

# INFRASTRUCTURE STRATEGY

2018 – 2048

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## EXECUTIVE SUMMARY

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In recent years Waipa District has enjoyed strong growth. Populations forecasts now suggest Waipa will, in the next 20 years, experience a rate and quantum of population growth not previously experienced in its history. Central to this Infrastructure Strategy is Council's response to this high growth environment and its associated risks and challenges. The forecast growth creates exciting opportunities for the district and will have very positive effects on our economy. At the same time growth brings challenges, most notably our exposure and sensitivity to unforeseen, out of our control legislative, social, environmental and economic changes that will still need to be mitigated.

We are also in an environment of increasingly stringent compliance requirements (especially those relating to water consents), as well as increasing central government and local community expectations for resilience in the face of environmental hazards. Tolerance for any incidents that render our infrastructure network as ineffective or non-compliant will not be well tolerated given the lessons already learned from issues with water supply in Havelock North and earthquakes in the South Island.

The details of the Infrastructure Strategy contained in the following pages outline how Council will provide adequate infrastructure to meet the projected increase in demand. This includes, given our status as a high growth district, provision for the National Policy Statement on Urban Development Capacity's (NPS-UDC) requirement to allow for an extra 15 - 20% planned enabled (zoned) land area above what our population projections otherwise suggests we will require.

The Strategy is underpinned by the growth projection figures compiled by the University of Waikato that are being used by the three sub-regional Future Proof partners, Waipa District Council, Waikato District Council and Hamilton City Council. Given the scale of the forecast growth, any deviation from these forecasts presents a greater than usual financial and reputational risk to Waipa District Council if not adequately managed. In practise any significant deviations of actual growth from forecast growth will be managed by deferring or accelerating network expansion within new growth cells. Where possible, we have also sought to make our key water and wastewater treatment plant upgrades modular or staged in nature. This allows for some ability to align plant upgrades to real demand.

Council retains some head room with forecast debt below prudent limits. In the scenario of higher than expected growth Council will more likely be constrained by contractor procurement reasons rather than financial constraints. Council has limited ability to mitigate this eventuality. If growth is faster than projected we will receive associated development contributions at an equally fast rate to help fund further development. Supply of land is unlikely to be a constraint due to our response to the NPS-UDC which requires Council to over-supply land through our Waipa 2050 Growth Strategy. Council's Financial Strategy shows how the 10-Year Plan budget demonstrates resilience should forecast growth, interest rates or inflation deviate from the plan.

In the short term, two key infrastructure projects are required to unlock growth in the district: the development of the Parallel Road water treatment plant to supply additional water for Te Awamutu; and provision of a stormwater solution for the planned development in the Cambridge growth cells, C1, C2 and C3. The Parallel Road treatment plant upgrade will relieve constraints on water supply in Te Awamutu for both residential and industrial development. The costs of implementing the full stormwater solution in Cambridge west (growth cells C1,2,3) is around \$69m which will be implemented in stages to help mitigate any financial risk should development be slower than forecast.

For the long term the population is forecast to maintain its strong current rate of growth until approximately 2041, after which the growth rate is expected to slow but not stop. During this time it is expected the construction market, as well as Council's Service Delivery team, will have adjusted to the demand and responded accordingly. The key project of note from years 11 to 30 (2029 to 2048) of our Infrastructure Strategy is the development of a third bridge in Cambridge, the precise date and future demand is yet to be determined.

Otherwise in the long term, this Infrastructure Strategy shows an ongoing programme of "business as usual" plant upgrades and renewals. Our philosophy is to stage incremental plant upgrades rather than large singular upgrades to reduce the financial risk of under-utilised assets. With the tension and focus created by responding to growth pressures, this strategy outlines a plan that generally maintains a steady level of service. For our asset renewal programme, Council pursues an on-going continuous improvement process to enhance our understanding of the current state and performance of our assets as well as a smarter 'criticality analysis' in order to make better decisions with beneficial financial and risk management outcomes.

## 1. INTRODUCTION

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The Infrastructure Strategy aims to ensure that our district remains a great place to live, work, and play well into the future. It provides a clear outline of the challenges facing Council in achieving our vision.

The 10-Year Plan 2018-2028 highlights the Waipa community outcomes that align to the four goals that support Council's vision of "Building Champion Communities". These outcomes are:

- To be economically progressive;
- To be environmental and cultural champions;
- To be socially responsible; and
- To be connected with our community.

In developing this Infrastructure Strategy Council has taken a good look at what infrastructure would be required to enable the desired outcomes while responding to the forecast population growth. The Strategy also explains what Council considers the best approach to managing our assets given their inherent significant upfront capital cost and typically long useful life .

Given the volatile political, environmental, social, technical, economic and legal world in which we plan, with growing uncertainty the further into the future we look, the approach to planning projects is to apply a high degree of confidence and accuracy for projects scheduled in years 1 to 3, a moderate level for projects scheduled in years 4 to 10, and generally more indicative estimates for years 11 to 30.

Council's strategic planning ensures that in responding to the population distribution and growth challenges the significant infrastructure issues are identified, along with the principle options, timing and implications for managing them.

This strategy builds upon the Infrastructure Strategy published in 2015 in signalling Council's intended direction for the provision of core water and roading infrastructure over the next 30 years to 2048. However, it now also includes Waste Management services which, although not currently managing assets, foresees a role in developing future assets in response to a growing population with a growing demand for waste disposal and recycling services.

## 2. KEY STRATEGIC INFRASTRUCTURE ISSUES

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### 2.1. Strategic issue 1: Responding to Waipa's forecast population growth

**What this means:** Waipa District is currently subject to high population growth rates, at a rate that is unprecedented in recent history. This strong growth is forecast to continue out to around 2041 before tapering off. It is critical to the economic development of the district that infrastructure is provided for in a timely manner to avoid unnecessary constraints for residential, commercial and industrial development.

**Principal approaches Council is, and will be taking, for tackling it:**

- Updated planning guidance from the Waipa 2050 Growth Strategy (2017);
- Respond to the National Policy Statement on Urban Development Capacity requiring 20% extra land supply above forecast population;
- Having an agile District Plan that allows a rapid process to uplift suitable land zoned as deferred;
- Securing a new water supply for Te Awamutu to remove constraints for residential and industrial development;
- Developing a comprehensive stormwater solution for the expansion of residential development into western Cambridge;
- New infrastructure upgrades and network extension across the district; and
- Ongoing upgrade and renewal programme for existing plant and network infrastructure.

**Alternative approaches:**

Given the requirements of the NPS-UDC for Council to make land available for development, and the Local Government Act 2002 requirements for Council to provide infrastructure services, doing anything other than providing required infrastructure in line with projected demand is not feasible. The projects that are designed to tackle this issue, together with any alternative options, are highlighted in chapters 6 to 10.

### 2.2. Strategic issue 2: Managing financial risk

**What this means:** Our capital programme for the next ten years is approximately three times as large as what has historically been delivered by our Council. Growth projections suggest this level of capital spend will need to continue in line with this for the majority of the 30 year outlook of this strategy. Consequently, we face increased exposure to financial and reputational risks associated with such programmes

should our planning assumptions not hold true. It is quite likely that at least some assumptions will not materialise as expected. It is therefore critical that our capital programme is able to respond swiftly to these changing external drivers and avoid unnecessary exposure to risk.

In particular, we are more exposed than usual to changes against forecast for:

- Population growth;
- Interest rates;
- Inflation rates;
- National and regional economic performance; and
- Natural disaster.

**Principal approaches Council is, and will be, taking for tackling it:**

- Demonstrated capacity via sensitivity analysis that Council can accommodate increases in interest rates or inflation (refer to the *Assumptions* section of the 10-Year Plan).
- Respond to the NPS-UDC by developing an improved monitoring process of market conditions for residential, commercial and industrial activity.
- Change our Development Contribution Policy so developers carry interest costs instead of rate payers.
- Extend the term for level of service debt and use table loans to free up cash flow.
- Review capital programmes annually and fully recast every 3 years with each 10-Year Plan, amending scale and timing of projects in response to growth occurring at a faster or slower rate than forecast.
- For a higher than expected growth scenario, accelerated development contribution revenue will help advance infrastructure delivery.
- Design the treatment plant upgrades in a modular fashion where suitable. This allows incremental spend that reduces financial outlay and the risk of under-utilised assets in the event of slower than expected growth.
- Retain capacity in our debt prudence limits to accommodate unplanned inflationary pressure (refer to Assumptions on page 91).
- Insurance: reliance on a combination of long-standing arrangements with the Crown, a layered approach to insurance cover, ready liquidity and various self-insurance mechanisms to address the risk of natural disaster.

**Alternative approaches:**

Because the NPS-UDC requires Council to supply land for growth, and by extension enable associated development, there are limited options with deferring capital spend for growth projects. In the case of residential development, Council could place the onus on the private sector to co-ordinate new development to reduce Council's financial exposure. However due to the multitude of landowners involved, ensuring a fair process with an optimal outcome for the community would be very difficult.

The community has previously indicated that a reduction in level of service for our water services is not very palatable, and deferring our renewal program in the short term to alleviate financial pressure for growth projects will introduce reputational risk to Council and health and safety risks to the public.

**2.3. Strategic issue 3: Capacity to deliver large capex programme**

**What this means:** Potential capacity constraints exist both within Council's in-house resource and within the regional construction industry. In the short term, a key issue for the Council is working through the growing pains to managing a substantially increased capital programme that responds to the forecast growth. Council has limited ability to mitigate the construction industry constraints, and will rely on market forces to establish a demand-supply equilibrium. Our focus is to manage our in-house capacity.

**Principal approaches Council is, and will be, taking for tackling it:**

- Developing a supply of labour agreement with professional service providers.
- A project management department focus and re-organisation to streamline large project activity and minimise cross departmental inefficiencies.
- Increased focus on internal organisational process to enhance the rigour around project management planning and procurement.

**Alternative approaches:**

Deferring projects will relieve this pressure. This would require either reducing levels of service, constraining growth or increased risk of failure with overdue renewals. Rather than offering this as our default solution, Council would re-examine projects on a case by case basis if capacity constraints were realized and forced the issue. Council will take a risk based approach to determining projects most suitable for deferral.

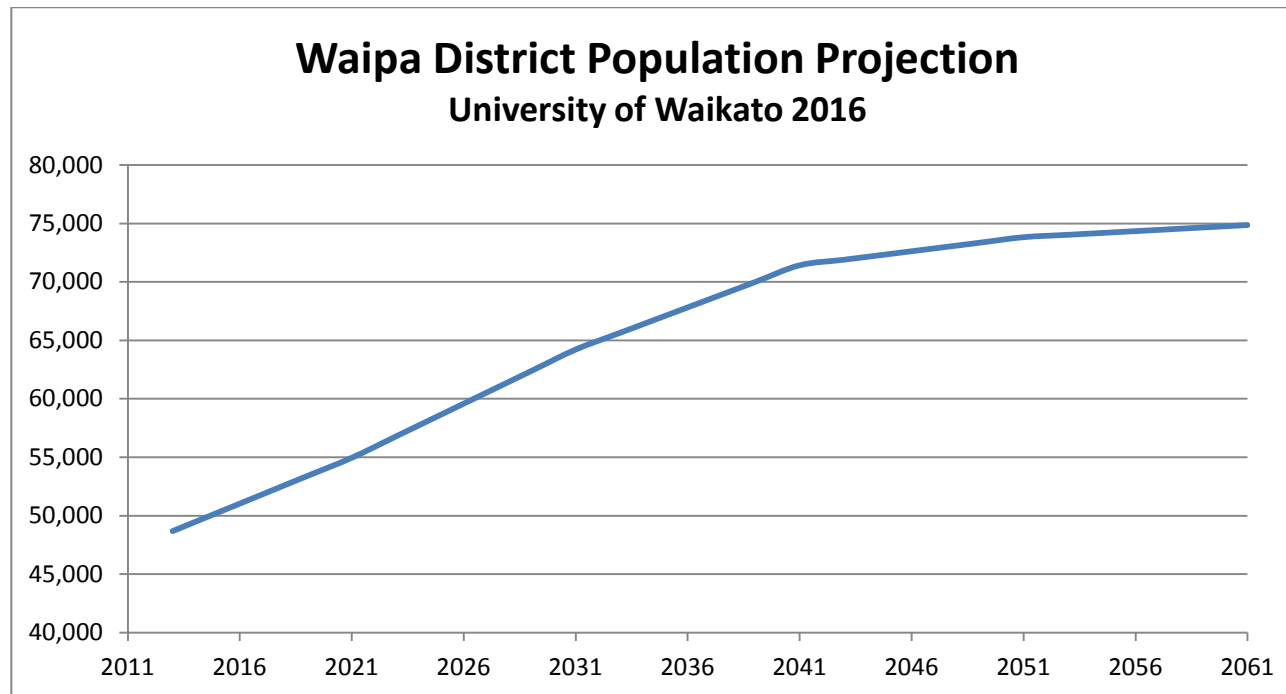


The other alternative is to hire substantially more full time staff. This solution is constrained as there is not a large pool of suitably qualified engineers seeking work in the public sector. Further, Council must keep a view to the long term staffing implications once the high growth environment wanes.

### 3. POPULATION GROWTH ANALYSIS

The population of Waipa District is expected to grow throughout the next thirty years, initially at an increasing rate until the early 2040s, but later slowing although still growing; negative growth is not anticipated in any part of the district.

Waipa District growth projections below are derived from the “2016 Update of area unit, household and labour force projections for the Waikato region 2013-2063” report written by the University of Waikato. This was commissioned by the Future Proof Sub-Regional Growth Strategy Technical Advisory on behalf of the Future Proof Partner councils.



Population changes due to births and deaths are predictable. It is the more volatile inward and outward migration from the district that drives the main population changes. The *Waipa 2050 Growth Strategy* is Council’s response to the projected population increases.

**Population demographics**

- Population growth in Waipa District is expected to continue;
- The population change is not likely to be consistent across all age groups, resulting in a significant change in the District's age structure;
- Both the 0-14 and 15-39 age groups are projected to decline, both in real terms and as a percentage of total population;
- The biggest expected change is in the population aged 65 plus: this group is predicted to change from being the smallest group in 2013 at 16% to the dominant group in 2043 at 39% of the population;
- The total number of households across the district is predicted to increase by over 80% between 2013 and 2063; this equates to an increase from 18,167 to 33,642 households across this entire 50 year period; most of the new households will be connected to reticulated water supply and wastewater services. The *Waipa 2050* Growth Strategy indicates where most of these new dwellings will be accommodated;
- Within this growth, there are likely to be changes to the composition of households: the number of 2-parent families is predicted to peak in 2043 before declining;
- The number of 1-parent families is likely to peak in 2050 before declining;
- The number of households without children (couples as well as single people) will continue to grow throughout the period to 2063.

[Source: Cameron, M.P. & Cochrane, W. (2016), *Update of Population, Family and Household, and Labour Force Projections for the Waikato Region 2013-2063*, University of Waikato.]

**Industrial growth**

- The demand for more industrial land is expected to be catered for by growth areas which have already been identified including Bond Road (Te Awamutu), Hautapu and Titanium Park (near the airport);
- Industrial use of water currently accounts for about half of all water supplied by Council;
- Industrial areas produce less than half of the wastewater and stormwater flows as not all is discharged to Council systems. The treatment and storage capacity of these systems will need to be maintained as industrial demand grows.

NIDEA medium household projects 2013-2061

	Base	Household Projection						
	2013	2017	2021	2031	2041	2050	2051	2061
Cambridge	6,147	7,008	7,870	11,140	12,774	13,456	13,532	13,813
Kihikihi	753	818	882	964	1,031	1,019	1,018	1,028
Ohaupo	193	204	216	261	307	305	305	308
Pirongia	532	568	604	661	705	715	716	724
Te Awamutu	4,277	4,898	5,519	6,449	7,595	7,728	7,743	7,845
Rest of District	6,265	6,598	6,931	7,851	8,670	9,228	9,290	9,718
	<b>18,167</b>	<b>20,095</b>	<b>22,022</b>	<b>27,325</b>	<b>31,082</b>	<b>32,451</b>	<b>32,603</b>	<b>33,435</b>

**Summary of impacts of growth and demographics on infrastructure**

The following impacts of growth and population demographic change are anticipated:

- a) Increased demand for all infrastructure services
- b) Increase in the number of assets vested in Council;
- c) The need for Council to provide major infrastructure in advance of development;
- d) The average number of people per household is expected to decline; therefore the growth in demand for new water and wastewater connections is likely to be greater than at present;
- e) Increase in motor vehicles in the district will lead to greater demand for road capacity which could lead to areas of congestion in peak periods, and greater demand for parking;

- f) Potentially additional requirements of an aging population, such as additional wastewater treatment plant facilities or car parking provisions.

## 4. MANAGING RISK

### 4.1. Key strategic risks

Description of risk	Risk consequence	Risk control/mitigation
<b>Growth forecasting risks</b>		
<p>Population growth is less than forecast</p> <ul style="list-style-type: none"> <li>▪ Rate of growth is slower</li> <li>▪ Actual population is less</li> <li>▪ Growth cell development is delayed</li> </ul>	<ul style="list-style-type: none"> <li>▪ Under-utilised capacity</li> <li>▪ Income to repay debt is less than projected</li> <li>▪ Debt requires more years to service</li> </ul>	<ul style="list-style-type: none"> <li>▪ Infrastructure developed/upgraded in modular fashion where possible responsive to growth</li> <li>▪ Defer further infrastructure development</li> </ul>
<p>Population growth is greater than forecast</p> <ul style="list-style-type: none"> <li>▪ Rate of growth is faster</li> <li>▪ Actual population is greater</li> <li>▪ Growth cells are developed earlier</li> </ul>	<ul style="list-style-type: none"> <li>▪ Growth potentially hindered if infrastructure development fails to keep pace with demand</li> <li>▪ Debt incurred for a project may be paid down sooner</li> <li>▪ Council and construction sector struggle to deliver infrastructure</li> <li>▪ Pressure to develop infrastructure diverts attention from other asset renewals</li> <li>▪ Demand for water supply exceeds consented volumes</li> <li>▪ Greater volumes of treated, discharged water may exceed consented volumes</li> <li>▪ Increased demand on current systems may reduce asset lifecycles</li> <li>▪ More CBD traffic congestion</li> <li>▪ Reduced environmental quality and road safety</li> <li>▪ Reduced levels of service</li> <li>▪ Poor reputation/public image</li> </ul>	<ul style="list-style-type: none"> <li>▪ Flexible capital programmes, reviewed in each Annual Plan and 10-Year Plan</li> <li>▪ Infrastructure development projects brought forward</li> <li>▪ Continuous review of Asset Management Plans and asset renewal programmes</li> <li>▪ Introduce more stringent water saving and education</li> <li>▪ Liaison meetings with Waikato Regional Council</li> </ul>

Description of risk	Risk consequence	Risk control/mitigation
<b>Asset management risks</b>		
<p>Inadequate project management input into significant projects</p>	<ul style="list-style-type: none"> <li>▪ Project fails to deliver on objectives, cost expectations not met</li> <li>▪ Public reputation risk</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project briefs developed for LTP which identify resource requirements</li> <li>▪ Follow project management framework requirements.</li> <li>▪ Renewal programme coordinated with maintenance and other renewal activities</li> <li>▪ Communications Plan developed for significant projects</li> </ul>
<p>Costs increase at a higher rate than anticipated</p>	<ul style="list-style-type: none"> <li>▪ Higher construction costs</li> <li>▪ Higher operational costs</li> <li>▪ Reduced programmes of work delivered</li> </ul>	<ul style="list-style-type: none"> <li>▪ Closely monitor cost escalation figures</li> <li>▪ Programme flexibility maintained to accommodate any fluctuations</li> <li>▪ Current costs monitored monthly to enable agile response if needed.</li> </ul>
<p>Inadequate asset management/infrastructure strategy planning</p>	<ul style="list-style-type: none"> <li>▪ Insufficient planning undertaken to understand future renewal need for agreed LOS,</li> <li>▪ Maintenance and renewal budgets under or over funded</li> <li>▪ Audit non-compliance</li> <li>▪ Sub optimal programmes delivered</li> <li>▪ 30 year Infrastructure Strategy incorrect</li> </ul>	<ul style="list-style-type: none"> <li>▪ AMP reviews</li> <li>▪ NZTA/Office of Auditor General audits completed</li> <li>▪ Commitment to regional and sub-regional shared services initiatives</li> </ul>
<p>Extreme natural event (Major flood, storm or earthquake)</p> <ul style="list-style-type: none"> <li>▪ District Wide – multiple occurrences</li> <li>▪ Multiple wash out of treatment plants and roads</li> <li>▪ Multiple Bridges Damaged or Unusable</li> <li>▪ Liquefaction to networks, road base or</li> </ul>	<ul style="list-style-type: none"> <li>▪ Water reticulations, roads/bridges unusable or reduced capacity</li> <li>▪ Loss of treated water supply</li> <li>▪ Delays to users</li> <li>▪ Diverted traffic on unsuitable roads</li> <li>▪ Risk of injury/death to road user</li> </ul>	<ul style="list-style-type: none"> <li>▪ Declaration of Civil Defence Emergency and external resources in a very large event</li> <li>▪ Maintenance of treatment plants, culverts, water ways, &amp; water tables</li> <li>▪ Risk based bridge and waterway condition inspections</li> <li>▪ High risk culverts renewed prior to failure</li> </ul>

