

# infrastructure strategy



## OVERVIEW

The focus of Council's Infrastructural Strategy over the next 30 years is to maintain and renew its current assets to ensure that the assets remain in such a condition as to continue to deliver a reliable and similar level of service to that currently being provided. They will be upgraded where appropriate, to enable Council to meet increasingly higher environmental standards. The levels of service and how they are provided will also reflect the changing needs of our ageing population.

Council does not anticipate any significant expansion of the infrastructure networks, with the exception of the Awarua Industrial Estate, where any expansion cost will not be attributable to ratepayers.

Key Strategies include:

- Maintaining assets by having regular and appropriate planned actions to keep the assets operating to expected levels.
- Renewing assets through managing deterioration as they approach their end of planned life.
- Identifying risks associated with owning and managing assets by developing detailed Asset Management Plans using data gathered, and then using appropriate mitigation methods to reduce any effect.
- Not expanding provision of the infrastructure networks delivery areas.
- Managing demand for service by utilising existing network capacities.
- Utilising subsidies, user payments, rates and loans to ensure that both current and future communities pay for the asset they are using.

- Utilising Council's financial "good health" and or insurances to manage risks if failure occurs.
- Increasing investment in pipe network renewals.
- Decreasing some levels of service where the community agrees or where funding is not available.
- Ensuring that affordability is the key focus of all expenditure and investment discussions.
- Identify, gather and improve data accuracy to enhance the Council's level of data confidence and reliability.

## BACKGROUND

In the coming years, Invercargill City will experience greater pressures on infrastructure renewals. During the periods of the 1920s, 1960s and 1970s large areas of our city and associated infrastructure were developed over short periods. These assets will require renewal and the strategies deployed to manage this work will reflect in the cost to the Community.

Past investment cycles create a future echo, which means that a significant part of Council's infrastructure management in the future will be managing the renewal cycles. Council has managed its assets well in the past and believe that there is not a large deferred risk on assets from the past.

Council has good quality asset data included in its Asset Management Plans, and this has enabled Council to establish budgets that maintain the level of expenditure necessary to ensure a consistent level of service in our infrastructure areas.

Council will continue to develop the quality of our asset data and this improvement will be ongoing for the life of the strategy.

Council is in good financial health with a debt ratio of 5.8%, (Term Debt over Total Assets) which is rated as excellent for a New Zealand council.

Being in this financial position allows Council a 'safety net' if renewals are required sooner than anticipated and planned. Council can increase debt in the short term to meet increasing costs.

Council has renewal programmes in place and these programmes are expected to increase. The Water Supply Activity has highlighted an area of pipe network where pipes have to be renewed before their expected scheduled end of life.

For some of Council's infrastructure activities, a decision has been made to reduce the rate of renewal against depreciation forecasts. This 'sweating of the asset' enables Council to experiment with changing and extending the predicted lifecycle of the asset.

For example, Council is proposing to underfund the footpath renewal programme as it can be done at the lowest risk and has the highest visibility for future monitoring. In doing so, Council is hoping to extend the overall life of all of the footpath assets beyond what has been earlier planned for and signalled in its Roading Asset Management Plan.

Council wants to ensure that it is delivering the right level of infrastructure at a cost the community can afford, both now and into the future.

To do this Council has looked closely at the renewals and maintenance of existing infrastructure as well as any planned new infrastructure projects. This strategy sets out what Council believes to be the most likely scenario for infrastructure needs in the future and assesses the options available to Council and the Community for addressing these needs.

## PURPOSE

The Infrastructure Strategy provides information about the significant infrastructure issues that the Invercargill area will face over the next thirty years.

Roading, Water Supply, Stormwater and Sewerage activities account for 55% of Council's operating expenditure and 76% of Council's capital expenditure. Council intends to maintain and renew its infrastructure assets to ensure that the assets remain in such a condition so as to generally continue to deliver a reliable and similar level of service to that currently being provided. Where a level of service is planned to change it is indicated in the Asset Management Plan.

This strategy applies to the following groups of activities:

- Roothing
- Water Supply
- Sewerage
- Stormwater
- Other Infrastructure

**Roothing** - The Roothing activity provides a safe, convenient and efficient transport system in the city including streetlights, traffic signs and signals, footpaths, drainage, surface water channel systems, bridges, culverts, street furniture, parking facilities, vehicle access crossings and cycle tracks.

**Water Supply** - The Water Supply activity supplies potable water to residential, industrial and commercial properties to protect public health, support city growth and contribute to the general well-being of the community. Council owns or maintains assets, providing water at pressure to the boundary of each property in the Bluff and Invercargill urban areas and also to properties where the main pipeline has been laid.

**Sewerage** - The Sewerage activity provides for the removal of sewage from residential, industrial and

commercial properties. Council owns and maintains assets that provide a sewage collection service to each property in the Bluff and Invercargill urban areas, Omaui and some parts of Otatara. Treated effluent is discharged to Foveaux Strait at Bluff, to the New River Estuary at Invercargill, and to land at Omaui.

**Stormwater** - The Stormwater activity provides for the removal of stormwater from residential, industrial and commercial properties to reduce the risk of property damage by flooding. Council owns and maintains assets that provide a stormwater service to each property in the Bluff and Invercargill urban areas. Stormwater is discharged to natural waterways including the Waikiwi Stream, Waihopai River, Kingswell Creek, Clifton Channel, Otepuni Stream, the New River Estuary and Bluff Harbour.

