1. Infrastructure Strategy

Introduction

This strategy sets out the Central Hawkes Bay District Councils strategic direction for water supply, wastewater, stormwater and land transport infrastructure assets over the next 30 years.

Infrastructure plays an important part in our everyday lives, providing a platform for healthy, thriving communities and allowing our business community to deliver goods and services to customers. 'Infrastructure' refers to the fixed, long-lived structures that facilitate the production of goods and services and underpin many aspects of quality of life¹.

The Central Hawke's Bay District covers an area of 3260 square kilometres; taking in the area from Pukehou in the north, to Takapau and Whangaehu in the south, and from the western Ruahine ranges to the eastern coast. There are two main towns in Central Hawke's Bay - Waipukurau and Waipawa, with a number of smaller townships including Otane, Takapau, Tikokino, Porangahau and Onga Onga, as well as several beach townships including Kairakau, Pourerere, Blackhead, Te Paerahi. The dispersed nature of these settlements means that much of our networked infrastructure must be provided separately to different communities.

Purpose of the Infrastructure Strategy

This is Central Hawke's Bay District Councils second infrastructure strategy prepared to meet the requirements of section 101B of the Local Government Act 2002 (LGA). Section 101B took effect on 8th August 2014 and requires Councils to prepare an infrastructure strategy that identifies:

- Significant infrastructure issues facing the Central Hawkes Bay District over the next 30 years
- The principal options for managing these issues and the implications of these options

The Act also requires Council to consider and set out in this strategy how, in managing its infrastructure assets:

- it will respond to growth or decline in demand;
- it will manage the renewal or replacement of existing assets over their lifetime;
- planned increases or decreases in levels of service will be allowed for;
- public health and environmental outcomes will be maintained or improved; and
- natural hazard risks will be addressed in terms of infrastructure resilience and financial planning

Scope of the Infrastructure Strategy

Section 101B of the LGA requires Council's infrastructure strategy to cover infrastructure assets used to provide services by or on behalf of Council in relation to the following activities:

- water supply
- sewage and the treatment and disposal of sewage (wastewater)
- stormwater drainage
- roads and footpaths
- flood protection and control works

This strategy does not cover:

- state highways as planning for, providing and managing state highways is the responsibility of the New Zealand Transport Agency
- flood protection and control assets as these are the responsibility of the Hawkes Bay Regional Council.

¹ National Infrastructure Plan, 2011, <u>http://www.infrastructure.govt.nz/plan/2011</u>

Relationship of Infrastructure Strategy to Other Plans

This strategy provides the link between a number of important Council documents such as the District Plan, Council's Financial Strategy, Wastewater, Stormwater, Water and Land Transport Activity Management Plans and the funding of these through the Long Term Plan (LTP).

The diagram below shows the relationship between the infrastructure strategy with other Council Plans and Policies interlinking with this document.



Based on the strategic direction set out in this document it is expected that Council will develop a schedule of intended capital works for the next 30 years. Council will prioritise these projects based on funding available and

the needs of the community. The projects identified will be discussed in more detail in the respective Activity Management Plans.

Central Hawke's Bay District Council Infrastructure Strategy

Infrastructure is a big ticket item and the cost of maintaining and developing our assets needs to be affordable for current and future ratepayers. Affordably and sustainably, managing networked infrastructure like roads, water supply, wastewater and stormwater with low levels of growth while standards and service level expectations continue remain the same over the period of this document. Developing this strategy assists Council to look at what is likely to be required over the next 30 years; balancing the current ratepayer's ability to pay and future ratepayers having well maintained and functioning infrastructure.

Our approach to ensuring that we manage existing infrastructure assets efficiently and effectively and invest in new infrastructure assets wisely will be based on the following approach:

Managing our existing assets efficiently and effectively

This approach enables us to achieve best value for the investment we have already made in existing assets. Many of our assets have long lives and we need to take a long-term view. Managing our assets over their full life requires us to take an integrated long-term approach based on good underlying data about our assets and to:

- optimise the way in which we operate, maintain, renew or replace our assets
- ensure our infrastructure meets the needs of current and future generations in an affordable way
- ensure that future generations are not disadvantaged by decisions made by Council in the short term
- ensure that risks to service levels and public safety are acceptable

Retain existing supply network boundaries verse extending the boundaries

Projections suggest that growth in residential housing in our district will be halfway between the medium to high for the period up to 2028 and high from 2028 to 2048. However, based on previous trends we expect that we will continue to experience life style residential development on the fringe of existing urban areas but outside of our existing reticulated water network. This type of development can result in pressure on Council to extend existing networks. However, we need to ensure that our water supply networks remain affordable and sustainable for current and future generations. To ensure the continued affordability of our water supply networks council is currently consulting with the community to grow the networks to allow expansion into the rural residential zones as identified by the proposed District Plan. Therefore our approach to the growth pressure is:

- to encourage utilisation of existing infrastructure where existing capacity allows
- Allow connections inside our current boundaries as of right
- Only allow connection to extend existing networks beyond our existing supply boundaries where they meet specified criteria as proposed in the amended Water By-law.
- Upgraded the existing networks to meet the legislative requirements for firefighting as well as growth with the view of providing extension to the network beyond current boundaries when they are adopted in the new District Plan.
- not provide for new reticulation beyond the urban areas until the reticulation inside the boundaries has been upgraded and the District Plan as confirmed the new service areas.

We are currently reviewing our District Growth Strategy and District Plan and these approaches will be reviewed.

Right-size our infrastructure

Given that our population is projected to increase over the next 30 years so we will experiencing a growth in dwellings between medium to high and coupled with the recent findings in modelling highlighting lack of firefighting/supply capacity to meet legislative needs in the Waipukurau, Waipawa and Otane networks. Council has planned significant upgrades to these networks over the coming years. This work also include new

treatment plant work to improve water quality in line with the new drinking water standards and provisional findings from the enquiry in to the Havelock North water issues as well as meeting higher resource consent conditions for wastewater and stormwater. Where practical council will utilised demand management tools to support this approach to ensure that our assets are not placed under too much stress during peak periods or in years where our climatic conditions place constraints on our ability to meet demand for services (e.g. manage demand for water in years when we have very dry summers, stormwater retention devices for new dwellings) until the upgrades can be completed.

Continue to deliver existing service levels

Increasing service levels can increase the cost of operating and maintaining our assets. Our population is ageing and over the next 30 years we will have more residents with fixed incomes who may be less able to absorb the costs of increased service levels. Assumptions is that while the number of houses is expected to increase over the next 30 years levels of service will remain the same over the period of this document.

Central Hawke's Bay District – Te Kaunihera o Tamatea

Our District – Physical Context

Our district covers an area of 3,324 square kilometres. It covers the area from Pukehou in the north, to Whangaehu and Takapau in the south, and from the western Ruahine ranges to the eastern coast.

The District extends from high hill country bordered by the Ruahine Ranges through gently rolling plains into rugged coastal farmland. Much of the area is highly modified for pasture and cropping, with remnants of forest and scrub.

Sheltered by the Ruahine ranges, Central Hawke's Bay enjoys a dry, sunny and temperate climate. The District averages around 2,200 sunshine hours and an average rainfall of around 900 millimetres.

The district has a number of outstanding natural features and landscapes, with the mountain, river and beaches as key features.

The District has three main river systems: the Tukituki, Waipawa and Porangahau Rivers. There is a major groundwater system under the Ruataniwha Plains. It comprises a shallow unconfined aquifer, with several deeper confined aquifers.

Natural hazards and climate change

Our district is subject to a number of natural hazards such as earthquakes, coastal inundation and erosion, tsunami and landslides and these can result in disruption to services and damage to our infrastructure. This can lead to unforeseen and often high costs to repair infrastructure and restore services.