Description of risk	Risk consequence	Risk control/mitigation
foundations ▪ Exposure of networks and pipe fractures	<ul style="list-style-type: none"> <li>▪ Repair cost – impact on budget</li> <li>▪ 3rd party damage - utilities</li> <li>▪ Insurance claims</li> <li>▪ Restricted network availability</li> </ul>	<ul style="list-style-type: none"> <li>▪ Bank stability maintenance.</li> <li>▪ Proactive preventative maintenance and inspections</li> <li>▪ Network recovery methodology in maintenance contract</li> </ul>
<b>Organisational strategic risks</b>		
Poorly-based estimates of population growth	<ul style="list-style-type: none"> <li>▪ Assumptions, capital project plans and financial forecasts contained in the 10 Year Plan requiring significant later amendment.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Population projections overseen by collaborative Futureproof effort.</li> <li>▪ External consultant commissioned by Futureproof in 2016 to critically review the robustness of the process and the data with focus on ensuring that past issues were addressed.</li> <li>▪ Review and adjust programmes via Annual Plan or future LTP</li> </ul>
The failure to deliver the principle outcomes of time, cost and quality for a major infrastructure project(s)	<ul style="list-style-type: none"> <li>▪ Lack of ownership</li> <li>▪ Appropriate systems and tools for management not used</li> <li>▪ Poor monitoring and/or reporting.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Establishment of the Project Delivery unit to focus on project management, and project delivery.</li> <li>▪ Routine Reporting (quarterly) to the Service Delivery Committee.</li> </ul>
Failure to construct infrastructure to meet growth demands and have Development Agreements in place that ensure growth.	<ul style="list-style-type: none"> <li>▪ No structure plan in place.</li> <li>▪ Unclear governance and ownership structure to set expectations, monitor and make key decisions</li> <li>▪ Property owners unwilling to sell land</li> </ul>	<ul style="list-style-type: none"> <li>▪ Regular meetings with the Project Control Group (PCG) regarding this project</li> <li>▪ Identified as a key Long Term Plan project and therefore reported to Exec quarterly</li> <li>▪ Structure Plans in place</li> </ul>
Critical staff skills shortages that impact Council's ability to deliver its objectives.	<ul style="list-style-type: none"> <li>▪ Misalignment between Council's existing workforce and the workforce required to deliver on growth/LTP expectations and business as usual work.</li> <li>▪ Failure to consider:                             <ul style="list-style-type: none"> <li>▪ Likely skill shortages</li> <li>▪ Impending retirements</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Department redesigns based on most appropriate department structure to achieve respective workloads</li> <li>▪ Leadership Development project</li> <li>▪ Strategic framework - LTP project planning – Department Business Planning resource</li> </ul>



Description of risk	Risk consequence	Risk control/mitigation
	<ul style="list-style-type: none"> <li>Increased workloads</li> </ul>	<ul style="list-style-type: none"> <li>Increase the organisation's ability to assess internal processes and systems that enable better efficiencies – additional resources provided to OPA                             <ul style="list-style-type: none"> <li>Where required, contract in external resource</li> </ul> </li> </ul>
Significant deterioration in the global economy	<ul style="list-style-type: none"> <li>Changed global economic circumstances impact on liquidity, interest rates, inflation or business confidence and GDP in New Zealand and the Waipa district to the extent that Council must review its financial plans.</li> </ul>	<ul style="list-style-type: none"> <li>Continue to monitor economic indicators and take appropriate action as and when required.</li> </ul>
Increases in interest rates for loans or increase in inflation rate	<ul style="list-style-type: none"> <li>Current capital programmes become unaffordable</li> </ul>	<ul style="list-style-type: none"> <li>Defer capital spend</li> <li>Take on debt allowed for in headroom with existing debt versus prudent debt limits.</li> </ul>

#### 4.2. The Infrastructure Policy environment

Council needs to be responsive to changing environmental conditions and risks. These include a regulatory regime that increasingly requires higher quality standards, improved public health and a cleaner natural environment. Council also has to consider how to plan for more extreme weather events arising from changing climate conditions but without knowing the frequency or precise effects of those changes. Similarly, Council is required to plan for seismic events and the strengthening of buildings; this is done with the expectation that such events will occur even though the timing and magnitude of such events is not known in advance.

Council does not deliver its services in isolation, but in response to statutes, policies, strategies, regulations, standards and agreements produced at national, regional and local levels. These are aimed at ensuring that Council services are provided that are safe, resilient, sustainable and which meet the economic, social and environmental needs of the community.

##### Water quality management

Council’s approach to improving its treated water quality is to ensure more stringent water management and compliance with the NZ Drinking Water Standards and the Health Act 1956 by:

- a continuous appraisal of water quality standards, monitoring of compliance and development of projects to ensure on-going compliance;

- regular negotiation with consent authorities to monitor and manage consent conditions and compliance; and
- taking action to mitigate, and improve on, any instances of non-compliance.

Council's aim in treating wastewater is to reduce the amount of bacteria and viruses, nutrients and suspended solids entering water courses and ensuring compliance with discharge consent conditions by:

- upgrades to wastewater treatment plants;
- environmental monitoring of water quality downstream of point discharges;
- regular negotiation with consent authorities to monitor and manage consent conditions and compliance; and
- taking action to mitigate, and improve on, any instances of non-compliance.

In managing stormwater, Council's approach is to reduce over time the amount of sediment, pollutants and nutrients entering water bodies in the Waikato and Waipa River catchments by:

- developing new stormwater management infrastructure to manage stormwater flows prior to it entering the receiving environment;
- regular negotiation with consent authorities to monitor and manage consent conditions and compliance; and
- taking action to mitigate, and improve on, any instances of non-compliance.

### **Climate change**

Council considers and plans for the effects of climate change as part of the detailed planning with respective infrastructure projects. New infrastructure assets are designed taking climate change into account. The new Regional Infrastructure Technical Specifications (which are agreed by participating Councils within the Waikato Region and which are expected to be adopted in 2018) include design guidelines and specifications taking account of anticipated climate change effects. Application of these specifications using the climate forecasts available at the time of infrastructure investment planning should reduce any legal risk for Council arising from any greater-than-anticipated weather events that may be attributed to climate change.

Council's current plans to improve the security of water supplies by increasing consented volumes, treatment and storage capacities, reticulation and water management planning, will reduce the actual and legal risks of water shortages in periods of extreme drought.

No maintenance regimes for assets have been altered as a result of climate change. Instead Council is adopting a “watching brief”, scheduling additional maintenance if required, identified either by events or by consideration of the Regional Infrastructure Technical Specifications.

**Earthquake resilience**

Waipa District’s seismic risk has been identified as “medium”. Consequently Council has until July 2022 to conduct engineering assessments and identify priority buildings that are potentially earthquake prone. All potentially “earthquake-prone” buildings - as defined in the Buildings (Earthquake-prone Buildings) Amendment Act 2016 - need to be assessed by July 2027.

Where Council is the owner of a potentially earthquake prone building, it will need to undertake the required seismic work by 2030 (priority buildings) and 2042 (all other buildings). The resource requirements and individual project timescales to undertake such remedial works will be considered in future 10-Year Plans and Infrastructure Strategies once the engineering assessments have been carried out and requirements are known.

**Legislation, policy and strategy**

Council is required to provide water supply, wastewater, stormwater and transportation infrastructure services under the Local Government Act 2002.

Infrastructure service	National legislation	Strategies, policies and guidelines
<b>Water supply, Wastewater and Stormwater drainage</b>	<ul style="list-style-type: none"> <li>▪ Health Act 1956</li> <li>▪ Health (Drinking Water) Amendment Act 2007</li> <li>▪ Resource Management Act 1991</li> <li>▪ Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010</li> <li>▪ Ngati Tuwharetoa, Raukawa, and Te Arawa River Iwi Waikato River Act 2010</li> <li>▪ Nga Wai o Maniapoto (Waipa River) Act 2012</li> <li>▪ Land Drainage Act 1908</li> </ul>	<ul style="list-style-type: none"> <li>▪ Drinking-Water Standards for New Zealand 2005 (revised 2008)</li> <li>▪ National Policy for Freshwater Management 2014</li> <li>▪ Water NZ publications</li> </ul>
<b>Transportation</b>	<ul style="list-style-type: none"> <li>▪ Local Government Act 1974</li> <li>▪ Transport Act 1962</li> <li>▪ Land Transport Act 1998</li> </ul>	<ul style="list-style-type: none"> <li>▪ Government Policy Statement/ National Infrastructure Plan</li> <li>▪ NZ Transport Agency Strategic Direction and other publications</li> <li>▪ Connecting New Zealand</li> </ul>

Infrastructure service	National legislation	Strategies, policies and guidelines
	<ul style="list-style-type: none"> <li>▪ Land Transport Management Act 2003</li> <li>▪ Government Roothing Powers Act 1989</li> <li>▪ Road User Charges Act 2012</li> <li>▪ Utilities Access Act 2010</li> <li>▪ Land Transport (Road User) Rule 2004</li> </ul>	<ul style="list-style-type: none"> <li>▪ National Land Transport Plan</li> <li>▪ Safer Journeys</li> <li>▪ National Code of Practice for Utility Operators' Access to Transport Corridors</li> <li>▪ Safer Journeys – Safer Speeds Action Plan</li> </ul>

During the course of the 30 years covered by this Infrastructure Strategy, the composition and policy priorities of the New Zealand government may change several times, requiring Council to frequently adapt to the changing political and legal environment.

Council’s infrastructure services are influenced by the Waikato Regional Policy Statement and the following regional strategies, policies and guidelines, any of which can be amended following discussion and consultation:

Infrastructure service	Regional legislation strategies, policies and guidelines
<b>Water supply, Wastewater and Stormwater drainage</b>	<ul style="list-style-type: none"> <li>▪ Waikato Regional Plan</li> <li>▪ Sub-regional Three Waters Strategy</li> <li>▪ Waikato-Tainui Environmental Plan</li> <li>▪ Raukawa Environmental Management Plan</li> <li>▪ Maniapoto Iwi Environmental Plan</li> <li>▪ Healthy Rivers Forum</li> </ul>
<b>Transportation</b>	<ul style="list-style-type: none"> <li>▪ Regional Transport Strategy</li> <li>▪ Regional Land Transport Plan</li> <li>▪ Regional Public Transport Plan</li> <li>▪ Road Safety Strategy for the Waikato Region</li> <li>▪ Walking and Cycling Strategy for the Waikato Region</li> <li>▪ Waikato Expressway Network Plan</li> </ul>

## 5. MANAGING COUNCIL’S INFRASTRUCTURE ASSETS

### 5.1. Council’s assets

Council’s assets are its resources that have long term financial value, that are created or purchased for a single cost, are maintained to extend their useful life and which are renewed or replaced after a period of years.

Most of Waipa District Council’s infrastructure assets are required for delivering the following services:

- Water treatment and supply (bores, treatment plants, pumps and pump stations, pipelines, reservoirs, meters etc.);
- Wastewater reticulation and the treatment and disposal of wastewater (treatment plants, pumps, pipelines etc.);
- Stormwater drainage (pipes, connections, manholes, treatment devices, soak holes, silt traps, trenches, detention ponds and swales);
- Access to a quality vehicle and freight road network, plus footpaths, cycleways and passenger transport bus stops.

Council does not have any infrastructure assets for its waste management services.

Note that under the Local Government Act 2002, flood protection and control works are also considered infrastructure assets. This activity is not included in this Infrastructure Strategy as Waipa District Council does not own or manage flood protection and control works. Instead, responsibility for managing flood protection infrastructure rests with the Waikato Regional Council.

In addition, Council manages a number of other assets most of which are not covered in this Infrastructure Strategy unless they help Council to manage key strategic issues in the next 30 years. These assets include:

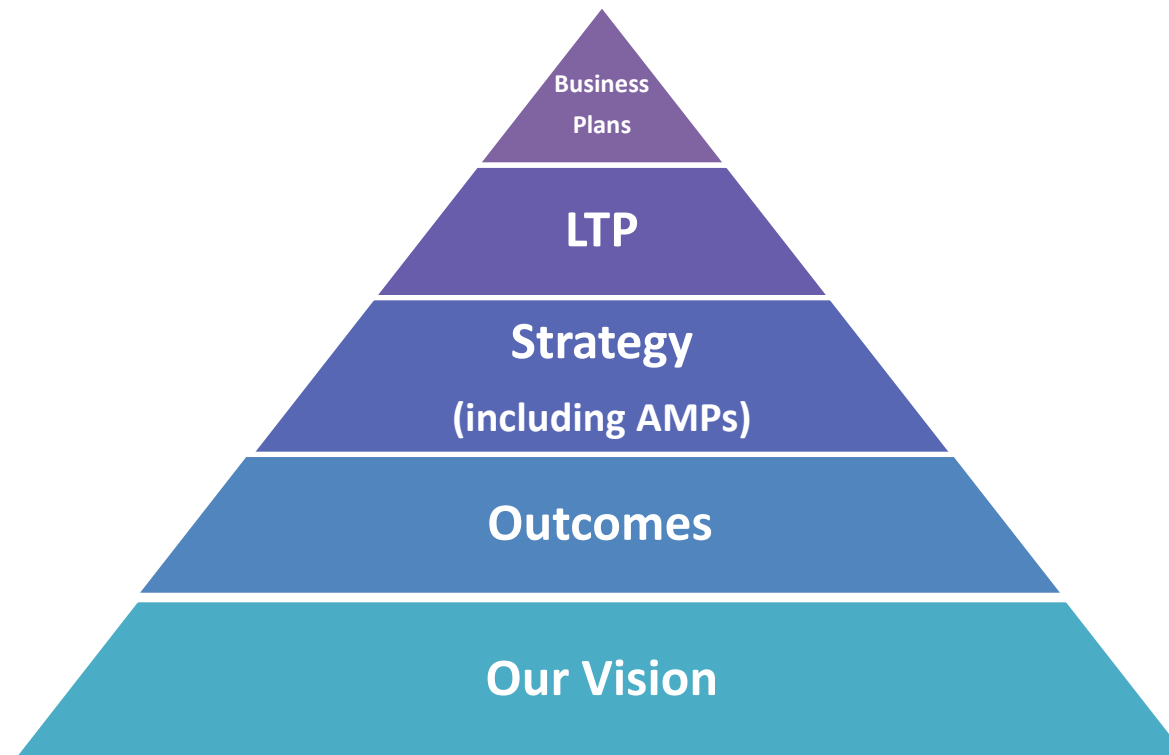
Parks and reserves	Swimming pools	Cemeteries
Mighty River Domain (on Lake Kārapiro)	Public toilets	Civil defence emergency management and rural fire infrastructure
Libraries	Community halls	
Museums and heritage	Pensioner housing	

## 5.2. Activity Management Plans

Principal documents for managing our assets is the Activity Management Plan (AMPs), of which Council has nine. These guide how services are delivered and the assets managed to ensure the delivery to the community of Council's stated levels of service.

The Activity Management Plans take account of Council's strategic documents that identify the goals and activities required to achieve Council's objectives. However, they also take account of this 10-Year Plan. The AMPs are also important contributors to developing the 10-Year Plans, identifying asset development, renewal or upgrade projects that will be needed during those ten years.

Fig 5.1: Organisational strategic context



From the Activity Management Plans, and reflecting each year of the 10-Year Plan, fall the Business Plans for each council service. These set the year's priorities and goals to enable delivery of the service and Council's stated levels of service to the community.

The hierarchy of Council's strategic alignment, the key to Council's asset management approach, is shown in the example figure above.

### **5.2.1. Balancing asset management responses**

Council needs to find an optimum balance between maintaining and renewing assets. A single approach is not suitable for all assets: for example, to maintain levels of service a major road will be renewed rather than maintained, whereas a minor road will be maintained rather than renewed.

Maintenance helps ensure the assets reach expected life, as well as ensuring the delivery of the required LOS. Maintenance activities include:

- Reactive (unplanned) maintenance that needs to be completed quickly to ensure levels of service are not compromised. Reactive maintenance is normally undertaken in response to a customer service request, asset failure or weather events.
- Pro-Active maintenance that is planned work carried out at regular intervals to ensure performance (preventative maintenance) and to prevent failure (predictive/condition driven maintenance). This approach is adopted for critical assets where consequences of failure are great.
- Condition assessments.
- Analysis and reporting of asset condition.

Asset renewals cover the progressive replacement of existing assets as they reach the end of their useful life. The rate of asset renewal is intended to maintain the overall condition of the asset system at a standard that ensures the community's investment in infrastructure is maintained. If existing assets are not replaced with assets of similar standard the ability of the service to deliver the required levels of service may be reduced.

The physical renewal works carried out historically has been adequate for water supply assets, suggesting current levels of renewal are appropriate. Council has increased expenditure in future years (beyond year four of the LTP) to reflect renewal levels based on asset age.

Ongoing condition inspection programmes will continue to further inform the renewal profiles, as Council moves away from basing renewal projections purely on the age of the assets as the only criterion, towards incorporating a multi-criteria assessment of condition, criticality, risk and age of assets to ensure that the network is maintained in the most cost efficient and effective manner.

The risk to Council is that condition assessment may result in highlighting issues within the network that require higher expenditure beyond what has been allowed for in the 10-Year Plan. Should this occur Council will evaluate the options available to continue to manage the asset and maintain service to the community. A combination of strategies is possible based on the following options:

- Review of the levels of service, particular focus on critical vs. non-critical assets, and possible impacts on the customer through reduced services.
- Increased capital expenditure to accelerate renewals and hence debt servicing costs impact on consumer.
- Increase operational costs to defer capital expenditure, and again having a direct impact on the consumer.

Water Services assets require cyclic renewal strategies intended to provide for the progressive replacement of individual assets that have reached the end of their useful life. The rate of asset renewal is intended to maintain the overall condition of the asset system at a set standard or level of service. Adopted remaining life, asset criticality and condition profiles of the water services systems are used to determine the forward renewal programme.

Failure to maintain an adequate cyclic renewal programme will be reflected in a greater decline in the overall standard of the system of assets than would be expected from the age profile of the asset system. Council currently has a small backlog of upgrades, renewals and maintenance projects across the three water services; the scope of most of these projects has not yet been finalised nor costs estimated.

For transportation activities there is no backlog of renewal or maintenance works but Council recognises that it is providing a higher-than-necessary level of service for pavement renewals. The intention is to reduce the pavement renewal works and accept a lower – but more appropriate – level of service based on traffic volumes. Guidance on a fit-for-purpose level of service is provided by the One Network Road Classification (ONRC). Other transportation activities remain unchanged. Over the next three years Council will undertake analysis of what this means for Waipa DC and what the gap is between the existing level of service provided, or asset conditions, and comparison with peers through the ONRC performance measurement tools.

The general principles used for identifying renewal needs are listed in **Table 5.1**.



Table 5.1: Renewal Identification & Prioritisation Principles

	Identification and Prioritisation Principles
Renewal Identification	Identification through staff knowledge of individual assets and associated analysis.
	Condition reports, maintenance records (asset failure and expenditure history), request for service (RFS) records, and observations of staff and contractors.
	Assessment of remaining asset lives.

**5.2.2. How do we prioritise our projects and asset renewals?**

Priority projects are identified on the basis of:

- the age of the asset,
- the time elapsed since its installation or upgrade or renewal,
- its current condition (based on regular condition surveys) and
- the risk of asset failure or risk of its condition contributing adversely to road user safety.

Prioritisation projects for the renewal of three waters assets are identified for assets that represent a higher risk due to:

- criticality\*,
- condition,
- age and
- performance.

Other considerations for project timing and location include:

- the ability to align water services renewals with the transportation *forward works plan*,
- district growth pressures for both renewals and increases in asset capacity,

- the opportunity to solve multiple issues within one project,
- achieving efficiencies in time and cost.

\* *Criticality*

Identification of criticality of assets allows for condition assessments, preventative maintenance and renewal programmes to be prioritised based on that criticality. If a disaster were to strike, this information will also help in the prioritisation of our infrastructure programmes to return to normal levels of service.