**Other Infrastructure** - Community Infrastructure where Council anticipates significant expenditure has also been included within this Strategy. These community assets include things such as the Invercargill Public Library and the Southland Aquatic Centre (Splash Palace).

Council's vision is to create an exciting, innovative, safe, caring and friendly city offering lifestyles based on a healthy environment and diverse growing economy. Sound management of Council's infrastructure is integral to the realisation of this vision.

By getting infrastructure spending right, Council can assist our community and economy in continuing to thrive. This Strategy will assist both Council and the Community to make well-informed decisions regarding the future development of any assets as well as the maintenance and renewal of our existing assets.

## WHERE ARE WE CURRENTLY

### Geographic

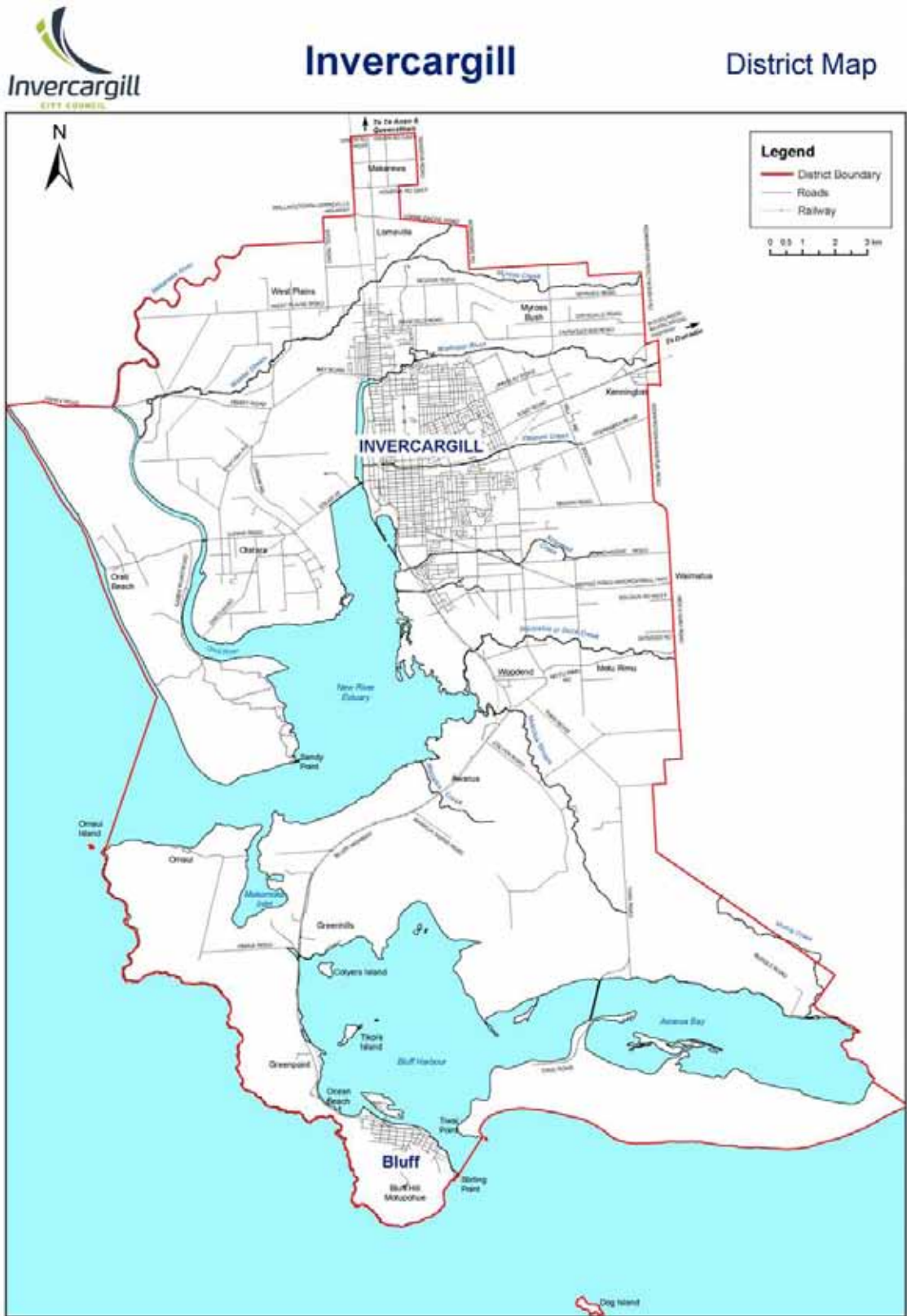
Extending from Makarewa in the north to Bluff in the south, Kennington in the east and Oreti Beach in the west, the Invercargill District encompasses an area of 49,142 hectares. Landscape features of importance to the community include Bluff Hill (Motupohue) and an extensive network of waterways which bisect the District. The urban areas of Invercargill and Bluff contain extensive areas of open space as well as distinct heritage buildings.

### Current state of Infrastructure Assets - Overall

Council has experienced asset management practitioners who have a detailed knowledge of their assets. The Asset Management Plans prepared for each infrastructure asset includes a continuous improvement programme and are typically of an "intermediate" or better range when assessed by reviewers. It is difficult to accurately assess the condition of Council's underground utilities and this has been considered in developing the plans.

