

Infrastructure Strategy



Infrastructure Strategy

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Background

Upper Hutt snapshot

Upper Hutt has a population of 42,630 (Forecast ID as at November 2017), 90% of whom live in the urban area. Unemployment is less than the national average but 52% of the working population work outside Upper Hutt (principally in Wellington or Lower Hutt). The economy of the city is transitioning from manufacturing to more small-scale niche companies, such as craft breweries, and with increasing number of people employed as professionals, managers and community and professional service workers.

A large proportion of the land area in Upper Hutt is taken up by regional parks and public open spaces. Unlike Lower Hutt and Wellington, Upper Hutt has a significant amount of land still available for greenfield development.

Upper Hutt's water, wastewater and stormwater networks are managed through Wellington Water. The transport network includes 243 km of roads and 53 bridges. Future levels of service of the network are to a significant degree dependent on the capacity of State Highway 2. There are good road and rail links between Upper Hutt and Wellington and Lower Hutt. Road links with Porirua and the Kapiti Coast are less well developed, being dependent on an upgrade to State Highway 58 and completion of the Transmission Gully route.

The city has 577 hectares of parks and reserves land and 220 km of footpaths, walking and cycling tracks. Around 70% of regional parks land is located within Upper Hutt.

Our Infrastructure Strategy – the next 30 years

Purpose

This is the second Infrastructure Strategy (the Strategy) prepared by Council under section 101B of the Local Government Act 2002. It forms part of Council's Long Term Plan 2018 – 2028 (LTP). It is proposed that future iterations of this document will be prepared in conjunction with an asset management strategy which will include policies, forecasts etc. common to all infrastructural assets. This document would be updated annually and the 30-Year Infrastructure Strategy will be formally reviewed and adopted every three years.

Well-maintained infrastructure located in the right place and provided for at the right time, with sufficient capacity and resilience is critical to the economic prosperity, and social well-being of people living and working in Upper Hutt.

This Strategy covers the following infrastructure assets:

- The three waters: wastewater, stormwater and water supply (managed by Wellington Water Limited),
- Land Transport,
- Parks and reserves, and
- Council property.

In order to deliver on its vision and strategic priority areas, Council provides a range of services to its community through its infrastructure assets:

- Ensuring our community is healthy by providing safe drinking water and the safe disposal of wastewater
- Ensuring our community is safe by protecting people and property from flooding and providing safe roading and cycleways/walkways
- Ensuring our community is connected by providing access to safe and efficient transport networks
- Ensuring our environment is healthy, by providing discharges of wastewater and stormwater to meet environmental standards, as well as by providing a range of recreational opportunities
- Ensuring our community is resilient to change as a result of foreseen and unforeseen events - natural hazards, climate change, changes in demand
- Ensuring our community has access to a range of recreational, cultural and social facilities that meet their needs now and in the future

Scope

The Strategy outlines:

- The significant infrastructure areas the Upper Hutt community must address,
- The principal options to address these areas,
- The cost and service delivery implications of these options for the community,
- How Council intends to manage its infrastructure assets over the next 30 years, and
- The most likely scenario for Council's infrastructure investment.

The most likely scenario includes potential projects that may or may not proceed subject to funding decisions made through future long term and annual planning processes.

Related documents

This strategy satisfies the requirements of Section 101B of the Local government Act 2002 and relates to the following Council documents:

- The Strategy forms part of the LTP.
- Levels of service and mitigation of risk in the Strategy are informed by the Council's Asset Management Plans for its Infrastructure Assets and the Wellington Regional Asset Management Plan for Water Services (in preparation).
- The growth assumptions in this Strategy are taken from Council's Land Use Strategy 2016 – 2043.
- The risk and resilience projects included in this Strategy will be informed by the Regional Resilience Strategy (in preparation).

Management of infrastructure assets

Council's approach to the management of its infrastructure assets over the lifetime of this Strategy is set out below—more detail can be found in the relevant Asset Management Plan.

Infrastructure plays a crucial role in people's lives and provides an important base for many of the activities within the community. It provides the foundation for economic prosperity, and the health and safety of the community. This Strategy presents an opportunity for Council to assess how its assets have performed and where improvements are required.

The theme of this Strategy is to identify significant infrastructure challenges and opportunities for Upper Hutt over the next 30 years. Decisions made in regard to the most likely option for responding to these issues are reflected in budgets incorporated into the LTP.

The capital investment needed for infrastructure assets often requires substantial expenditure when they need replacing or require significant maintenance. However, the long life of most infrastructures means that significant peaks in expenditure are typically followed by long periods where relatively low expenditure is required. This Strategy reflects on what has already been done and considers the best way to move forward to ensure efficient and effective management of these assets to achieve the outcomes the community requires.

At a national level while there is broadly a good infrastructure base despite historic underinvestment, there are significant future challenges, particularly pertaining to ageing infrastructure networks that will require renewing¹. However the core infrastructure for Upper Hutt has been well managed and the budgets and programmes in this document illustrate that we do not anticipate any significant unplanned investment over the next thirty years.

Renewal of existing assets

Council's approach to the renewal (renew the condition and life of the asset) and replacement of its infrastructure assets over the timeframe of this Strategy will be to prolong the life of its assets by prioritising which assets to renew based on their age, condition, criticality and risk of failure. In order to continue to meet the required level of service, Council funds the replacement of assets when their condition dictates. The expected asset lives are set out in Appendix A.

Council has an ongoing programme to survey the condition of its assets and review the level of service to be delivered through the asset. This information, together with the past history for the asset, including feedback from contractors and customers, and the level of service standards will be used for modelling the networks and to develop the work programmes. Work to minimise the risk of failure from natural hazard events will also be considered when priorities are considered for the renewal programmes.

The condition rating of assets is checked:

- Every year for roads with over 500 vehicles per day and every second year for roads with under 500 vehicles per day,
- Every 10 years for wastewater and stormwater,

¹ National Infrastructure Unit (2015). *The Thirty Year New Zealand Infrastructure Plan 2015*.

- Every year for water supply (for selected mains) and
- Every year for property, parks and reserves due to short economic lives of the parks and reserves assets.

Upper Hutt conducts a city-wide pipe condition survey (CCTV) of all wastewater and stormwater pipes on a 10 year cycle. In addition to the city-wide CCTV programme there is an annual programme for urgent pipe condition surveys and re-checking of pipe condition before renewals and repairs to reconfirm the need for investment.

Consideration has been given as to the adequacy of the 10 year rolling condition assessment for wastewater and storm water pipes and on balance this is deemed to be adequate. Condition assessment is undertaken to inform maintenance and renewal programmes and for the bulk of the network which is in good condition, the assessment process is in itself the driver of inspection frequency. Where condition assessed is less than average, those sections of network are more closely monitored – particularly post any event or incident which has the potential to decrease the assessed condition more rapidly.

Overall Council is satisfied that it understands the condition of its assets. This is underpinned by the significant amount of condition rating data accumulated over a long period of time. This is supported by “historic” long-term work programmes based on asset management life cycle forecasts and modified by asset condition rating that have been found to be still valid.

Council is of the view that the overall condition of its assets is good. Condition is of course a function of both age and use and to an extent the replacement/renewals profile for assets will have peaks and troughs based on historic periods of high growth/investment. Council’s approach is to smooth out expenditure (where possible) so as to avoid the worst extremes. This means that based upon condition the life of some assets may be pushed out and again based upon condition the replacement of others brought forward. This balancing occurs across all infrastructural assets simultaneously.

In addition to pipe condition surveying, there is a monthly fresh water quality sample testing programme at 10 selected locations in Upper Hutt. This programme indicates any wastewater contamination issue in fresh water. If an issue is found, further investigations are undertaken on pipes and manholes to find out faults. Wastewater flow monitors are also used to understand system performance. The flow monitoring programme pinpoints any inflow and infiltration issues in the wastewater network through faulty pipes and manholes. Inflow and infiltration investigations are also regularly undertaken. These include smoke testing and gully trap checks. This programme also covers private laterals.

Council has a very high level of confidence in its asset information and condition rating data across all infrastructural assets and in relation to the three waters Wellington Water confirms that this is the most up to date and complete for any comparable network asset information from within the five councils served by them.

As illustrated in the explanation above, Council confirms whether the condition rating is still valid prior to finalising the work programme each year and work is prioritised accordingly. Should an unexpected fault occur, the annual work programme is re-prioritised to ensure that the most effective and efficient use is made of funding.

There are elements of Council assets where the business or service level consequences of failure are sufficiently severe to justify proactive action—these are considered to be high-risk assets. High-risk assets are those that are critical for the health and safety of the community and that have a high likelihood of failure given their age, materials and location.

High-risk assets include pipelines towards the end of their expected lives, all bridges and any roads that gives access to critical infrastructure such as pump stations and reservoirs. Such assets are inspected immediately after a severe event such as an earthquake. They are renewed when condition requires it.

Based on the current condition profiles for the stormwater and wastewater networks, Council foresees a steady increase in the expenditure requirements for these assets over the next 30 years.

The CAPEX and renewal estimate graphs in the *Most likely scenario* section identify the renewals and CAPEX budgets for each of the assets covered by the Strategy.

These highlight that the Council will face the following peaks in renewals expenditure within the timeframe of this Strategy:

- Silverstream Bridge replacement: 2023 – 2025
- Sports ground replacements: 2024 – 2025 and 2036 – 2037
- Asbestos cement wastewater pipe replacements between 2029 and 2034

Council will continue to smooth the renewals programmes to strike a balance between optimal timing for renewal of the asset, undertaking the renewal work in tandem with other council work programmes such as road resealing to deliver the service at the least cost to the ratepayers. Council will fully fund replacements as indicated in the CAPEX and renewal estimate graphs in the *Most likely scenario* section.

Responding to growth or decline in demand

Council anticipates the following key drivers and trends will influence the growth or decline in demand for infrastructure services in Upper Hutt over the next 30 years:

- Changes in demographics
- Planning for growth: Implementation of the Land Use Strategy (additional infill and greenfields development)
- A change from manufacturing to craft breweries and other industries that have a high demand for water
- Stormwater discharge consenting requirements
- Community desire for improved walking and cycling facilities
- Greater community awareness of the need to have resilient service networks.

These factors influence the demand for Council's services delivered by its infrastructure assets and consequently the programme of works reflected in the Long Term Plan. The challenge is to time any CAPEX projects (new or upgrades to existing assets) in order to provide the agreed level of service.

Recent housing and residential growth has begun to increase pressure on key assets. Some of these growth-related needs have been reflected in projects brought forward in the LTP. Similarly Council is reinstating its lapsed Development Contributions Policy and intends to implement a broader Development Contributions Policy across the whole of the city in the near future.

Changes in demographics

Between 2006 and 2013 the Upper Hutt population increased by 1,764 (an increase of 4.5%) and the 2017 estimated resident population is 42,630.

The most significant trend for Upper Hutt is an aging population seeing an almost doubling of those in the 65+ age range over the next 30 years.

Council expects that an aging population will impact on the type of recreational and social facilities the council provides, the timing and extent of any upgrade to Akatarawa Cemetery and transport accessibility (passenger transport and access for the less mobile or transport disadvantaged).

Along with an ageing population, Council anticipates that there will be a fall in average household size.

Planning for growth

Council prepared its Land Use Strategy 2016 – 2043 to identify key areas for growth in Upper Hutt to meet the needs of a changing population and to encourage and support future growth and development. The Land Use Strategy has informed the development of this Strategy.

The Land Use Strategy replaced the Urban Growth Strategy, which relied on a population projection of 41,000 by 2021 based on growth in subdivision and housing development, cheaper housing options than elsewhere in the Wellington metropolitan areas and access to amenities.

The current estimated resident population of 42,630 in 2017 indicates that growth has taken place at a faster rate than anticipated earlier. This demonstrates the need for the Land Use Strategy as Council's principal approach response to growth.