These hazards impact on our networks in different ways. For example, where our infrastructure networks are near the coast they may be subject to coastal erosion, coastal inundation, tsunami and landslips. Our urban infrastructure networks are more likely to be impacted by earthquakes and flooding.

Climate change is likely to have an impact on the Central Hawkes Bay over the coming years, with changes to wind and weather patterns, sea level rises, increased flood risk and frequency of extreme weather events predicted². Climate change is not expected to create new natural hazards in our District but it may change the intensity and frequency of natural hazards. In Central Hawkes Bay, increasing levels and intensity of rainfall may cause localised flooding issues, placing pressure on our stormwater drainage systems and wastewater systems (for example, if stormwater infiltrates our wastewater network). This could impact negatively on our natural environment, our water quality and increase public health risks. Sea level raise could be a major issue for our coastal settlements and roading network that runs along the foreshore. Council has a statutory requirement to consider sea level raise under the RMA and new District Plan where rule and process will be set after consultation with the public and other governing bodies.

Changing Environmental Standards and Legal Obligations

The National Policy Statement for Freshwater Management (NPS-FM) will require the Council to meet high levels of treatment for the disposal of waste from our pond discharges. This has certainly been the case with the increase in consent condition for the Waipukurau and Waipawa discharge consents. As a result of this Council envisages consent conditions are likely to more prescriptive for Takapau, Porangahau and Te Paerahi similar to the more prescriptive approach the HBRC have taken with the Otane consent.

Also from the hearing over the Havelock North water crisis council has experienced more attention from the regional council and the district health board on how we manage and run our drinking water supplies. This has not only impacted on capital works projects such as new UV water treatment but has added cost on the operational side of council water supply systems. In the short term council is envisaging further operation cost increases as the legal process over the water issue progress.

² http://www.mfe.govt.nz/climate-change/climate-change-resources/guidance-local-governmentf

Similar to wastewater the regional council consents have increased cost both in capital and operation works to manage our stormwater discharges. In the short term this will impact on operational cost but in the long term additional work is envisaged improving the quality of stormwater discharges in to the receiving catchments such as the Tuki Tuki River.



The District

Our People

Household Growth

Understanding the characteristics of our current households (households are used instead of population as it directly links to service demand) and how these are likely to change over the next 30 years is critical for the effective management of our infrastructure. Different demographic groups have different needs and preferences for services. Our people live in dispersed settlements across the district and each of these settlements is likely to change in different ways over the life of this strategy and this may influence how, when and where we provide infrastructure across our district in the future.

The Central Hawkes Bay District has a population of around 13,720 with approximately 5,560 households in the District (2017 Census update by Sean Bevin). Based on past trends, medium to high projections suggest that our district will experience a growth of households around 9.5% in total across the district for the next 10 years from 2018, with a growth of around 9.0% over the following 20 years to 2048. By 2048, projections number of households is suggest around 6,700 across the district.

Projections suggest that over the next 30 years, the household increase in all of our townships will follow a similar trend.

Demographic Change

Like many parts of New Zealand, our population is ageing. In 2015 around 20% of our population is over the age of 65 and the median age of our population is 42 years of age. By 2048, around 36% of our population is expected to be over the age of 65 and the median age of our population will be over 50 years of age. This means that an increasing proportion of our residents will be reliant on fixed incomes and will be less able to absorb increased costs of service.

Our Settlements

There are two main towns in Central Hawke's Bay - <u>Waipukurau</u> and <u>Waipawa</u> - with a number of smaller rural townships including <u>Otane</u>, <u>Takapau</u>, <u>Tikokino</u>, Porangahau, Te Paerahi Beach and <u>Onga Onga</u>. In addition there are several beach townships including Kairakau, Pourerere, Blackhead and Te Paerahi.

Approximately 55% of the District's population lives in the urban areas. The main towns of Waipukurau and Waipawa house 5,080 and 2,510 residents respectively. Of the rural townships the villages of Takapau and Otane have the highest populations with approximately 500 - 650 people in each settlement.





Changing preferences and Future Residential Growth

Based on past residential growth trends we are likely to continue to experiencing a mixture of life style residential development on the fringes of our existing urban areas and more intense development within our town boundaries.

We are currently reviewing our Urban Growth Strategy and our initial work indicates that there is sufficient land available for infill development in the towns of Waipukurau, Waipawa and Otane to meet the anticipated housing growth.

Infill housing and urban intensification have the potential to increase pressure on existing infrastructure. Larger houses generally have larger garages and hard standing areas as well. In general these new developments have fewer permeable surfaces, which results in higher stormwater flows.

Improved standards of living and increased use of water-consuming appliances and garden watering devices have coincided with a customer expectation of a right to a continuous water supply and the right to dispose of all wastewater created.

Most houses now being built are larger than the average dwelling was 20 years ago and often contain multiple bathroom and toilet facilities. Despite a reduction in the number of household occupants, water demand is still expected to increase over time because of higher water use per capita.

Our Economy

The district's "bread and butter" is still sheep and beef farming, vegetable and grain crops, pip-fruit, with more recent increases in dairy farming. Non-traditional industries are being explored and finding some success including top quality vineyards. However, over the next 30 years our economic profile is not expected to change significantly.

Overview of our Infrastructure Assets

Land Transport

Our land transport networks are managed directly by Council with assistance from Consultants, with operations and maintenance activities contracted to a third party. Council is responsible for allowing movement of people within our communities on local roads and footpaths. New Zealand Transport Agency is responsible for managing the state highways that run through our District and connect our communities regionally.

Asset Group	Asset Type	Quantity	Units
	Pavements	1,264	km
	Saeled Roads	863	km
Pavements	Unsealed	401	km
	Urban Roads	72.9	km
	Rural	1191.1	km
Povement Dreinage	Drainage Asset	8,852	No
Pavement Drainage	Surface Water Channels	1,756	km
Bridges & Cuard Dails	Bridges & Large Culverts	264	No
Bhuges & Guard Rails	Guard Rails	7,419	m
Potoining Structures	Retaining Walls	299	No
Retaining Structures	Stock Underpass	3	No
	Lighting Poles	310	No
Carriageway Lighting	Lighting Brackets	879	No
	Lights	881	No
	Marking - Linear	1,079	km
Traffic Facilitates	Marking - Symbols	1,878	No
	Signs	5,098	No
	Railings	6,816	m
	Footpath	68.4	km

Water Supply

Council owns and operates seven treated water supply schemes that supply water to domestic, commercial and industrial properties in each of these schemes. Many of these networks were originally installed in the early 1900s. There is also a small water supply scheme at Pourerere for two connections only including the camping ground and public toilets.

	Connections	Pipes	Valves	Hydrants	Pump Stations	Reservoirs
	Number	metres	Number	Number	Number	Number
Waipukurau	2,173	77,859	342	322	1	3
Waipawa	981	52,295	115	190	2	3
Otane	273	18,488	72	36		2
Takapau	272	16,406	44	51	1	13
Porangahau	110	10,138	37	22		3
Te Paerahi	133	6,349	46	17	1	15
Kairakau	84	3,312	9	2	3	5
Pourerere	5	6,120				4
Total	4,031	190,966	665	640	8	48

Wastewater

Council collects, treats and disposes of wastewater at six treatment plants at Otane, Waipawa, Waipukurau, Takapau, Porangahau, and Te Paerahi. The oldest parts of our wastewater networks were installed in the early 1900s in Waipukurau and Waipawa. In all our networks, wastewater treatment currently occurs primarily in oxidation ponds.