The Council has looked at the City's past investment cycles and considers that it is reasonable to assume that these create a future maintenance and replacement echo. A significant part of Council's infrastructure management in the future will be managing our renewal cycles. For some of Council's infrastructure activities a decision has been made to reduce the rate of renewal against depreciation forecasts. This 'sweating of the asset' enables Council to experiment with changing and extending the predicted life cycle of the asset. This has with it an inherent risk, so to do so Council has to ensure that it has good quality data, the ability to closely monitor the asset and the financial resources to quickly address the issue if necessary.

The Map below outlines the territorial boundaries of the Invercargill City Council.



## WHAT ARE OUR KEY ASSUMPTIONS

The following assumptions and potential impacts have been considered while developing and preparing Asset Management Plans.

### 1. Economic Climate and Growth

Council has made the assumption that there will be gradual positive growth in the Invercargill and Southland economy. Council has assessed the risk of this assumption at a medium level. If this assumption should prove to be wrong, and there is a significant change to the economy, such as a large employer choosing to locate in the district, then Council may need to reassess its provision of infrastructure and the current strategy to not expand provision may need to be changed. Council continues to promote the Awarua Industrial Estate to enable job creation.

### 2. Population Growth

As the economy grows, more employment opportunities will arise within the district. Council has made the assumption that population growth will remain positive and that we will have a population of 53,400 (based on Statistics New Zealand projections) by 2031. With the average number of people per household assumed to be 2.3, Council is anticipating a further 570 occupied dwellings being constructed by 2031. Council has assessed the risk of these assumptions at a medium level. If these assumptions should prove to be wrong and there is a significant increase in population and the number of dwellings, this may result in a demand for infrastructure and services beyond the existing capacity, and Council would need to reassess its strategy of not increasing provision of services or expansion of the network. Should the assumptions prove to be wrong and there is a significant decrease in population and number of occupied dwellings, this would adversely impact on the Community's ability to fund the current levels of service provided in the infrastructure network and some levels of service may need to be reduced to ensure continued affordability.

### 3. Climate Change

Council has made the assumption that the impact of climate change on the District will be minimal in the next ten years. Over the next 30 years projections for Invercargill indicate a rise in average annual mean temperature of 0.1 to 1.9 degrees, with rainfall expected to vary from -2% to 19%. Southland's climate is expected to become warmer, windier and wetter. It is assumed that while rainfall will increase the intensity of a storm will not be greater than the current design standards and that the flood protection works (owned mainly by Environment Southland) will offer the necessary protection. The piped stormwater network will continue to deliver the necessary levels of service. Council has assessed the risk of this assumption being incorrect as low. Should the assumption prove incorrect and current stormwater networks do not have the capacity to meet the increased rainfall, the Community would need to determine if they wished to incur significant cost to increase the capacity of the system or suffer an increasing occurrence of flooding and cross contamination of the stormwater and sewerage networks.

### 4. Environmental Expectations

Council has made the assumption that we will continue to hold discharge resource consents for the Sewerage and Stormwater activities and that the conditions of the new consents will not be significantly different from current consents. Council has assessed the risk of this assumption as high.

The National Policy Statement on Freshwater Management developed under the Resource Management Act 1991 is likely to have an impact on how Council undertakes its Stormwater activity. Over the coming years, Environment Southland will be working with the Community to put in place standards for freshwater in the Southland Region. These standards may require improvement to our



stormwater quality that could include the need for treatment of stormwater prior to discharge. The cost implications of this have not yet been identified, but significant capital expenditure may be incurred if the conditions of new resource consents are significantly different to the existing consent.

### 5. NZTA Funding Assistance

The New Zealand Transport Agency provides funding assistance for carrying out the management and maintenance of the roading network. Invercargill City Council's financial assistance rate for 2015/16 will be 60% and reduce by 1% per year until it is at 51%. Council has made the assumption that Council revenue will meet the gap in funding caused by the decreasing NZTA subsidy. Council has assessed the risk of this assumption as low. Should the assumption prove to be incorrect and Council revenue is not made available to meet the gap left by the decreasing NZTA subsidy then less work on the roading network will be able to be undertaken and the roads will worsen more quickly than anticipated.

### 6. Catastrophes

Council has made the assumption that there will be no major catastrophes that impact on the district. Council has assessed the level of risk of this assumption as high. Should the assumption prove to be wrong a major catastrophe could significantly impact on the infrastructure network and the ability of the Community to pay for the current levels of service. Council mitigates this risk by having appropriate insurance.

### 7. Delivery of Service

Council has made the assumption that there will be no changes to the way that it delivers its services - in-house or contractors. This assumption has been assessed as having a medium risk. Should a change be made to how the infrastructure services are provided there may be an increase or decrease in cost and budgets would need to be amended to reflect the change. Service delivery will be reviewed

consistently in accordance with the requirements of the Local Government Act 2002. Council assumes that we will be able to train or procure the workforce necessary to deliver the plan over the next 30 years.

### 8. Fixed Asset Valuations and Useful Lives of Assets

Fixed Asset Valuation estimates are prepared based on Council's Accounting Policies. Those Accounting Policies include valuation policies appropriate for public benefit entity assets. Council has assessed the risk of the fixed asset valuation assumptions being incorrect as low. Consistent use of national standards reduces the risk of inaccurate asset valuation.