Council's most critical assets are those whose failure would have major implications for emergency services' access and travel for many people (Transportation), or which would impede or prevent the supply of other lifeline services such as drinking water supply and wastewater.

Criticality of infrastructure plays a role in the prioritisation of planning for the renewal of assets: those that have a higher criticality score are prioritized over lower criticality assets. As part of the 2018-2028 Long Term Plan development of a strategy for asset renewals, planning and budgeting for water services has involved consideration of criticality as well as age, condition, maintenance activity, hydraulic modeling results, risk and growth activity.

Council's process to determine asset criticality in the water services results in a grade from one (1) to five (5) for each asset. The criticality grades are as follow;

- 1) Very High
- 2) High
- 3) Medium
- 4) Low
- 5) Very Low

To date this objective assessment has been undertaken for pipes only; it is intended that other asset types will also be similarly assessed during 2018 to 2023.

The asset types that are currently and subjectively assessed as "critical" are as follows:

Table 5.2: Water Supply critical asset types

System Component	Asset Type	Why is this Asset Critical?
Treatment Plant	Treatment Plants	These assets are our facilities that are constructed to meet our drinking water standards. This is a legal requirement under the H& S act. During summer when consumption is increased the plants become critical as if there are any plant failures at this time, they may impact on our ability to supply water.
Storage	Reservoirs	The amount of storage that we have meets the requirements for drinking water standards, if a reservoir was to fail, we would be unable to meet these standards
	Pumps	The majority of our reservoirs rely on pumps to distribute water into the reticulation, without these pumps disruption to supply or reduction in pressure would be felt by all customers serviced by the reservoir .
Reticulation	Trunk mains & valves	Our trunk/bulk and ring main feeds reservoirs and the network, if these were to fail interruptions to supply or reduction in pressure would be felt by all customers within the District.
	Pipes & valves	Pipes that provide water to our significant customers such as hospitals are considered to be critical
	Fire Hydrants	Our fire hydrants must be operational at all times to ensure that they are available for fire fighting

Table 5.3: Wastewater critical asset types

System Component	Asset Type	Why is this Asset Critical?
Network	Pipes/Manholes located adjacent to streams and rivers	This is due to their location. A failure of these assets will result in direct wastewater spills to a stream or river.
	Connections	These provide a service to our key customers who provide a district wide service i.e. hospitals
	Pipes with restricted/limited capacity	All pipes that are at greater than 50% full during dry weather are considered to be critical as it is more likely that these will overflow during a rain event
	Interceptors	These provide conveyance of wastewater from large areas of the district to the wastewater treatment plant. If these fail, large amounts of wastewater will spill into private property, public areas, streams and rivers.

System Component	Asset Type	Why is this Asset Critical?
Pump Stations	Pump Stations	These are considered to be critical as they are located in the low points of our network and therefore are at a high risk of wastewater spills and odour. Some pump stations are more critical than others, depending on their size and/or location.
Treatment	Treatment Plants	The wastewater treatment plants are considered to be critical as they are our main form of treatment. However some areas of each plant are more critical than others.

Table 5.4: Stormwater critical asset types

System Component	Asset Type	Why is this Asset Critical?
Network	Pipes	Any of these assets that is damaged or blocked at the time of a storm event is considered to be critical as its inability to transfer stormwater may result in flooding.
	Manholes	
	Inlets	
Treatment	Ponds	These assets are required to protect our streams and the Waikato River from the effects of pollution from urbanisation.
	Wetlands	
	Treatment Devices	

Table 5.5: Transportation critical asset types

System component	Asset type	Why is this asset critical?
Network	<p>Bridges crossing rivers:</p> <p>Fergusson Bridge and Victoria Street bridge (Waikato River)</p> <p>Achilles Avenue (Karapiro Stream)</p>	<p>Catastrophic failure of any one bridge would be difficult to manage, severely impeding movement with economic and social impacts.</p> <p>These bridges service large areas and high traffic volumes and also carry essential utility services including water, telecommunications and gas.</p> <p>Bridges have relatively high replacement costs. All these bridges were in average-good condition in 2016, performance is good or satisfactory and each has at least 30-50 years of remaining life; current resilience studies will guide Council in planning for resilience improvement work if necessary.</p>

Council’s Asset Management Plans each consider critical asset condition assessments, performance monitoring and management. Where asset performance declines, Council’s response will be to plan and finance appropriate works to improve asset condition, performance and confidence in addition to business-as-usual programmes of asset renewals.

**5.3. Levels of service**

- Levels of service sit at the heart of asset and activity management.
- They define the quantity and/or the quality of the services that Council aim to provide for the community.
- Once defined Council can develop or adapt meaningful service delivery operations, maintenance, renewal, capital development, and service development programmes. Meaningful financial forecasts also become possible.

The Long Term Plan is an overview of what Council intends to do over the next ten year period and contains key information about Council’s activities levels of service, assets and cost of providing its services. The desirable outcome is the delivery of those services to the agreed levels of service in a cost-effective way that is sustainable for present and future customers.

Activity Management Plans document the long term management approach in regard to the life cycle of the assets and the levels of service they deliver.

Performance indicators are set at operational, service and corporate levels within Council. They show what is to be recorded and the performance measures show how it is to be done. They tell Council how well it is meeting its agreed levels of service. The results indicate where Council needs to invest more resources in order to improve service delivery as well as where services are being successfully provided. Customer satisfaction surveys also provide Council with similar information but more directly from the community about how well Council is perceived to be delivering its services.

Good information about the condition and performance of our assets will allow us to make decisions to ensure investment levels are optimal for meeting the levels of service as demonstrated by the performance measure results.

Council's challenge is to balance the current customer and service delivery requirements with the need to avoid unsustainable debts and other problems for future ratepayers.

The levels of service issues that Council currently faces are:

- Population growth – maintaining levels of service for all in times of expanding services.
- Ageing population – dealing with particular level of service issues as a consequence of have more aged people in the community.
- Consent compliance - compliance needs to be raised and maintained simultaneously with expanding infrastructure.
- Increasingly restrictive consent conditions – consent conditions are expected to become more stringent as environmental standards are raised.
- Sanitary assessment actions – health and hygiene remains a priority in Council's public health responsibilities.
- Climate change – how does Council plan for an uncertain size and frequency of weather events and still maintain levels of service and cost-effectiveness?
- Increasing number of stormwater ponds and swales – as part of Council's climate change and stormwater management response, more detention ponds and swales require more upkeep to maintain levels of service.

The current levels of service for the services covered by this Infrastructure Strategy are shown in table 5.6 below:

Table 5.6: key levels of service

Infrastructure service	Key level of service
Water supply	<ul style="list-style-type: none"> <li>▪ The community is provided with wholesome potable water via a safe and reliable treatment and supply system within specified areas in a way that is most cost-effective</li> <li>▪ The supply and demand are managed to ensure prudent use of water</li> </ul>
Wastewater (sewerage and the treatment and disposal of sewage)	<ul style="list-style-type: none"> <li>▪ Wastewater is managed to minimise public health risk and environmental impact in a way that is most cost-effective.</li> <li>▪ The community is provided with a safe and reliable wastewater system (within specified areas) in a way that is most cost-effective.</li> </ul>
Stormwater drainage	<ul style="list-style-type: none"> <li>▪ Stormwater is managed in a safe and reliable way to minimise flooding and environmental impact in a way that is most cost-effective.</li> </ul>
Transportation	<ul style="list-style-type: none"> <li>▪ Roads are designed, and managed to reduce the risk of harm to users</li> <li>▪ The existing network is well maintained</li> <li>▪ We are responsive to roading issues raised by the community</li> <li>▪ Alternative transport options are available and promoted</li> </ul>
Waste management	<ul style="list-style-type: none"> <li>▪ Provision of an effective waste minimisation education programme</li> <li>▪ Provision of a reliable kerbside recycling service</li> </ul>

Our strategic direction is to reach intermediate asset management practices. In order to achieve this there is a need for improvements in asset data capture and management, condition assessments and predictive modelling.

#### 5.4. Financing assets

Asset renewals are funded through depreciation reserves. This means that a proportion of Council’s revenue is set aside each year specifically to renew assets. The amount is calculated annually and is based on the value of Council’s assets and the estimated life left.

All operational expenditure and renewals for roads and footpaths are funded on average 49% by Council and 51% by New Zealand Transport Agency (NZTA). There is no NZTA funding available for footpaths, bus stops, shelters or car parks.

Council's debt level is set to rise substantially, peaking in year 7 (refer to the *debt profile* in the Finance Strategy) in order to finance the infrastructure development required to enable the forecast residential and industrial growth. The Finance Strategy sets out how debt remains within prudent limits. Debt associated with growth projects is paid down as development contributions are received (including the debt's interest component), so effectively "growth pays for growth".

The maximum debt term for capital spend associated with maintaining or improving levels of service has recently changed from 20 years to 30 years, the same timescale as this Infrastructure Strategy. This recognises the long-term planning involved and the intergenerational benefits of the assets being created by this debt and the need for all those who benefit from them to contribute to their costs. Refer to the Financial Strategy for more details on how Council manages asset finances.

### **5.5. Staged development of new assets**

Council needs to provide core infrastructure to new growth areas to enable growth to commence. However, there is a risk Council will develop and finance new infrastructure and then soon after the forecast growth fails to materialise. This can have the consequence of reduced development contribution revenue to service the debt.

There will always be a degree of redundancy within networks as they are expanded and before the maximum utilisation of that service is achieved, but enlarging networks too far and too quickly risks the costs of development being incurred many years before those costs can be recovered. Some other councils have had difficulties repaying the costs of new infrastructure when growth did not occur as expected.

To manage this risk, wherever possible, Council will try to develop new infrastructure capacity in a staged or modular fashion: adding just enough new capacity to cater for medium term, rather than long term growth. This is straightforward for reticulated systems, but less so for existing treatment plants or reservoirs. Treatment and storage facilities generally service larger areas of population and growth cells and may therefore not require frequent modular development: a single upgrade may suffice in some circumstances.



## 6. WATER SUPPLY SERVICES

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### 6.1. What we do

- Collection and treatment of water for drinking by managing bores and treatment plants.
- Storage of drinking water for distribution to customers by managing reservoirs.
- Distribution of drinking water to customers by managing pumps, pump stations and pipelines.
- Encourage water use efficiency and fair pricing through water meters, leak reduction and education.
- Plan and install new water supply networks and capacity to cater for new residential and commercial growth.

### 6.2. Key Water Supply Focus

- Catering for growth.
- Upgrade at Parallel Road treatment plant and connection to Te Awamutu town supply.
- Maintaining level of service to comply with NZ drinking water standards.
- Maintaining level of service to meet fire-fighting requirements.
- Obtaining and renewing resource consents.
- Improving renewal programme with better understanding of asset condition and performance.

Council is faced with the following three significant demand issues which are addressed by the projects below to ensure there is adequate water supply, treatment, storage and distribution in the future :

- Future growth forecast (From Waipa 2050) will result in a significant increase in demand in future across the District.
- Te Awamutu and Cambridge water supplies are close to capacity during peak demand periods.
- Currently there is a consent capacity across the district but in 2030 the consent at Te Tahi will be reduced from 21,000 to 4,300m<sup>3</sup>/day. A new source would then be required for Te Awamutu.

Council recognises the benefits of water conservation and demand management and committed funds in the 2015-25 Long Term Plan for a Demand Management Campaign. The project has publically campaigned for better water demand management from all users of Council water supplies, including non-residential (commercial and industrial). The project has included the appointment of a Water Demand Management Officer as the Council “champion” for water conservation and water demand management. The role manages and enforces the day-to-day operation of the Council’s water bylaws and policies, in particular developing, implementing and monitoring water management and conservation strategies such as the recently completed programme to install water meters.

The Education Strategy and action plan within Council’s Three Waters Strategy aims to deliver:

- Proactively prepare and disseminate consistent messaging to communities;
- Explore ways of improving efficiency of water takes and use;
- Council water values are understood and incorporated into decision making;
- Includes Kaitiakitanga (guardianship values) in decision making; and
- Iwi and hapu engagement.

Industrial specific/targeted controls on water use:

- Metered connections and volumetric pricing;
- Water diagnostic sessions;
- Water management plans; and
- Water supply agreements (where appropriate).

Following a large outbreak in August 2016 of *Campylobacter* associated with the Havelock North water supply, a government enquiry was conducted in 2016-2017 and two reports released in May and December 2017. A number of short term and long term recommendations have been made in these reports. The recommendations if implemented fully by the Government have the potential to significantly change the regulatory environment for managing water supplies. Council has been fully monitoring the process and the outcomes of the enquiry to ensure that the district’s water supplies are being managed appropriately and to prepare Council for changes that may need to occur.

To date the most significant recommendation that could require extra capital investment is the possibility of redefining the current “secure water” status of the Kihikihi water supply as “insecure”, and consequently requiring installation of a protozoa barrier. “Secure water” is water

that is protected from pathogens due to the conditions in which it is naturally stored including the length of time it is in the aquifer and also the condition of the bore it is abstracted through. The Kihikihi water supply is a deep bore and currently does not require any treatment. The risk associated with this supply has not changed and a risk approach would assess this as an extremely low risk supply. However, if legislation requires treatment to be installed then the council would be obliged to do this. The costs of installing such treatment is unlikely to be significant and could probably be managed within existing Council budgets.

Constant quality improvement was also a focus of the enquiry. Council already has ongoing review processes in place and will continue to ensure improvements are made to the processes and documentation related to its water supplies.

Waipa is in a good position with regard to the safety and treatment of its water supplies. Whilst not costed as it is not yet clear if it will be required, the potential installation of extra equipment and additional monitoring to ensure compliance with any new regulations is deemed to be substantially less than \$1million which will not impact significantly on water supply costs for consumers.

### 6.3. Overview of assets

Summary of Water Treatment & Supply Assets (July 2017)

	Asset Description	Unit	Quantity	Replacement Cost	ODRC*
Above Ground Assets	Pipe Bridges	qty	17	\$389,202	\$234,982
	Monitors	qty	30	\$1,155,442	\$857,993
	Pump Stations	qty	137	\$1,647,787	\$640,456
	Reservoirs	qty	17	\$14,762,394	\$9,672,483
	Treatment Plants	qty	7	\$24,601,161	\$13,101,947
In Ground Assets	Connection	qty	15,042	\$29,360,879	\$11,139,940
	Hydrants	qty	1,797	\$4,519,455	\$1,920,235
	Pipes	km	582.2	116,269,469	61,176,187
	Valves	qty	3,649	\$5,722,140	\$3,003,116
<b>Totals</b>				<b>\$198,427,930</b>	<b>\$101,747,338</b>

\*Optimised Depreciated Replacement Cost

**6.4. Projects 2018 to 2048**

Note: where no alternative to the most likely scenario has been provided, the only other option so far identified is to do nothing and retain the status quo. In all cases this is likely to result in failure to comply with regulatory requirements, and/or loss of water supplies, hindered growth and reduced levels of service to current and new customers, or maintained levels of service at a higher cost or longer timescale.

<b>Project WS1: Alpha Street Water Treatment Plant</b>		<b>Area:</b> Cambridge
<p><b>Most likely scenario:</b> Upgrade the Alpha St water treatment plant to meet Drinking-water Standards, levels of service and comply with resource consent conditions providing increased connectivity between water supply schemes across the district.</p> <p>This will increase the capacity of the Alpha Street treatment plant (currently 3000 m3 )up to current abstraction consent levels (6500m3) to help meet the water demand projections.</p>		
<p><b>Alternative scenario 1:</b> Address local water supply issues locally with no connectivity between schemes. Upgrades to water sources and treatment plants occur in isolation.</p>		
<p><b>Alternative scenario 2:</b> Connectivity between schemes with all upgrades concentrated at Parallel Road; able to meet growth in demand across the district from this additional supply.</p>		
<p><b>Anticipated project date:</b></p> <p>2028 to 2033</p>	<p><b>Estimated costs (including inflation):</b></p> <p>\$17.1 million</p> <p>(alternative options would be greater)</p>	<p><b>Funding Source</b></p> <p>Growth</p>

<b>Project WS2: Cox Road reservoir with supplementary supply to Ohaupo</b>		<b>Area:</b> Cambridge & Ohaupo
<p><b>Most likely scenario:</b> Upgrade the Cox Road Reservoir - Increase storage from 800m<sup>3</sup> to 2000m<sup>3</sup>. Provide supplementary supply to Ohaupo. To meet current water use rates and projected population increases as well as increasing the availability of water for major emergencies.</p>		
<b>Anticipated project date:</b>	<b>Estimated costs (including inflation):</b>	<b>Funding Source</b>
2028 to 2038	\$7.7 million	Growth

<b>Project WS3: New Cambridge reservoir</b>		<b>Area:</b> Cambridge
<p><b>Most likely scenario:</b> Construct new reservoir for Cambridge to meet current water use rates and projected population increases. It will also increase the availability of water for major emergencies.</p>		
<b>Anticipated project date:</b>	<b>Estimated costs (including inflation):</b>	<b>Funding Source</b>
2038 to 2043	\$10.8 million	Growth

<b>Project WS4: Reticulation expansion for Cambridge growth cells</b>		<b>Area:</b> Cambridge
<p><b>Most likely scenario:</b> Provide water to Cambridge growth cells: C1, C2, C3, C4 &amp; C7. Significant current and future growth will place significant stress on existing water assets. New and upgraded infrastructure is also needed to support new developments.</p>		
<b>Project date:</b>	<b>Estimated costs (including inflation):</b>	<b>Funding Source</b>
2018 to 2021	\$3.7million	Growth

<b>Project WS4: Reticulation expansion for Cambridge growth cells</b>		<b>Area:</b> Cambridge
<p><b>Most likely scenario:</b> Provide water to Cambridge growth cells: C1, C2, C3, C4 &amp; C7.</p> <p>Significant current and future growth will place significant stress on existing water assets. New and upgraded infrastructure is also needed to support new developments.</p>		
2021 to 2028	\$6.8 million	
2028 to 2038	\$9.5 million	

<b>Project WS5: Reticulation expansion for Te Awamutu growth cells</b>		<b>Area:</b> Te Awamutu
<p><b>Most likely scenario:</b> Provide extra reticulation capacity to Te Awamutu Growth Cells:</p> <ul style="list-style-type: none"> <li>• T8 Kihikihi Rd / Golf Rd/T13/T5;</li> <li>• T12, T4 and T 2;</li> <li>• T14, T15.</li> </ul> <p>To provide reticulated, treated water to growth cells and also address low water pressure and flow issues.</p>		
<b>Anticipated project dates:</b>	<b>Estimated costs (including inflation):</b>	<b>Funding Source</b>
2033 to 2038	\$2.0 million	Growth
2038 to 2043	\$2.0 million	
2043 to 2048	\$1.9 million	

Project WS6: Cambridge dedicated main reticulation		Area: Cambridge
<p><b>Most likely scenario:</b> Provide extra reticulation capacity Cambridge North to Hautapu Pipeline and growth cell C8; plus security of supply from the Watkins reservoir to the Fonterra Hautapu reservoir.</p> <p>Maintain the current levels of service (LOS) to existing users and reduce operational difficulties (minimizing pressure fluctuations) whilst facilitating growth in the north of Cambridge.</p> <p>The proposal is that the Hautapu reservoir would be used to service the new C8 and industrial zones in addition to the present factory demand.</p>		
<p><b>Alternative scenario 1:</b> Do nothing. There would be an increased risk of system failure, non-compliance with regulatory requirements and a significant increase in operational costs to fix failed assets and deal with third party issues.</p>		
<p><b>Alternative scenario 2:</b> provide water to Fonterra only. This would provide security of supply to Fonterra but still increases the risk of system failures, non-compliance with regulatory requirements and a significant increase in operational costs to fix failed assets and deal with third party issues elsewhere in Cambridge north and Hautapu.</p>		
<p><b>Alternative scenario 3:</b> provide the most likely scenario (above) plus additional water to Fonterra. However, Fonterra has indicated that the additional costs would be too high.</p>		
<b>Project date:</b>	<b>Estimated costs (including inflation):</b>	<b>Funding Source</b>
2018 to 2021	\$3 million	Growth

**Project WS7: Parallel Road Water Treatment Plant**

**Area:** Ohaupo, Mystery Creek, Hamilton Airport, Pukerimu, Te Awamutu

**Most likely scenario:** Upgrade the Parallel Rd water treatment plant to meet Drinking-water Standards, levels of service and comply with resource consent conditions providing increased connectivity between water supply schemes across the district and supplementing the supply to Te Awamutu.

Increase the treatment capacity of the Parallel Road Treatment Plant in this LTP period by 5 Mld, and then by a further 12.5Mld in 2030 and beyond.

Necessary due to the reduction in the water take for Te Awamutu. It is critical to the future of the district.