	Connections	s d L metres	Manholes Manholes	Lampholes Numper	Pump Stations	Treatment Plants
Waipukurau	1,948	54,867	577		5	1
Waipawa	858	30,037	248	12	2	1
Otane	252	9,832	83		0	1
Takapau	199	8,449	55		1	1
Porangahau	105	4,030	33		1	1
Te Paerahi	126	4,847	26		2	1
Total	3,488	112,061	1,022	12	11	6

Stormwater

Council collects and disposes of stormwater in the built up areas of Central Hawke's Bay District. The stormwater network consists of two separate systems servicing the two main towns of Waipawa and Waipukurau. There are also six smaller networks providing varying levels of coverage for the townships of Otane, Takapau, Porangahau, Te Paerahi, Kairakau, and Blackhead Beach.

	Inlet/Outlet Structures	Gravity Mains	Manholes	Open Drains
	Number	Metres	Number	Metres
Waipukurau	130	25,997	406	10,404
Waipawa	120	10,718	142	4,417
Otane	3	184.9	0	136
Takapau	2	58.14	1	802
Porangahau	8	2,217	69	291
Te Paerahi	1	325.63	0	0
Kairakau	3	379.92	5	496
Blackhead	1	135.88	1	0
Total	268	40,017	624	16,546

Significant Infrastructure Issues

The figure below outlines (but is not limited to) a number of significant issues that could impact on the Central Hawke's Bay District.



The following tables set out the significant issues for each type of infrastructure; land transport, water supply, wastewater, and stormwater. A short high level discussion on the implications of the issues and Councils suggested response is included against each issue.

Where the scenario translates into physical projects Council endeavours to follow the basic risk analysis approach outlined in Australian/New Zealand Standard AS/NZ 4360. These are covered in more detail in the Activity Management Plans for the respective infrastructure areas.

Transport				
Signific	ant Infrastructure Issues	Principle Options for Managing the Issues	Implications	
e	Council has a number of roads that are located on unstable land that is prone to landslides or land movement in wet conditions and this can result in damage to roads.	Our key action is to ensure that road drainage is adequate and well maintained so that we avoid the wet conditions which increase the likelihood of landslides or land movement for roads which we know are on unstable land. We also take a proactive approach to managing and maintain our roads, particularly with the roads on known unstable land. If roads are damaged but do not need to be completely closed we may need to put restrictions in place to ensure the safety of road users, for example, reducing sections of	There is a risk of affected communities being inaccessible, or facing long detours, by road after a significant storm or rain event that results in landslides or land movement. The repair and clean up needed to reinstate roads could place considerable strain on our financial resources.	
Network Resilie	Our District is located in a region with high earthquake risk. This may cause major disruption to the roading network due to loss of bridges or as a result of significant damage to roads.	 Council manages earthquake risk in a number of ways; we: develop and put in place and test Emergency Response Plans as well as working with our neighbouring Councils for resources maintain a catastrophic events reserve fund to mitigate the financial impacts of natural disasters and in the event of our network being damaged we would use this fund to undertake a prioritised program of repairs ensure that our road drainage is adequate and proactively manage and maintain road drainage to protect the integrity of our roads 	Natural disaster will impact our communities as they may be cut off in the event or face long detours until access can be restored or damages to roads repaired. Significant damage to our roads following an earthquake may make restoring other critical assets or services difficult and this may pose health and safety risks. Changes in the way in which the New Zealand Transport Agency funds disaster repairs may impact on our ability to fund the repair work associated with disaster events.	

Significant In	Infrastructure Issues	Principle Options for Managing the Issues	
			Implications
Usag volun accel addit • •	age of our road network by industry can impact on the ume of traffic on our roads and heavy vehicles can celerate the deterioration of our roads. We anticipate ditional demand on our road network due to: logging trucks within our District are projected to increase as a number of forestry blocks in our District are ready to be harvested. They currently do not cause significant damage to our road network but this may change with the forecast increase in forest harvesting logging trucks crossing our District on four local roads from Tararua District to the Napier Port. We understand that these truck movements are important for the national economy but they do have an impact on our local roads as well as road safety issues for our community the possibility of oil exploration off the coast of our District which could result in additional heavy traffic, although this with the sharp reduction in global oil prices is unlikely in the short to medium term.	 Our main responses include: We will continue to work with the logging industry to understand their forest harvesting in the short to medium term and any likely potential damage to our local roads. We will then allow for the maintenance and renewal activities to be scheduled to maximise the efficiency for the log haulers and minimise the damage to the road network. We have prepared a business case for enhanced targeted funding assistance rate to mitigate the impact of the logging trucks crossing our District due to the economic importance nationally. We will continue with our proactive discussions with NTZA for a favourable outcome. We will continue to monitor any new oil exploration sites within our District and any increase in the number of heavy vehicles on minor road. It seems unlikely that there will be further sites in the short to medium term. 	The implications for all three demand changes have the potential to damage our road network. This may result in the impacted roads requiring earlier intervention for renewals or in the worst case complete reconstruction which is costly and disruptive to our community.
With there deve	th the increase in demand for more affordable section re is a pressure on our rural towns like Tikokino to velop the paper roads to service existing land parcels	Develop a policy at a strategic level on how Council will manage and fund the development increasing pressure to construct new roading assets on existing paper roads.	This will have an impact on the funding of the Land Transport group with little or no ability to recover some of the cost by way of tools like development levies.

Transp	Transport					
Signific	cant Infrastructure Issues	Principle Options for Managing the Issues	Implications			
tandards	NZTA and LGNZ have implemented the One Network Road Classification (ONRC) system so that road users will have consistent customer levels of service across the country. Like other Road Controlling Authorities, we are still in the process of fully understanding the implications on our District. The proposed new road classification will be based on a roads main function. This may result in lower customer levels of service in the future (for example, road roughness) for some of our extensive road network.	 Our main responses include: We will work collaboratively with NZTA recognising that this process is still subject to refinement. The refinement will consist of adding more reporting requiremnerts and specifications As the ONRC is now in place we will work with NZTA to better understand the impacts and minimize the effects where possible. We will start to analyse at a high level to understand the impact across our network in terms of customer levels of service 	Although the impacts of the ONRC are not fully understood at this time it is likely that there will be some changes to levels of service on the network that NZTA are prepared to subsidise. This might mean that some parts of our road network, particularly where there is low volume of vehicles, may have reduced service levels – for example, roads may be rougher than they are now. At this stage we have not quantified this and any subsequent financial impact.			
Changing S	The Minsirty of Transport is steadily increasing the amount of weight allowed to be carried on all networks. This includes initiatives such as 50 Max (50 tonnes); HPMV (62 tonnes) and 46 tonnes as of right which have the potential to increase the deterioration rate on our bridge network	 Ensure that the only routes that the council approves for 50 Max and HPMV are routes that do not have bridges on them. Screen all of the bridges in the district to determine which bridges cannot carry 46 tonnesand restrict those bridges that are understrength Undertake an investigation as to the remaining life of the individual bridges and begin to create a fund for bridge replacement which would allow through reconstruction and ability to carry heavier weights 	a catastrophic failure of one or more of our bridges thus restricting access to some areas and increasing travel times through the use of detours a faster deterioration of our bridges which the district may not be able to fund thus increasing travel times through detours and potentially isolating communities for long periods of time			

Transport				
Significant Infrastructure Issues	Principle Options for Managing the Issues	Implications		