Depreciation rate assumptions are based on Council's Accounting Policies and useful lives as stated in Asset Management Plans, which use the IIMM Manual as a guide. Council has assessed the level of risk of getting the useful lives assumption wrong as medium. Shorter than anticipated useful lives create a financial burden on the Community by requiring renewal work, and the funding of, to be undertaken sooner than anticipated. Council has recently experienced this with the failure of some of the pipes within the Water Supply network. Using national guidelines for useful life minimises this risk.

### 9. Insurance

Council has made the assumption that it will have no issues in insuring its underground assets. This assumption is assessed as having low risk. Should the assumption prove to be wrong, Council would have to borrow to replace assets in the event of a disaster.

### 10. Cost Change Factors

Council has made the assumption that the rate of inflation for Council services will follow the Local Government Cost Index. Council has assessed this assumption as having a medium risk. The Local Government Cost Index was developed by Business and Economic Research Limited in October 2014. Should this assumption prove to be wrong it is likely

that the estimated cost of programmed works in the later years of this strategy are incorrect and would need to be reassessed closer to their implementation.

*You can read more about Council's significant assumptions in the Significant Assumptions section of this Long-Term Plan.*

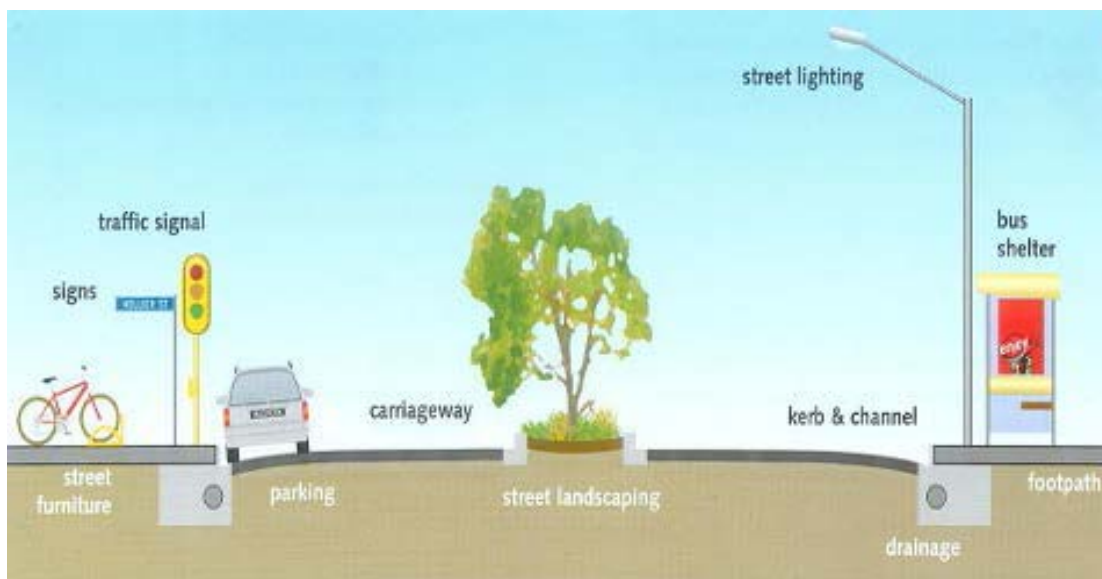


# what are our big issues?

## roading

Council owns and operates approximately 600km of formed roads, 296km of urban road and 180km of rural road, including 127km of unsealed (gravel) roads. Other assets include 51 bridges, kerb and channelling, streetlights, road signs, traffic signal sets and road markings.

The image below shows the schematic layout of the roading network.



The condition of roads is established through regular specific testing and ratings and is recorded in the RAMM database. Road surface assets are able to be regularly inspected allowing faults or failures to be seen and managed in a timely manner. Assets can be “pushed” harder, and lives extended at relatively lower risk, than underground assets where deterioration is not easily observed and failure can be sudden.

### The Key Issues are:

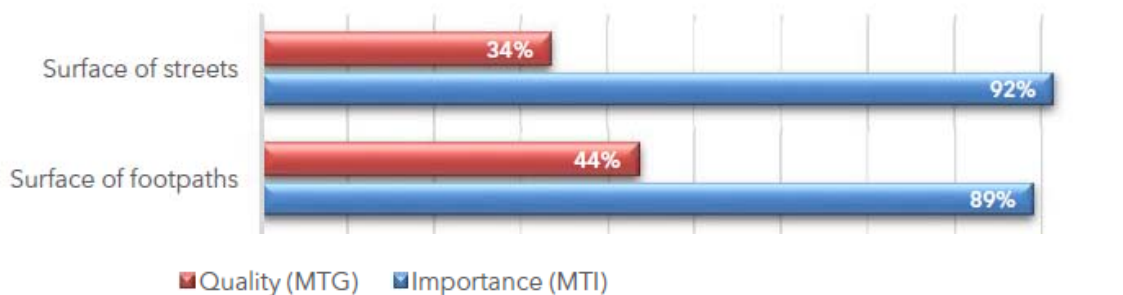
- The level of service provided by the Roding (carriageways) asset will reduce.
- The level of service provided by the Footpath asset will reduce.

### Roding Activity Key Assumptions:

- Council will meet the gap in funding caused by the reduction in the NZTA subsidy. Approximately 71% of the Roding programme of works is subsidised by NZTA.
- Assets will continue to operate up to their predicted useful lives.
- A higher risk profile for footpaths is acceptable.