**Alternative scenario 1:** Address local water supply issues locally with no connectivity between schemes. Upgrades to water sources and treatment plants occur in isolation.

**Alternative scenario 2:** Connectivity between schemes with all upgrades concentrated at Parallel Road; able to meet growth in demand across the district from this additional supply.

**Alternative scenario 3:** For Te Awamutu re-consent the water take to enable 100% take during drought conditions and provide a local Te Awamutu supplementary supply of 6ML/day via bores or surface water source.

Project date:	Estimated costs (including inflation):	Funding Source
2018 to 2021	\$13.2 million (more for alternative options)	Growth and Levels of service



Project WS8: Parallel Road Water Treatment Plant reticulation		Area: Te Awamutu
<p><b>Most likely scenario:</b> Install a pipeline and associated pumps from the Parallel Rd WTP to the reticulation in Te Awamutu providing increased connectivity between water supply schemes across the district.</p> <p>The Te Tahi Water Treatment Plant (WTP) consented water take is set to significantly reduce in 2030 meaning significant supply and demand issues and imbalances for Te Awamutu.</p> <p>Necessary due to the reduction in the water take for Te Awamutu. It is critical to the future of the district as it adds resilience provided to the Te Awamutu water supply area.</p>		
<p><b>Alternative scenario 1:</b> Address local water supply issues locally with no connectivity between schemes. Upgrades to water sources and treatment plants occur in isolation.</p>		
<p><b>Alternative scenario 2:</b> Connectivity between schemes with all upgrades concentrated at Parallel Road; able to meet growth in demand across the district from this additional supply.</p>		
<p><b>Alternative scenario 3:</b> For Te Awamutu re-consent the water take to enable 100% take during drought conditions and provide a local Te Awamutu supplementary supply of 6ML/day via bores or surface water source.</p>		
<p><b>Project date:</b></p> <p>2018 to 2021</p>	<p><b>Estimated costs (including inflation):</b></p> <p>\$12.7 million</p> <p>(more for alternative options)</p>	<p><b>Funding Source</b></p> <p>Growth and Levels of service</p>

Project WS9: Water main renewal and pump installation		Area: Te Awamutu
<p><b>Most likely scenario:</b> Renew and increase the intake capacity of the Parallel Road treatment plant to help meet the present water supply and levels of service to the Pukerimu scheme plus future water demand projections.</p> <p>Current and future growth will place significant stress on existing water assets. This project removes need for a new water source with associated consenting, land purchase, construction costs. It will ensure a consistent, safe and adequate water supply to our communities, meet our Level of Service agreements, reduce disruption from unplanned service outages and promote community development and growth.</p>		
<p><b>Project date:</b> 2018 to 2020</p>	<p><b>Estimated costs (including inflation):</b> \$7.9 million</p>	<p><b>Funding Source</b> Levels of service</p>

Project WS10: Duplication of Te Tahi trunk main		Area: Te Awamutu and Pirongia
<p><b>Most likely scenario:</b> Te Tahi - Papesch Rd Trunk Duplication &amp; Renewal to maintain the level of service and provide additional security of supply.</p> <p>The trunk mains from the Te Tahi WTP to Papesch Road booster pump station have reached the end of their useful life and the number and value of repairs are increasing.</p>		
<p><b>Anticipated project date:</b> 2022 to 2026</p>	<p><b>Estimated costs (including inflation):</b> \$6.6 million</p>	<p><b>Funding Source</b> Renewals</p>

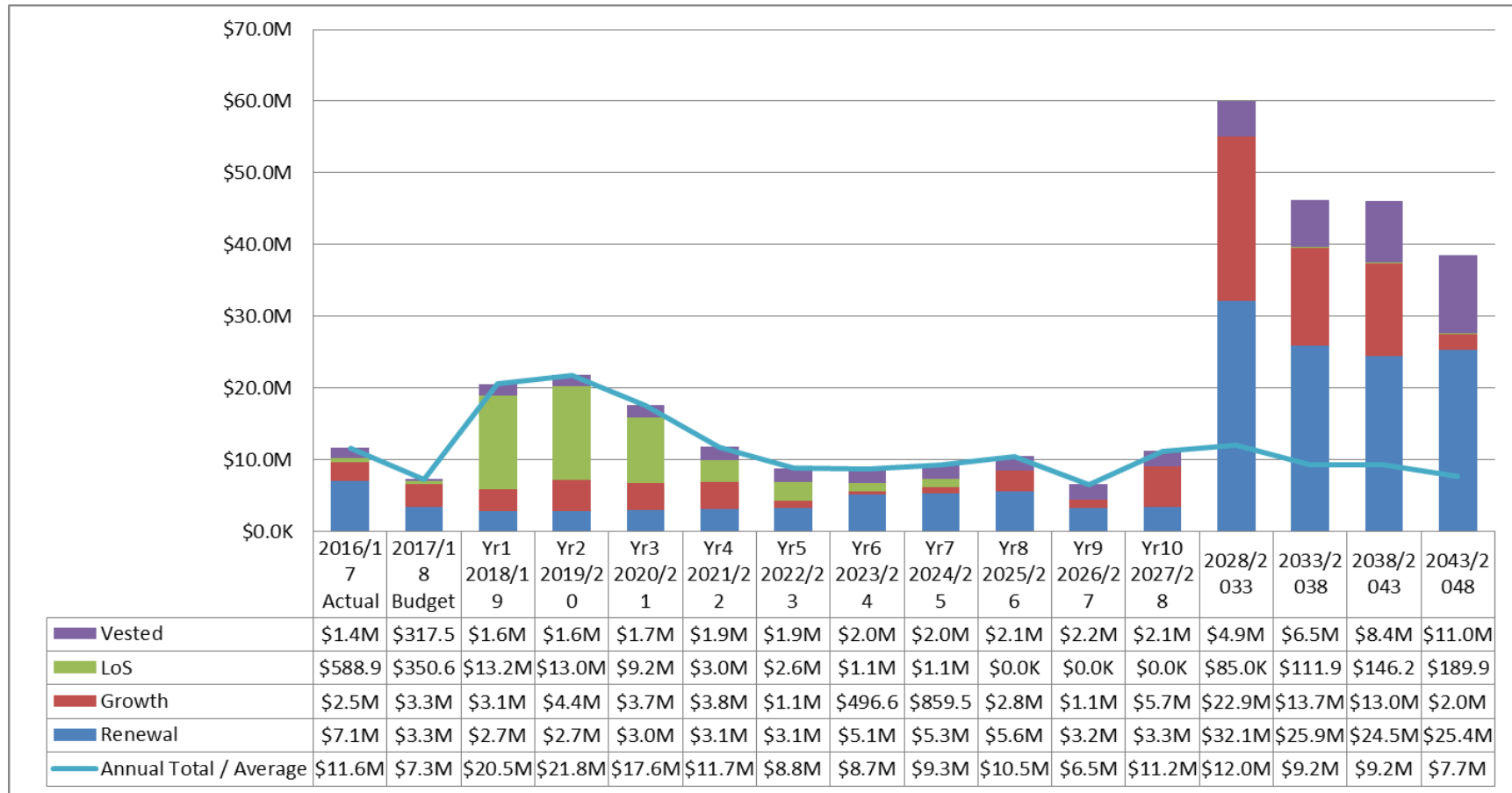
### 6.5. Water supply asset renewals

Asset renewals are programmes of work consisting of several projects to maintain assets. The sum of individual project costs results in significant total programme costs both annually and for 2018-2048.

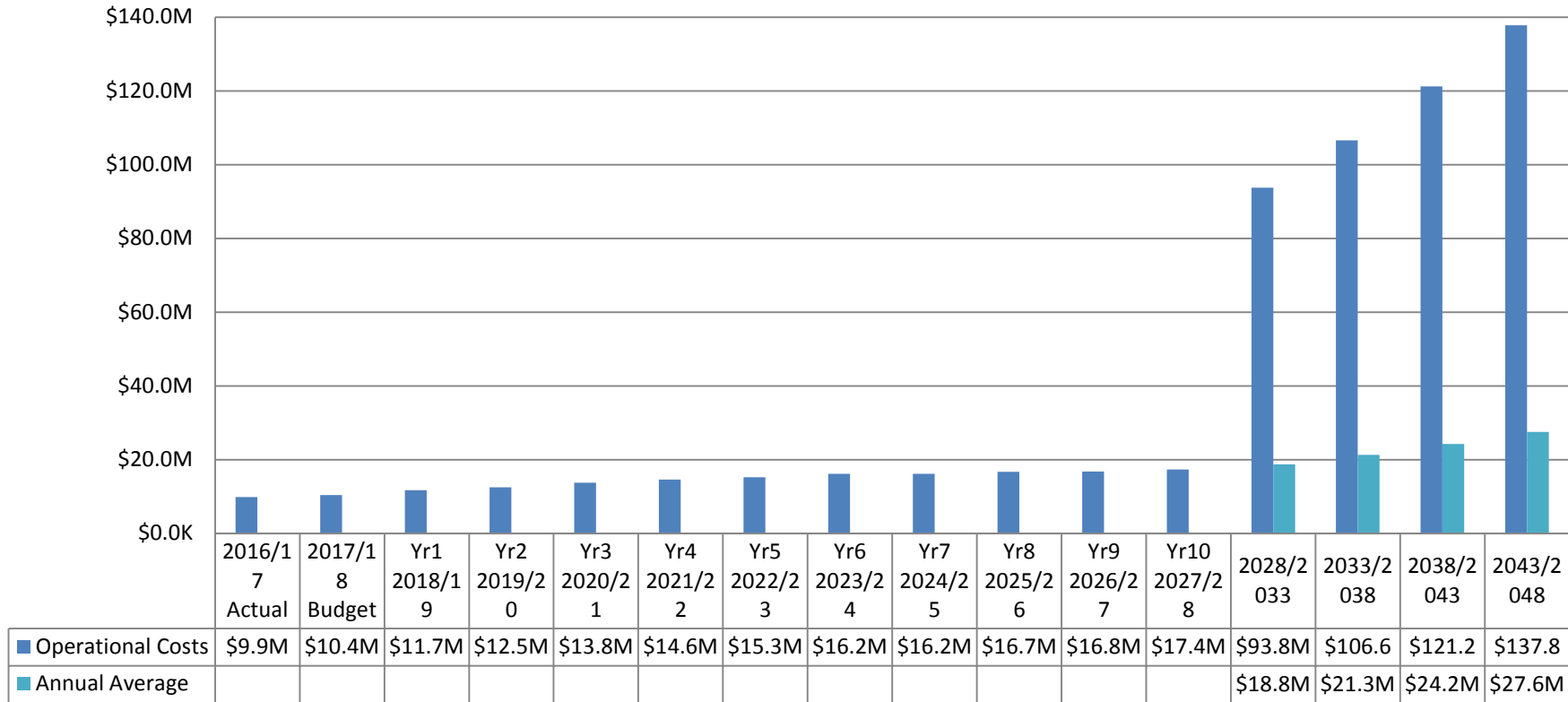
<b>Project WS11: Water supply network renewals programme</b>		<b>Area:</b> District
<p><b>Most likely scenario:</b> Renew the water treatment plants, pipes, valves, hydrants and pump stations. Replacement and prioritised renewal of water supply pipeline and associated assets i.e. mains, valves, hydrants, connections and rider mains, predicted for renewal within the Asset Management System</p>		
<p><b>Alternative scenario:</b> Do less resulting in fewer renewals. This increases the risk of asset failure. No renewal and capital development will result in loss of supply, hindered growth. Levels of service will not be met.</p>		
<p><b>Anticipated project date:</b> Annually 2018 to 2048</p>	<p><b>Estimated costs (including inflation):</b> Average \$4.9 million annually (\$146.3 million over 30 years)</p>	<p><b>Funding Source</b> Renewals</p>

6.6. Financial analysis

6.6.1. Capital works programme



Operational works programme



Operational project expenditure is related to leak detection, condition investigation, demand management campaigns and modelling. Inflation adjustments (2.60% per year) contribute to steadily increasing operation costs in the last twenty years of the Infrastructure Strategy.

6.7. Service delivery mechanisms

The Water Supply service is managed internally by Council. Operations and maintenance work is typically undertaken by Council staff. Simple renewals are carried out in-house with the larger/more complex renewals being contracted as they exceed the Council’s in-house capacity.

Development work is contracted out as necessary as the volume of work is outside WDC's internal capacity. Network Modelling is also undertaken by specialist external suppliers.

As part of its involvement in the *Future Proof* Three Waters Working Group, Waipa District Council has reviewed its service delivery model. A recent review by Council examined the option of a joint-owned Council-Controlled Organisation (CCO) with Hamilton City Council which would have managed water supply services but not owned the infrastructure assets; these would remain vested with each council. Council resolved not to proceed with the motion for a shared water services company in December 2017.

### **Shared Services**

The shared services approach has already been used for the development of a sub-region Three Waters Strategy across Hamilton City, Waikato and Waipa District Councils under the *Future Proof* umbrella. Activities undertaken under shared services include trade waste, sampling and laboratory testing, and water conservation (*Smart Water*).

Waipa District Council has a shared service agreement with neighbouring councils Hamilton City Council and Waikato District Council. Under the current agreement, sampling and sample analysis is undertaken. The *Smart Water* (demand management) campaign is also part of a shared service agreement with the same councils. Further opportunities to expand the scope of works undertaken under a shared services agreement will be considered under section 17A Local Government Act 2002.

## **6.8. Effect on levels of service**

All projects, regardless of the driver, aim to at least maintain existing levels of service as a minimum.

Projects that are directly related to population growth in particular aim to ensure that new growth cells receive at least the same levels of service as the existing communities. Those projects that seek to address the consequences of growth on surrounding areas aim to continue providing current levels of service for all into the future.

Projects will also be designed to incorporate the most recent operational and technological improvements necessary to cost-effectively achieve full and consistent compliance with the NZ Drinking Water Standards, Resource Management Act requirements and to maintain public health.

Alternatives to the most likely scenarios for each project will also maintain levels of service and achieve compliance by an equivalent amount but may entail additional costs or time to do so.

## 6.9. Monitoring Performance

How levels of service are achieved or maintained following the completion of projects will be the measure of the success of projects. Council has several performance indicators by which the efficiency and effectiveness of services are measured. Many of these, particularly in the areas of water and transportation services, are statutory measures and will be used to determine whether Council's infrastructure developments have been effective for the community.

## **7. WASTEWATER SERVICES**

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### **7.1. What we do**

- Collect sewage and transfer it to wastewater treatment plants by managing pumps, pump stations and pipelines.
- Treat sewage by managing wastewater treatment plants.
- Disposal of treated wastewater and biosolids in line with resource consents.
- Plan and install wastewater network services for areas of new residential and commercial growth.

### **7.2. Key Wastewater Focus**

- Maintaining current level of service with forecast growth.
- New Cambridge wastewater plant.
- Upgrading Te Awamutu wastewater plant.
- Wastewater connection to Waikeria Prison.
- Improving renewal programme with better understanding of asset condition and performance.



7.3. Overview of assets

Summary of Wastewater Treatment & Disposal Assets (June 2017)

	Asset Description	Unit	Quantity	Replacement Cost	ODRC*
Above Ground Assets	Pump Stations	Qty	57	\$9,674,719	\$5,851,905
	Treatment Plants	Qty	2	\$21,279,886	\$12,329,883
	Pipe Bridges	Qty	4	\$2,359,389	\$73,818
In Ground Assets	Connections	Qty	12,048	\$23,842,986	\$15,194,719
	Pipes	km	263.0	\$72,082,353	\$39,387,680
	Valves	Qty	76	\$266,942	\$158,142
	Manholes	Qty	4,638	\$25,495,826	\$14,637,054
<b>Totals</b>				<b>\$155,002,100</b>	<b>\$87,633,202</b>

Data as at 30<sup>th</sup> June 2017 Valuation  
 \*Optimised Depreciated Replacement Cost

7.4. Projects 2018 to 2048

Note: where no alternative to the most likely scenario has been provided, the only other option so far identified is to do nothing and retain the status quo. In all cases this is likely to result in failure to comply with regulatory requirements, and/or hindered growth and reduced levels of service to current and new customers, or maintained levels of service at a higher cost or longer timescale.

<b>Project WW1: Cambridge Wastewater Treatment Plant upgrade</b>		<b>Area:</b> Cambridge
<p><b>Most likely scenario:</b> Upgrade the Cambridge wastewater treatment plant using an on-site, in-tank mechanical biological nutrient removal (BNR) process to cater for growth, meet levels of service and comply with current and future resource consent conditions.</p>		
<p><b>Alternative scenario 1:</b> Upgrade on-site processes using an algae-based enhanced pond system. This has been determined not to be favourable compared to the BNR process for the Cambridge situation to achieve effluent discharge consent compliance.</p>		
<p><b>Alternative scenario 2:</b> Achieve existing consent requirements for Stage 1 effluent parameters using a clarifier, recycling and UV treatment. This will not achieve consent requirements beyond 2022.</p>		
<p><b>Alternative scenario 3:</b> Off-site mitigation of environmental effects requiring no upgrade at the treatment plant; includes a complete review of the current resource consent. In reality this is a “do nothing” alternative.</p>		
<b>Project date:</b> 2018 to 2023	<b>Estimated costs (including inflation):</b> \$27.4 million	<b>Funding Source</b> Growth, Levels of service and Renewals

<b>Project WW2: Te Awamutu Wastewater Treatment Plant expansion</b>		<b>Area:</b> Te Awamutu
<p><b>Most likely scenario:</b> This project has two elements; increase plant capacity and also provide a dedicated pipeline to the Waikeria Prison. Increasing the capacity of the Te Awamutu waste water treatment plant is primarily to cater for an increase in demand from the Waikeria Prison expansion (a Department of Corrections project), but it will also expand capacity for growth in our district too.</p> <p>Waikeria Prison has an existing treatment facility which will need to be upgraded as the prison expands. The Department of Corrections’ preference is to finance an expansion to the capacity of the Te Awamutu Wastewater Treatment Plant and providing a dedicated pipeline to receive waste water directly from the Waikeria prison; it has both growth and level of service elements. This part of the project is therefore to be fully funded by central government: the Department of Corrections will contribute the \$19million project costs.</p> <p>The connection to Waikeria will allow for increased levels of service to the Tokanui community with wastewater connections to the same</p>		

reticulation used for the prison at an estimated cost of \$3.3 million.

The expansion of Waikeria Prison will trigger some economic development in Waipa district via the building activity: 1,000 contractors will likely be required followed by permanent staff of approximately 500 plus associated support services. There are estimated costs of a further \$3.3million to cater for the anticipated population growth resulting from an increase in Waikeria Prison staff and contractors.

*Note on funding type: \$19m of this project for the installation of a dedicated pipeline between Waikeria and plant is not deemed as growth because although it is an expansion to our network, no Waipa ratepayers, now or in the future, will be able to take advantage of this part of the network. We will not be able to grow our population or economy as a result of this pipeline. Instead we view this as a service offering to a party outside our district with our rate payers not seeing a material level of service improvement themselves.*

Project date:	Estimated costs (including inflation):	Funding Source
2018 to 2021	\$25.6 million (\$19.5million to be financed by Department of Corrections)	Levels of service (but with a small proportion funded as growth)

**Project WW3: Te Awamutu Wastewater Treatment Plant renewals and upgrade**

**Area:** Te Awamutu

**Most likely scenario:** Continuously improve asset condition, predictive and preventative maintenance to ensure that WWTP remain operational and to improve asset renewal programme to replace an asset before it fails whilst maximizing the assets economic life.

This project will reduce overloading on the infrastructure and ensure effective asset management principles are used to meet wastewater levels of service.