Water S	Water Supply					
Signific	ant Infrastructure Issues	Principle Options for Managing the Issues	Implications			
Infrastructure Age and Condition	Some parts of our water network are ageing in particular in townships like Waipawa and Waipukurau, and over the next 30 years will reach the end of their asset life and will need renewal to maintain the existing levels of service. To compound this modelling has shown deficiency with the ability of the network to provided adequate firefighting response.	Our key actions will be to increase the focus on asset management activities such as investigations, data gathering, break analysis, renewal candidate assessments, field verification, and improved asset records and information about asset condition. We will continue to work across Council to align renewal of different types of infrastructure, for example, to align water supply renewals with our land transport's AWTP, when we replace infrastructure. This has the cost benefit of sharing the re-instatement work with other parts of Council as well as reducing disruption to our community.	As our assets age, they are more likely to fail which will result in service interruptions. These unplanned water outages will become increasingly unacceptable for our residents and businesses. There may also be increased operational costs with responding to the breakages as well as major leakages.			
Increasing Standards: Environmental	The Hawkes Bay Regional Council (HBRC) Plan change 6 is now operative which is imposing high environmental standards for the Tukituki catchment, for example around the amount of water that we are allowed to take. It also plans to set new water quality and allocation limits for groundwater from rivers, and increase the minimum river flows. This may have the effect of reducing the quantities of water that can be extracted for town supplies, particularly reducing the peak flow rates. This may result in water restrictions for longer periods in the summer periods and constrains our ability to service additional wet industries in our main town Waipukurau.	Council's main response to reduce flows and the consequential restriction on water takes is to impose water restrictions and bans on irrigation and other non-potable water uses. With the high minimum flow rates likely to be imposed under Plan Change 6, Council is looking at other options for supplying water to the towns. We will continue to monitor our water demand as well as undertaking more detailed growth analysis to understand growth patterns better.	 Plan Change 6 also has put constrain on flows in the river networks. This increase the level for minimum flows which will impact on our ability to extract from the rivers and may result in more or longer extraction restrictions. Plan Change 6 may constrain our ability to cater for additional wet industries in Waipukurau as well as residential growth in our four main townships. This may impact our District's prosperity in the long term. 			

Water S	Water Supply					
Signific	cant Infrastructure Issues	Principle Options for Managing the Issues	Implications			
Increasing Standards: Public Health	Our water supply schemes currently comply with Drinking Water Standards (DWS) 2002 but do not comply with the DWS 2005 (revised 2008). The Pourerere water supply scheme which supplies the Pourerere camping ground and Pourerere toilet block does not currently comply with the Drinking Water Standards (DWS) 2000.	 Over the next ten years we are planning to undertake a programme of works to improve service levels with the aim of meeting the DWS 2005 (revised 2008). The work programme includes: The Waipukurau water supply schemes are being upgraded over the next two years with new UV treatment units. We are planning to undertake a prioritised programme of improvements for the Takapau, Porangahau, Kairakau and Pourerere water treatment schemes. 	The DWS 2005 (revised 2008) were put in place to improve the quality of drinking water and public health. If we do not undertake this programme of work our communities will not benefit from improved quality of drinking water or enhanced public health. Increase requirements imposed on Council from the water inquiry will add additional operational cost and in some networks capital costs			
Network growth beyond existing supply boundaries	Projections suggest residential growth in our district will be halfway between the medium to high for the period up to 2028 and high from 2028 to 2048. However, based on previous trends we expect that we will continue to experience life style residential development on the fringe of existing urban areas but outside of our existing reticulated water supply network. This type of development can result in pressure on Council to extend existing networks so that these developments can connect to town water supply. We also expect to continue to see more intense development can place pressure on the capacity of our existing water supply networks. However, we need to ensure that our water supply networks remain affordable and sustainable for current and future generations.	 To ensure the continued affordability of our water supply networks our current approach is: to encourage utilisation of existing infrastructure where existing capacity allows not to extend existing networks beyond our existing supply boundaries (e.g. not allow houses or developments which are outside our existing supply network boundaries to connect to the network) not provide for new services in areas which are currently un-serviced We are currently reviewing our District Growth Strategy and District Plan and these approaches will be reviewed. 	Extending our reticulated water supply system could have major cost implications and we already have limited funds. The cost of the extension could be covered by targeted rating schemes, but these would need to be financially sustainable for current and future ratepayers. Extending our water supply networks would increase demand for water and may mean we need additional water sources to meet demand.			

Water	Water Supply					
Signifi	cant Infrastructure Issues	Principle Options for Managing the Issues	Implications			
Network Resilience	 Some of our water supply schemes are serviced by a single supply main pipeline in the road corridor. This means that these water supply schemes are vulnerable to: Damage resulting from the work undertaken in the road corridor Asset failure The impact of natural hazard events In particular, our largest town Waipukurau has a single supply pipeline so is vulnerable. 	 Our key actions include: Regular maintenance, renewal and replacement of our water supply assets to ensure that they continue to deliver services and provide the foundation for a prosperous economy and healthy, thriving communities across the District. We provide tanker supplies to our smaller townships as part of emergency response processes. When assets for our larger towns fail they are rapidly repaired by our maintenance facility contractor. We are taking resilience into account in our discussions about how we develop and replace or infrastructure especial with Waipukurau and Otane. An additional management options for the conservation of the water resource that Council will need to consider is the use of on-site storage tank attached to new or existing dwellings. 	There is a risk of communities being without water services which are an essential service for drinking water as well as providing firefighting capability. This may result in health and safety risks if there are major water outages.			
Natural Hazards: seismic	The impact of infrastructure failure due to natural hazards has been highlighted by the Canterbury earthquakes. Our water supply networks are the most vulnerable of all our infrastructural assets to seismic risk. In the towns of Waipukurau and to a lesser extent Waipawa, there are a number of points where the infrastructure crosses known fault lines.	 We manage the risk of earthquakes in a number of ways: We check and action any leaks that may arise after earthquake activity as part of our emergency response plans. We use flexible water pipelines so that there is less likelihood of failure. We ensure that our water reservoirs are able to cope with seismic risk. We have set up a catastrophic events fund to mitigate the financial impacts of natural disasters. 	In the event of a natural disaster our communities may be without water services for a significant period. This may result in health and safety risks with limited or no drinking water as well as firefighting capability.			

Water S	Water Supply					
Signific	ant Infrastructure Issues	Principle Options for Managing the Issues	Implications			
Natural Hazards: coastal impacts	Council owns two reticulated systems that service coastal settlements. They may be impacted with water inundation as they are located on low lying land. Climate change could increase the risk of this, with these communities subject to coastal inundation from rising sea levels.	 The impact of water inundation on our regional coastline is currently being modelled by Hawkes Bay Regional Council. We will collaborate with the Regional Council on the findings of this study and practical options if any for our District for these two coastal communities. We will also manage the impact of natural hazards by: Monitoring and assessing the risk of coastal hazards on our existing water supply assets Work with our communities to ensure that they are prepared for and able to manage in the event of a natural disaster. This approach is supported by our Civil Defence and Emergency Management Group who assist with building resilient, prepared communities 	Council could be faced with considerable costs if water supply infrastructure needed to be relocated or abandoned. A worst case scenario is that these two coastal communities would need to be relocated as the most affordable and pragmatic solution.			
Security of Supply	Increases in long dry periods will put significant pressure on our already stretched summer water supplies. This pressure is already causing restrictions to be enforced during the summer periods.	 Our key actions include: Sound leakage management practices are in place to ensure water is not wasted unnecessarily. We will continue with our smart operations to ensure pump stations are not running excessively and that our reservoirs are not draining below safe levels. We will continue to monitor our resource consents and apply for resource consents for enhanced or extended water take in a timely manner as demands change. 	Water restrictions in the summer period will continue and may lengthen in duration or we may need to put tougher restrictions in place. It will be difficult to attract development to our District without ample water supply and this may affect our long term prosperity.			