## ROADING - CHANGE IN LEVELS OF SERVICE

Council's 2013 Service Levels Research, refer graph below, has highlighted that the road surfaces are the most important expectation of the community, with 92% of those surveyed responding that the surface of streets was "more than important", and one in which Council has scored relatively low in quality, only 34% of those surveyed rated the surface as "more than good". Respondents were asked to rate the importance of the roading services that Council provides. This was done by rating the importance of each service on a 5-point scale (where 1 is 'very important' and 5 is 'very unimportant').



To make these results easier to interpret, a composite 'more than important' (MTI) score was calculated. This simply combines the number of respondents who rated the service as 'important' or 'very important'. The same type of scale was utilised for the Quality where 1 is 'very poor' and 5 is 'very good'. Again a 'more than good' score has been provided.

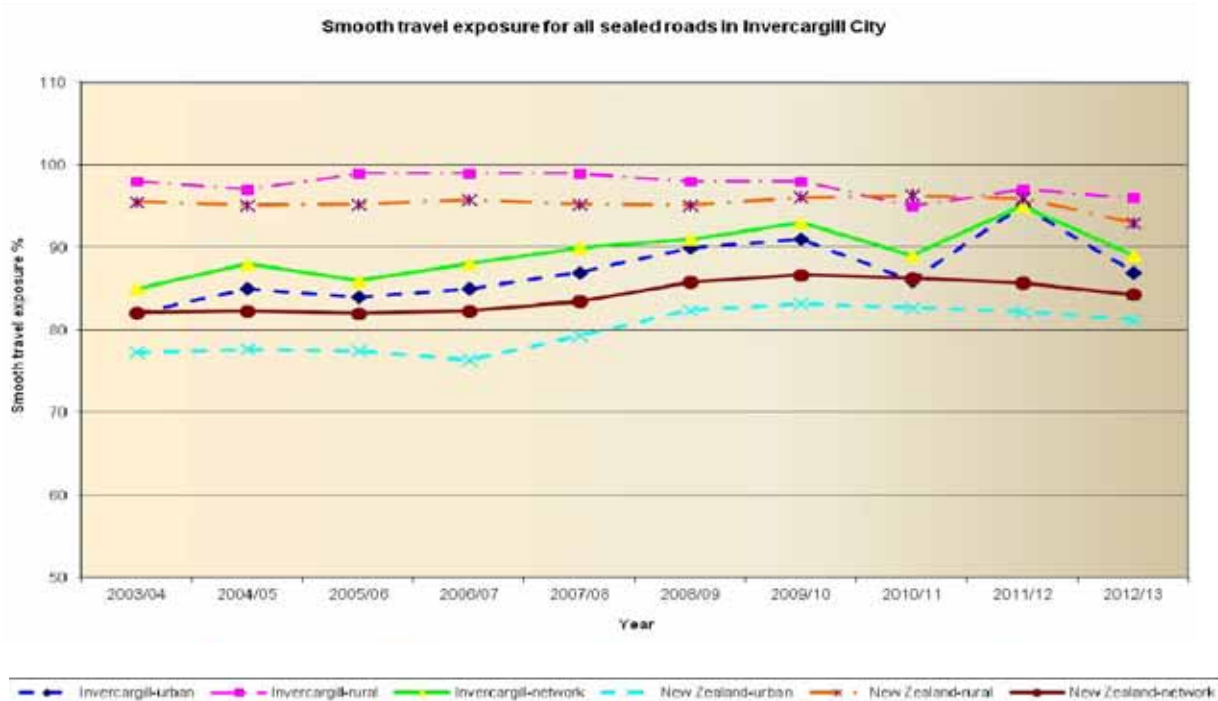
Funding for our roads is subsidised by the New Zealand Transport Agency (NZTA), who provide 60% of the funding for approved Council budgets. Council revenue provides the remaining 40% from rates, loans and other Council revenue.

A national review of the way NZTA allocate funding assistance is resulting in Council's financial assistance rate (FAR) decreasing by 1% per year from 60% to 51%, over the next nine years. This change will mean Council is faced with the decision to either keep the same annual investment level in roading by allocating extra money, or decide to leave Council's share the same and accept that the total funding available for maintenance and renewal would be less.

One of Council's key assumptions is that rates funding will meet any NZTA shortfall. This will cost approximately an additional \$90,000 cumulatively per year. In 2024/25 an extra \$810,000 (excluding inflation effects) will be required just to keep available roading funds the same.

Further, NZTA records show that Invercargill roads are better than the national average (refer graph overleaf) and, through their investment decisions and direction, are requiring that our level of interventions lessen. This means that NZTA expect that our roads will become less smooth and closer to the standard that the rest of New Zealand has. As a result our Community will notice a decrease in the level of service.

The following graph shows one of the key performance measures (Smooth Travel Exposure) which is a representation of the “smoothness” of our roads which the users (cars, buses and trucks) will experience. This index is an average of the network.



There is a gap in expectation between our co-investor (NZTA) and our users. Council has not planned to improve the smoothness of our roads.

Council programmes have focused works based on the function and hierarchy of the roads, what purpose the road serves from an arterial road to a low volume access road, and note that further additional investment from NZTA is unlikely. Council will maximise interventions in maintenance cycles at the optimum time. Council plans to do the work at the right time with the right solution.

The roading customer typically only sees and feels the travel they experience by the road surface and

consequently the smoothness measure, however, the delivery of the network is also closely connected to the strength of the pavement and the safety facilities of the network system.