Anticipated project date:	Estimated costs (including inflation):	Funding Source
2028 to 2043	\$12.4 million	Renewals

Project WW4: Growth cell reticulation and sewer provision for Te Awamutu growth cells		Area: Te Awamutu
<p><b>Most likely scenario:</b> Provide Wastewater reticulation to Growth Cells:</p> <ul style="list-style-type: none"> <li>T8 Kihikihi Rd / Golf Rd &amp; T13 &amp; T5 Kihikihi</li> <li>T12 &amp; T4 Rewi Street &amp; T2 - Pirongia/Frontier Road</li> <li>T14 &amp; T15 Sewer provision</li> </ul> <p>Significant current and future growth will place significant stress on existing water assets. New and upgraded infrastructure is also needed to support new developments.</p>		
Anticipated project date:	Estimated costs (including inflation):	Funding Source
2033 to 2038	\$2.1 million	Growth
2038 to 2043	\$2.3 million	
2043 to 2048	\$2.5 million	

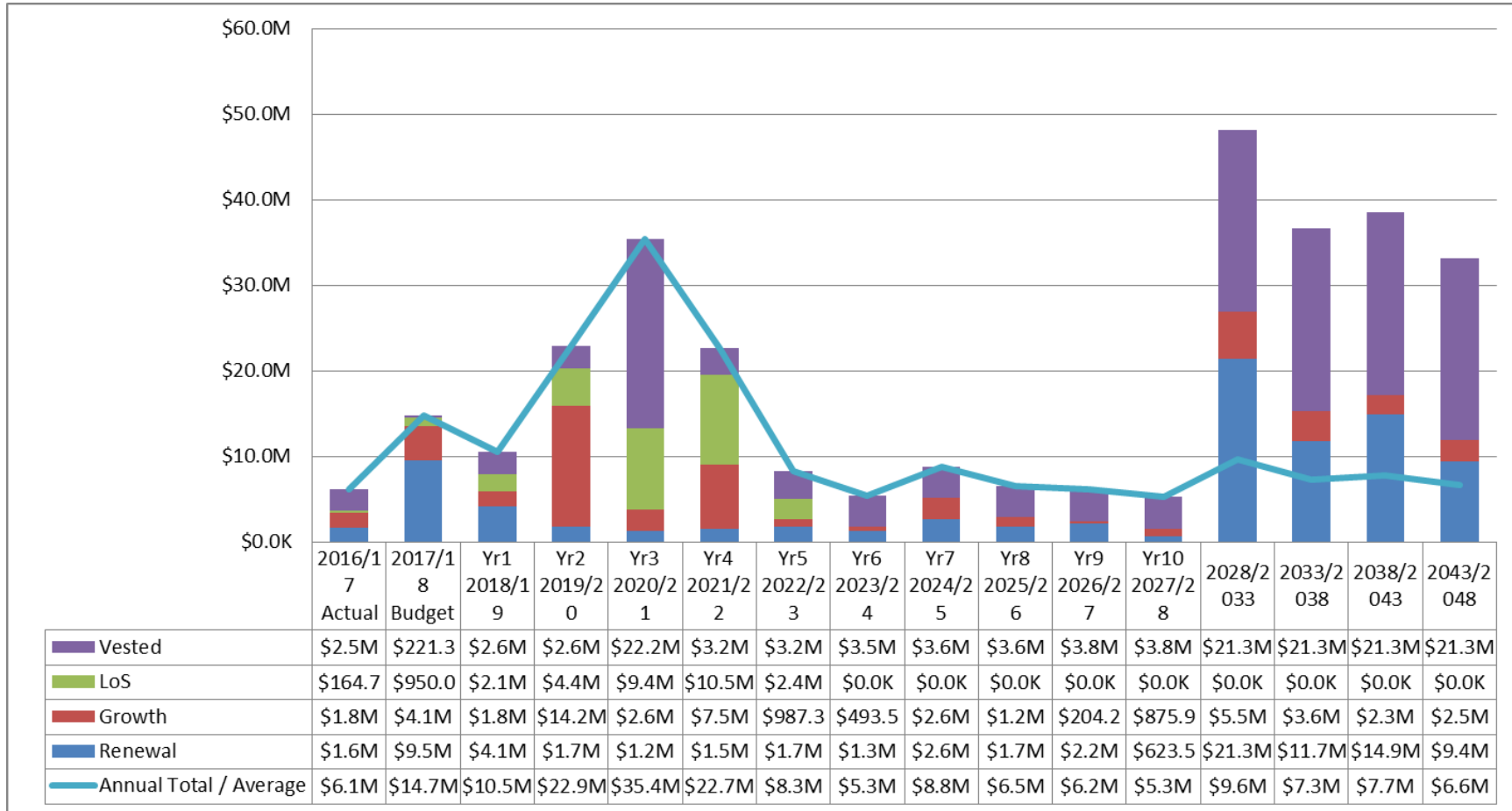
### 7.5. Wastewater asset renewals

Asset renewals are programmes of work consisting of several projects to maintain assets. The sum of individual project costs results in significant total programme costs both annually and for 2018-2048.

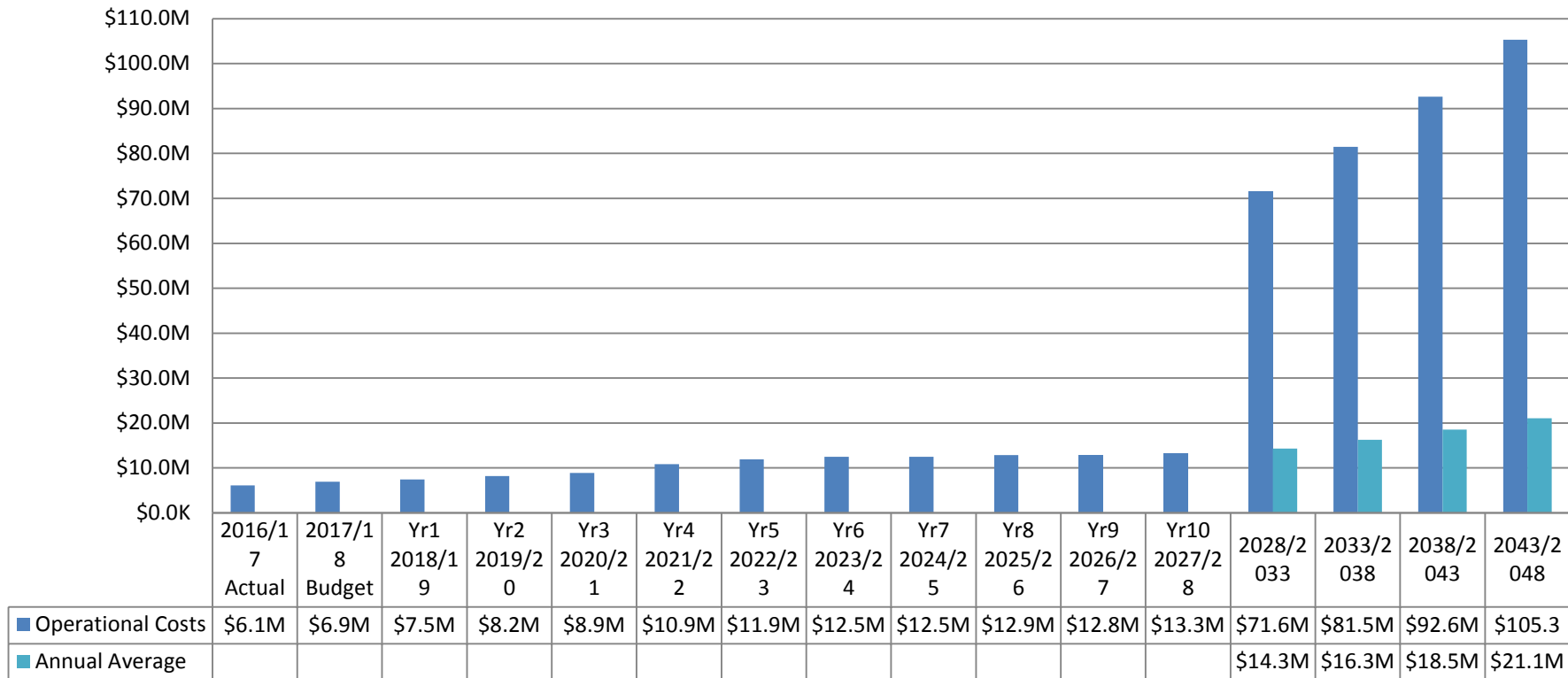
<b>Project WW5: Wastewater system renewals programme</b>		<b>Area:</b> District
<p><b>Most likely scenario:</b> Renew the wastewater pipes, pump stations and treatment plants.</p> <p>A number of wastewater assets have either reached, exceeded or are approaching their useful life and are either causing detriment to current levels of service or pose high risk to the organisation if not acted-on.</p> <p>Ensure effective asset management principles meeting wastewater levels of service district wide.</p> <p>Reduce overloading on the infrastructure.</p>		
<p><b>Alternative scenario:</b> Do less resulting in fewer renewals. This increases the risk of asset failure. Levels of service may not be met.</p>		
<p><b>Anticipated project date:</b></p> <p>Annually 2018 to 2048</p>	<p><b>Estimated costs (including inflation):</b></p> <p>Average \$2.5 million annually (or \$76 million over 30 years)</p>	<p><b>Funding Source</b></p> <p>Renewals</p>

7.6. Financial analysis

7.6.1. Capital works programme



Operational works programme



Operational project expenditure is related to infiltration studies, condition investigation, and modelling. Increased operational costs from 2021/22 are related to the Te Awamutu wastewater treatment plant upgrade. Inflation adjustments (2.60% per year) contribute to steadily increasing operational costs in the last twenty years of the Infrastructure Strategy.

### 7.7. Service delivery mechanisms

The Wastewater service is managed internally by Council.

Waipa District Council currently has a shared services agreement with Waikato District Council and Hamilton City Council. In relation to Wastewater treatment and disposal, this Shared Services agreement covers the administration and management of Trade Waste connections, and sampling and analysis of wastewater. Opportunities to extend the activities of the Shared Services agreement for wastewater will be explored in the future.

As part of its involvement in the *Future Proof* Three Waters Working Group, Waipa District Council has reviewed its service delivery model. A recent review by Council examined the option of a joint-owned Council-Controlled Organisation (CCO) with Hamilton City Council which would have managed wastewater services but not owned the infrastructure assets; these would remain vested with each council. Council voted in December 2017 against the proposal and alternative strategies and approaches are being developed for Water Services within Waipa, including reviewing shared services activities.

### 7.8. Effect on levels of service

All projects aim to at least maintain existing levels of service. In circumstances where Council has previously had greater difficulties in complying with levels of service or environmental standards, these projects are designed to help attain those levels of performance consistently for treatment and discharges.

Projects that are directly related to population growth in particular aim to ensure that new growth cells receive at least the same levels of service as the existing communities and that compliance with discharge consent conditions is not compromised by the increased volume of wastewater to be treated and discharged.

Those projects that seek to address the consequences of growth on surrounding areas aim to continue providing current levels of service for all into the future.

Alternatives to the most likely scenarios for each project will also maintain or attain levels of service and improve compliance by an equivalent amount but may entail additional costs or time to do so.



### **7.9. Monitoring performance**

How levels of service are achieved or maintained following the completion of projects will be the measure of the success of projects. Council has several performance indicators by which the efficiency and effectiveness of services are measured. Many of these, particularly in the areas of water and transportation services, are statutory measures and will be used to determine whether Council's infrastructure developments have been effective for the community.

## 8. STORMWATER SERVICES

### 8.1. What we do

- Collect surface stormwater run-off by managing soak holes, catchpits, pipes, trenches and detention ponds
- Reduce surface stormwater contaminants by installing and managing detention ponds, treatment devices, silt traps and swales
- Direct surface stormwater to receiving waterways and land by managing pipes and resource consents
- Plan the stormwater services needed in areas of the district where residential and commercial growth is occurring

### 8.2. Key Stormwater Focus

- Catering for growth, particularly the planned residential development north and west of Cambridge
- Responding to climate change with increased incidence and severity of high rainfall events
- Increasing number of ponds and swales requiring maintenance of the desired levels of service
- Increasingly tougher resource consent requirements

### 8.3. Overview of assets

Summary of Stormwater Drainage Assets (June 2017)

System Component		Asset Type	Unit	Quantity	Replacement Cost	ODRC*
Primary System	Network	Connections	qty	1168	\$1,554,047	\$1,315,146
		Pipes	Km	158.6	\$66,465,247	\$43,125,331
		Manholes	qty	2,944	\$16,509,328	\$9,310,612
	Treatment	Treatment Devices	qty	3.0	\$197,819	\$171,079
		Silt Traps	qty	38	\$806,678	\$652,926

System Component		Asset Type	Unit	Quantity	Replacement Cost	ODRC*
Land Drainage		Soak Holes	qty	168	\$839,224	\$507,112
		Soakage Trenches	qty	53	\$472,014	\$424,449
	Assets within streams and rivers	Outlets & Inlets Structures	qty	431	\$2,086,658	\$1,727,885
		Retention Ponds & Swales	qty	65	\$1,963,853	\$1,728,039
		Rural Drains	km	138	\$7,742,997	-
<b>Totals</b>					<b>\$98,637,864</b>	<b>\$58,962,578</b>

\*Optimised Depreciated Replacement Cost

### 8.4. Projects 2018 to 2048

Note: where no alternative to the most likely scenario has been provided, the only other option so far identified is to do nothing and retain the status quo. In all cases this is likely to result in failure to comply with regulatory requirements, and/or hindered growth and reduced levels of service to current and new customers, or maintained levels of service at a higher cost or longer timescale.

#### Project SW1: Stormwater management projects for Cambridge North

Area: Cambridge

**Most likely scenario:** Cambridge North Development group of projects to manage stormwater to meet future growth needs and levels of service.

Current and future growth will place significant stress on existing stormwater assets. New and upgraded infrastructure is required to support the new development. New assets required to minimise impact on the Cambridge stormwater network and maintain current Levels of Service

Project date:	Estimated costs (including inflation):	Funding Source
2018 to 2024	\$ 16.5 million	Growth and Levels of Service

Project SW2: Cambridge stormwater reticulation growth		Area: Cambridge
<p><b>Most likely scenario:</b> Provide Stormwater reticulation to Growth Cells C1, C2 &amp; C3.</p> <p>Significant current and future growth will place stress on existing Stormwater assets. New and upgraded infrastructure is needed to support the new development. This project will facilitate growth in Cambridge whilst ensuring levels of service are maintained for present and future customers.</p>		
Project date:	Estimated costs (including inflation):	Funding Source
2018 to 2021	\$ 19.1 million	Growth
2021 to 2027	\$48.9 million	

Project SW3: Te Awamutu stormwater reticulation growth		Area: Te Awamutu
<p><b>Most likely scenario:</b> Provide Stormwater reticulation to Growth Cells:</p> <ul style="list-style-type: none"> <li>▪ T8 Kihikihi Rd / Golf Rd/T13/T5;</li> <li>▪ T12, T4 and T 2;</li> <li>▪ T14, T15.</li> </ul> <p>Significant current and future growth will place stress on existing Stormwater assets. New and upgraded infrastructure is needed to support the new development. This project will facilitate growth in Te Awamutu whilst ensuring levels of service are maintained for present and future customers.</p>		
Anticipated project dates:	Estimated costs (including inflation):	Funding Source
2033 to 2038	\$2.8 million	Growth
2038 to 2043	\$3.0 million	
2043 to 2048	\$2.3 million	

<b>Project SW4: Hautapu industrial stormwater provision</b>		<b>Area:</b> Cambridge
<p><b>Most likely scenario:</b> Provide the extra reticulation capacity and to support industrial growth in Hautapu.</p> <p>Planned growth in the Hautapu industrial area will place significant stress on existing stormwater infrastructure. New and upgraded stormwater infrastructure is therefore needed to support the new development. Additionally, the upgrade of Hautapu Road will include managing stormwater.</p>		
<b>Project date:</b>	<b>Estimated costs (including inflation):</b>	<b>Funding Source</b>
2018 to 2021	\$2.7 million	Growth
2021 to 2023	\$3.9 million	

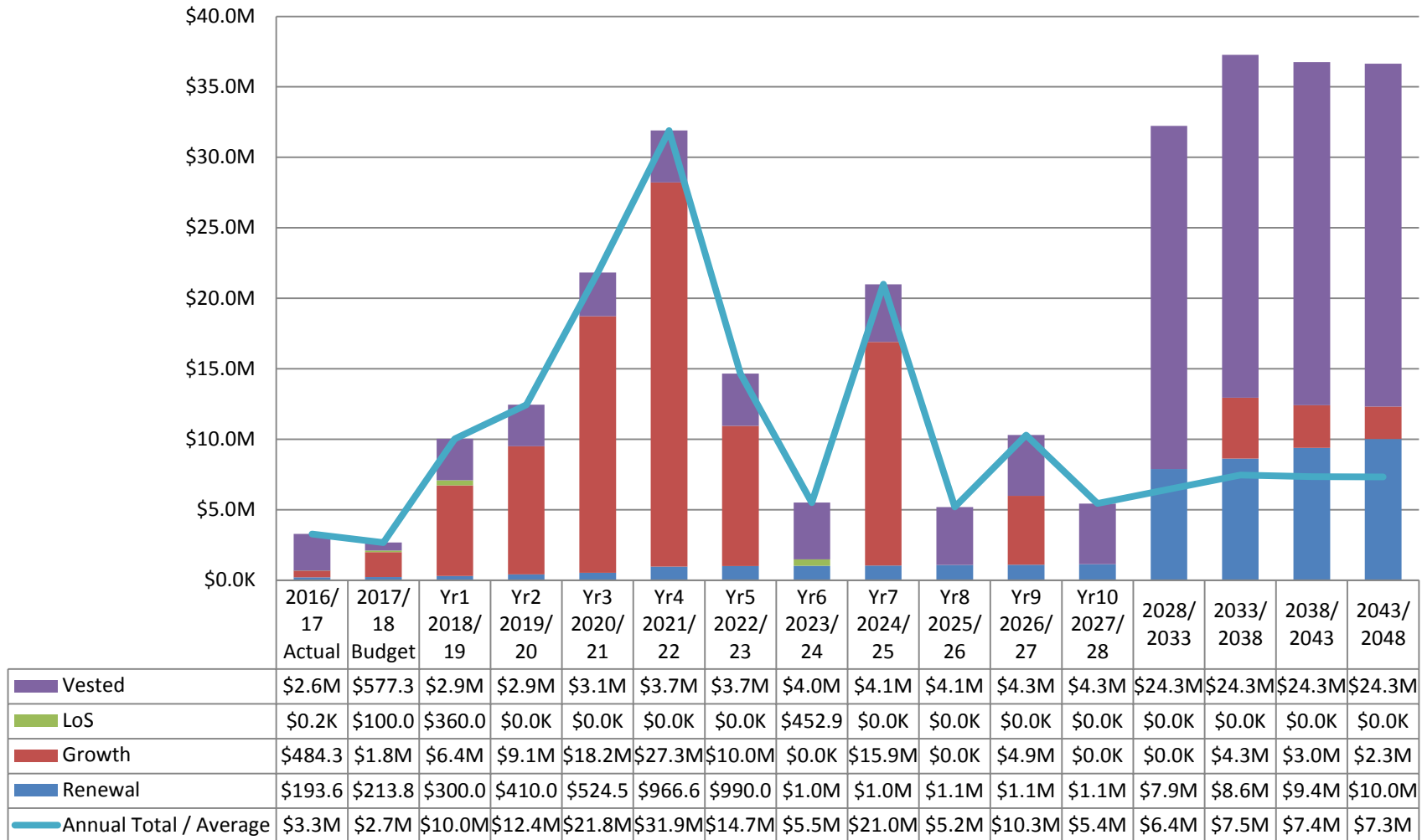
### 8.5. Stormwater asset renewals

Asset renewals are programmes of work consisting of several projects to maintain assets. The sum of individual project costs results in significant total programme costs both annually and for 2018-2048.