Wastew	Wastewater			
Signific	ant Infrastructure Issues	Principle Options for Managing the Issues	Implications	
Condition	Some parts of our wastewater network are ageing, in particular in townships like Waipawa and Waipukurau. Over the next 30 years some of our wastewater assets will reach the end of their useful life and will need to be	Council is actively looking at new ways to deliver the wastewater service to the community, including the methods of treatment, improved pipe laying and lining technology.	As our assets age they are more likely to be subject to service interruptions or to fail and this may impact on levels of service and on the resilience of our wastewater networks.	
ge and (renewed or upgraded.	Take a proactive planned approach to maintaining and renewing our assets to minimise reactive renewals.	Assets which are ageing or in poor condition are more likely to have a negative impact on the quality of our	
Infrastructure Aç		The use of technology to extend the life of infrastructure. For example, Council is currently undertaking a programme of work using technology such as relining pipes to extend the life of our wastewater infrastructure.	environment and on public nealth. There are significant periods in the near future when large portions of our networks will require replacing or upgrading to maintain current service levels. The cost of this work could be beyond Councils ability to fund projects depending on the timing required by the AMPs.	
Increasing Standards: Environmental	The Hawkes Bay Regional Council (HBRC) Plan change 6 is now operative which is imposing high environmental standards for the Tukituki catchment, for example around the amount of water that we are allowed to take and around discharging to water and land.	Council is currently undertaking upgrades at the Waipukurau and Waipawa treatment facilities so these networks should meet new standards. However, some of our other wastewater networks may need to be upgraded in the future to meet new environmental standards.	Upgrading wastewater networks to meet new environmental standards imposed by new resource consents will be costly.	

Wastewater			
Signifi	ant Infrastructure Issues	Principle Options for Managing the Issues	Implications
signific	 vater cant Infrastructure Issues Over the next 30 years a number of resource consents relating to our wastewater networks will need to be renewed. Our smaller wastewater schemes are currently meeting consent conditions but in the future, consent conditions may set higher standards or the conditions for new resource consents may not be met given the age, conditions or design of our existing infrastructure. In the next few years we will be required to apply for consent renewals for: Otane Treatment pond consent has been granted with conditions in September 2017 and now expires in May 2042 Takapau Treatment pond consent expires in May 	Principle Options for Managing the IssuesTo meet new consent conditions Council is currently undertaking upgrades to the Waipukurau and Waipawa treatment facilities.Based on the higher consent condition imposed for the Waipukurau and Waipawa pond Council is planning for major works over the next ten year period for the Otane, Takapau, Porangahau and Te Paerahi schemes.Council will design and implement appropriate and cost effective wastewater solutions to ensure compliance with consent conditions.Council will also continue to work with the local Community to find an acceptable solution to the treatment of wastewater.	Implications The HBRCs proposed changes to environmental standards for the Tukituki catchment (Plan Change 6) could dramatically affect the conditions set for new resource consents for wastewater schemes in this catchment; making it more costly to treat wastewater. Some level of uncertainty exists around whether consent conditions will change and on what impact this will have on our wastewater supply networks. This means that it is difficult to determine the best option for renewing or upgrading treatment schemes to meet higher standards. Upgrading our wastewater networks to meet new standards could have significant cost implications for the community. Until consents are finalised we will not know what level of funding in marked at the unit was have included in final time.
Increasing Standar	 2018 Porangahau Town Treatment pond consent is due for renewal in May 2021 Te Paerahi Treatment pond consent expires in May 2021 and we know that there is some local objection to the continuing land based discharge approach 	A 3 year consent is expected to be issued by February 2018 for Takapau which will define consent condition which will allow Council to plan options to meet these new conditions.	tunding is required although we have included indicative amounts in the Long-term-Plan for those consents which will need to be renewed in the next ten years. With Takapau consent not being issued prior to consultation on the LTP. Disposal methods are still to be investigated and approved by HBRC so only a rough estimate has been included in the Wastewater AMP.

Wastewater			
Signific	ant Infrastructure Issues	Principle Options for Managing the Issues	Implications
Unification for the second sec	 ant Infrastructure Issues During wet weather events stormwater can enter or infiltrate our wastewater networks, increasing the volume of water that needs to be treated. Some of our wastewater networks are more prone to infiltration because: of the age or condition of our assets the design of some of our networks means that stormwater infiltration is more common irrespective of asset age and condition Climate change could result in increases in the frequency or intensity of wet weather events and this could mean that stormwater infiltration becomes more of an issue. 	Principle Options for Managing the Issues The principle method of resolving this issue is to reduce infiltration. This reduces the volume of wastewater for treatment and maintains capacity in the networks to cater for small increases in demand. Council currently undertakes ongoing monitoring of stormwater infiltration and where major issues are found, a prioritised program of pipe replacement or re-lining is implemented. Where stormwater infiltration is the result of leaking pipes, Councils main response is the use of the latest pipe lining technology. This not only protects the pipe lines from infiltration but extends the useful life of the network. Where this is not a practical option, pipeline replacement is considered. For areas such as the commercial centre of Waipukurau,	Implications If our wastewater networks are placed under pressure due to stormwater inflow and infiltration this may impact on: • Our ability to maintain service levels • The condition and sustainability of our network, resulting in unplanned service interruptions and increased maintenance and renewals cost Improving our network to address stormwater infiltration could be costly, particularly where addressing infiltration requires re-routing or redesigning our networks. This could place an unreasonable financial burden on our rating base.
Stormwater Inflow and		the relining of the main trunk line may not be a practical due to the construction of a number of buildings over the mains. This will require the design of an alternative route which could require land purchases and the redesign of existing infrastructure.	

Wastewater			
Signifie	cant Infrastructure Issues	Principle Options for Managing the Issues	Implications
Network growth	Projections suggest residential growth in our district will be halfway between the medium to high for the period up to 2028 and high from 2028 to 2048. However, based on previous trends we expect that we will continue to experience life style residential development on the fringe of existing urban areas but outside of our existing reticulated wastewater network. This type of development can result in pressure on Council to extend existing networks so that these developments can connect to town wastewater networks. We also expect to continue to see more intense development within our existing towns. This type of development can place pressure on the capacity of our existing wastewater networks. However, we need to ensure that our wastewater supply networks remain affordable and sustainable for current and future generations.	 To ensure the continued affordability of our water supply networks our current approach is: to encourage utilisation of existing infrastructure where existing capacity allows not to extend existing networks beyond our existing supply boundaries (e.g. not allow houses or developments which are outside our existing supply network boundaries to connect to the network) not provide for new services in areas which are currently un-serviced We are currently reviewing our District Growth Strategy and District Plan and these approaches will be reviewed. 	Extending our reticulated wastewater system could have major cost implications and we already have limited funds. The cost of the extension could be covered by targeted rating schemes. Extending our wastewater networks would increase demand for water and may mean we need additional water sources to meet demand.
Levels of Service	Modelling of the Waipukurau network suggests that we have some networks constraints or bottlenecks and that these may need to be addressed to maintain existing levels of service.	To maintain the existing service levels these constraints of bottle necks will need to be addressed.	Provided we take a proactive and planned approach to addressing these constraints or bottlenecks, Council is of the view that this issue will have very little impact on the users.

CHBDC Long Term Plan 2018-28 Supporting Information

Wastewater			
Signifi	cant Infrastructure Issues	Principle Options for Managing the Issues	Implications
Natural Hazards	In the towns of Waipukurau and to a lesser extent Waipawa, some of our wastewater infrastructure crosses known earthquake fault lines, so could be damaged in the event of an earthquake. Our district is also prone to flooding, particularly in the event of storms or heavy rainfall and this could result in damage to our infrastructure assets.	 To manage the impact of natural hazards on our assets we: Monitor and assess the risk of natural hazards on our existing assets Where new infrastructure is planned the potential risk of natural hazards, such as earthquakes and flooding is considered when determining location and design Work with our communities to ensure that they are prepared for and able to manage during service interruptions. This approach is supported by our Civil Defence and Emergency Management Group who assist with building resilient, prepared communities In the event of an earthquake, Council monitors and responds to damage to the network. Most parts of our District that are particularly prone to flooding are protected from the impact of flooding by stop banks. Council has adopted a practise of fixing the problem should an event occur. In addition, Council: has ensured that its insurances are adequate to ensure Council has adequate cover over all infrastructure assets maintains a catastrophe reserve fund which can be used to undertake a prioritised program of repairs 	In the event of a minor earthquake it can take some time before damage to our networks is identified. The impact of a major event such as seen in Christchurch which has unforeseen damage the only course open to Council is to ensure that we have the correct level of insurance to fund the repairs.