It is expected that the customer’s experience of service levels within roading will decrease with time. The Asset Management Plan and this strategy do not aim to reduce this gap, but accept that the lesser smoothness at the national average is appropriate.

The gap between the customer’s expectation and what is able to be delivered is not resolved.

## Renewals - Carriageway

Renewals and rehabilitations are an important part of the expenditure plans for the coming thirty years within the Roothing activity. These renewals are required to bring our important roads back up to full strength so they can deliver their function, making sure that freight can efficiently travel through and across Invercargill, together with providing a resilient and effective network for other users.

Invercargill is fortunate that, due to planning in the 1960s and 1970s for a population of 100,000, we have existing roading networks with the capacity to provide for the slow but steady growth experienced. However, the wide streets also mean that we have to maintain more than is necessary, and for efficiency, when benchmarked against other peer groups sized communities, we need to continue to look to renew in ways where the roads are sized for our population.

The renewals expenditure covers the renewal, refurbishment and replacement works carried out on the existing assets to extend the life of the asset. Advanced deterioration modelling (dTIMS) of the road pavements has been utilised with the data knowledge in our Asset Management System (RAMM) and practitioners to establish renewal and resurfacing programmes.

dTIMS utilises an analysis approach with various budget scenarios and outputs what the expected network will look like through technical measures such as NAASRA Roughness counts. Through this approach a model is developed to maximise existing pavement capabilities and to push existing pavements longer and harder before renewals are undertaken.

Council historically spent a renewals budget, including surfacing, of \$4.2 million per year. The forward plan, following detailed modelling and review, is to drop this budget to \$3.2 million for approximately 6 years, then increase to a \$4.2 million for approximately 25 years and then increase again to \$5.2 million.

This approach allows roughness to worsen, but remain within the national and network performance parameters, and utilises and optimises existing pavement strengths. This approach has resulted in a cost effective and prudent approach so that funding affordability can be maintained and meets expectations of NZTA.

New ONRC technical performance measures will ensure safety, efficiency, resilience and customers are measured and expectations monitored at a technical and national level.

Seal extensions and seal widening, often popular with localised resident groups, have historically been non-subsidised works. The current asset plan recognises that none of this type of work is planned due to the financial cost of the work and the impact on Council budgets.

Improvements within the street lighting area are planned to upgrade and improve residential light using LED technologies. These new lights are more energy efficient and generate ongoing savings in operational and maintenance costs.

The expectation of the renewal and surfacing budget is to have a lower level of service but that this will trend toward nationally accepted technical measures.

Council had identified three options for Roading - carriageways:

Option 1	COUNCIL'S PREFERRED OPTION Option 2	Option 3
Don't increase ratepayer funding.	Ratepayer funding increased to meet the gap left by the decreasing NZTA subsidy.	Further increase in ratepayer funding.
<b>Impact on level of service</b> Less work can be done and our roads will worsen more quickly.	<b>Impact on level of service</b> Our roads will slowly get worse and move back towards the New Zealand average.	<b>Impact on level of service</b> Our roads remain at the current level of service.
<b>Cost to ratepayers</b> No additional financial cost to ratepayers, but residents will experience a larger deterioration in road quality.	<b>Cost to ratepayers</b> \$90,000 each year, accumulating to an additional sum of \$810,000 (uninflated) per year in 2024/25.	<b>Cost to ratepayers</b> The cost of this is unknown, but is likely to be a substantial increase in the rates required for roading. Any extra ratepayer expenditure would not attract extra NZTA funding.

Following the consultation process Council determined to follow Option 2.

### Footpaths - Change in Levels of Service

The asset valuation for footpaths indicates an expenditure of \$2.1 million for footpaths is required. Council is currently budgeting approximately \$1.24 million per year for footpath renewals.

Council has decided to under fund the footpath asset as the potential risks faced are the lowest for the infrastructural assets. A footpath failure is likely to be relatively localised, easily identified and remedied very quickly allowing a higher risk to be taken.

Council's strategy is to allow the number of "very poor" condition rated footpaths to increase from the current level of approximately 4% towards the performance target of 10%. The gap exists between

the customers expectation and what Council is intending to provide.

The risk of this strategy is mitigated as Council recognises that the materials utilised, more concrete than asphalt, and the thicker construction, 100mm not 75mm, that are currently being installed, will have a longer life than those installed during the 1980's under a government works scheme. This extended life will mean less annual calculated depreciation. The strategy also ensures that each street, at a minimum, would always have at least one good footpath ensuring easy and appropriate access for the ageing population.

Option 1	COUNCIL'S PREFERRED OPTION Option 2	Option 3
Spend \$2.1 million per year.	Spend \$1.24 million per year.	Spend \$1 million per year.
<b>Impact on level of service</b> Level of service will remain the same.	<b>Impact on level of service</b> Level of service will gradually reduce as the footpath asset deteriorates.	<b>Impact on level of service</b> Level of service will reduce as footpath deterioration and the risk of asset failure increases to the point where footpaths could become unsafe.
<b>Cost to ratepayers</b> \$2.1 million per year, an increase of \$860,000 per year over Council's preferred option.	<b>Cost to ratepayers</b> \$1.24 million per year (uninflated).	<b>Cost to ratepayers</b> 1 million per year. A saving of \$240,000 per year on Council's preferred option and a saving of \$1.1 million on the asset valuation expenditure.

Following the consultation process Council determined to follow Option 2.