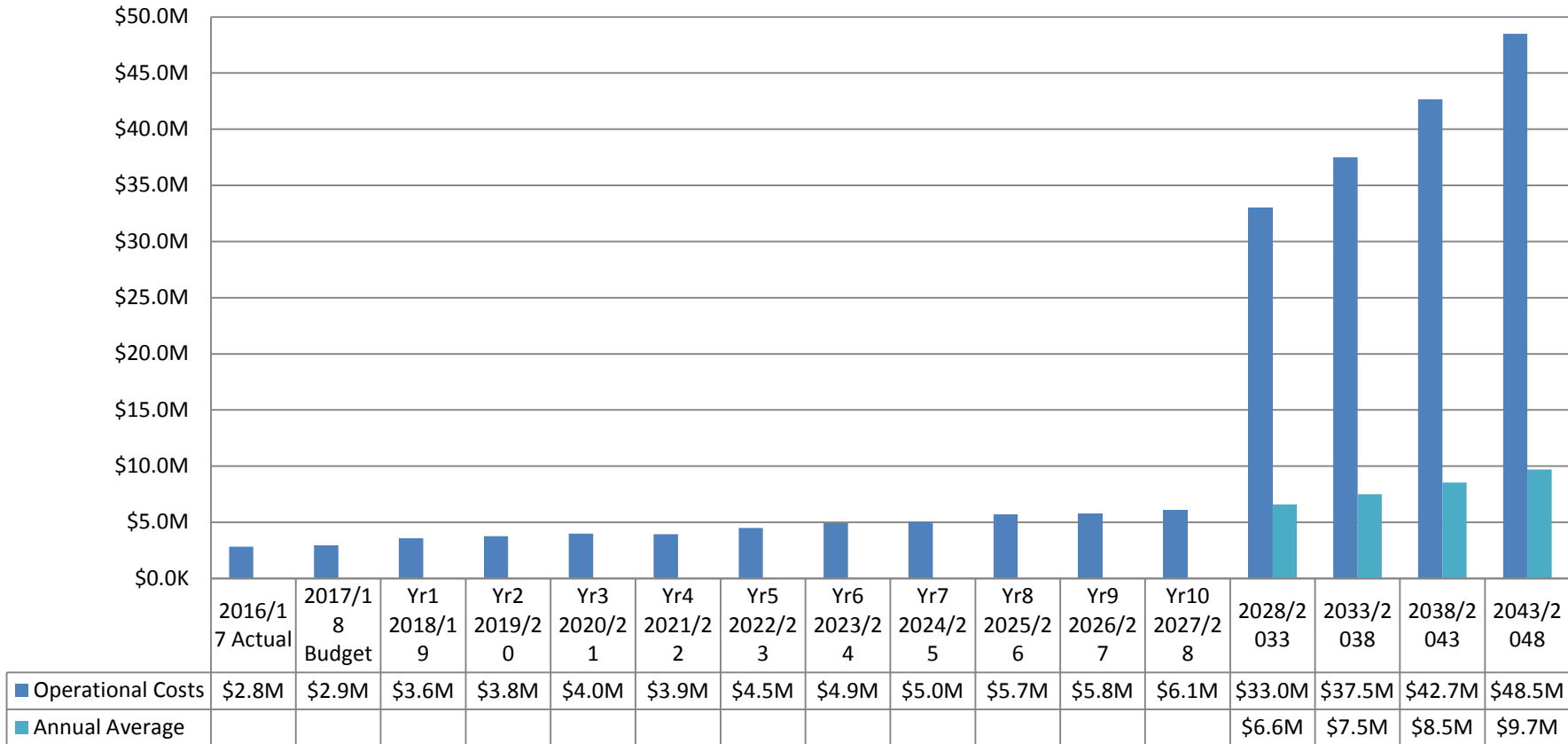
<b>Project SW5: Stormwater infrastructure renewals programme</b>		<b>Area:</b> District
<p><b>Most likely scenario:</b> Renew the stormwater network assets.</p> <p>A number of stormwater assets have either reached, exceeded or are approaching their useful life and are either causing detriment to current levels of service or pose high risk to the organisation if not acted-on.</p>		
<p><b>Alternative scenario:</b> Do less resulting in fewer renewals. This increases the risk of asset failure. No capital development will result in hindered growth. Levels of service will not be met.</p>		
<b>Anticipated project date:</b>	<b>Estimated costs (including inflation):</b>	<b>Funding Source</b>
Annually 2018 to 2048	Average \$1.48 million annually (\$44.5 million over 30 years)	Renewals

8.6. Financial analysis

Capital works programme



Operational works programme



Operational expenditure for stormwater increases gradually due to inflation and the effects of growth. Operational project expenditure is related to condition investigation and modelling. Inflation adjustments (2.60% per year) contribute to steadily increasing operational costs in the last twenty years of the Infrastructure Strategy.

### 8.7. Service delivery mechanisms

The Stormwater service is managed internally by Council. Operations and maintenance work is typically undertaken by Council staff. Simple renewals are carried out in-house with the larger/more complex renewals being contracted as they exceed the Council's in-house capacity.

The shared services approach has already been used for the development of a sub-region Three Waters Strategy across Hamilton City and Waikato and Waipa District Council's under the *Future Proof* umbrella.

Currently the tasks associated with stormwater management within the Waipa District undertaken by a shared services agreement are limited to sampling and laboratory analyses, carried out by the shared services samplers.

As part of its involvement in the *Future Proof* Three Waters Working Group, Waipa District Council has reviewed its service delivery model. A recent review by Council examined the option of a joint-owned Council-Controlled Organisation (CCO) with Hamilton City Council which would have managed stormwater services but not owned the infrastructure assets; these would remain vested with each council. Council voted in December 2017 against the proposal and alternative strategies and approaches are being developed for Water Services within Waipa, including reviewing shared services activities.

### 8.8. Effect on levels of service

All projects are designed specifically to minimise the risks from flooding for new and existing communities including business areas. They are also designed to reduce the environmental impact of stormwater by flooding and its discharge into receiving environments. Any alternatives to the most likely scenarios for each project will either achieve the same levels of service but entail additional costs or time, or will have a less beneficial effect on communities and the environment.

### 8.9. Monitoring performance

How levels of service are achieved or maintained following the completion of projects will be the measure of the success of projects. Council has several performance indicators by which the efficiency and effectiveness of services are measured. Many of these, particularly in the areas of water and transportation services, are statutory measures and will be used to determine whether Council's infrastructure developments have been effective for the community.



## 9. TRANSPORTATION SERVICES

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### 9.1. What we do

- Manage access to a quality local road network for vehicles and freight (roads other than the State Highways)
- Manage footpaths, cycleways and passenger transport bus stops and contribute subsidy to passenger transport services run by Regional Council.
- Repair and maintain road, footpath and cycleway surfaces.
- Plan to service the local transportation needs of a growing residential, visitor and commercial population.

### 9.2. Key Transportation Services Focus

- Waikato Road Asset Technical Accord (RATA), to optimize maintenance spend on roads in collaboration with Councils in the Waikato region
- Waikato Regional Transport Model predicts less individual travel in the future even as population grows.
- Managing consequences of population growth such as provision and costs of parking; intersection configurations; walking and cycling facilities; road safety.
- Revocation of former State Highways into the local road network.
- Demand for infrastructure development in the Upper North Island resulting in high demand/reduced availability of contractors to deliver projects; high contractor demand could lead to higher cost inflation for infrastructure construction projects.

One effect of high population growth and economic development in the upper North Island is increasing volumes of traffic and freight on the Waipa road network, whether generated locally or passing through. This has an environmental impact where large trucks pass through urban areas; e.g. SH3 through Kihikihi, Te Awamutu, Ohaupo, SH39 through Pirongia and Ngahinapouri, but also a safety effect as it becomes harder for pedestrians to cross busy roads or for local traffic to enter intersections at peak times. There is also an increased road maintenance cost where heavy traffic diverts from highways to use local roads; e.g. Tuhikaramea Road 400 trucks/day, Cambridge Road 500 trucks/day. It is important to manage these effects to ensure that we retain a safe and high quality urban environment for our residents.

By 2041, 70% or approximately 50,000 residents will live in Waipa’s urban areas and 33% of the population may be over 65. It is expected that older residents will drive less and will see more demand for other modes of transport. We will see greater demand for good footpaths, street lighting, cycleways, and road crossings, and the removal of barriers presented by steps and steep path grades. We are already seeing a demand for better local public transport services. If we do not respond to this challenge then Waipa residents will remain dependent on private vehicle travel and an increasing portion of the community will have limited transport choices.

We are also expecting an increased demand for parking in our town centres.

**9.3. Overview of transportation assets**

**Summary of Road Corridor Assets**

Asset Type	Component	Unit	Quantity	Replacement Cost	ODRC*
Road	Formation /Sub-Grade	m <sup>2</sup>	10,016,240	\$210,323,993	\$210,323,993
		km	1,141		
	Sub-Base (Sealed)	m <sup>2</sup>	9,376,425	\$156,105,627	\$156,105,627
		km	1,141		
	Sub-Base (Unsealed)	m <sup>2</sup>	374,150	\$4,992,888	\$4,992,888
		km	58		
	Basecourse	m <sup>2</sup>	8,836,538	\$270,507,980	\$166,916,763
		km	1,114		
	Surfacing	m <sup>2</sup>	8,860,151	\$51,690,577	\$23,900,102
		km	1,289		
Road Islands	qty	98	\$1,932,903	\$1,767,317	

Asset Type	Component	Unit	Quantity	Replacement Cost	ODRC*
Drainage	Surface Water Channel	km	1,946	\$21,552,584	\$11,942,915
	Catchpit	qty	2,666	\$6,222,371	\$4,342,565
Structures	Bridge	qty	227	\$87,154,659	\$29,846,474
	Culverts	m	41,253	\$17,260,939	\$8,447,660
		qty	2943		
	Retaining Wall	m	2,767	\$1,573,693	\$1,227,936
		qty	73		
Bus Shelters	qty	14	\$94,995	\$50,656	
Traffic Facilities	Signs	qty	17	\$335,922	\$197,565
	Railings	m	11,473	\$3,052,853	\$1,653,384
Street Lights	Lamps	qty	3,111	\$1,637,504	\$678,540
	Mounts	qty	2,875	\$3,865,692	\$2,392,485
Pedestrian	Footpath	m <sup>2</sup>	379,926	\$35,266,966	\$23,008,427
		km	190		
<b>Totals</b>				<b>\$737,060,511</b>	<b>\$541,376,205</b>

\*Optimised Depreciated Replacement Cost

### 9.4. Projects 2018 to 2048

Note: where no alternative to the most likely scenario has been provided, the only other option so far identified is to do nothing and retain the status quo. In all of those projects this is likely to result in failure to comply with regulatory requirements, and/or hindered growth and reduced levels of service to current and new customers, or maintained levels of service at a higher cost or longer timescale.

<b>Project T1: meeting growth needs in Cambridge north and west</b>		<b>Area:</b> Cambridge
<p><b>Most likely scenario:</b> New roads are planned and developed to meet future housing needs, levels of service and safety targets. Structure plans for these areas identify urbanisation of existing roads and development of primary collector routes.</p>		
<b>Project dates:</b>	<b>Estimated costs (including inflation):</b>	<b>Funding Source</b>
2018 to 2021	\$5.5 million	Growth and Levels of service
2021 to 2028	\$23.1 million	

<b>Project T2: Urban growth projects – Cambridge (long term)</b>		<b>Area:</b> Cambridge
<p><b>Most likely scenario:</b> Cambridge growth cell related projects to plan and install roads and footpaths to meet long term future housing needs, levels of service and road safety targets.</p> <p>There will be projects required to meet expected growth beyond the 2018-2028 10-Year Plan. Timing will be dependent on development impetus around Cambridge.</p>		
<b>Anticipated Project dates:</b>	<b>Estimated costs (including inflation):</b>	<b>Funding Source</b>
2028 to 2038	\$28.6 million (across all decisions)	Growth

**Project T3: Enabling industrial growth in Cambridge**

**Area:** Cambridge

**Most likely scenario:** Construct roads and intersection improvements in the industrial growth cells on Hautapu and Victoria Roads to safely accommodate increased traffic.

The structure plan prepared for the area’s development includes existing road upgrades to make the area suitable for increased volumes and turning traffic.

The projects may be fully developed in 10yr period.

Project dates:	Estimated costs (including inflation):	Funding Source
2018 to 2021	\$2.2 million	Growth
2021 to 2023	\$4 million	

**Project T4: Urban growth projects – Te Awamutu and villages (medium-long term)**

**Area:** District

**Most likely scenario:** New roads are planned and developed to meet growing housing needs, levels of service and safety targets in towns outside Cambridge.

Provides for housing growth around other towns such as Te Awamutu, Kihikihi, Pirongia, Ngahinapouri. The timing of projects will be subject to development progress.

Project dates:	Estimated costs (including inflation):	Funding Source
2018 to 2021	\$2.1 million	Growth and Levels of service
2021 to 2028	\$11.6 million	

**Project T5: Urban growth projects - Te Awamutu (long term)**

**Area:** Te Awamutu

**Most likely scenario:** New roads are planned and developed to meet growing housing needs, levels of service and safety targets in Te Awamutu. Precise projects, costs and timescales will be responsive to events and cannot be determined at this time. Some level of project planning and implementation is likely to be continuous across a range of projects.

Provides for housing growth around Te Awamutu and Kihikihi. The timing of projects will be subject to development progress.

Anticipated project dates:	Estimated costs (including inflation):	Funding Source
2028 to 2048	\$ 18.6 million	Growth

**Project T6: Urban growth projects – villages (long term)**

**Area:** District

**Most likely scenario:** New roads are planned and developed to meet growing housing needs, levels of service and safety targets in towns outside Cambridge. Precise projects, costs and timescales will be responsive to events and cannot be determined at this time. Some level of project planning and implementation is likely to be continuous across a range of projects.

Provides for housing growth around villages such as Ohaupo, Pirongia and Ngahinapouri. The timing of projects will be subject to development progress.

Anticipated project dates:	Estimated costs (including inflation):	Funding Source
2023 to 2043	\$ 9.8 million	Growth

<b>Project T7: Tourism provision</b>		<b>Area:</b> District
<p><b>Most likely scenario:</b> Improvements to airport and urban transport to cater for increased visitor numbers such as improving passenger transport connections to Hamilton airport and urban centres, visitor parking and amenities.</p> <p>Precise projects, costs and timescales will be responsive to events and cannot be determined at this time. Some level of project planning and implementation is likely to be continuous across a range of projects.</p>		
<b>Anticipated project dates:</b>	<b>Estimated costs (including inflation):</b>	<b>Funding Source</b>
2028 to 2048	\$ 7.8 million	Growth

<b>Project T8: Te Awamutu western arterial route</b>		<b>Area:</b> Te Awamutu
<p><b>Most likely scenario:</b> Te Awamutu Western Arterial Heavy Traffic Route is constructed to reduce truck traffic in CBD streets.</p> <p>The arterial route is already designated and Council may be required to purchase further designated properties in the LTP period and beyond.</p>		
<p><b>Alternative scenario 1:</b> Do nothing. This option risks increasing conflict with local traffic, and lower amenity value or environmental quality of the CBD.</p>		
<p><b>Alternative scenario 2:</b> Intersection changes which direct traffic around the CBD may provide medium term relief.</p>		
<b>Anticipated project dates:</b>	<b>Estimated costs (including inflation):</b>	<b>Funding Source</b>
2028 to 2033(possible intersection changes)	\$ 58 million (total)	Levels of service
2038 to 2048		

<b>Project T9: Town centre vehicle parking</b>		<b>Area:</b> Cambridge and Te Awamutu
<p><b>Most likely scenario:</b> Improved parking provision and management on roadsides and in Council car parks.                  Maintaining vibrant and accessible town centres requires continued improvement in parking provision and operation.</p>		
<p><b>Alternative scenario:</b> No additional provision.                  This will lead to private provision of parking within commercial buildings; and parking charges introduced to manage demand and fund parking provision.</p>		
<b>Anticipated project dates:</b> 2028 to 2033	<b>Estimated costs (including inflation):</b> \$ 4.1 million	<b>Funding Source</b> Levels of service

<b>Project T10: Road safety improvements</b>		<b>Area:</b> District
<p><b>Most likely scenario:</b> Road corridor and intersection improvements that will reduce the risk of crashes.                  Individually these are low cost projects that benefit all road users. Works are subsidised by NZTA. The projects all respond to traffic growth pressures, crash risk and needs of vulnerable road users particularly pedestrians and cyclists.                  Precise projects, costs and timescales will be responsive to events and cannot be determined at this time. However our Levels of Service for transportation include year on year reductions in the number of deaths and serious accidents.</p>		
<p><b>Alternative scenario:</b> Do nothing. The risk of crashes, fatalities and serious injuries is not reduced.</p>		
<b>Anticipated project dates:</b> 2028 to 2048	<b>Estimated costs (including inflation):</b> \$ 46.6 million (average \$2.33 million per year)	<b>Funding Source</b> Renewals



**Project T11: Repurposing revoked state highways**

**Area:** Cambridge

**Most likely scenario:** A group of projects to bring the revoked State Highways [those replaced by the Waikato Expressway] into the local road network; to bring them to Council’s level of service standards; to improve pedestrian and cycle facilities at intersections; and to align these roads with the Cambridge Town Concept Plan (each LTP from 2018 to 2027).

Sections of current State Highways will become part of the Council-managed local road network. Some intersections, principally those at Hanlin Road, Albert/Queen Streets, Albert/Duke Streets, Shakespeare/ Tirau intersections, will in time require transformation to create urban local road functionality and amenity.

Anticipated project dates:	Estimated costs (including inflation):	Funding Source
2018 to 2021	\$4.4 million	Levels of service
2021 to 2028	\$2.1 million	
2028 to 2033	\$3.4 million	

**Project T12: Cycling and walking projects**

**Area:** District

**Most likely scenario:** Combining urban and recreational Cycling/Walking Projects from Council’s Integrated Transport Strategy in each subsequent LTP.

There have been community requests for good urban and recreational cycling opportunities. Projects are included in Council’s adopted Integrated Transport Strategy. Council has already committed to developing the Te Awa Cycleway project.

Precise projects, costs and timescales will be responsive to events and cannot be determined at this time. However our Levels of Service include targets to increase the percentage of roads that have footpaths on at least one side and build between two and four kilometers of cycle way annually (between 2018 and 2018).

**Alternative scenario:** Do nothing resulting in more traffic conflicts with cyclists and pedestrians on existing roads and river crossings; there would be no consequential reduction in carbon and nitrous oxide emissions.

Anticipated project dates:	Estimated costs (including inflation):	Funding Source
2018 to 2021	\$1.5 million	Growth and Levels of service
2021 to 2028	\$6.3 million	
2028 to 2048	\$8.3 million	

**Project T13: A third bridge crossing the Waikato River**

**Area:** Cambridge

**Most likely scenario:** Council investigates timing and location options, secures land on either side of the Waikato River and constructs a third bridge.

Population and traffic volume growth will result in increasing congestion on Cambridge’s existing bridges. The timing of this project is very dependent on actual population growth, particularly on the south bank of the Waikato River in Cambridge.

**Alternative scenario:** Do nothing, but this will result in increased congestion in peak periods and vulnerability to major disruption should the historic Victoria Bridge need to be closed for repair.

Anticipated project dates:	Estimated costs (including inflation):	Funding Source
2018 to 2021	\$208,000	Levels of service
2021 to 2028	\$6.2 million	
2028 to 2048	\$57.4 million	

### 9.5. Transportation asset renewals

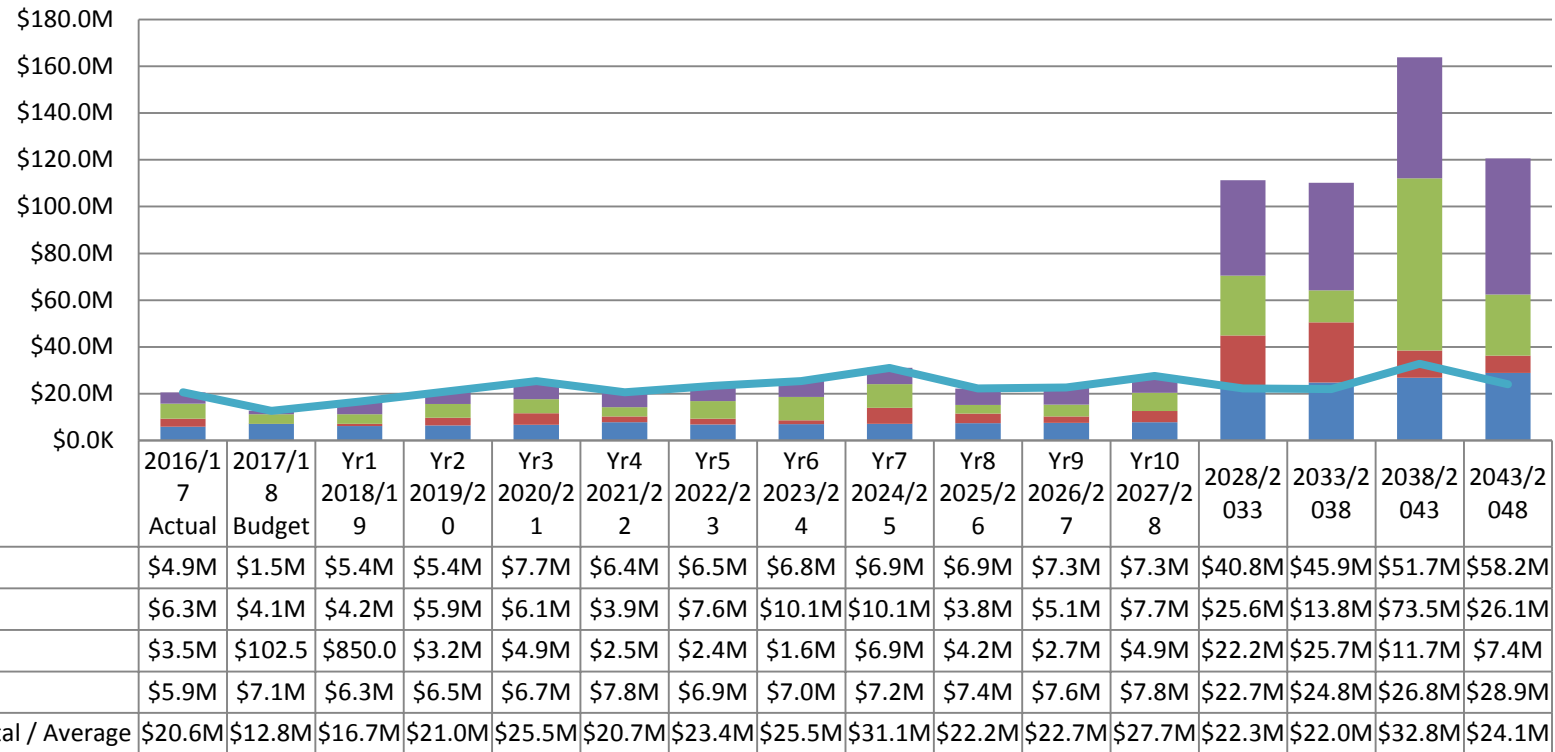
Asset renewals are programmes of work consisting of several projects to maintain assets. The sum of individual project costs results in significant total programme costs both annually and for 2018-2048.