The Land Use Strategy predicts a population of 49,400 by 2043 based on a moderated growth rate of 0.6%. Based on this and the 2017 estimated resident population above, the current projected increase in population by 2043 is 6,770. This is around the mid-point of the Land Use Strategy forecast of a population increase of 5,100 – 8,100 by 2043. The upper end of this range was projected to require up to an additional 4500 dwellings, which will result in changes to water consumption levels and the volume of wastewater discharged as well as demand on the transport and recreational networks.

Any future growth areas will be well signalled and Council will carry out modelling of its networks as the implementation of the Land Use Strategy proceeds. The Land Use Strategy sets out Council's response to growth and includes amongst other things giving effect to the National Policy Statement on Urban Development Capacity. Modelling undertaken to date has identified the need for the following additional infrastructure to support the implementation of the Land Use Strategy for the time periods identified.

DEVELOPMENT WITHIN THE EXISTING URBAN LIMITS (2018 – 2028): INFILL AND GREENFIELD

- Construction of a new sewer cross-connection from the local network to the Design Build Operate (DBO) main trunk sewer network at Gibbons Street (2019 – 2020)
- Ward/Whakatiki/Fergusson Drive intersection upgrade (2018 – 2020)
- Fergusson/Gibbons/Main Road intersection upgrade (2019 – 2020)
- Construction of a new city centre reservoir (2027 – 2028) to support an expected increase in demand as a result of infill and greenfield development over the next 30 years

- Silverstream Bridge replacement (2021 – 2025)

DEVELOPMENT ON THE EDGE OF THE URBAN LIMITS (POST 2028) – GREENFIELDS

- Field Street wastewater upgrade to accommodate the wastewater flow from the proposed Guildford and Silverstream Spur developments
- Totara Park wastewater rising main and pump station upgrade to accommodate the proposed developments in Totara Park area
- Support of the potential Maymorn development of up to 220 lots:
 - Upgrade wastewater reticulation
 - New water reservoir and feeder pipe

The implementation of the Land Use Strategy is expected to drive an increasing emphasis on the upgrading of the rural road network to cater for rural lifestyle rather than agricultural users. The effect of the Land Use Strategy on the roading network has been reviewed using the high level city wide traffic model. This has shown that there are several intersections, including some State Highway intersections, and lengths of road where the present configuration is not capable of carrying the expected demands. These areas will need to be revisited during planning stages to ensure that adequate capacity is provided for the expected traffic volumes and that the configuration of the roading network is compatible for the expected type of user – i.e. cycle lanes, bridal paths and footpaths.

The level of development that has occurred since the previous Infrastructure Strategy is ahead of that forecast and this in turn has resulted in the need to bring forward the Silverstream Bridge replacement planned for 2023 – 2025 and the Ward/Whakatiki/Fergusson Drive upgrade planned for 2018 – 2021.

Consenting requirements

The National Policy Statement for Freshwater Management 2014 (NPS) imposes bottom line standards for freshwater quality. Greater Wellington Regional Council (GWRC) is currently reviewing its five regional plans and will be producing a single regional plan for the Wellington region. Part of this review process will be to give effect to the NPS.

GWRC have prepared a draft Natural Resources Plan which includes proposed provisions to require councils to hold consents for stormwater discharges to freshwater. Council does not currently need to hold resource consents for its existing stormwater discharges.

If Council is required to hold consents for its stormwater discharges in the future, it may need to undertake upgrades to its stormwater network to meet any environmental standards imposed. Budget allowance has been made for stream monitoring in anticipation of the need for consents.

For further information, refer to the section on public health and environmental outcomes below.

Allow for planned increases or decreases in levels of service

Council has planned the following increases in levels of services over the lifetime of this Strategy:

- Akatarawa Road safety improvements
- Rural road upgrades to safely accommodate cyclists and pedestrians
- Upgrades to the cycling network
- The Pinehaven Stream flood protection upgrade.

Note that the Council is not currently meeting the level of service for the stormwater service in some parts of the network. See *Resilience of infrastructure assets* and *Stormwater* sections of this Strategy for a discussion of this issue.

Public health and environmental outcomes

The Council provides for public health and environmental outcomes through the delivery of a potable water supply, the safe disposal of wastewater and the disposal of stormwater in an environmentally sustainable manner.

The Council intends to maintain its A1-a1 grading for its reticulated water supply which is the best grading available in New Zealand.

A key environmental outcome for the Council is the compliance with legislative, planning and consenting requirements. GWRC is currently reviewing its five regional plans and will be replacing them with a single regional plan (the Natural Resources Plan) with standards developed at a catchment level. Consenting requirements for stormwater discharges are likely to be more rigorous. Council is currently monitoring 10 stormwater sites for water quality.

Council is currently not required to hold stormwater discharge consents. Funding has been set aside in the 2018/19, 2019/20 and 2020/21 years (\$50K, \$50K, \$25K respectively) to obtain any necessary resource consents for stormwater discharges as a result of the Wellington Natural Resources Plan.

A global (regional) consent has been lodged with GWRC for the discharge of stormwater under the Natural Resources Plan. Funding is being allocated for a monitoring regime as the next stage of the consent and stormwater management process.

Resilience of infrastructure assets

The principal risks that Upper Hutt is likely to face over the next 30 years relate to the three waters and roading networks—the former being at risk from flooding and a major earthquake and the latter from increased rainfall resulting in landslips as well as a major earthquake.

Upper Hutt lies within a floodplain with much of the city exposed to flood risk. Climate change is likely to exacerbate this risk through increased frequency and intensity of flooding events. It is uncertain whether the effects of climate change will be seen during the lifetime of this Strategy; however there is the potential to see increasing rainfall variability.

Council's approach will continue to be to manage risk by treating natural hazards as a 'source' of risk and putting into place controls to manage the failure to deliver a service and any consequences of the natural hazard event (e.g. Pinehaven Stream improvements). Council checks the backbone of the three waters' networks for seismic resilience when determining the renewals programme and is currently a partner in developing a Regional Resilience Strategy with the other Wellington councils. Some additional resilience works to provide security of water supply were funded prior to the LTP and are likely to be delivered early in the life of the Plan.

Although resilience is an important issue it is a conscious decision that, where possible, resilience will be addressed concurrently within the renewals programme. Evidence would suggest that an often marginal change in cost to a renewals programme can bring about significant resilience benefits. Therefore although significant resilience costs and programmes may not be specifically identified resilience benefits will nevertheless be delivered as part of the renewals programme. It is considered best practice to not to just replace "like with like" but to replace to present day standards—this includes incorporating our current knowledge of resilience and hazard mitigation.

In other words, resilience is incorporated in all that is done. Networks are renewed with more resilient materials. Renewals are prioritised with resilience being one of the key drivers alongside condition.

In the three waters activities specific projects have been identified in the LTP. These include pipe seismic upgrades, reservoir seismic upgrades and the installation of auto shut off valves to preserve water in reservoirs after an earthquake. (Some of these works are renewals, some are growth and some have a component of resilience.) There is also work being carried out on the GWRC bulk water network that Upper Hutt benefits from, and is paid for through the bulk water levy, which is an operational cost. There are also operational projects that are underway which are planned to improve preparedness and operational response. This last point illustrates that not all resilience gain is through capital investment and worthwhile improvements can also result from improvements in processes, systems and planning.

Council includes additional design capacity to factor in climate change impacts when carrying out planned upgrades to the three waters networks.

Council's water supply reticulation network is vulnerable to a major earthquake. Two out of Council's 15 reservoirs are exposed to risk from a seismic event: Pinehaven Reservoir No 1 (seismic strengthening was undertaken in 2014 – 2015) and Plateau Reservoir (completed 2017 – 2018). Currently Upper Hutt has approximately 27 days storage at 20 litres per person per day based on 70% of water being held within seismic resilient reservoirs.

The resilience of the roading network has been recently reviewed with the major concerns being the number of hilly rural roads that could be affected by major slips and some important access roads that could be affected by fallen overhead cables after a severe event whether it is seismic or weather related. A plan has been prepared to assist in the recovery of these roads to a condition that would permit access for emergency services and access to essential services such as water reservoirs and pump stations as quickly as possible.

There are also a number of bridges that require upgrading to varying degrees to give them a better chance of surviving a large seismic event. Some of these structures have been upgraded and others are programmed for upgrading. The upgrading would be to at least a state where there was a good chance that they could be quickly opened again to emergency services. The Council-owned buildings have been assessed for seismic compliance and upgrades required have been programmed for implementation

A snapshot of current resilience based projects under way includes (but is not limited to):

- More resilient pipes being utilised as part of water network renewals;
- Resilience assessments and identified works being programmed in the Regional Land Transport Plan for Eastern Hutt Road, Silverstream Bridge, State Highway 58.
- Wellington Water emergency water supply facilities (four in Upper Hutt)
- Seismic assessment and appropriate strengthening of council buildings.

Council has comprehensive insurance cover for asset replacement following a damaging event which is regularly reviewed.

Unique to buildings the impact of seismic strengthening will in most instances require the relocation of staff which may impact upon levels of service. However with adequate time to plan levels of service need not be reduced.

An exception is the Central Library closure in February 2018, on the basis of the building being earthquake prone, with no time to plan ahead. For the safety of staff and the community access to the building was immediately restricted. Options for alternative delivery of services are being implemented, albeit those services do not yet match previous levels of service. Depending upon the time it takes to undertake the remedial work and pending other decisions yet to be made longer term options for relocation of library services which will get back to full service delivery are being explored. At this time the disruption to service levels will be a small number of months.

Current intentions are to seismically strengthen the Library and Civic Centre buildings and funding has been allocated on this basis. However until more analysis of the work required has been undertaken, it is not yet clear whether (other than for the Library building) strengthening is in fact the most optimal outcome.

Infrastructure snapshot—significant areas

The following section:

- Provides a snapshot of the infrastructure assets covered by this Strategy,
- Identifies whether Council anticipates that there will be changes in levels of service,
- Summarises the nature of the work programmes; and
- Identifies the key area(s) facing the delivery of services through that asset.

More information on each asset and the services they deliver can be found in the relevant Asset Management Plan.

Wellington Water

Wellington Water Ltd was established in September 2014 to take a regional focus to the delivery of the three waters services: water supply, wastewater and stormwater.

Wellington Water Ltd is a council-controlled organisation jointly owned by the Hutt, Porirua, Upper Hutt and Wellington City councils and GWRC; each council is an equal shareholder. A representative from each council sits on the regional Wellington Water Committee that provides overall leadership and direction for the company. This is done through consideration of the company's half yearly and annual reports, monitoring performance of the company, appointing directors to the Board and providing recommendations to shareholders on proposals from the company. The Committee writes an annual Letter of Expectations to the Chair of the Board of Wellington Water which outlines key priorities and areas of focus for the company. This letter further guides the development of Wellington Water's Statement of Intent². Wellington Water also meets regularly with Client Council Representatives, generally Council's infrastructure managers, to ensure the more operational issues and directions are also aligned to councils' intentions. Services are provided using the assets that are owned by the councils.

Wellington Water oversees the maintenance, upgrade, renewal and development of the three waters infrastructure through their life cycle, and supports Council by managing data, modelling and providing strategic asset management planning. The organisation also provides value to customers and client councils by acting regionally in reducing duplication and delivering economies of scale.

Wellington Water developed a Regional Service Plan that sets out the approach to deliver the three waters services for the region in a cost effective and sustainable manner. This is the foundation for integrated three waters planning and ensures a consistent approach is applied across the 5 councils. The term 'service plan' is used to reflect the focus on delivering the services to meet customers' expectations. The Regional Service Plan also provides an output specific to each client council, including Upper Hutt Council, and shows how planned activities are aligned with the expected customer outcomes set in Council's Infrastructure Strategy and other plans and policies. Council supports Wellington Water and provides feedback in development of Regional Service Plan and further decides and funds the work programmes produced using this Plan.