### Data Confidence and Reliability

The confidence in the data used in Asset Management Plans has been assessed using the following table:

Confidence Grade	General Meaning
<b>A</b>	<p><b>Highly Reliable</b></p> <p>Data based on sound records, procedures, investigations and analysis which is properly documented and recognised as the best method of assessment. Dataset is complete and estimated to be accurate 2%.</p>
<b>B</b>	<p><b>Reliable</b></p> <p>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 place on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate 10%.</p>
<b>C</b>	<p><b>Uncertain</b></p> <p>Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolation from a limited sample for which grade A &amp; B data is available. Dataset is substantially complete but up to 50% is extrapolated data and accurately estimated 30%.</p>
<b>D</b>	<p><b>Very Uncertain</b></p> <p>Data is based on unconfirmed verbal reports and/or cursory inspection and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy 40%.</p>

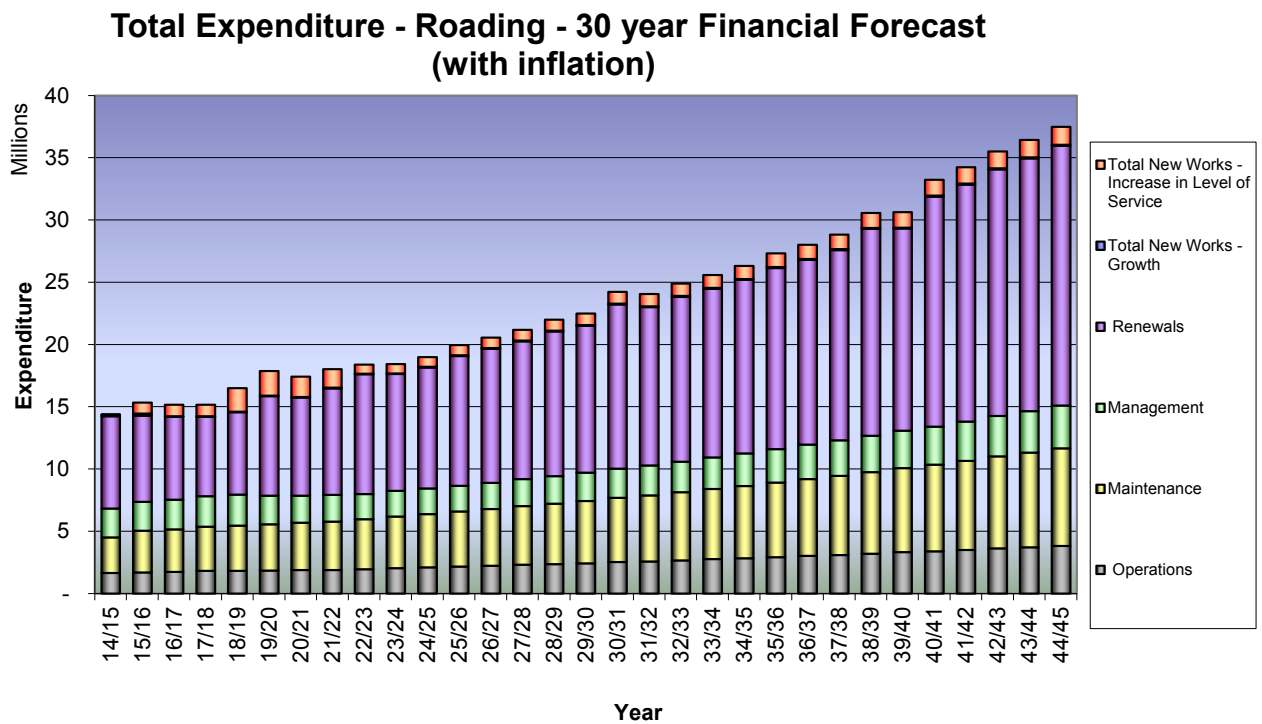
The confidence levels which have been allocated in the assessment of the financial forecasts are:

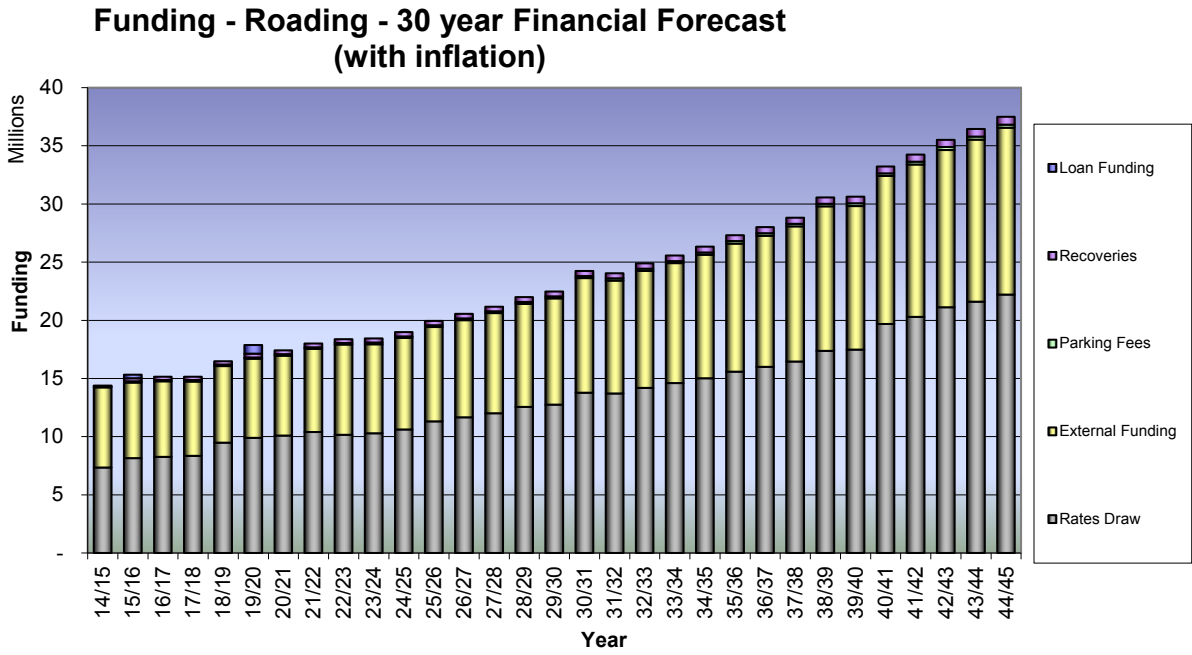
Asset Category	Confidence Level			
	A	B	C	D
Pavements		✓		
Top Surface		✓		
Kerbs and Channel		✓		
Footpaths		✓		
Bridges		✓		