Wastewater			
Signifi	cant Infrastructure Issues	Principle Options for Managing the Issues	Implications
Climate Change	 Climate change could have an impact on some of our wastewater networks. For example, in the future our District could experience more intense periods of storm activity, resulting in: Large volumes of stormwater entering our networks which may be unable to treat the resulting volume of wastewater our wastewater assets being damaged, for example by flooding In the future rising sea levels could impact on the coastal township networks especial the township of Te Paerahi. 	To manage the impact of natural hazards on our assets we monitor and assess the risk that climate change poses to our existing assets. Where new infrastructure is planned the potential risk from climate change, e.g. rising sea levels, or increased flooding, is considered when determining location and design. For example if there is an increased risk of flooding in some parts of our district we could ensure that new critical structures, such as control cabinets, are in locations where the risk of flooding is low or above expected flood levels. In terms of these events flooding the underground network, Council is reducing the points of entry and thus reducing the impact on the normal flows.	 Some options for mitigating the impact of climate change, such as raising critical assets like control cabinets would be relatively affordable. However, it may sometimes be costly to minimise the impacts of climate change on our assets. If our wastewater networks are subject to more intense or frequent storm events it could result in our networks being unable to treat the volume of wastewater and this could result in discharges to our natural environment. If this occurred: Council could breach the discharge limits set allowed under our resource consents it could have a negative impact on our natural environment and water quality it could have a negative impact on public health

Stormwater				
Significa	ant Infrastructure Issues	Principal options for response	Implications	
Capacity Constraints	The South West area of Waipukurau drains to Lake Hatuma and can silt up at times creating a constraint for the single outlet. This may cause flooding upstream including onto the Racecourse and a constraint for future development in this catchment. Also we currently have minimum floor height restrictions in a small area of Waipukurau due to limitations on the stormwater network and low lying land.	 The principle method of resolving this issue is to manage future development by: Encouraging water sensitive design so that stormwater from new imperviousness areas are released slowly through natural assets to reduce the volume and velocity of stormwater runoff Ensuring that new developments do not make the effect any worse than pre development state through use of retention tanks or similar devices 	 If our stormwater network in Waipukurau cannot drain sufficiently and in a timely manner to Lake Hatuma this may impact on: Our ability to maintain flood protection service levels for the Racecourse and this may have an economic impact for their business Future development may be stopped or reduced due to the capacity constraints It may be uneconomic for future development to implement the mitigation measures to pre development state for effective stormwater management Further modelling to find alternative designs to reduce the impact of surface flooding in these areas. 	
Stormwater Inflow and Infiltration	As noted in the section on wastewater, during wet weather events stormwater can enter or infiltrate our wastewater networks, increasing the volume of water that needs to be treated. Climate change could result in increases in the frequency or intensity of wet weather events and this could mean that stormwater infiltration becomes more of an issue. For further detail see the section on the impact of stormwater infiltration on our wastewater networks.	The principle method of resolving this issue is to reduce infiltration. This reduces the volume of wastewater for treatment and maintains capacity in the networks to cater for small increases in demand. Council currently undertakes ongoing monitoring of stormwater infiltration and where major issues are found, a prioritised program of pipe replacement or re-lining is implemented. For further detail see the section on the impact of stormwater infiltration on our wastewater networks.	Improving our network to address stormwater infiltration could be costly, particularly where addressing infiltration requires re-routing or redesigning our networks. This could place an unreasonable financial burden on our rating base. For further detail see the section on the impact of stormwater infiltration on our wastewater networks.	

Stormwa	Stormwater		
Signific	ant Infrastructure Issues	Principal options for response	Implications
Increasing Standards: Environmental	The Hawkes Bay Regional Council (HBRC) Plan change 6 is now operative which is imposing high environmental standards for the Tukituki catchment, for example around the amount/quality of water that we are allowed to discharge.	Council is currently undertaking upgrades at the Waipukurau and Waipawa treatment facilities so these networks should meet new standards. However, some of our other wastewater networks may need to be upgraded in the future to meet new environmental standards.	Upgrading wastewater networks to meet new environmental standards imposed by new resource consents will be costly.

Infrastructure Investment Programme

Our most likely scenario is to deliver to current day standards while remaining affordable for our community.

To achieve this scenario over the next 30 years we will focus on:

- ongoing maintenance and renewals programmes to meet current service levels
- minor road safety improvements
- a small number of growth related water supply and wastewater projects in our larger townships
- investment to meet standards and consent conditions where necessary

Total Expenditure

This strategy covers assets used to provide water supply, wastewater, stormwater drainage, and land transport. Council currently owns assets, for the purpose of delivering these activities, estimated at over \$751 million. These range from pipes under the ground to reservoirs and roads.

The following table shows total expected capital and operational expenditure for each infrastructure asset class over the 30 year period between 2018 and 2048.

Infrastructure Activity	Operational Expenditure	Capital Expenditure	
Land transport	\$563 million	\$369 million	
Water supply	\$140 million	\$52 million	
Wastewater	\$149 million	\$44 million	
Stormwater and drainage	\$34 million	\$23 million	
Total	\$886 million	\$488 million	

Over the next 30 years we expect that:

- Given future growth estimates indicate medium to high growth related infrastructure planned mainly for water supply and wastewater infrastructure assets in urban areas. This expenditure relates to water supply infrastructure mainly based in Waipukurau and Waipawa but does include treatment upgrades to other supplies.
- Operational expenditure, including the costs of labour, depreciation, materials and maintenance accounts for the majority of expenditure for all four infrastructure asset groups.
- Our expenditure on renewals, across all infrastructure categories is variable over the 30 year period. We know that we have ageing water supply and wastewater in the older settlements of Waipawa and Waipukurau and these will be the focus of our programme of works.
- Our expenditure on maintaining service levels will see us focusing on a programme of upgrades to our water supply schemes to meet the Drinking Water Standards 2005 (revised 2008) and meeting higher standard required for consent conditions at a number of our wastewater treatment plants.
- We have an ongoing programme to address high priority road safety issues.
- We expect that NZTA funding assistance will continue at existing subsidy levels.

Further detail about our expected operational and capital expenditure for transport, water supply, wastewater and stormwater is set out in following sections.



The following figure shows expected capital expenditure across the four types of infrastructure assets for the period from 2018 to 2048 by expenditure category.

Figure 1: Summary of 30 year total expenditure

Source: 2018 LTP budget (as at 1st November 2017) (2028-2048 5 year averages) (excluding any remediating work required by the HBRC)

Significant Decisions about Capital Expenditure

The following table shows the likely timing and estimated cost of significant capital projects. Note that there are currently no significant stormwater capital projects until there is better understanding of the network performance. This will be addressed with detailed modelling planned for Waipukurau in the next three years.