² More information about the arrangements between Wellington Water and Upper Hutt City Council can be found in the current Statement of Intent (2017 – 2020) at www.wellingtonwater.co.nz/about-us/vision/

Council retains ownership of its network assets for the delivery of potable water, sanitary waste water and storm water. Council maintains and updates asset databases for all of these networks and this information is provided to Wellington Water for asset management purposes—developing work programmes for renewals, replacements and maintenance. Historically these plans and work programmes were developed in-house and formed part of previous Long Term Plans. To date there has been no significant change in Wellington Water recommended work programmes from those earlier iterations. This validates both the earlier and current proposed programmes and it turn provides a high level of confidence in the programmes submitted by Wellington Water. Variations between the earlier programmes (which form the basis of what we would expect to see) and those proposed in the new work programmes and forecasts are the basis of negotiation between Council and Wellington Water.

The asset based work programmes are based upon anticipated life-cycle renewals modified by real-time condition rating. By taking into account condition rating as a modifying influence work programmes can be focussed on areas of highest need in terms of continuity of service level delivery. An example is a cluster of leakage complaints from customers will trigger a condition assessment in that location and this may result in renewals being reprioritised to that location.

For a number of reasons Council will continue to maintain asset inventories for all assets that it owns including the three waters. Should service delivery arrangements change (for any reason) then Council has at its disposal robust information to enable the continuity of asset management practices and the delivery of work programmes.

Water supply

Upper Hutt's water supply comes from the twin lakes at Te Marua and is delivered to the community via a network of reservoirs, pump stations and water mains.

Council, along with the other councils in the Wellington region, purchase their water in bulk from the GWRC. The cost of this water is close to \$2.5 million per annum for Upper Hutt. In addition, the cost of pumping, distributing and maintaining the city infrastructure that transports water from Council's water reservoirs to tap is about another \$4.6 million per annum.

The quality of water is very high. Upper Hutt presently has an "A1-a1" grading for its source and reticulated water supply, which is the best grading available in New Zealand. This means full compliance being achieved for source and distribution under the New Zealand Drinking Water Standards.

In Upper Hutt domestic water consumption is currently averaging 345L/person/day which is similar to the average for other cities in the Wellington region. Council monitors consumption, undertakes leak detection and runs education programmes in relation to water conservation.

From modelling the water supply network is able to meet current predicted demand with no changes anticipated to the work programme over the lifetime of this Strategy at this time, which focuses on:

- Bringing reservoirs up to current design standards for seismic events
- Leak detection
- Water conservation programmes

However there is the possibility that the current level of security against raw water shortages could be eroded with the population growth in the Wellington region thereby impacting on the Council's ability to meet demand. The GWRC by agreement with its customers (including Upper Hutt) targets a security of supply standard of 1 in 50; being a shortfall in supply only once in every fifty years. Modelling of the catchment yield and the demand for water supply indicates that a new water supply source will be required in approximately 2036. Council also monitors, models and plans for future water supply requirements.

Changes to the work programme may be required subject to the level and timing of any new development resulting from the Land Use Strategy 2016 – 2043 and consequent district plan changes. New reservoirs would be required to support greenfields development (paid for by developers) and infill development (see Wastewater section below).

Focus areas:

- Ensuring ongoing security of supply against water shortages (note that this is the responsibility of GWRC).
- Improving resilience in the event of a natural disaster (pipes, storage and supply).
- Demand management.
- Improving network modelling.
- Aligning services with growth demands.

Wastewater

The city's wastewater system removes some 11,000,000 litres of wastewater from Upper Hutt homes, shops and business premises each day through 223 kilometres of wastewater mains, manholes (access chambers) and 11 community pumping stations. The Hutt Valley Bulk Wastewater System is jointly administered by Council and Hutt City Council (HCC) by way of a joint committee known as the Hutt Valley Services Committee.

HCC is responsible for administration of the bulk wastewater system from Hutt City and Upper Hutt, conveying wastewater to the Seaview Wastewater Treatment Plant, and the operation of the Wastewater Treatment Plant. Council pays an annual operating levy and Upper Hutt's share of capital works.

Modelling shows that the wastewater service is able to meet current known demand with no anticipated changes in levels of service.

Some localised upgrades have been identified to meet growth projections. However, the Hutt Valley main trunk pipeline is ageing, particularly the pressure pipelines. This pipe was constructed in 1958 and currently cannot be taken off-line for inspection or maintenance. There is a major capital project planned in 2020 – 2021 (a total cost of \$5.3 million with UHCC's share being 32% of this) to duplicate the main collecting sewer to provide some redundancy and improvement in seismic resilience.

Inflow (stormwater getting into the wastewater network via cross connections between the networks) and infiltration (groundwater getting into the wastewater network) is an issue for parts of Upper Hutt's wastewater network.

Council's sewer network is divided into 13 catchments for the purpose of sewer flow monitoring. Previous flow monitoring has identified inflow and infiltration issues in the Pinehaven and Timberlea wastewater catchments. The detailed investigation and remedial work has been completed in these catchments.

Focus areas:

- Reducing the volume of stormwater inflow into identified parts of the wastewater network.
- Contribution to cost of improvements to Seaview Treatment Plant overflow.
- Replacing mains in poor condition and/or facing seismic risk.
- Improving network modelling.
- Aligning services with growth demands.

Stormwater

The city's stormwater system is designed to manage the collection and disposal of stormwater within the urban areas by a combination of reticulated pipes, pumps, open drains and onsite soakage pits. The stormwater system comprises 150 km of mains, manholes (access chambers), five stormwater pumping stations, the Heretaunga and Brown Owl detention dams and open drains within the urban areas.

Council's current policy is to provide flood protection to a design standard of meeting a 1:25 year flood event if there is a secondary flow path and for a 1:100 year event if there is no secondary flow path.

While the Council has no immediate plans to change the level of service, the Council needs to determine the level of flooding that people are willing to accept and the cost implications to achieve Council's design standards. The Council is currently plotting areas susceptible to 1:25 and 1:100 year flood events to assist the Council in its decision-making.

Council is currently consulting on a Flood Plain Management Plan for the most at risk area, Pinehaven Stream. Through future consultation Council will determine the level of flooding that the community is willing to accept and will develop an appropriate catchment based response to achieve that level of service. The Pinehaven Flood Management project is an example of the Council working towards meeting both a stormwater design standard and associated channel improvements.

Changes in the level of service may be required due to increased rainfall as a result of climate change which could increase stormwater flows thereby placing pressure on the network.

Council includes additional design capacity to factor in climate change impacts when carrying out planned upgrades to the stormwater network and for development.

The level of service debate also emerges through the yet to be determined finite capacity of onsite soakage pits to absorb stormwater run-off in both increasing frequent high intensity rainfall events and the demands that medium intensity development puts on reducing areas of permeability.

The GWRC is currently reviewing its five regional plans and has released a draft Natural Resources Plan which requires councils to hold consents for stormwater discharges. Council does not currently need to hold any stormwater discharge consents. This will be an additional cost to Council including any upgrades required to ensure that required environmental standards are met.

Focus areas:

- Where there are parts of the stormwater network not meeting the expected level of service council will investigate options for improvement.
- GWRC's Natural Resources Plan will require the Council to hold consents for its stormwater discharges—this may require upgrades to the stormwater network to meet environmental standards.
- Catchment studies for flood mitigation including improved understanding of the capacity for onsite disposal systems.
- Flood mitigation measures including pipe upgrades and other practical options.
- Pinehaven Flood Management Project.
- Stormwater quality monitoring.

Land transport

Upper Hutt's transport network includes 243km of roads (79.3 km rural and 163.9 km urban), 4.7km of cycleways, 323km of kerbs and channels, 245km of footpath, 3775 street lights, 53 bridges (including 7 pedestrian foot bridges), three sets of traffic signals and numerous sumps and street signs. (Note the quantity of assets vested in council is increasing to match growth driven development and those these reported numbers will increase overtime.)

The land transport network is currently able to meet agreed levels of service. Generally traffic can move around the city with relative ease there being only minor areas of congestion developing. However future land development will increase congestion.

For this reason projects on the Fergusson Drive transport corridor (which include the Silverstream Bridge and two significant roundabout works) have been signalled as being brought forward in the works programme.

Challenges are also emerging in rural communities due to subdivision and use demands. Roads which were generally narrow were fine for low traffic volumes but as development has occurred new residents are expecting a higher level of service as well as contributing to traffic growth. At the same time many of these rural roads are popular with multiple users including cyclists, walkers and horse riders. The mixed use combined with increasing traffic volumes is a growing and ongoing problem. Development Contributions have a role to play in how these issues will be resolved.

Rural roads are also particularly vulnerable to land movement and the frequency/severity of these events is increasing. This is due to the increased frequency of high intensity localised rainfall events.

Council has assessed the likely impact of any future development as a result of Council's Land Use Strategy 2016 – 2043 on the roading network through modelling. The LTP includes potential projects to ensure that adequate capacity is provided for the expected traffic volumes from future development.

Modelling also shows that the level of service provided by State Highway 2 through Upper Hutt is less than acceptable and advocacy to seek improvement on this route and State Highway 58 will continue with the New Zealand Transport Agency.

Similarly both of these routes have known vulnerabilities which reduce their resilience to natural hazards. The alternative routes involve the use of local roads and studies continue as to what can be done at a local level to bolster resilience on these routes.

From a sustainability and economic perspective Council has also invested in a number of opportunities to assist in demand management. These include:

- The construction of cycle ways including the provision of cycle safety infrastructure such as markings at intersections. This work being co-funded through the Urban Cycle Fund (UCF) and the New Zealand Transport Agency (NZTA). Although notionally concluding in July 2018, there are indications that this national programme will be ongoing.
- Street light conversion to LED due to be completed by end of June 2018 will bring about ongoing savings in energy consumed and maintenance required.
- The investment in improvements to railway stations and their environs recognising that transport hubs can become medium density development opportunities. An example of this has been the shared development by GWRC and Council of the Upper Hutt Railway station, commuter parking and Princess Street upgrade.
- The ongoing monitoring and review of parking in the city centre to ensure the balance between demand and turnover is maintained. This requires identification an assessment of council owned off-street parking and how it is managed to be made.
- As the population ages and as medium density housing becomes more common, the demand on footpaths and maintaining footpath condition continues to grow.

Focus areas

- Ensuring the road network is resilient, efficient, effective, and safe and assists in the delivery of councils strategic goals.
- Assessing and mitigating the vulnerability of the rural roading network to natural hazard events.
- Addressing substandard rural carriageway widths, which impact on safety of motorists, cyclists and pedestrians on rural roads.
- Delivering agreed levels of service as the city enters a period of growth.
- Providing cycling and walking facilities that meets the agreed levels of service for all ages.
- Continuing advocacy work with GWRC and NZTA for capacity and safety upgrades of State Highway 2 and State Highway 58.

Parks and reserves

Upper Hutt has 70% of the Wellington region's parks and reserves. Infrastructure assets covered by the Parks and Reserves portfolio includes 577 hectares of parks and reserves land including 34 hectares of sports grounds, 36 regional and neighbourhood playgrounds, 19 park buildings, 30 toilet blocks and 220km of walking and cycling tracks. Akatarawa Cemetery is also included in this portfolio.

Akatarawa Cemetery is jointly owned by Council and HCC, providing burial services for the Hutt Valley. Lower Hutt is also served by Taita Cemetery which has reached full capacity for first interment.

