi-sport hub. | |

# Infrastructure Strategy

Scientific evidence is clear that the climate is changing and New Plymouth District will, over time, experience more impacts from climate change, climate hazards and climate extremes. The assumptions that have underpinned the development of this Infrastructure Strategy are covered below.

| Assumption - Climate Change | Uncertainty/Risk |
|---|---|
| **Ministry for the Environment forecasts**<br>• By 2040 the average temperature is forecast to be 0.7C to 1.1C warmer than 1995. By 2090 the average temperature is forecast to be 0.7C to 3.1C warmer than 1995, with five to 41 extra days per year where the maximum temperature exceeds 25C.<br>• Winter rainfall is expected to increase by five to nine per cent by 2090.<br>• The number of extreme wind and storm events is not expected to vary significantly, but there may be changes in their direction and intensity by 2090.<br>• Sea-level rise by 2100 is expected to be between 0.3-1.0m above the 1995 level. Up to 2060, there is less uncertainty, and a narrower range of sea-level rise of 0.2–0.4 metres is expected. | |
| **Impacts for New Plymouth District**<br>• Coastal hazards. Within the next 10 years there could be increased risk to coastal properties, roads and infrastructure from coastal erosion and storm inundation. While the entire coast is at risk from coastal erosion, the risks from coastal inundation are localised to areas of developed low-lying coastal land around river mouths, such as Waitara, Puke Ariki landing and Ōākura.<br>• Flooding. With increasing rainfall intensity it is likely that increased flooding will occur in some areas.<br>• Drought. With increasing water demand and the increasing likelihood of extended dry periods during summer months, the district it at risk of not meeting water supply levels of service at certain times of year. | There is significant uncertainty in the short-term and long-term implications of climate change. However, it is unlikely that any of the investment undertaken will be an over-investment in the long-term. There is risk that climate hazards occur earlier than current forecasts meaning, for instance, that stormwater asset capacity has not been increased early enough. This will result in infrastructure failure (whether temporary or permanent), requiring additional resource and financing. |