Wastewater Project	Description	Timing	Estimated Cost (Inflated)	
Wastewater: Program of wastewater treatment plant upgrades				
Most Likely Scenario	Programme of upgrades to meet the higher standards for consent requirements at Otane, Takapau, Porangahau, and Te Paerahi wastewater treatment plants.	2018 to 2023	\$3.6 million	
Wastewater: Waipav	va trunk main renewal			
Most Likely Scenario	Replacement of the trunk gravity main through the lower part of Waipawa required due to its age and importance as a critical asset for this town.	2019 to 2020	\$1.7 million	
Wastewater: Waipuk	urau & Waipawa treatment Improvements			
	Upgrade treatment	2020/2021	\$2.1 million	
Wastewater: Waipukurau reticulation improvements				
	Upgrade to reticulations improvements and removal of bottle necks	2025 to 2027	\$0.4 million	
Wastewater: Waipawa reticulation improvements				
	Upgrade to reticulations improvements and removal of bottle necks	2028 to 2030	\$0.4 million	
Wastewater: Reticula	ation increase for growth			
	Up-size and additional mains to meet growth demands	2030 to 2045	\$5.6 million	
Wastewater industria	al servicing	·		
Most Likely Scenario	Wastewater project to enable growth for the industrial area of Waipukurau with additional wastewater infrastructure.	2030/32	\$3.4 million	
Wastewater industria	Wastewater industrial servicing			
Most Likely Scenario	Wastewater project to enable growth for the industrial area of Waipukurau with a new main from this area to the wastewater treatment plant.	2029/2030	\$1.5 million	

Water Project	Description	Timing	Estimated Cost (Inflated)	
Waipukurau Water Supply: Second Supply				
Most Likely Scenario	A project to construction a second supply to Waipukurau including new pump station, treatment plant and reservoir to provided security of supply and increased demand.	2019/20	\$5.7 million	
Water Supply: Altern	ative supply to Otane			
Most Likely Scenario	Project for larger trunk main for an alternative supply for Otane to improve security.	2019/20	\$2.7 million	
Waipukurau Water S	Supply: Increase/Improve reticulation			
Most Likely Scenario	Project to provide additional flows around Waipukurau to meet demand and firefighting demands.	2019 to 2025	\$3.9 million over seven year period	
Waipawa Water Sup	ply: Increase/Improve reticulation			
Most Likely Scenario	Project to provide additional flows around Waipukurau to meet demand and firefighting demands.	2020 to 2027	\$4.12 million	
Takapau Water Supp	oly: Treatment Upgrade and improvements			
Most Likely Scenario	A project to upgrade improves to the treatment plant at Takapau to meet demand from NZDWS.	2019	\$0.77 million	
Porangahau Water S	Supply: Treatment Upgrade and improvements			
Most Likely Scenario	A project to upgrade improves to the treatment plant at Porangahau to meet demand from NZDWS.	2020	\$0.82million	
Kairakau Water Supp	oly: Treatment Upgrade and improvements			
Most Likely Scenario	A project to upgrade improves to the treatment plant at Kairakau to meet demand from NZDWS.	2022	\$0.55 million	
Pourerere Water Sup	oply: Treatment Upgrade and improvements			
Most Likely Scenario	A project to upgrade improves to the treatment plant at Pourerere to meet NZDWS.	2022	\$0.17 million	
District Water Supply: Increase/Improve reticulation				
Most Likely Scenario	Project to provide additional flows around Other water supply systems to meet demand and firefighting demands.	2018 to 2048	\$4.923 million	
Waipukurau Water S	Supply: New main			
Most Likely Scenario	A project to provide new main from the existing reservoir into town. Project to enable the resilience of Waipukurau network.	2037 and 2038	\$4.9 million	
Waipukurau Water Supply: Takapau Road Industrial area Reticulation				

Water Project	Description	Timing	Estimated Cost (Inflated)
Most Likely Scenario	A project to provide reticulation to service water supply to the Waipukurau industrial area that may be developed in the future.	2032	\$1.4 million

Stormwater Project	Description	Timing	Estimated Cost (Inflated)		
Waipukurau Stormwater: CBD upgrades					
Most Likely Scenario	A project to upgrade the stormwater reticulation in the CBD area to reduce flooding issues.	2019	\$0.6 million		
Waipukurau Stormwater: Upgrades to the network					
Most Likely Scenario	Project is to upgrade the stormwater network in Waipukurau to meet future demands.	2031 to 2036	\$4.1 million		
Waipawa Stormwater: Upgrades to the network					
Most Likely Scenario	Project is to upgrade the stormwater network in Waipawa to meet future demands.	2033 to 2038	\$2.0 million		
District wide Stormwater: Upgrades to the network					
Most Likely Scenario	Project is to upgrade the stormwater network across the district to ensure resilience in the networks	2018 to 2028	\$0.31 million		
District wide Stormwater: Upgrades to the network					
Most Likely Scenario	Project is to upgrade the stormwater network in District wide to meet future demands.	2040 to 2048	\$8.2 million		

Land Transport Project	Description	Timing	Estimated Cost (Inflated)	
Transport: New Roads programme				
Most Likely Scenario	The creation of new infrastructure on existing paper road corridors to cater for new homes in rural township such as Tikokino.	2018-2048	\$1 million over 30 year period	
Transport: Renewals programme				
Most Likely Scenario	Programme of ongoing roading renewals including emergency works, resilience improvements, metalling unsealed roads, resurfacing and rehabilitation of sealed roads. It is also for the timely replacement of the other road assets including drainage, structures, footpaths and traffic services as th ev age and fail	2018-2048	\$357 million over 30 year period	
I ransport: Minor improvements programme				
Most Likely Scenario	Programme of minor transport improvements to resolve safety issues on an annual basis.	2018 to 2048	\$14 million over 30 year period	
Transport: Bridge Renewals Investigation programme				
Most Likely Scenario	Investigation into all bridges to identify the condition and life span of all the bridges with in the CHB roading network. Thus enabling a forward works/ replacement program to be designed.	2018-2021	\$0.2 million over 3 year period	
Transport: Bridge Renewals programme				
Most Likely Scenario	Based on the forward works programme look at replacement of bridges in the roading network.	2022-2048	\$2.2 million	

Water Supply Infrastructure Expenditure

The water supply networks are managed directly by Council with operations and maintenance activities contracted to a third party. Council owns and is responsible for managing seven public water supply networks at Otane, Waipawa, Waipukurau, Takapau, Porangahau, Te Paerahi, and Kairakau. We also have a small scheme which supplies water to the Pourerere Camping Ground and Pourerere toilet block. Council is upgrading the water supplies to meet the Drinking Water Standards 2005 (revised 2008) and developing Water Safety Plan to mitigate public health risks.

Council's water supply assets are valued at around \$58 million (total replacement cost as at 30 June 2017). Council's water supply networks include six treatment plants that distribute water through 190 km of pipeline, 48 reservoirs and 8 pump stations.

Over the next 30 years we expect that:

• Operational expenditure including the labour costs, renewals, materials and maintenance accounts for most of the water supply expenditure at about 73 percent.

- Expenditure on renewals relates to the replacement of infrastructure mainly in the older townships of Waipawa and Waipukurau.
- Expenditure on maintaining service levels in the first 10 years relates to installing second water supply for Waipukurau and improving the reticulation. The pump station works includes new pumping configuration to provide greater range of flow rates. This is planned to be undertaken in 2017/18.
- Further expenditure on maintaining service levels is planned in 2026/27 with water treatment at Takapau, Porangahau, Kairakau and Pourerere townships. The Takapau, Porangahau, Kairakau improvements are required to meet the 2008 Drinking Water Standards 2005 (revised 2008) at the pump station. The Pourerere costs are required for an automated chlorine injection system (as currently manual). We have budgeted around \$2.6 million to provide an alternative supply for the Otane Township with a new main into town in 2019/20 to improve the service to user and allow for the additional water users.
- We intend to install reticulation for the Waipawa township to provide additional flows to meet demand initially in 2027/43 (estimated at \$3.2 million in total).
- Most of the growth related water supply infrastructure is planned for Waipukurau estimated at \$13.6 million in total with the works programme starting in 2019/20. A significant project is to provide a second supply for the District's largest township including treatment plant and pumping station and additional reservoir. The new reticulation will provide additional flows for the town to meet demand in particular for enabling industrial development.



Figure 2: Summary of 30 year water supply expenditure

Source: 2018 LTP budget (as at 18 October 2017) (2028-2048 5 year averages)

Wastewater Infrastructure Expenditure

Council collects, treats, disposes of wastewater at six treatment plants. Each area serviced with a wastewater network has a treatment facility. Council's wastewater assets are valued at around \$80 million (total replacement

cost as at 30 June 2017). Council's wastewater networks include 112 kilometres of pipeline, around 1022 manholes and 11 pump stations.