While currently able to meet demand, Upper Hutt has an aging population which is expected to have an impact on the requirements for burials in the next 10 to 15 years. While it is not an immediate issue, the extension of Akatarawa Cemetery was investigated in 2015 – 2017 with provision to extend in 2023 – 2025. The extension will be the development of a block of land adjacent to the Akatarawa Cemetery which has been purchased for cemetery purposes. The costs of development will be shared between the two councils on a ratio of one quarter UHCC and three quarters HCC.

Some projects will be subject to obtaining funding through disposal of surplus Council-owned land. The timing of these projects is unclear due to uncertainty over the disposal process and the number of surplus land parcels that need to be sold to fund the works. Some land parcels require the zoning to be changed from Open Space to Residential in order to maximise the return. One of these projects is the Maidstone Park Stage 3 development proposal which would include new sports fields as well as a sand-based turf and sports hub. Council will also use Development Contributions funding where appropriate.

Leveraging off the Open Space Strategy, significant investment is proposed in refreshing facilities such as Maidstone Max to take into account both the age of facility and the changing demand of users. Similarly there will be significant investment in cycleways and ancillary infrastructure particularly where these routes add to or enhance the connection of regional and national cycleways. Levels of service will be consistent with the Strategy taking into account affordability. Nevertheless it is expected that there will be demand for increases in levels of service for walking and cycling.

Focus areas:

- Catering for anticipated future growth in burial requirements.
- Providing and extending of cycling and walking facilities.
- Disposing of surplus land holdings.
- Upgrading Maidstone Max and the development of a Maidstone Sports Hub including turfs and shared sports facilities.
- Aligning work programmes and levels of service with the Open Space Strategy.

Property

Council Property Services currently manage and maintain 31 individual buildings and 4 parcels of land. The buildings are made up of:

- Community houses.
- Administrative buildings where day to day Council business is undertaken.
- Leisure and recreation facilities.
- An arts and entertainment centre.
- A holiday park.
- Works depot (Park Street).

Council-owned land is categorised into three subsets:

1. Land associated with Council buildings;
2. Land only owned by Council; and
3. Special lands.

Special lands are a group of land parcels which were originally purchased for development and for which Council has been granted resource consent for subdivision to enable the land to be sold. The most recent example of this is Maidstone Terrace. Council doesn't see its primary role to be that of land developer. This is likely to occur when Council needs to be proactive in ensuring an outcome to meet broader community or planning objectives.

There are no anticipated changes in level of service over the lifetime of the Strategy for the property assets. Rather it is anticipated that land and property will continue to be managed efficiently and effectively for the maximum benefit of the community. Options for the alternative use of unencumbered land not required for core Council activity will be assessed on a case by case basis with recommendations for future use made to Council. Land held or acquired for a specific purpose will be managed in such a way that holding costs are minimised and any potential return maximised.

The provision of accommodation for a variety of community groups within Upper Hutt is currently under review. This combined with the demands and expectations of a growing/changing community are posing challenges and opportunities for aging property infrastructure. Council's response is to:

- Fund an expansion of Expressions Whirinaki (to be completed within 3 years);
- Investigate and implement a major upgrade of H²O Xtream;
- Investigate and deliver a purpose built community hub facility.

A number of Council buildings are especially built and kitted out for specific purposes. For example H²O Xtream as a swimming pool has mechanical and electrical equipment operating in a hostile environment. Similarly the structure which encloses the facility is constantly under attack. A building of this nature, let alone the equipment housed within, requires high levels of maintenance. Alongside this is the service offering and the need to refresh it, usually before the economic life of the facility is reached. In a similar vein is Expressions Whirinaki. To protect exhibits the environment needs to be climate controlled whereas

the associated theatre and stage has significant amounts of electrical and mechanical equipment. Its challenges stem from it being an overly value-engineered and architecturally designed building requiring more maintenance than normally expected. (Build capital cost was traded off against ongoing operational costs.)

A typical aspect common to all buildings in the Council portfolio is the need to fully assess and understand their seismic capacity. Nationally there has been a steady progress in improved understanding of building behaviour in seismic events. Buildings can be assessed against current standards using current techniques but it is certain that both the standards and assessment techniques will raise the bar overtime. The most likely impact will be a decline in building seismic ratings. Council will have to make calls on how to optimise the decisions and investment needed to maintain appropriate seismic ratings for its buildings. The timeframe for meeting required ratings will vary upon the building importance level and the rating against the National Building Standard.

In recognition of this Council will allocate funding in the LTP 2018 – 2028 (first 2 – 3 years) to address known seismic strengthening³ requirements in relation to the central library and administrative buildings. These funds have been calculated on an accepted industry unit rate for seismic strengthening works of \$1000 per square metre. In relation to the civic administration building a quantity surveyors report for works in 2012 was adjusted into present day dollars using the construction cost index and this confirmed the appropriateness of the current industry guide. Council have set target strengthening levels for the library (being importance level 3) of >67% NBS⁴ and for the civic administration building (being importance level 2) of >67% NBS.

The magnitude of the potential issues in relation to seismic strengthening of other Council-owned buildings is thought to be small but in the light of improved understanding of building behaviour and assessment techniques it is unable to be quantified at this time. Seismic strengthening work on any building is likely to be intrusive to the extent the buildings have to be vacated whilst this occurs. With time to plan disruptions to levels of service can be minimised and other building renovation works can be integrated (subject to need and funding).

In relation to the current budget allowances for the library and civic administration building these only cover the cost of seismic strengthening. Any opportunity to refurbish or repurpose buildings will require additional funding.

Focus areas:

- Ensuring that community facilities are maintained so that they are fit for purpose.
- Ongoing rationalisation of land and building holdings.
- Investigating the needs for and the provision of a new community hub.
- Completing the extension of Expressions Whirinaki.
- Investigating options and implementing the upgrade of H²O Xtream.
- Completing seismic assessments of Council-owned buildings and undertaking required remedial works (Central Library and Civic Centre buildings).

³ The budget has been predicated upon the seismic strengthening option delivering the most optimal outcome. However until additional analysis is done it isn't clear that seismic strengthening will in fact proceed – particularly for the civic administration building.

⁴ NBS is national building Standard

Most likely scenario

Indicative estimates

The total projected capital expenditure (CAPEX) for Council's infrastructure assets over the next 30 years is approximately \$375 million. Over the same period Council expects to spend approximately \$214 million on operational expenditure (OPEX) for its infrastructure assets.

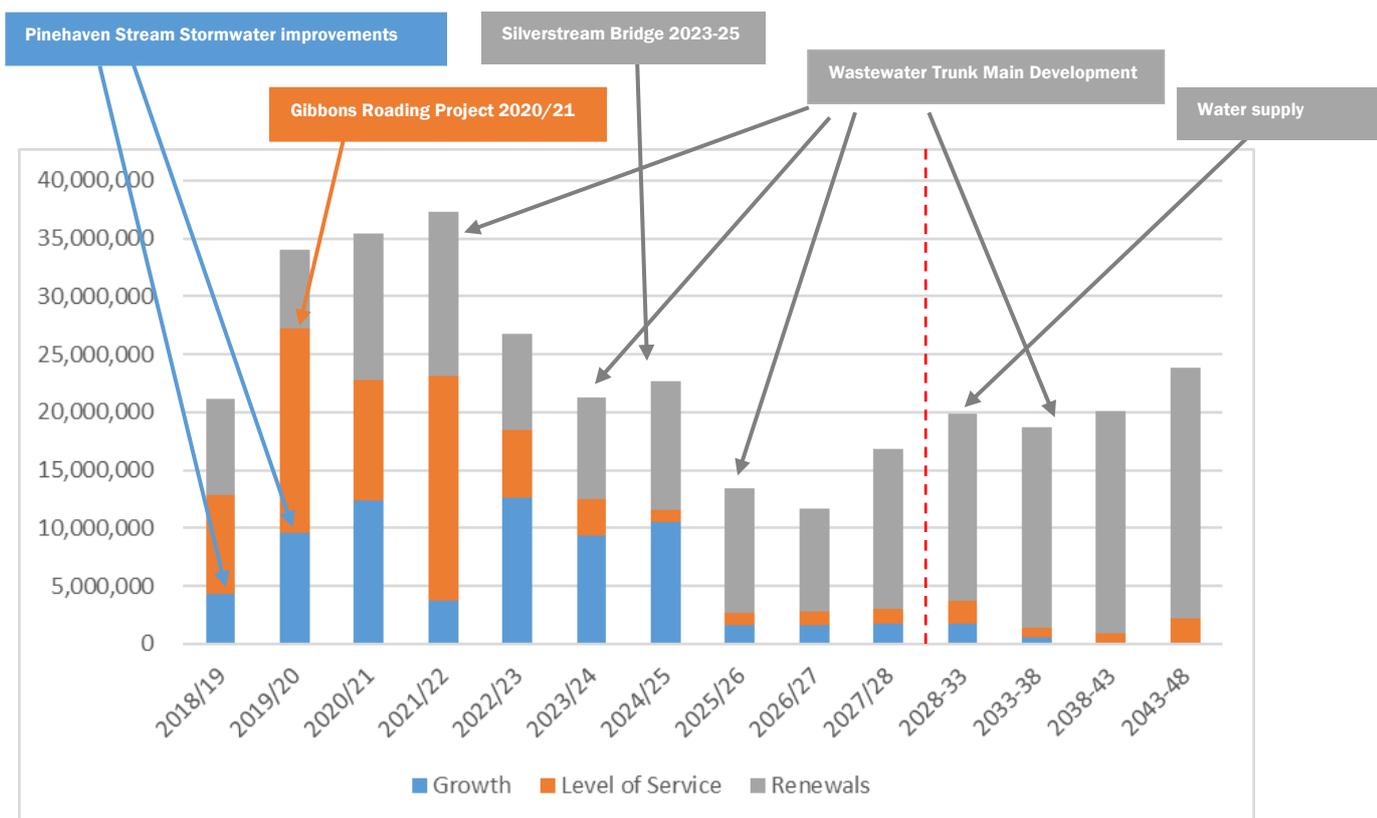
The allocation of CAPEX and OPEX across the infrastructural activities is set out below (inflated figures):

Infrastructure Activity	Capital Expenditure	Operational Expenditure
Water Supply	\$59 million	\$32 million
Wastewater (Excluding UHCC's contribution to Hutt Valley DBO)	\$68 million	\$17 million
Stormwater	\$62 million	\$18 million
Land Transport	\$136 million	\$80 million
Property	\$28 million	\$11 million
Parks and reserves	\$22 million	\$56 million
TOTAL	\$375 million	\$214 million

The following graph shows an overview of the indicative capital and operating costs for the infrastructure assets covered by this Strategy. Detailed costs and project information can be found in the ‘Significant capital expenditure decisions’ table (in the next section) and in the LTP Financial Statements.

The bulk of capital expenditure is occurring over the next 14 years with relatively low levels shown for years 2034 to 2048 (except for one major bridge renewal programmed in 2042).

This expenditure pattern is a combination of uncertainty over growth at those forecast limits as well as reflecting mature network infrastructures which have been consistently well managed to produce an even, ‘no surprises’ investment profile.



Asset Renewals includes all investment necessary to renew the condition and life of an asset and maintain the integrity of the existing network taking into account seismic upgrades

Level of Service change includes those capital investments required to improve/upgrade parts of the asset systems currently below existing target service standards, or to achieve increasing service standards due to increasing customer expectations/changes in technical standards or legislative requirements. For example any new stormwater discharge consenting requirements as a result of GWRC’s regional plans review.

Growth (new) includes all capital investment resulting from changes in demand for the services delivered by the assets.

Growth forecasts through to 2043 are not matched by investment in infrastructure for the following reasons:

- Until development takes place it is unknown to what extent existing network capacity is available and its ability to cater for that demand. For example infill development is unlikely to have as greater servicing cost as will greenfields development.