<b>Project T14: Transportation asset renewals programme</b>		<b>Area:</b> District
<p><b>Most likely scenario:</b> Transportation network assets are renewed in line with Council’s Activity Management Plans. This includes all transportation assets with timing of individual projects being dependent on the asset condition.</p>		
<p><b>Alternative scenario 1:</b> Do less resulting in fewer renewals. This will result in deteriorating assets and increases the risk of asset failure, reduced road safety and a general lowering of standards and levels of service.</p>		
<p><b>Alternative scenario 2:</b> Extend asset lives, and accept reduce levels of service.</p>		
<p><b>Anticipated project dates:</b> 2018 to 2048</p>	<p><b>Estimated costs (including inflation):</b> Average \$ 5.8 million per year (\$174.4 million over 30 years)</p>	<p><b>Funding Source</b> Renewals</p>

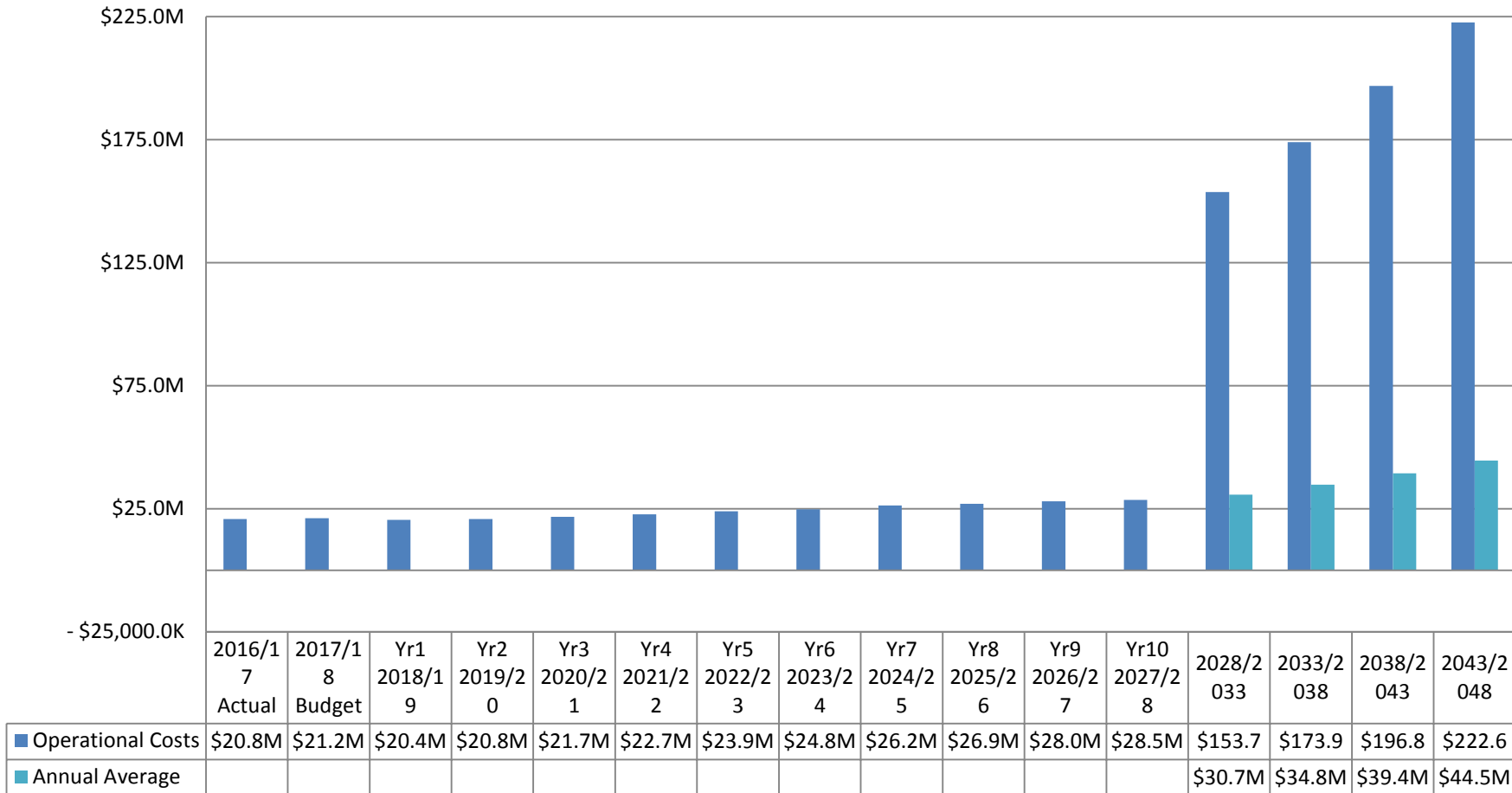
<b>Project T15: Extending road seals programme</b>		<b>Area:</b> District
<p><b>Most likely scenario:</b> Seal remaining unsealed rural roads. Council’s adopted policy is to progress seal extensions.</p>		
<p><b>Alternative scenario 1:</b> Do less resulting in roads remaining unsealed for longer. This increases the risk of asset failure. Levels of service may not be met.</p>		
<p><b>Alternative scenario 2:</b> Seal highest priority roads and leave very low use roads until such time as use increases.</p>		
<p><b>Anticipated project dates:</b> 2028 to 2038</p>	<p><b>Estimated costs (including inflation):</b> \$ 7.9 million (\$0.790m per year)</p>	<p><b>Funding Source</b> Levels of service</p>

9.6. Financial analysis

Capital works programme



Operational works programme



The increase in operational budgets reflect the growth in the network due to vested assets , increased population and traffic volumes due to growth. Inflation adjustments (2.50% per year) contribute to the steadily increasing operational costs in the last twenty years of the Infrastructure Strategy.

### **9.7. Service delivery mechanisms**

There are a number of shared services initiatives between Waikato roading authorities, including in the area of transportation asset management. Waipa District Council leads the initiative for bridge and structural asset inspections with the costs shared equally between the councils. The shared services agreement was last reviewed in early 2014 with agreement to continue as there are significant benefits to the participants in sharing of knowledge and experience, as well as reduced costs.

By section 17A Local Government Act 2002 this arrangement will require a further review in 2020.

### **9.8. Effect on levels of service**

All the above projects aim to at least maintain existing levels of service as far as possible within the RATA process of optimising the levels of service in use across all the participating councils. As such, some assets may be renewed to a slightly lower level of service.

Projects that are related to population growth in particular aim to ensure that new growth cells receive at least the same levels of service as the existing communities. Those projects that seek to tackle the consequences of growth will aim to continue the agreed levels of service for all into the future.

Alternatives to the most likely scenarios for each project, where applicable, will be designed to also maintain levels of service but to do so may entail additional costs or time.

### **9.9. Monitoring performance**

How levels of service are achieved or maintained following the completion of projects will be the measure of the success of projects. Council has several performance measures by which the efficiency and effectiveness of services are measured. Many of these, particularly in the areas of water and transportation services, are statutory measures and will be used to determine whether Council's infrastructure developments have been effective for the community.



## 10. WASTE MANAGEMENT SERVICES

### 10.1. What we do:

- Manage a contract that delivers a kerbside recycling service to 19,000 households (weekly for urban and bi-weekly for rural properties). Service includes glass, tin & aluminium cans, plastics (1-7), cardboard and paper. Each household recycles approximately 195 kgs per year.
- Maintain contact with the community, monitoring needs and desires for increase resource recovery options.

### 10.2. Overview of assets

Since divesting from solid waste management Council does not own any transfer stations, landfills or run any services. Council contracts a service to operate a recycling collection from all properties in the district, but does not own any assets for this service.

### 10.3. Projects 2018 to 2048

**Project WM1: Expanding waste recovery facilities in Cambridge; and**

**Project WM2: Expanding waste recovery facilities in Te Awamutu**

**Area:** Cambridge and Te Awamutu

**Most likely scenario:** Expansion of Waste Recovery Centres to divert more waste streams and volume from landfill.

Cambridge is currently served by a basic refuse transfer station with limited waste recovery.

Te Awamutu/ Kihikihi/ Pirongia/ Ohaupo is currently served by two basic refuse transfer stations with limited waste recovery.

Neither transfer station is a fit-for-purpose service in the long term.

**Alternative scenario:** Do nothing - not an option as there is a legislative requirement and increasing expectation from the community for options.

Private recovery centres may operate if sufficient volume and revenue is available and public/ private delivery is possible.

<p><b>Anticipated project dates:</b></p> <p>2028 to 2033</p>	<p><b>Estimated costs (including inflation):</b></p> <p>\$ 8.2 million total</p> <p>(\$ 4.1 million per project)</p>	<p><b>Funding Source</b></p> <p>Levels of service</p>
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**10.4. Service delivery mechanisms**

The kerbside recycling service is managed via a contract. Future contract models are currently being assessed for suitability and outcomes. Waikato District Council, Hamilton City Council and Waipa District Council work together informally, and on one co-funded project per year to increase waste minimisation and reduce waste to landfill.

**10.5. Effect on levels of service**

These projects aim to at least maintain existing levels of service. They seek to tackle the consequences of growth aim to continue current levels of service for all into the future.

The alternatives to the most likely scenarios for both of these projects will probably also maintain or raise levels of service by an equivalent amount but may entail additional costs or time to do so.

**10.6. Monitoring performance**

How levels of service are achieved or maintained following the completion of projects will be the measure of the success of projects. Currently Council has performance measures for managing the efficiency and effectiveness of its waste and recycling contract and for measuring the quantity of materials being recycled.

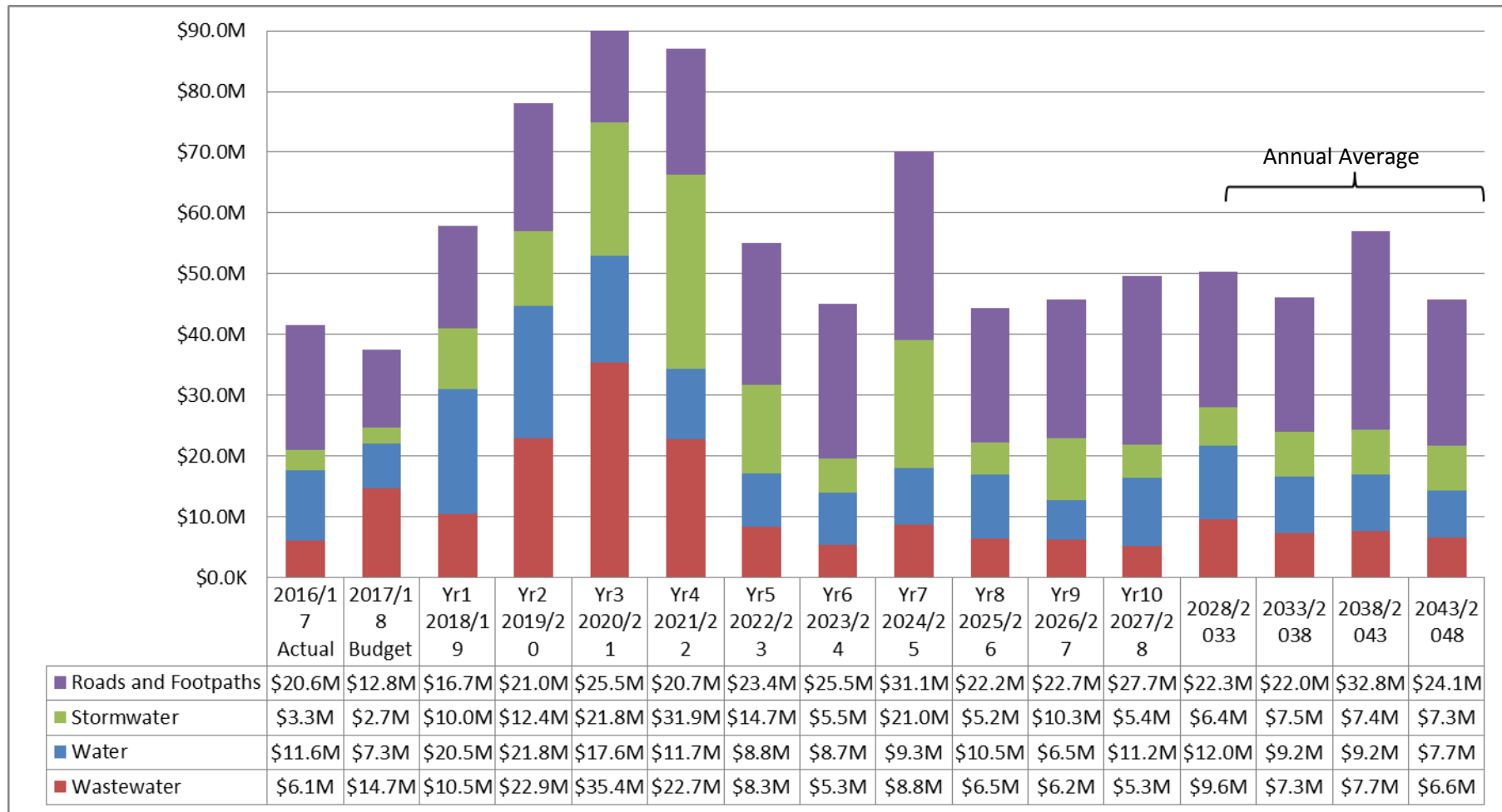
**11. EXPENDITURE SUMMARY**

In addressing the issues identified in the Infrastructure Strategy, Council expects to spend \$1.670 billion from 2018 to 2048 on new or replacement infrastructure. Approximately \$2.272 billion is expected to be spent from 2018 to 2048 on operating costs, labour, depreciation, materials and maintenance.

These areas are anticipated to be spread across the infrastructure activity areas as outlined in the table below:

Infrastructure Activity	Capital Expenditure (million)	Operational Expenditure (million)
Water	\$317M	\$610M
Wastewater	\$288M	\$462M
Stormwater	\$285M	\$209M
Roads and Footpaths	\$742M	\$991M
<b>TOTAL</b>	<b>\$1,637M</b>	<b>\$2,272M</b>

The following figures show the expected overall annual capital (including vested) and operational expenditure for the four infrastructure services from 2018 to 2048, by activity:

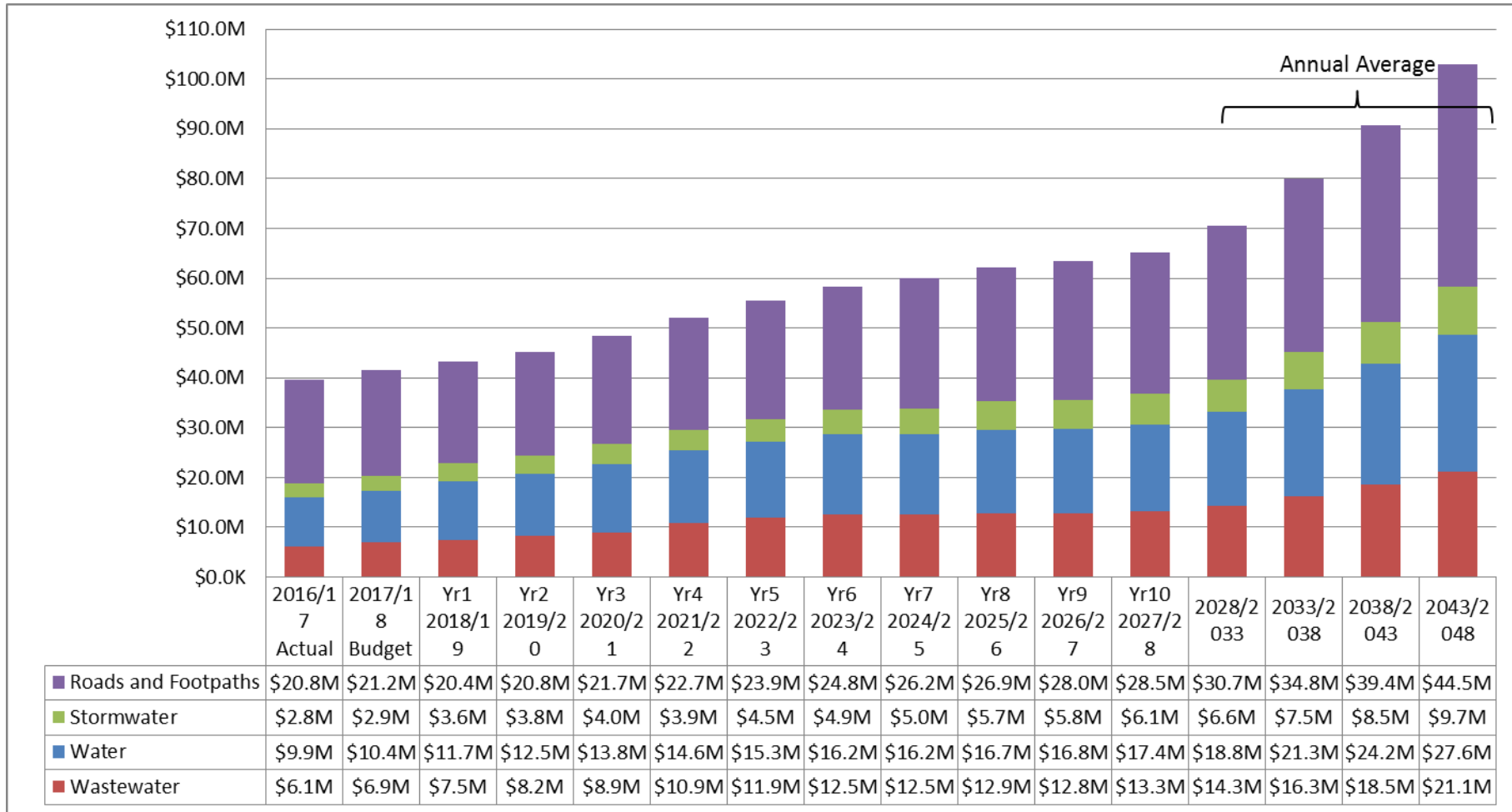


Water, wastewater and stormwater capital expenditure is focussed on the first ten years of the Infrastructure Strategy. This is a continuation of work predicted in the initial Infrastructure Strategy (2015/25) of upgrades and new builds in the treatment plants and reticulation, to provide for the large growth occurring in the district. These upgrades are expected to provide sufficient capacity for growth for the next thirty years.

Roads and Footpaths expenditure in the first ten years is focussed on the impacts of growth being experienced in the district and to maintain a consistent renewal programme that provides a safe and efficient roading network within the Waipa district.

**Operational Expenditure Overview**

The following figures show the expected overall annual operational expenditure for the four infrastructure services from 2018 to 2048, by activity:



Operational costs steadily increase over the thirty years of the Infrastructure Strategy in response to inflation adjustments, the impact of growth and additional costs associated with treatment plant upgrades required for environmental and public health compliance.

## 12. PROJECT TIMELINES

Key decision dates for infrastructure projects 2018 to 2048.