Over the next 30 years we expect that:

- Operational expenditure including the labour costs, renewals, materials and maintenance accounts for most of the wastewater expenditure at about 77 percent.
- Expenditure on renewals relates to the replacement of infrastructure mainly in the older townships of Waipawa and Waipukurau. There are also resource consent renewals for Otane, Porangahau, Te Paerahi and Takapau in the first 5 years. Specific renewal projects in the first 6 years are the improvement to treatment upgrades and Waipawa trunk main renewal (estimated at \$3.4 million).
- Expenditure on maintaining service levels is planned in the first 10 years and relates to meeting the higher standards for consent requirements estimated at \$7.7 million in total. It is expected that upgrading of the treatment process will be required as part of the new consents to remove phosphorus and nitrogen at Otane, Takapau, Porangahau, and Te Paerahi wastewater treatment plants.
- We are budgeting around \$5.6 million in Waipukurau to improve capacity for servicing the industrial area, improving capacity in the existing network, providing a new main from the industrial area to the treatment plant, and to service the rural area of Racecourse Rd as it becomes subdivided. We also plan to reticulate the small townships of Onga Onga and Tikokino that are currently on septic tanks in the last 30 year period.



Figure 3: Summary of 30 year wastewater expenditure

Source: 2018 LTP budget (as at 18 October 2017) (2028-2048 5 year averages) (excluding any remediating work required by the HBRC)

While developing this capital program for this LTP, we are dealing with the issue of breaching resource consent requirements at the Waipukurau and Waipawa Wastewater Treatment Plants. There is more investigation work to do to find a viable solution for these issues and although investigation allowances and minor improvements have been made in the capital program of \$2.1m, we understand that more investment will be needed and will require another consultation with the community once the viable options have been identified. This is likely to result in an amended Long Term Plan.

Stormwater Infrastructure Expenditure

The stormwater networks are managed directly by Council with operations and maintenance activities contracted to a third party. Council's stormwater assets are valued at around \$27 million (total replacement cost as at 30 June 2017). Council's stormwater networks include 40 km of pipeline, 624 manholes, 268 inlets and outlets, and 16km of open drains.

The catchments in Waipawa consist of around 25 kilometres of open watercourses and piped reticulation. They drain into the Waipawa River or to the north to the Papanui Stream. The catchments in Waipukurau consist of around 36 kilometres of open watercourses and piped reticulation. They drain into the Tukituki River through a number of systems including the Pah Flat Stream, or to the south and east to the Mangatarata Stream system, while the south west drains into Lake Hatuma.

Council also manages some minor reticulation in Otane, Takapau, Porangahau, Te Paerahi, Pourerere bech and Blackhead beach settlement consist of open drains with some piped sections, generally being roading drainage. Over the next 30 years we expect that:

- Operational expenditure including the labour costs, renewals, materials and maintenance accounts for most of the stormwater expenditure at about 69 percent.
- Expenditure on renewals relates to the replacement of infrastructure mainly in the two main townships of Waipawa and Waipukurau.
- Our focus in the next few years will be completing a detailed model of Waipukurau to better understand the stormwater network performance. This will assist us with developing new works for stormwater where appropriate.



Figure 4: Summary of 30 year stormwater expenditure

Source: 2018 LTP budget (as at 18 October 2017) (2028-2048 5 year averages)

Transport and Footpaths Infrastructure Expenditure

Council's land transport network consists of 862 kilometres of sealed and 402 kilometres of unsealed roads, 265 bridges, 7,907 culverts, and 68 kilometres of footpaths. To ensure road safety Council has a large number of signs, street lights and lane marking to aid the road user to safely navigate their way around the district. Council's transport assets are valued at around \$670 million (total replacement cost as at 30 June 2017 excluding land under roads).

Over the next 30 years we expect that:

- Operational expenditure including the labour costs, renewals, materials and maintenance accounts for most of the transport expenditure at about 60 percent.
- There will be no significant vested assets expected for the next 30 years from developers.
- There will be no growth driven related roading infrastructure planned and funded by Council.
- Expenditure on service level improvements is for minor improvements to resolve safety issues and is constant over the 30 year period (estimated at around \$14 million in total).
- Expenditure on renewals relates to emergency works, resilience improvements, metalling unsealed roads, resurfacing and rehabilitation of sealed roads. It is also for the timely replacement of the other road asset classes including drainage, structures, footpaths and traffic services as they age and fail. About one third of the transport expenditure is for renewals and estimated at around \$357 million in total for the 30 year period.
- Council is currently inspecting all bridges at a cost of \$150,000 over the next 3 years to development a replacement/renewal program.



Figure 5: Summary of 30 year transport expenditure

Source: 2018 LTP budget (as at 18 October 2017) (2028-2048 5 year averages)

Key Assumptions

This section describes some of the assumptions or limitations made when developing the Infrastructural Strategy. It is hoped this will give the user some insight in the discussions made in the plan and how they should be interrupted and the limitations of the decisions.

The following are the key assumptions have been when preparing this Strategy.

- Council will continue to be involved with the infrastructure discussed in the document.
- The demand (or decline) for these infrastructure elements are based on the work done in the Central Hawkes Bay District Long-Term Planning Demographic and Economic Growth Directions 2018 2048 Growth Environment and Outlook document that has been prepared for Council.
- We expect that NZTA funding assistance will continue at existing subsidy levels.
- Depreciation will be raised and used to fund replacement of deficient infrastructure.
- The forecasts are based on the best available knowledge of asset condition and performance, and on the levels of service that are being delivered. More detailed evaluation of asset renewal requirements will be undertaken by the use of predictive deterioration modelling during the periodic review of this Infrastructure Strategy.
- Predicted areas of development are based on the best available knowledge at the time of writing this
 document. It will be subject to changes through the review of the development Urban Growth Strategy
 and as part of the District Plan Review.
- Funding for capital improvements will be limited by political decisions as to the level of funding permitted under the financial strategy.
- It is expected that some funding will be available through the Development Levy Policy for new infrastructure listed in the Capital Work Projects.
- The dollar values shown in this Document are June 2018 dollars and have been adjusted to include inflation in accordance with the guidelines provided by the Society of Local Government Managers; set out in the BERL *Forecasts of Price Level Change Adjustors 2018 Update.*
- All capital costs are rough order of cost estimates that will need to be further researched and refined.
- The knowledge of the practitioners directly providing this plan, both on a day-to-day basis and historically, has been relied upon. These practitioners include staff in Council's Technical Services, Utilities, Land Transport and Financial Services Departments, as well as staff from the Facilities Management Contractor
- Inspection and condition rating of some of the key assets is continually being updated to form a better overall picture of the infrastructure, particularly in buried assets
- It has been assumed that climate change will happen at a gradual rate over the next 100 years.
- In regards to the potential for any business development of an industrial/processing nature, the assumed responses do not allow for a medium to large scale wet industry.
- There is a key risk with the market place is reaching capacity in the following areas industry experts, personnel resources, consultancy capacity, and contracting capacity that will impact on the Council ability to deliver the proposed projects both on time and within budgets.
- Remediating work on the wastewater ponds at Waipukurau and Waipawa as part of the requirements from the HBRC have not been included in this document as investigation work is still ongoing at the time of writing.
- With the fact that the Land Transport Activities is clearly identified because it mostly above ground we
 have a high level of confidence about the accuracy of the data used to produce the forward projections
 outlined in this document.
- Council has done a considerable amount of work surveying, CCTV inspections contractor feedback etc. on the 3 water networks so bearing in mind that the major of these assets are buried will believe that the data currently held in the databases can be considered reliable.