- Council policy is that developers pay for the cost of in-development infrastructure and vest this back in council as public infrastructure once installed. This means growth-related infrastructure is funded at no capital cost to Council but it does have an impact on operating expenditure once vesting has occurred. Off-site impacts are proposed to be met through Development Contributions as per the Local Government Act 2002.
- Some of the growth-driven demands are not met directly by Council investing CAPEX. For example bulk water is supplied and funded by an OPEX charge for bulk water. The water supplier then uses a portion of this charge to fund supply enhancements to cater for increased demand. It does not show as being a Council CAPEX investment. Waste water is another example where a fee is paid and a service provided.
- In relation to Land transport, there is no growth component beyond 2025 because the growth projects identified (Silverstream Bridge, Eastern Hutt/Silverstream, Fergusson/Ward/Whakatiki, and Fergusson/Gibbons/Main) have been brought forward and will be provided as lead infrastructure. These improvements are to key arterials and will deliver transport efficiency benefits to meet the level of growth out to 2048. Other network improvements are likely to be more development site specific and also more minor in nature.

CAPEX and renewals estimates

The following graphs show the indicative, inflated CAPEX (to cater for growth and maintaining current or improved levels of service) and renewals budgets over the next 30 years for each of Council’s infrastructure assets. More detailed costs, operational expenditure and project information can be found in the *Significant capital expenditure decisions* section and in the LTP Financial Statements.

It is important to note that the actual needs of each asset activity and its ability to sustain issues such as growth have been factored into the forecasts. An example is that growth expenditure for water supply showing in 2042 through to 2045, but for wastewater these is no growth anticipated expenditure. This is simply because based on current modelling there appears to already be adequate existing capacity to meet that growth within the wastewater networks. Development of infrastructure in areas not serviced by existing networks would be provided by developers (who control both the nature and timing of development) which would then be vested back in Council.

Going forward there are finite opportunities for large scale greenfield growth (as identified in the Land Use Strategy) and with present demand, early inroads will be made into land with highest development potential, leaving the less certain opportunities for the outer years.