	10-Year Plan 2018 - 2021	10-Year Plan 2021 - 2028	2028 - 2033	2033 - 2038	2038 -2043	2043 - 2048
Meeting growth needs in Cambridge north and west (T1)	\$5.5m	\$23.1m				
Cambridge stormwater reticulation growth (SW2)	\$19.1m	\$48.9m				
Stormwater management projects for Cambridge North (SW1)	\$11m	\$5.5m				
Cambridge dedicated main reticulation (WS6)	\$3m					
Reticulation expansion for Cambridge growth cells (WS4)	\$3.7m	\$6.8m	\$5.5m	\$4m		
Enabling industrial growth in Cambridge (T3)	\$2.2m	\$4m				
Hautapu industrial stormwater provision (SW4)	\$2.7m	\$3.9m				
Repurposing revoked state highways (T11)	\$4.4m	\$2.1m	\$3.4m			
Water main renewal and pump installation (WS9)	\$7.9m					
Parallel Road Water Treatment Plant & reticulation (WS7 & 8)	\$25.9m					
Cambridge Wastewater Treatment Plant upgrade (WW1)	\$9.9m	\$17.5m				
Te Awamutu Wastewater Treatment Plant expansion (WW2)	\$25.6m					
Urban growth projects for Te Awamutu and villages (T4,5,6) }	\$2.1m	\$11.6m				
			\$4.1m	\$4.5m	\$4.8m	\$5.2m
				\$4.5m	\$4.8m	
Reticulation expansion for Te Awamutu growth cells (WS5)				\$2m	\$2m	\$1.9m



			10-Year Plan 2018 - 2021	10-Year Plan 2021 - 2028	2028 - 2033	2033 - 2038	2038 -2043	2043 - 2048	
A third bridge crossing the Waikato River (T13)	Research/land purchase	}	\$208k	\$6.2m	\$1.4m	\$7.5m			
	Construction	}					\$48.5m		
			10-Year Plan 2018 - 2021	10-Year Plan 2021 - 2028	2028 - 2033	2033 - 2038	2038 -2043	2043 - 2048	
Duplication of Te Tahi trunk main (WS10)				\$6.6m					
Road safety improvements (T10)						\$10.2m	\$11.2m	\$12.1m	\$13.1m
Expanding waste recovery facilities (WM1 & 2)						\$8.2m			
Alpha Street Water Treatment Plant (WS1)						\$17.1m			
Cox Road reservoir (WS2)						\$100k	\$7.6m		
Urban growth projects – Cambridge (T2)						\$13.7m	\$14.9m		
Town centre vehicle parking (T9)						\$4.1m			
Te Awamutu Wastewater Treatment Plant renewals and upgrade (WW3)						\$5m	\$3.3m	\$4.2m	
Growth cell reticulation and sewer provision for Te Awamutu growth cells (WW4)							\$2.1m	\$2.3m	\$2.5m
Te Awamutu western arterial route (T8)						\$11m		\$22.6m	\$24.4m
Te Awamutu stormwater reticulation growth (SW3)							\$2.8m		

	10-Year Plan 2018 - 2021	10-Year Plan 2021 - 2028	2028 - 2033	2033 - 2038	2038 -2043	2043 - 2048
					\$3m	
						\$2.3m
					\$10.8m	
New Cambridge reservoir (WS3)					\$10.8m	
Cycling and walking projects (T12)	\$1.5m	\$6.3m	\$2m	\$2.2m	\$2.4m	\$1.7m
Tourism provision (T7)			\$1.7m	\$1.9m	\$2m	\$2.2m

### 13. ASSUMPTIONS AND UNCERTAINTIES

#### 13.1. General assumptions and uncertainties

Assumption	Uncertainty
<p>Asset information held within <i>AssetFinda</i> and <i>RAMM</i> is true and correct and will continue to improve in reliability.</p>	<p>While <i>AssetFinda</i> provides a priority list based on set criteria which drives the renewals programme, and there is certainty regarding the assets whose conditions has recently been assessed, there is less certainty regarding the current condition of older assets. Overall, the level of uncertainty is LOW.</p> <p><i>RAMM</i> has been in use since 1988 so the level of uncertainty within that system is LOW.</p>
<p>All the financial data is based on <i>AssetFinda</i> and <i>RAMM</i> (renewal profile, age-based information, condition and criticality) and assumed to be correct.</p>	<p>The financial data relies on accurate information in <i>AssetFinda</i> and <i>RAMM</i>.</p> <p>Levels of uncertainty:</p> <ul style="list-style-type: none"> <li>▪ Assetfinda - LOW</li> <li>▪ RAMM - LOW</li> </ul>
<p>Improved data and condition information will significantly reduce renewal profiles to match current budget availability.</p>	<p>Improved data and information confirms or increases the renewal profiles, requiring additional budget or increasing the risk of asset failure and an inability to maintain levels of service.</p> <p>Uncertainty:</p> <ul style="list-style-type: none"> <li>▪ Waters - MEDIUM</li> <li>▪ Transportation - LOW.</li> </ul>

Assumption	Uncertainty
<p>Renewal strategy aligns with Activity Management Plans and effective asset management principles.</p>	<p>Renewal strategy may require rapid realignment with data and condition information or improved asset management practices in advance of a review/redraft of Asset Management Plans. Level of uncertainty: LOW.</p>
<p>Adequate resources available internally and externally to deliver the program of works.</p>	<p>Council needs to be able to recruit project managers of sufficient ability to manage the capital works programme successfully, otherwise development for growth might fall behind market demand and the additional costs of debt will increase.</p> <p>There are competing demands for similarly qualified and experienced staff from other councils.</p> <p>Level of uncertainty: HIGH</p>
<p>These renewals/upgrades are for maintaining current levels of service.</p>	<p>Renewals and upgrades may be required to achieve legal compliance rather than affecting the levels of service experienced directly by customers.</p> <p>Uncertainty:</p> <ul style="list-style-type: none"> <li>▪ Waters – MEDIUM</li> <li>▪ Transportation - LOW</li> </ul>
<p>The district population will increase with an additional 25,000 residents by 2050. The focus of this will remain in Cambridge and Te Awamutu, with the bulk of the growth within Cambridge.</p>	<p>Factors outside of Council’s control may affect the rate of migration into Waipa District. The predicted population growth may occur but at different rates and at different times. Council needs to have an adaptable capital works programme to develop infrastructure for growth as cost-effectively and</p>

Assumption	Uncertainty
	efficiently as possible. Level of uncertainty: MEDIUM.
Planned development of growth cells will occur as per Waipa 2050 and approved Structure Plans	Growth cells need to have the infrastructure services available for connections before development can commence. The timing of development of each growth cell will be driven by developers and the development of the relevant structure plans; consequently, the sequence of growth cell development may differ from that in <i>Waipa 2050</i> . Development will be driven by the market for new residential property and the current demand is centred on Cambridge; but if demand suddenly changes away from Cambridge Council’s projects may need to reprioritized. Level of uncertainty: LOW.
<p>There will be on-going population growth pressures across the district that will need to be managed.</p> <p>There will be continuous annual development activity rather than sporadic growth.</p>	Growth projections indicate a progressively increasing rate of population growth until 2041. Within this growth rates may increase and decrease. Council needs to retain flexibility in its capital programme and funding, and to develop infrastructure by module where possible, in order to manage such changes more efficiently. Level of uncertainty: LOW/MEDIUM.
There will be an increasing need to conserve water and promote and provide for improved water quality in Waipa’s lakes, rivers and streams.	Water conservation measures require political and popular acceptance to be adopted and acted upon to be effective. Wastewater and stormwater treatment needs to be cost-effective to achieve water quality standards at an acceptable cost. Uncertainty: LOW.
Developers provide connecting reticulation to the existing / new Council assets.	All growth cells require structure plans to be prepared and adopted by Council in advance of development beginning. All structure plans will include a requirement to connect to Council’s existing or new network assets. Level of

Assumption	Uncertainty
	uncertainty: LOW.
Council and existing landowners mutually agree on relevant land purchases required	Where project locations are currently unknown (eg. Waikato River crossing) the land required for purchase may not be known; when land has been identified, negotiating the purchase of land may be protracted or may not be achieved. Uncertainty: LOW.
Investment in arterial roading networks has occurred, including completion of the Waikato Expressway; Southern Links to the north of the district linking with Hamilton City; potential revocation of SH39..	<p>Changes to government transportation policies and funding may affect investment in Southern Links and the Waikato Expressway, affecting the quantum and value of changes required to revoked State Highways. Council will manage deviations from forecast plans by regularly reviewing and adjusting its capital works programme.</p> <p>Levels of uncertainty:</p> <ul style="list-style-type: none"> <li>▪ SH1 revocation – LOW</li> <li>▪ Southern Links – LOW</li> <li>▪ SH39 revocation - MEDIUM</li> </ul>
High level costs from the Water Supply Strategy are correct	The Water Supply Strategy is dated 2014; high level costs within it are unlikely to have remained correct. Project costs have been recalculated for this Infrastructure Strategy. Uncertainty: MEDIUM.
The Comprehensive Stormwater Discharge Consent due for renewal in 2020 can be renegotiated to include the new growth cells and the stormwater solutions as presented in	Negotiations for a new consent will need to meet the Regional Council’s needs; these may be greater than anticipated and require additional management to that in structure plans and additional costs to achieved the required

Assumption	Uncertainty
the associated structure plans.	compliance. Uncertainty: HIGH.
New assets can be built off line and integrated on site without extensive plant shut downs being required.	This will not always be possible for every asset. Plant shut down is to be expected while the new plant is integrated/attached or brought on-stream. Uncertainty: LOW.

### 13.2. Significant asset management forecasting assumptions

All long term planning has to be based on managing a series of circumstances or conditions that are assumed will occur based on research of current circumstances and trends. Over time, these assumptions may change as reality shows how accurate those original assumptions were. New assumptions are developed based on the new circumstances and new up-to-date research.

In considering how Council needs to develop, manage and finance its infrastructure assets over the thirty years of this Infrastructure Strategy, the following assumptions have been used:

- a) **Regulations** – It is assumed that regulations and environmental standards relating to infrastructure management will increase, particularly in relation to abstracting water and discharging stormwater and treated wastewater into streams and rivers in the Waikato region (to adhere to the Waikato River Vision and Strategy and Healthy Rivers project). It is also envisaged that new building standards in relation to earthquake protection will have an impact on above ground assets, such as treatment plant buildings, reservoirs etc. However, due to the uncertainty of these changes, Council has not provided funding for any improvement works in the 10-Year Plan for these increased standards to regional resource consents, or earthquake prone above ground assets.
- b) **Level of Service** – It is assumed Council meets the community’s expectations for levels of service and that there will be an increased level of services in relation to meeting environmental compliance and earthquake protection over the 30-year planning period. NZTA and Local Government NZ have recently agreed on a One Network Road Classification for New Zealand roads, with associated fit for purpose levels of service. To achieve a nationally consistent level of service, this may impact on Council securing co-investment from the NZTA, and therefore affect the affordability of the current level of service delivered by the transportation network. However, it is envisaged that the majority of level of service that Council provides to the user will remain the same.

- c) **Growth** – Demand forecasts are correct. They are based on population, household and vehicle forecast predictions made by NIDEA in 2017.
- d) **Ownership of assets** – It is assumed that assets will remain in Council ownership throughout the 30-year planning period.
- e) **Delivery of services** - It is assumed that the current management and delivery structure will be retained throughout the 30-year planning period. However, the delivery of transportation services via RATA is due to be reviewed in 2020 and an alternative means of delivering cost-effective services may be found.
- f) **Expected life of assets** – Asset useful lives have been determined with reference to the NZ Infrastructural Asset Valuation and Depreciation Guidelines published by the National Asset Management Steering Group, and have been adjusted for local conditions based on past experience. Asset inspections, deterioration and condition modelling are also carried out regularly to give further assurance over useful life estimates.
- g) **Asset Values** – The determination of, asset replacement value, depreciated value and renewal projections are based on the valuation data as at 30 June 2017
- h) **Depreciation** – The depreciation has been calculated on a simple straight-line basis on all property, plant and equipment other than land, at rates that will write off the cost (or valuation) of the assets to their estimated residual values over their useful lives.
- i) **Renewal and Planned Deferrals** – The renewal focus in the roads and footpaths activity is to extend the life of assets, in particular road pavement and surface assets, beyond the point at which historically they would have been renewed. This approach is in response to reducing national funding and the need to constrain rate increases. It is acknowledged that the condition of the assets may deteriorate to a level that is below that which has been provided in the past.
- j) **New developments** – The majority of the infrastructure required to service new developments will be funded by developers. Some funding has been allocated to ensure these new developments are well connected to existing infrastructure.
- k) **Financial** – Council has forecasted an internal borrowing rate range of 4.11%-6.4%. Please refer to the significant forecasting assumptions and minimising risk section of the 2018-2028 Long Term Plan.
- l) **Expenditure** – All expenditure is stated in dollar values as at December 2017 with allowance made for inflation as per projections developed by Business and Economic Research Limited for the Local Government sector.
- m) **Natural disasters** – No provision has been made for the cost of repairing damage or other additional costs consequent upon a natural



disaster such as major flooding or substantial earthquake apart from the costs of insurance or additional bank credit.

- n) **Climate change** – Council has made the assumption that the district should expect more frequent extreme weather events. It has also identified that these events have the potential to have a significant impact on the District’s environment, communities, and community.
- o) **Asset disposals** – Some assets may become redundant during renewal or upgrade works, in these cases the asset is generally abandoned in situ or dug up and removed with minimal residual value. Currently reviewing the long term future of the Water infrastructure that forms a subpart of the Cambridge Scheme known as the Hicks Road scheme, further public consultation will determine the future of these assets.

### 13.3. Risks to the significant asset management forecasting assumptions

During the thirty years of this Infrastructure Strategy the conditions these assumptions are based on are likely to change due to economic, political, social, legal, demographic, physical circumstances. Therefore Council is conscious of the following risks involved in using these assumptions in activity management planning:

#### *Inflation projections*

Council uses the inflation projections developed by Business and Economic Research Limited (BERL) for the Local Government Sector for years 1-10. These BERL price adjusters can be found in the AMPs. Inflation projections for years 11-30 are based on the average inflation rate over the previous ten years for the relevant infrastructure (2.5% for roads and footpaths and 2.6% for the three water services) which are accumulated out for the full thirty years of the Infrastructure Strategy. Council will monitor projections against actuals, with significant variances and associated responses reflected in budget forecasts and annual reviews. Council has chosen not to use a set of regional inflation projections for reasons outlined in the *Assumptions* section of the 10-Year Plan.

#### *Interest rate projections*

Historically there have been interest rate fluctuations during any 30 year period, requiring re-assessment of the affordability or timeframe of individual future projects. Interest rates rely on national, regional and global economic conditions and are therefore outside Council’s control. The impact of interest rates higher than projected will be to defer or re-design individual projects, or to reschedule other Council programmes to enable key projects (eg. for growth) to be funded. Lower than anticipated interest rates will provide Council with further options such as

paying debt more quickly.

#### *Population growth rates*

Influences outside the district and the impact of the Waikato Expressway could result in higher than forecast population growth which may extend beyond 2040. This will be managed by working with *Future Proof* partners to closely monitor trends and update forecasts accordingly. This will ensure infrastructure upgrades are provided at the appropriate time and scale. Lower than forecast population growth risks Council capital expenditure and debt accrual occurring in advance of demand unless Council is able to expand infrastructure incrementally in a “just in time” response to demand.

#### *Asset condition and remaining life*

The condition of many assets, particularly those underground, is difficult to determine. This consequently affects the prediction of remaining life and renewal requirements. This will be managed by continuing the asset condition assessment programme which is budgeted for under operational expenditure. The condition assessment programme prioritises work based on the criticality of the asset.

#### *Economic development (industrial)*

Industrial development can have significant impact on infrastructure services, particularly demand for water, wastewater disposal and traffic impacts. Council provides for industrial zoned land and may facilitate development if required. This will be managed by engaging directly with larger industries that may have a major impact on infrastructure.

#### *Healthy rivers project/environmental expectations*

The Healthy Rivers: Plan for Change project being facilitated by Waikato Regional Council is likely to propose changes to the Waikato Regional Plan to benefit the region’s rivers. Higher standards may require additional expenditure on infrastructure. This will be managed by participating in consultation processes for any proposed changes.

### **13.4. Confidence in asset information**

An assessment of the accuracy and corresponding confidence levels in the asset data has been undertaken as part of the asset management process. The data confidence grades have been assessed using the grading systems detailed in tables 13.1:

Table 13.1: Confidence grades

Confidence grade	Description	
A	Highly Reliable	Data based on sound records, procedures, investigations and analysis which is properly documented and recognised as the best method of assessment.
B	Reliable	Data based on sound records, procedures, investigations and analysis which is properly documented, but has minor shortcomings. For example the data is old, some documentation is missing and reliance is placed on unconfirmed reports or some extrapolation.
C	Uncertain	Data based on sound records, procedures, investigations and analysis which is incomplete, unsupported, or extrapolated from a limited sample for which confidence grade A or B applies.
D	Very	Data is based on unconfirmed verbal reports and/or cursory inspection and analysis.
E	Unknown	None or very little data held

Tables 13.2 and 13.3 show the confidence levels of Council’s infrastructure asset data.

Table 13.2: Water supply, wastewater & stormwater infrastructure asset data confidence levels

Asset Data	Confidence grade	Accuracy	Comment
Asset quantity	B		Data reconciled between <i>FinanceOne</i> and <i>AssetFinda</i> . Asset valuation includes a sample field validation of asset quantity.
Asset type	A-B		As above.
Asset material	B		Material type data is reliable; it is acknowledged that data on older in-ground assets is often based on historic records which may not be as accurate as more recent data.
Asset location	A-B		Location of above ground asset is highly reliable, for in-ground assets this drops to reliable as data

Asset Data	Confidence grade	Accuracy	Comment
			on older assets is often based on historic plans which may not be as accurate as more recent plans.
Asset depth	C		Data confidence is increasing: where depths have been obtained, the data confidence level is A. Depths are obtained from As Built plans and on-going surveys/validation checks in the field. Otherwise, depths are generally assumed; water mains are not laid to grade but max/min depths.
Soil types	C		Economic lives not yet adequately assessed to soil types. But soil types are considered a minor issue and are captured as-and-when pipe sampling is undertaken. Soil types are not currently mapped in the asset system.
Asset age	B		There is reasonable confidence in asset ages
Asset condition	B		Programmed condition assessments are being undertaken and results. The extent of coverage varies across asset types based on levels of importance and ease accessibility for assessment.
Asset performance	C		Network models have been developed to assess performance issues and are factored into renewal programmes. There is on-going updating of these models to improve identification of performance issues. As models mature and data improves, so asset confidence will increase.
Unit costs	B		Costs are reviewed at each valuation with the valuers reviewing recent local contract rates, industry norms and inflation rates to determine appropriate unit rates.
Deterioration rates	C		Now well established and supported by local knowledge; Council continues to review deterioration curves, consistent with industry averages, as part of its on-going, bi-annual valuation process.

Data confidence levels will also increase as Council continues to improve its asset management practices including upgrading the asset database *Assetfinda*. Aspirationally, Council would like to begin treating data as an asset in its own right. This would lead to improvements in the collection, management and use of data.

Table 13.3: Transportation infrastructure asset data confidence levels

Asset Type		Confidence Grade	Comment
Road	Formation	B	Data generally complete for formation records, but some short-comings identified with apparent gaps and duplicated or overlapping records.
	Subbase (sealed)	B	Data generally complete for subbase records, but some short-comings identified including apparent gaps and duplicated or overlapping records
	Subbase (unsealed)	A-	Good data for unsealed pavements, with only minor dimensional inaccuracy identified during field audit.
	Basecourse	B	Data generally complete for basecourse records, but some short-comings identified including apparent gaps and duplicated or overlapping records.
	Surfacing	B-	Data generally complete for pavement surfacing records, but some short-comings identified including apparent gaps and duplicated or overlapping Records. Field audit highlighted large proportion of duplicated records on one road.
	Roading Islands	B+	Good data record completeness. Notable inaccuracies in dimensions of both field audited assets
Drainage	Surface Water Channel	B	Data generally complete for surface water channel records, but some short-comings identified. Field audit identified location recording inaccuracies for records, but current units used for valuation largely lined up with field findings on a road section basis.
	Catchpits	B+	Data generally complete for catchpit records, but some short-comings identified. Field audit indicated some missing assets and some non-existent records.
Structures	Bridge	A	Data for bridges based on sound records and procedures. Minor dimensional data issues which will have limited impact on valuation.
	Culverts	B+	Data generally complete for catchpit records, but some short-comings identified. Field audit indicated some missing assets and some non-existent records.
	Retaining Walls	A	Good data for all retaining walls. No assets in field audited sections

Asset Type		Confidence Grade	Comment
	Bus Shelters	A	Good data for all bus shelter records. None in field audit sections.
Traffic Facilities	Signs	A	Good data for provided high value signs. It is noted that low value signs and related posts/structures are not included in the valuation. None in field audit sections
	Railings	B	Data generally complete for railing records, but some short-comings identified. Field audit identified some material or length inaccuracies, but largely short and low cost items.
Street Lights	Lamps	C+	Data found to be incomplete. Field audit indicated many lamps either not found or not recorded. Additionally location data was largely incorrect and inconsistent with recorded mount locations
	Mounts	C+	Data found to be incomplete. Field audit indicated many mounts both not found or not recorded. Additionally location data was largely incorrect.
Pedestrian	Footpaths	B	Data generally complete for footpath records, but some short-comings identified. Field audit identified location recording inaccuracies for records, but current units used for valuation largely lined up with field findings on a road section basis.