Figure 1: Water supply

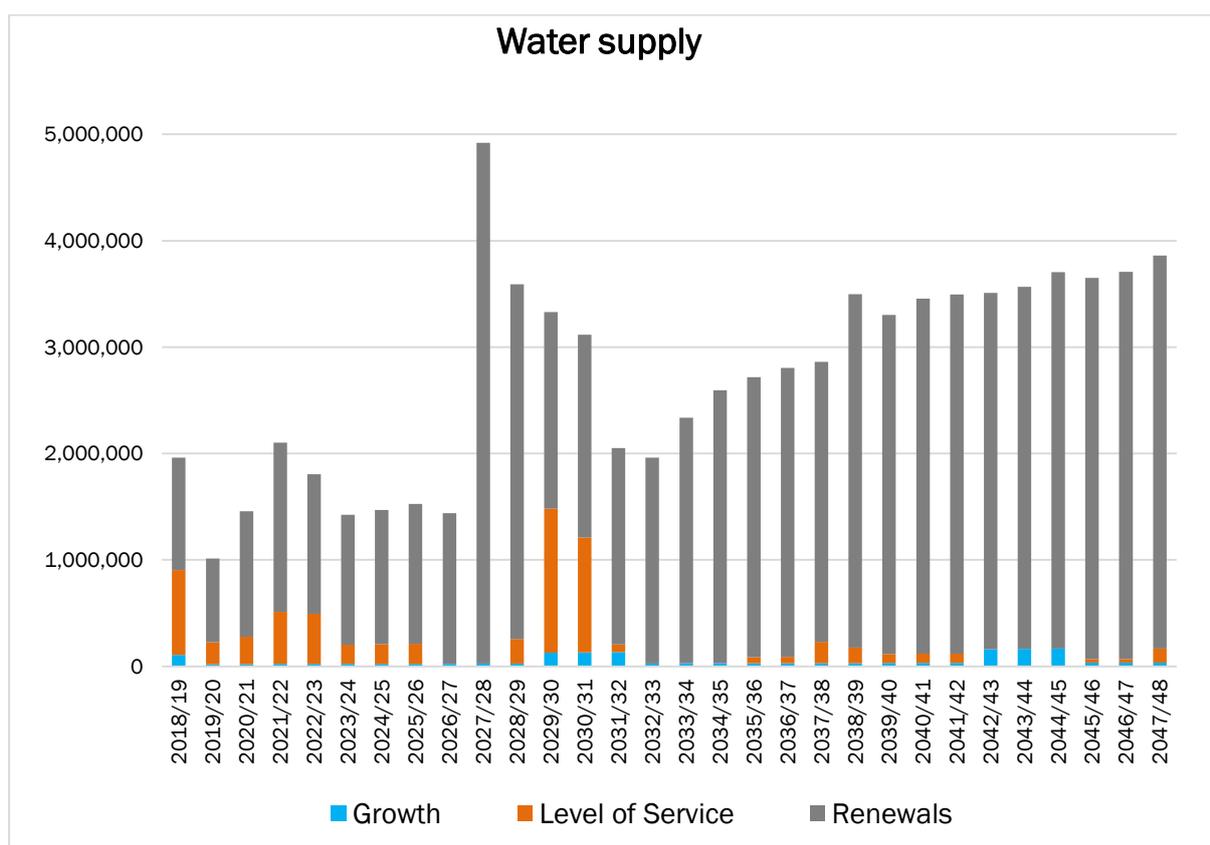


Figure 2: Wastewater

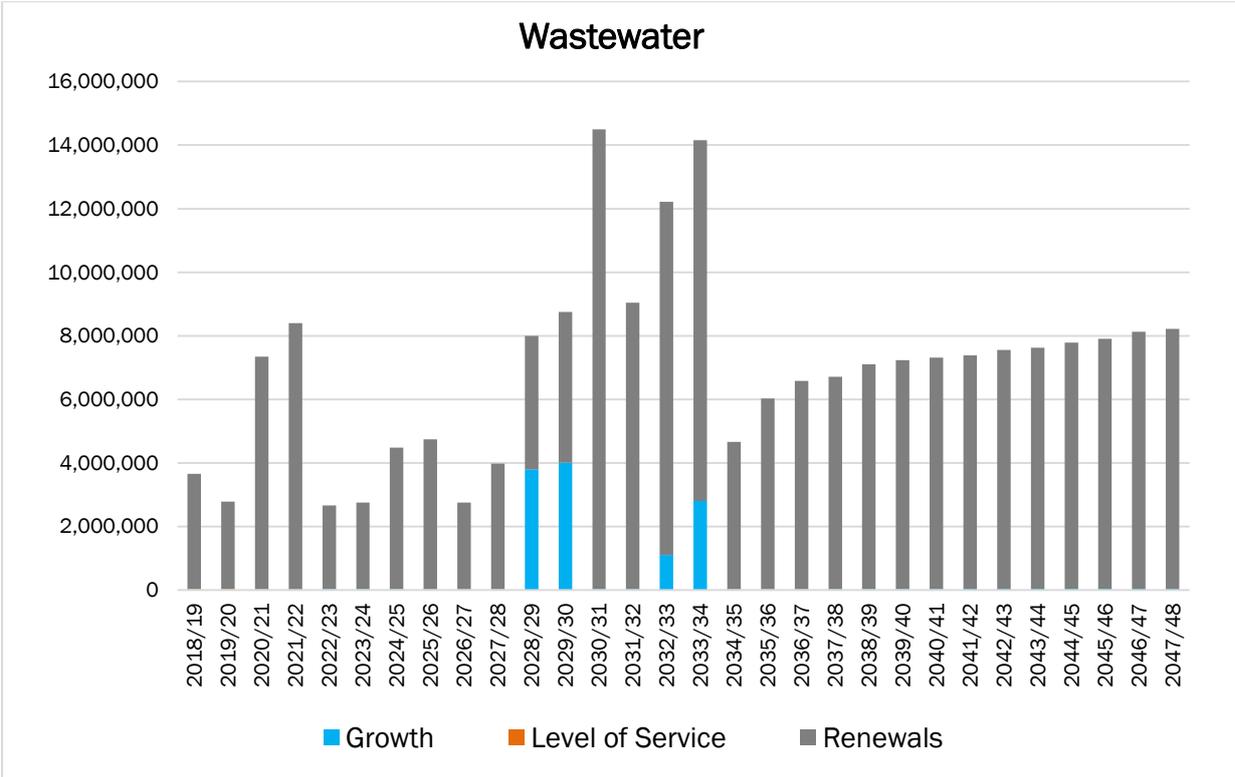


Figure 3: Stormwater

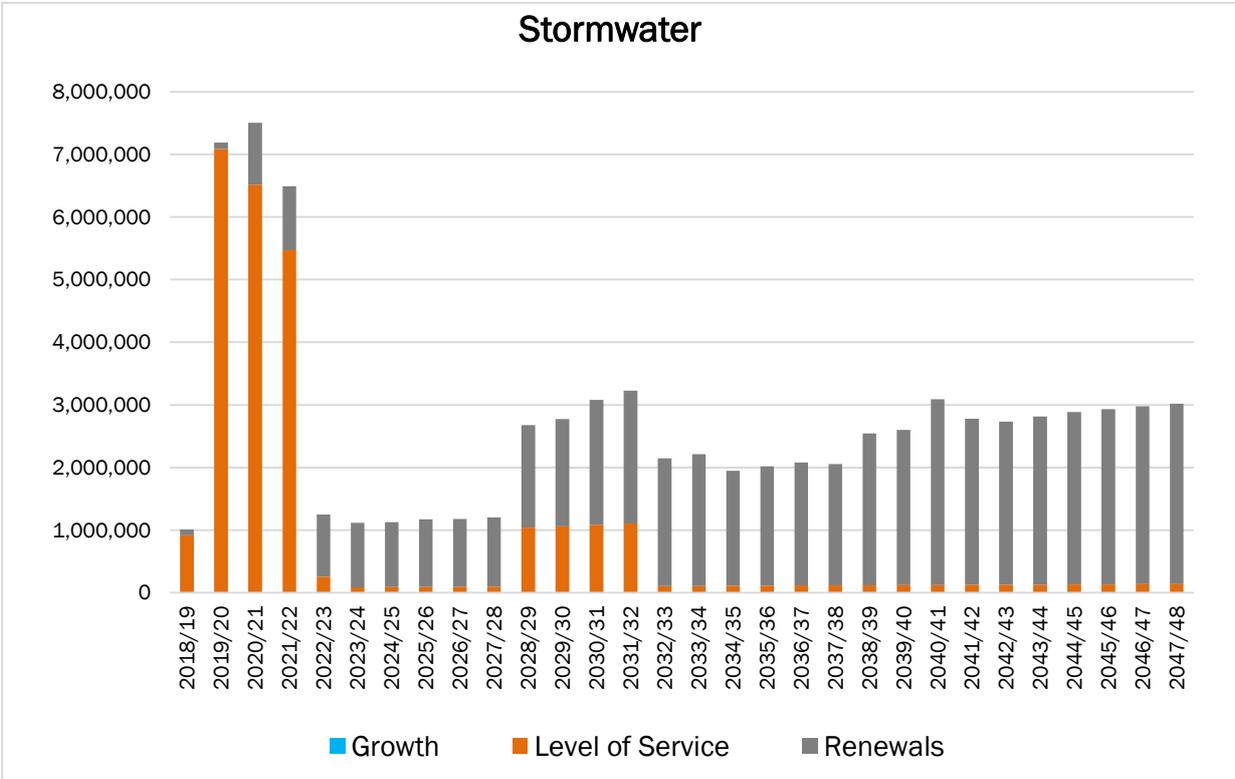


Figure 4: Land transport

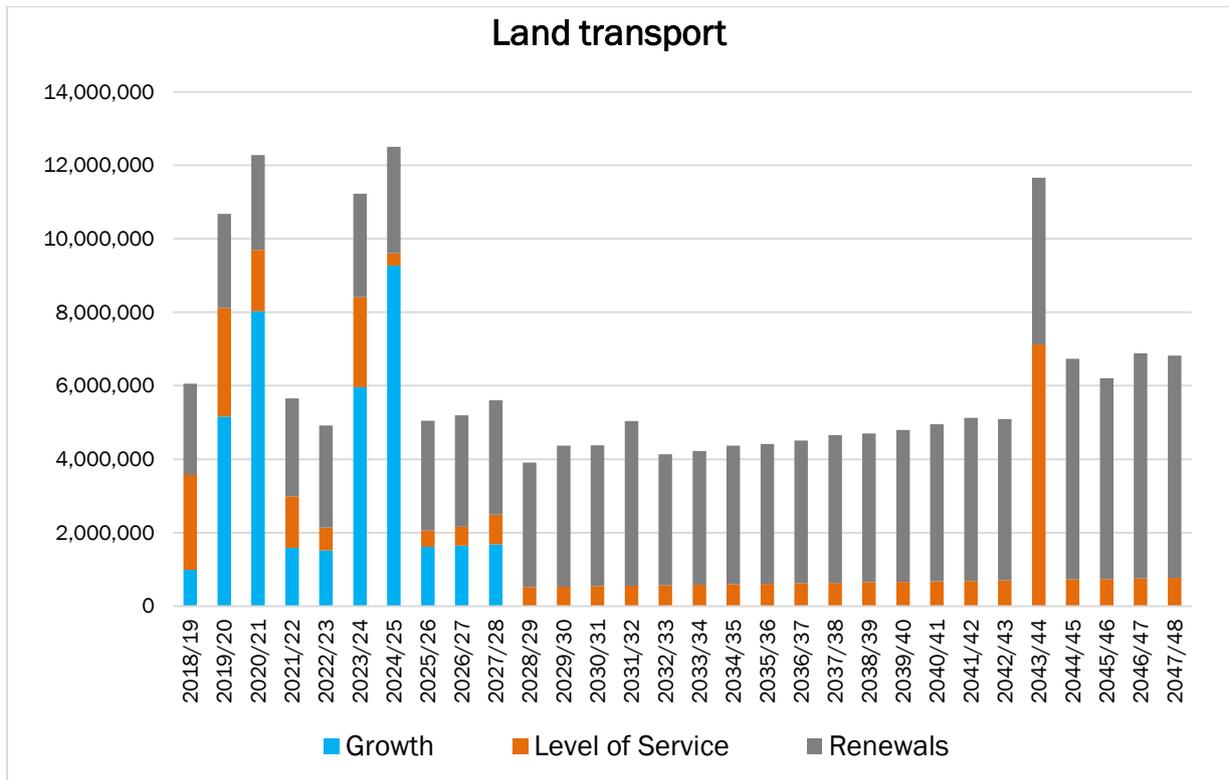


Figure 5: Parks and reserves

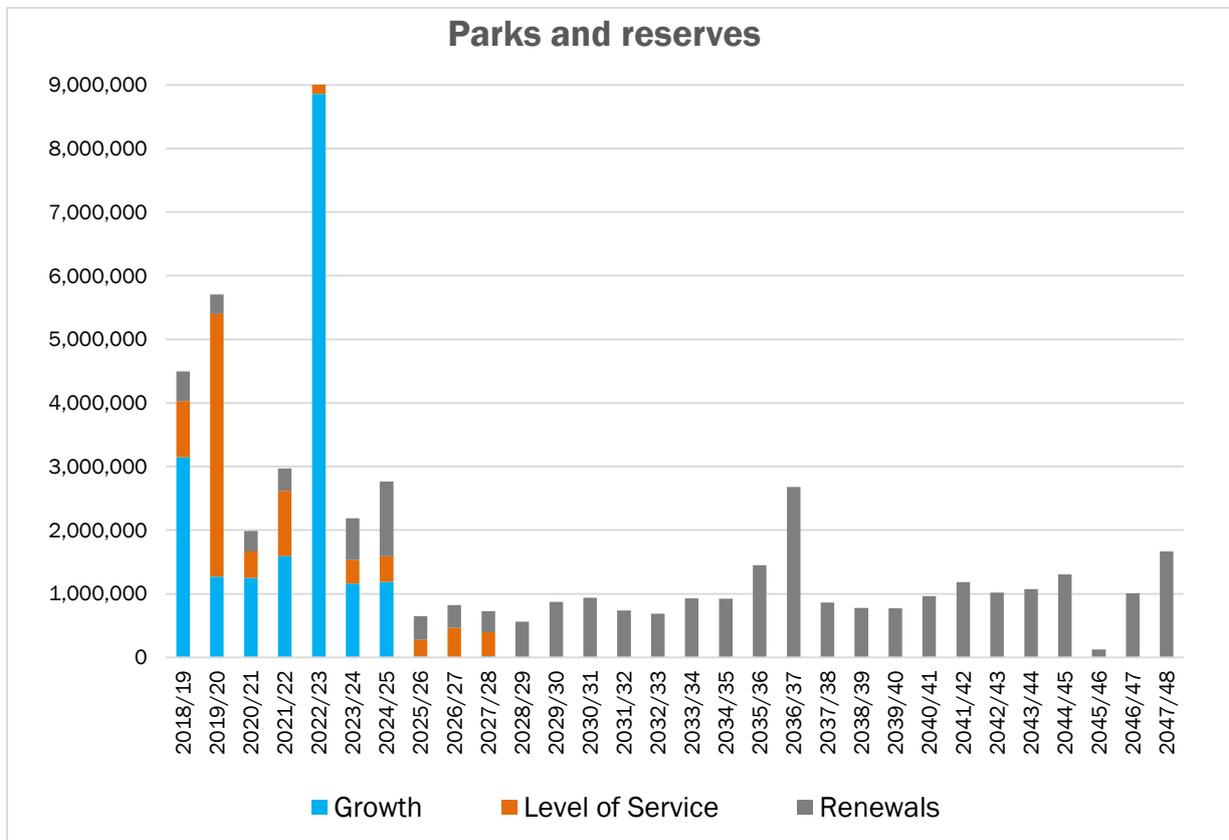
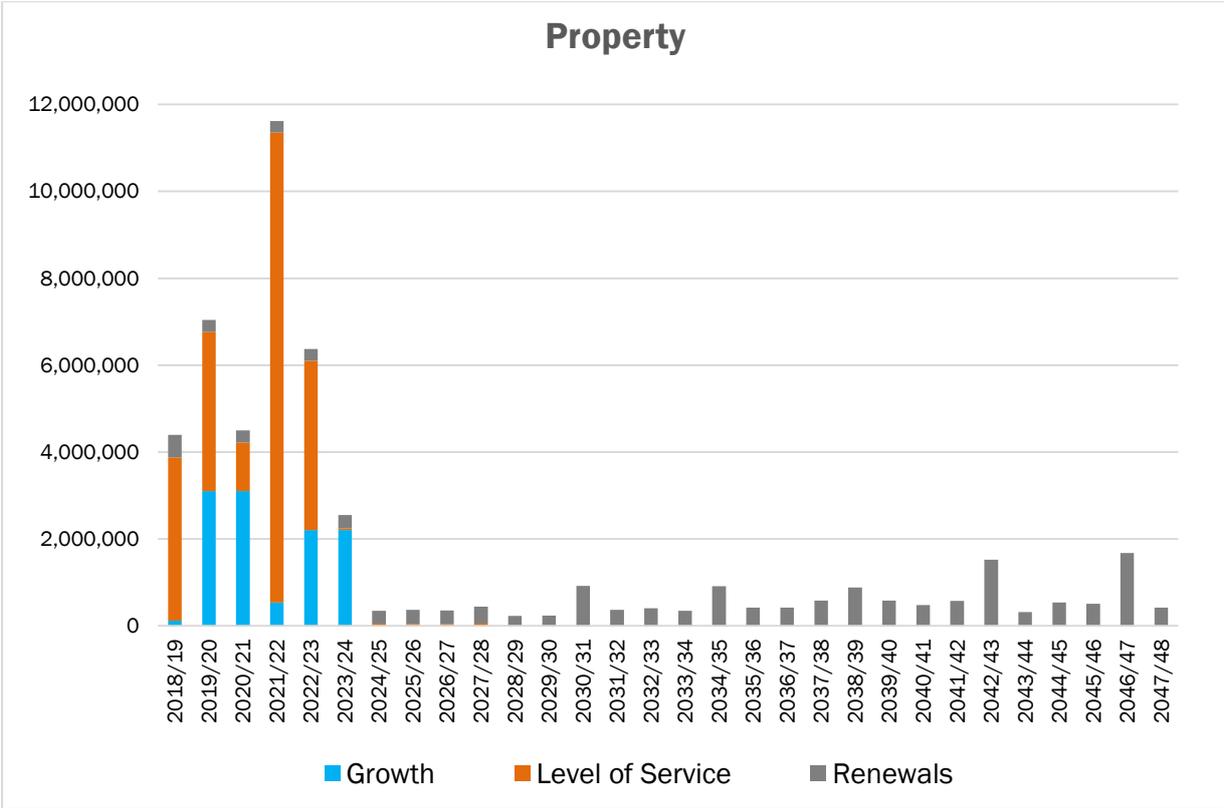


Figure 6: Property



Significant capital expenditure decisions

The following tables identify the significant capital expenditure requirements under the most likely scenario for Council's infrastructure investment over the next 30 years. Note that the projects are subject to confirmation of funding through the Long Term Plan and Annual Plan processes.

Notes:

- Operating Costs refer to the total interest on the capital borrowed over the life of the loans which in all but one instance is 20 years. Therefore other than for the Pinehaven Stream upgrade (40 years) the loans will be repaid within the 30 year period covered by the Infrastructure Strategy.
- Interest is calculated at 4.75% for loans using a table mortgage calculator

Water Supply

Issue	Most likely scenario	Cost (Millions)		Timeframe	Growth	Level of service	Renewal	Benefit	Principle alternative options
		Capital	Operating						
Security of Supply Resilience improvement required	New 9000 cu.m City Centre Reservoir (Replaces existing Cruickshank Reservoir which was due for renewal in 2054)	\$3.521	\$2.010	2023 - 2024	Yes	Yes	Yes	Sustained water supply to meet expected demand within level of service expectations.	Demand management unlikely to compensate for growth forecast to occur before renewal of existing reservoir. Retain existing inadequate 2000cu.m reservoir not viable solution.
Assumption and Strategic Fit Storage will be sufficient to meet foreseeable growth driven demand and maintain agreed level of service. This project has a high strategic fit because the network for delivery of potable water is an essential infrastructure which supports the health and well-being of the community. Also provides enhanced resilience in the event of supply disruption.									
Security of Supply Resilience improvement	New 900 cu.m Kingsley Heights Reservoir to replace existing seismic risk 225 cu.m reservoir which is also inadequate to meet	\$1.300 (Joint funded with developer	\$0 (Renewal Funded - not	2026 - 2027	Yes	Yes	Yes	Sustained water supply to meet expected demand within level of	Demand management unlikely to compensate for growth forecast to occur before

required.	growth forecasts. Number of lots serviced is expected to increase from 150 to 450.	contribution)	loans)					service expectations.	strengthening of existing undersized reservoir. Retain existing inadequate 225cu.m reservoir not viable solution.
<p>Assumption and Strategic Fit</p> <p>Storage will be sufficient to meet foreseeable growth driven demand and maintain agreed level of service. This project has a high strategic fit because the network for delivery of potable water is an essential infrastructure which supports the health and well-being of the community. Also provides enhanced resilience in the event of supply disruption.</p>									

Waste Water

Issue	Most likely scenario	Cost (Millions)		Timeframe	Growth	Level of service	Renewal	Benefit	Principle alternative options
		Capital	Operating						
Changing Land Use	<p>Gallipoli Rd/Pinehill Cr wastewater upgrade of pipe sizes to accommodate wastewater discharge from proposed CIT residential development and resolve the existing pipe capacity issues due to Rimutaka prison developments.</p> <p>The proposal is to replace the existing 225mm pipe with 300mm diameter and the existing 300mm pipe to a 375mm diameter pipe.</p>	\$1.600	\$0 (Renewal Funded – not loans)	2018 - 2019	Yes	Yes	Yes	Additional pipe capacity to ensure network can meet expected demand within level of service expectations.	Existing piped network at capacity. Only viable option to meet changing land use expectations is to replace existing pipes with those of larger capacity.
<p>Assumption and Strategic Fit</p> <p>The additional pipe capacity will be sufficient to meet foreseeable growth driven demand and maintain agreed level of service. This project has a high strategic fit because the network for sanitary waste disposal is an essential infrastructure which supports the health and well-being of the community.</p>									
Changing Land Use	<p>Gibbons St wastewater upgrade of pipe sizes to relieve the pipe capacity issue on Whakatiki St HVWW trunk sewer due to Wallaceville development and to also accommodate future developments in the city centre and South Pacific tyre site.</p> <p>The proposal is to replace the existing 225mm pipe to 300mm diameter pipe and to provide a cross connection to the DBO main trunk sewer</p>	\$1.600	\$0 (Renewal Funded – not loans)	2019 - 2020	Yes	Yes	Yes	Additional pipe capacity to ensure network can meet expected demand within level of service expectations.	Existing piped network at capacity. Only viable option to meet changing land use expectations is to replace existing pipes with those of larger capacity.
<p>Assumption and Strategic Fit</p> <p>The additional pipe capacity will be sufficient to meet foreseeable growth driven demand and maintain agreed level of service. This project has a high strategic fit because the network for sanitary waste disposal is an essential infrastructure which supports the health and well-being of the community.</p>									

Stormwater

Issue	Most likely scenario	Cost (Millions)		Timeframe	Growth	Level of service	Renewal	Benefit	Principle alternative options
		Capital	Operating						
Level of Service Alignment Resilience improvement required	Pinehaven Stream upgrade to address a long history of flooding within the catchment. The current level of service is well below the Council's minimum service level. Physical works are required to improve hydraulic performance in order to meet the Council's level of service for flood protection	\$18.22 (total) UHCC Share over 3 years \$9.112	\$4.287	2018 - 2021		Yes		To reduce the frequency of flooding so that it is in alignment with the council level of service expectations.	The two options to address this level of service deficit are a combination of physical channel works and land use controls. The solution is a combination of these with land use controls being pursued through Plan Change 42 to the UHCC District Plan.
<p>Assumption and Strategic Fit</p> <p>The project will reduce the frequency and severity of flooding in the Pinehaven Stream catchment bringing these factors into alignment with the council's level of service for stormwater. The protection of property and people from the adverse effects of floodwaters provides a strong strategic fit with protecting the health and well-being of the community. This also produces resilience benefits in that the return period of events likely to cause flooding and disruption is increased and so the frequency of flooding is decreased.</p>									

Land Transport

Issue	Most likely scenario	Cost (Millions)		Timeframe	Growth	Level of service	Renewal	Benefit	Principle alternative options
		Capital	Operating						
Level of Service Improvement and Road safety)	To re-configure the Eastern Hutt/Fergusson Drive intersection and access to County Lane by removing conflicts to make the two intersections safer for all road users. (Note timing has been amended to align with proposed Silverstream Bridge replacement.)	\$1.04 (Funded through a combination of council and NZTA funds subject to business case approval.) Total Cost \$2.114	\$0.592	2023 - 2024	Yes	Yes		Improved traffic efficiency and safety.	For intersections there are limited options available to improve levels of service based upon traffic volumes, speed and other site constraints. Roundabout and intersection improvements have been chosen over the alternative of traffic signals due to a combination of efficiency gains and cost.
	Assumption and Strategic Fit As traffic volumes grow the need for safety and efficiency improvements are required. This project has a high strategic fit because it contributes to the provision of a safe and efficient transport network.								
Level of Service Improvement	Totara Park Bridge widening through the addition of a new lane to the existing bridge to increase the capacity for the Totara Park Road/SH2 intersection and significantly decrease the peak hour delays.	\$0.412 (Funded through a combination of council and NZTA funds – subject to business case approval.) Total Cost \$0.840	\$0.042	2019 - 2022		Yes		Improved traffic efficiency.	The options were to do nothing and accept the delays, build a new bridge and intersection with state highway 2 or widen the existing bridge. The option to widen the existing bridge in order to provide an acceptable level of service is the most cost effective.
	Assumption and Strategic Fit Congestion continues (and potentially grows) until such time as an intervention to reduce it is made. This project has a high strategic fit because of the transport efficiency benefits derived.								

Issue	Most likely scenario	Cost (Millions)		Timeframe	Growth	Level of service	Renewal	Benefit	Principle alternative options
		Capital	Operating						
Level of Service Improvement - To reduce congestion and allow for future growth.	Fergusson/Ward/Whakatiki intersection reconstruction to allow for traffic growth on Fergusson Drive and additional cross valley traffic from new subdivisions in Wallaceville and Whitemans Valley.	\$2.159 (Funded through a combination of council and NZTA funds – subject to business case approval.) Total Cost \$4.406	\$1.233	2019 - 2020	Yes	Yes		Improved traffic efficiency.	The options are to do nothing or reconfigure the intersection and install traffic signals or install a multi lane roundabout. The latter option of a reconfigured intersection with multi lane roundabout is the most cost effective option to provide the level of service uplift required.
<p>Assumption and Strategic Fit As traffic volumes grow the need for efficiency improvements are required. This project has a high strategic fit because it contributes to the provision of a safe and efficient transport network.</p>									
Level of Service Improvement	Fergusson/Gibbons/Main intersection upgrade to retain an acceptable level of service. This involves realignment of the intersection to accommodate vehicle volumes and anticipated increase in heavy vehicles using this route.	\$2.987 Funded through a combination of council and NZTA funds – subject to business case approval.) Total Cost \$6.096	\$1.706	2020 - 2021	Yes	Yes		Improved traffic efficiency and access to commercial and industrial land.	The options are to do nothing or reconfigure the intersection and install traffic signals or install a multi lane roundabout. The latter option of a reconfigured intersection with multi lane roundabout is the most cost effective option to provide the level of service uplift required.
<p>Assumption and Strategic Fit Congestion continues (and potentially grows) until such time as an intervention to reduce it is made. This project has a high strategic fit because of the transport efficiency benefits derived.</p>									

Issue	Most likely scenario	Cost (Millions)		Timeframe	Growth	Level of service	Renewal	Benefit	Principle alternative options
		Capital	Operating						
Level of Service Improvement – To reduce congestion and allow for future growth. Resilience improvement required.	<p>Silverstream Bridge replacement has been brought forward in consideration of increasing congestion and city growth. It also doesn't cater well for cyclists.</p> <p>The bridge is partly owned by Hutt City and also carries the water main to Porirua City. Any improvements to the bridge will need to be coordinated with State Highway 2 improvements and so the actual timing of implementation of this project is dependent upon a number of other parties as well as UHCC.</p> <p>The bridge sits astride a major fault line and currently intrudes into the Hutt River floodway. The bridge is a major connection to State Highway 2.</p>	\$6.200 (Funded through a combination of HCC, UHCC and NZTA funds – subject to business case approval.) Total Cost \$25.200	\$3.597	2021 - 2025	Yes	Yes	Yes	Improved traffic efficiency and level of service improvement for cyclists	The options are to divert traffic away from the bridge, retain the existing bridge and accept a worsening level of service or replace with a higher capacity bridge. This latter option will provide the best future proofed outcomes.
<p>Assumption and Strategic Fit</p> <p>The Silverstream Bridge remains an essential connection to State Highway 2. This project has a high strategic fit because it contributes to the provision of a safe and efficient transport network. There are also reliance benefits in that the new bridge will be built to a higher seismic standard than the current structure and it will also provide a more secure crossing for the water main attached where it crosses the fault line.</p>									
Level of Service Improvement (Safety improvements rural roads)	<p>Rural Road High Priority Safety Projects that include improving sight distances, improving the alignment/carriageway and shoulder widening.</p> <p>These works are to respond to changing land use growth demands in the rural parts of the city.</p> <p>Work is currently being staged to</p>	\$4.704 Funded through a combination of council and NZTA funds as well as Development Contributions Total Cost	\$2.686	2018 - 2028	Yes	Yes		Improved road safety outcomes.	Changing land use is driving growth and demand for a better level of service on rural roads. In order to meet these physical works have to be undertaken and the only options are timing driven by how the delivery aligns with current and optional

Issue	Most likely scenario	Cost (Millions)		Timeframe	Growth	Level of service	Renewal	Benefit	Principle alternative options
	align with income from development contributions.	\$9.600							cash flows.
<p>Assumption and Strategic Fit Land use and service level demands continue in rural areas effective demands on the rural road network. This project has a high strategic fit because of the road safety benefits derived.</p>									
Level of Service Improvement (Alignment with Growth as per the Land Use Strategy)	Intersection and general road improvements will be required to address areas of concern as growth and land use in accordance with the land Use Strategy occurs. These will be identified as traffic/transport and demographic modelling and data becomes available. The preparation of a more holistic development contributions policy having city wide impact will begin to draw these threads together and will help shape a future work programme based up demand and levels of service.	TBC	\$0	Post 2025	Yes	Yes	Yes	The level of service, efficiency of movement and safety of the transport network is sustained.	The need for interventions and their programming will drive the assessment of options. At this stage the needs for the next 10 years are comfortably addressed within existing programmes but sustained growth beyond that forecast could change those needs.
<p>Assumption and Strategic Fit Although some works and projects have been allowed for it is clear that as events unfold needs which have not been anticipated will arise. This project has a high strategic fit because it contributes to the provision of a safe and efficient transport network.</p>									

Parks, Reserves and Property

Issue	Most likely scenario	Cost (Millions)		Timeframe	Growth	Level of service	Renewal	Benefit	Principle alternative options
		Capital	Operating						
New and Improved Services	<p>Integrated walking and cycling network providing links through-out the city that gives easy access to a growing cycling and walking population.</p> <p>For Upper Hutt the recreational aspect of walking and cycling is an important and growing attractor for visitors with opportunities to link between regional and local routes and networks.</p>	\$5.744	\$3.657	2018 - 2028	Yes	Yes		The provision of a safe and integrated network for cyclists and walkers between key destinations in and through Upper Hutt City.	The principle options are either on-road less safe solutions or off-road solutions where safety of users is higher because of the separation from general road traffic. Where available and affordable off road solutions will be developed in preference to on-road solutions.
<p>Assumption and Strategic Fit</p> <p>The growth in the demand and utilisation of cycling and walking facilities continues to grow. This project has a high strategic fit because of the transport and health benefits for the community.</p>									

Level of Service Improvement	<p>Expressions Whirinaki</p> <p>The Expressions Whirinaki Arts and Entertainment Centre needs to expand to continue to support the needs of the community.</p> <p>A feasibility study was completed in 2016/17 to decide the best form of extension for Expressions. The chosen outcome was to construct a heritage gallery, workshop space, collection storage and conference kitchen.</p> <p>The feasibility study is being developed into concept drawings which have enabled more refined estimates of costs to be developed.</p>	\$4.382	\$1.4	-2019 - 2022	Yes	Yes		Level of service adjustment to align with customer and community expectations.	<p>The feasibility study identified the need for additional space and facilities to compliment the current service offering.</p> <p>An extension to the Expressions Whirinaki buildings was considered the best way to deliver these outcomes.</p> <p>The feasibility study can be found at consultation.upperhuttcity.com</p>
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Issue	Most likely scenario	Cost (Millions)		Timeframe	Growth	Level of service	Renewal	Benefit	Principle alternative options
<p>Assumption and Strategic Fit An improvement in facilities will see a continuation in the growth of activities and support for Expressions Whirinaki This project has a high strategic fit because it delivers upon community cultural and heritage outcomes.</p>									
		Capital	Operating						
Maintaining Level of Service	<p>Akatarawa Cemetery To ensure sufficient provision of land for burials the Upper Hutt and Hutt City Councils have purchase a block of land adjacent to the Akatarawa Cemetery for expansion purposes. An aging population and consolidation of future burial sites within the Hutt Valley indicate increased demand for land for burial purposes in the next 10 to 15 years.</p>	<p>\$0.845 Jointly funded by UHCC (25%) and HCC. Total Cost \$3.381</p>	\$0.482	2022 - 2025	Yes	Yes		Increased land for burials to meet levels of service and community expectations.	Either expand adjacent to existing location and associated facilities or incur additional capital costs in providing facilities at a new location. Expanding adjacent to the existing site was deemed to be the most cost effective.
<p>Assumption and Strategic Fit The demand for land for burials will continue to rise as population increases. This project has a high strategic fit because it delivers upon community cultural, compassionate and heritage outcomes.</p>									
Level of Service Improvement (Alignment with Growth as per the Land Use Strategy)	<p>Community Hub Upper Hutt City Council's community houses are currently fulfilling their need however they require some major works in the near future. A feasibility study was completed in 2017/18 to decide the best outcome for the community's needs. The outcome was a decision to build a central facility to house a number of community groups and to create efficiencies off the synergies that co-location would bring.</p>	\$ 4.946	\$1.677	2021 - 2024	Yes	Yes	Yes	Coordinated and efficient delivery of services to the community through co-location in a community hub facility.	The feasibility report reached the conclusion that co-location would create benefits in the delivery of community services. The study recommended an extension to the Upper Hutt Central Library. This recommendation was made prior to the library's recent closure for seismic strengthening. This decision may therefore need to be revisited when the future of the library is known. The Community Hub feasibility

Issue	Most likely scenario	Cost (Millions)		Timeframe	Growth	Level of service	Renewal	Benefit	Principle alternative options
									study can be viewed at consultation.upperhuttcity.com
	<p>Assumption and Strategic Fit</p> <p>The creation of a community Hub will strengthen the delivery of services to the community. This project has a high strategic fit because it delivers upon community self-help aspirations.</p>								
		Capital	Operating						
Level of Service Improvement	<p>H²O Xtream upgrade</p> <p>To explore and implement options to refresh the recreational offering and bring the services available in line with current and forecast demands. Since the complex was originally built the needs of customers have evolved and changed. Studies and consultation are underway to understand what changes need to be made to meet changing demand with additional lane space and improved supervision of aquatic spaces identified as priorities. How this project is integrated with the expansion of Expressions/Whirinaki and the Gibbons/Main intersection improvements will be further explored in terms of timing and configuration.</p>	\$16.166	\$ 8.890	2019 - 2023	Yes	Yes	Yes	The H2O Xtream upgrade aligns the service offering with customer expectations for the present and foreseeable future.	<p>Studies are underway to determine the nature of any development. This will include assessment of alternatives such as building a new facility on a different location through understanding how the existing facility could be expanded or modified to cater for changing demand. For cost reasons expansion to the existing has attraction and for logistical reasons building on a new site would streamline operations but is likely to cost prohibitive. The feasibility study can be found at consultation.upperhuttcity.com</p>
	<p>Assumption and Strategic Fit</p> <p>H²O Xtream continues to provide essential and relevant aquatic recreational opportunities. This project has a high strategic fit, delivering upon the recreational needs of the community.</p>								

Issue	Most likely scenario	Cost (Millions)		Timeframe	Growth	Level of service	Renewal	Benefit	Principle alternative options
<p>Level of Service Retention</p> <p>Resilience improvement required.</p>	<p>Seismic Strengthening</p> <p>The civic administration building and library both require seismic strengthening to ensure they meet appropriate percentages of the National Building Standard relevant to their respective Importance Levels and use. The need for this work has only recently been identified and a full evaluation of the options, costs and timelines has yet to be undertaken.</p> <p>The budget provision is an estimate of the seismic strengthening work only and it is expected that consenting this work will trigger additional expenditure to bring the buildings up to current Building Code standards. It is unknown to what extent the seismic strengthening work will lead to the need to refurbish building interiors.</p>	<p>\$6.062 (preliminary)</p>	<p>\$3.461</p>	<p>2018- 2020</p>		<p>Yes</p>	<p>Yes</p>	<p>Seismic strengthening of the library and civic administration building ensures they meet appropriate percentages of the National Building Standard relevant to their respective Importance Levels and use.</p>	<p>There are a range of options yet to be fully explored. The opportunity is to assess where services are best located whilst evaluation of the economic merits of strengthening buildings to levels based upon their potential current and future uses is still to be undertaken.</p> <p>There are a number of building interdependencies that need to be resolved.</p>
<p>Assumption and Strategic Fit</p> <p>Council buildings need to be safe in the event of an earthquake. This work has a high strategic fit because council has a range of statutory obligations it must meet and services to provide pre and post a natural hazard event. This is also clearly a resilience project in that it improves the ability of the council to deliver services in the event of a natural disaster.</p>									

Issue	Most likely scenario	Cost (Millions)		Timeframe	Growth	Level of service	Renewal	Benefit	Principle alternative options
		Capital	Operating						
Level of Service Improvement	<p>Maidstone Sports Hub</p> <p>To investigate options for and deliver a multi-purpose sports hub which includes training facilities. The proposal is to develop a sports hub for multi-sport utilisation consistent with a masterplan for the Maidstone Park. That master plan is currently under development. The hub would be one part of an integrated development (which will include how the area is utilised by the various sporting codes) and its design be finalised after consultation with potential user groups.</p> <p>This project currently proposes to complete the development in two stages.</p> <p>STAGE 1: Upgrade sports fields (2018 - 2019) Convert the two current rugby fields to sand-based fields and with new capacity added for athletics use. Additional work and funding is required to improve the stormwater drains, reshape the bank, construct an irrigation bore, and the removal of the block wall from Maidstone Max play area to visually open the park up and maximise space.</p>	<p>\$ 6.806</p> <p>UHCC Share of Stage 2 is 67% with Community Funding Balance.</p> <p>Total Cost \$8.843</p>	\$3.383	<p>2018 - 2019 (Stage 1)</p> <p>2022 - 2023 (Stage 2)</p>	Yes	Yes	Yes	Optimum utilisation of recreational space and facilities.	The development of a hub will be consistent with the Maidstone Park masterplan which is still under development. The final design of the hub will be developed in consultation with potential users of the facility which includes current users of the park and others to be identified.

Issue	Most likely scenario	Cost (Millions)		Timeframe	Growth	Level of service	Renewal	Benefit	Principle alternative options
	<p>STAGE 2: Redevelop clubrooms (2022 - 2023) Once the field upgrade is complete, Council will redevelop the current rugby clubrooms into a new combined facility. This would include clubrooms and supporting features such as offices and changing rooms for multiple codes. Council would seek one third funding from external sources.</p>								
	<p>Assumption and Strategic Fit A high class multi sports hub at Maidstone Park meets the needs of the community in an efficient and effective manner.</p>								
	Capital	Operating							
<p>Level of Service Improvement</p>	<p>Maidstone Max upgrade To explore and implement options to refresh the recreational offering and bring the services available in line with current and forecast demands. Proposal is to redevelop the facilities on offer in collaboration with the community and current and future potential users.</p> <p>New features may include:</p> <ul style="list-style-type: none"> • Replacing the play equipment with modern, exciting, and interactive equipment • Lighting to enable the playground areas to be used in the evening. • Feature lighting on the towers to add points of interest at night. • A new skate park design to suit current demand from users. 	\$3.804	\$2.172	2019 - 2020		Yes	Yes	Maidstone Max regains its reputation as a premier regional recreational facility.	The principle alternative is to not upgrade the park. Detailed options for the upgrade will be explored in conjunction with the users and community.

Issue	Most likely scenario	Cost (Millions)		Timeframe	Growth	Level of service	Renewal	Benefit	Principle alternative options
	<ul style="list-style-type: none"> A cluster of youth play spaces. 								
Assumption and Strategic Fit Maidstone Max regains its reputation as a premier regional recreational facility. This project has a high strategic fit because it delivers upon community and economic outcomes.									
Level of Service Retention	Artificial turf replacements The two existing artificial turfs have a life of 12 years and are due for replacement in 2024 - 2025 and 2035 - 2036. These turfs have very high utilisation and extend the opportunity for recreational activity through greater consistency of playing surface	\$1.203	\$0 \$0 (Renewal Funded - not loans)	2045 - 2025 2035 - 2036		Yes	Yes	Activities reliant upon access to artificial turf can continue	These are existing assets which are either removed when they become a safety hazard through excessive wear or are replaced. There is no current appetite for their removal.
Assumption and Strategic Fit The demand for artificial turfs continue to remain high. This project has a high strategic fit because it delivers upon community recreational outcomes.									

Assumptions

The management of Council's infrastructure assets over the next 30 years is based on the following assumptions:

- There are currently no significant changes in customer expectations regarding demand for services or levels of service other than those identified within this document.
- Levels of service for the three waters activities may be standardised across the Wellington region, which in turn may affect the cost and programming of renewals and upgrades.
- Council's water supply is currently rated A1-a1 and it is assumed that any future changes to drinking water standards or legislation is not expected to alter this grading.
- The GWRC Natural Resources Plan will require Council to hold stormwater discharge consents. The effect of this is unknown.
- There will be minimal impact on Council services during the lifetime of this Strategy as a result of the implementation of the Land Use Strategy. The areas of growth have been identified in the Land Use Strategy and are allowed for within this document.
- The overall condition of the asset networks will not change significantly over the next 30 years (see renewal strategies), and therefore the level of maintenance required will not increase. However new assets associated with growth will, by necessity, increase relative maintenance costs.
- Traffic growth will occur at a rate of 1 to 1.5% per annum.
- The NZTA Financial Assistance Rate (FAR) will not change significantly over the lifetime of this Strategy.
- The impacts of increasing resilience, climate change and environmental awareness, as well as growth have been factored into this Strategy based on current best knowledge. Successive iterations of this document will address how those assumptions align with future changes.
- The costs shown in this document are full project costs irrespective of sources of funding. Where studies or other funding are known to be available these sources have been identified.

Appendix A: Expected asset lives

ASSET	LIFE CYCLE
WATER SUPPLY	
Civil works	80 to 100 years
Mechanical and electrical plant, outlets, pumps	20 to 50 years
Pipe work, appurtenances and associated structures	50 to 100 years
Reservoirs, intake structure	100 years
WASTEWATER	
Civil works	80 to 100 years
Electronic equipment	10 to 20 years
Mechanical and electrical plant, outlets, pumps	15 to 50 years
Pipe work, wastewater mains	50 to 100 years
STORMWATER	
Civil works	80 to 100 years
Mechanical and electrical plant, outlets, pumps	20 to 50 years
Pipe work, appurtenances and associated structures	50 to 100 years
TELEMETRY	
Civil works	80 to 100 years
Electronic equipment	10 to 20 years

Mechanical and electrical plant, outlets, pumps	20 to 50 years
Pipe work, appurtenances and associated structures	50 to 100 years
ROADING	
Bridges	50 to 100 years
Road formation	80 to 150 years
Culverts	50 to 80 years
Roundabouts	50 years
PARKS, RESERVES, PROPERTY	
Parks and reserves services	10 to 100 years
Buildings	10 100 years
Buildings fitout and services	10 to 40 years