**ROADING - COSTS AND FUNDING**

The following graph shows the total expenditure and income sources requirement for the roading activity, inflated in accordance with the Local Government

Cost Index, with annual inflation varying from 2.5% to 3.5%.





The following table shows how Council intends to fund the Key issues identified.

Key Issue	Sources of Funding
<b>Level of service decrease - roads</b>	NZTA subsidy
	Rates
<b>Level of service decrease - footpaths</b>	Rates

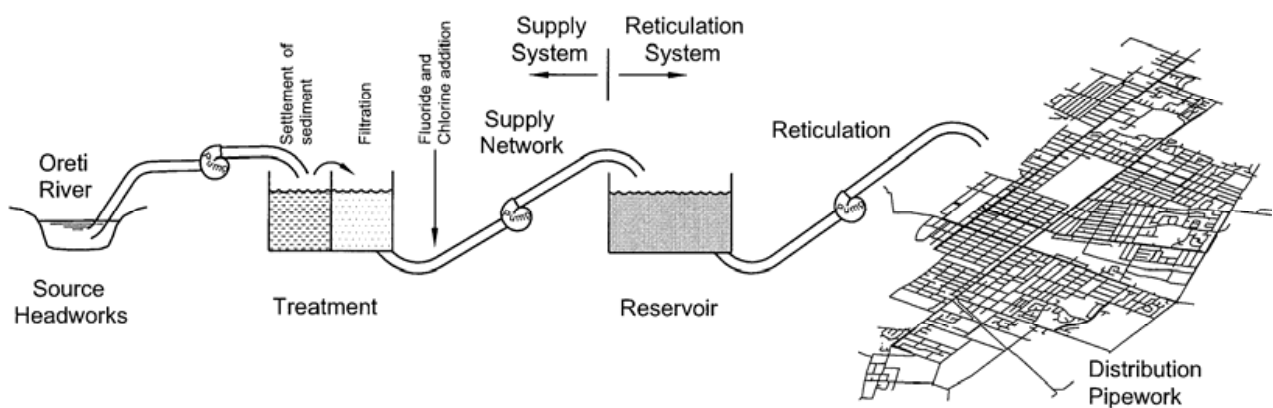
# what are our big issues?

## water supply

The Invercargill water supply provides water to the urban areas of Invercargill, Bluff and the Port of Bluff. It has one source, the Oreti River at Branxholme approximately 17 kilometres north of Invercargill. The supply system comprises a full treatment plant at Branxholme, a chlorination plant at Bluff, bulk

supply mains connecting Branxholme to Invercargill and Invercargill to Bluff, pumping stations and pipe distribution networks in both Invercargill and Bluff.

The image below shows the schematic layout of the water supply network.



### The Key Issues are:

- Distribution water pipes, made of asbestos cement, require earlier replacement than expected.
- Delaying the alternative water supply project.
- Upgrade Branxholme Water Treatment Plant to meet the Drinking Water Standards.

### Water Supply Activity Key Assumptions:

- Water distribution asbestos cement pipes fail earlier than expected.
- The Branxholme trunk water mains have yet to be structurally sampled but have an assumed life of 65 years.
- Concrete reservoir structures will only reach their predicted useful lives.
- No catastrophic event occurs that will require an alternative water supply prior to it being available.

## Renewals - Asbestos Cement (AC)

### Distribution mains

Recent failures in some areas of the pipe network have meant that Council has brought forward the programme for replacement of asbestos cement (AC) pipe as it now recognises that the expected life of the pipe will not be as long as previously anticipated. This has been validated by sampling processes and the testing of the materials taken out.

This type of pipe forms approximately 50% of the water supply network and has a significant impact on renewal programmes.

Thirty-eight samples of asbestos cement water main pipe were taken from the network and evaluated to assess their life. Results varied with the median life determined as 56 years, nine years less than the 65 years previously assigned. The results were then extrapolated across the network. This extrapolation suggests that there may be a significant number of pipes in the water main network, with a replacement value of \$22 million, which are near or close to failure. This will mean an increasing likelihood of failure of single isolated pipe assets.

The initial findings of the survey need to be verified by further condition assessment and this will be undertaken. However, it is clear from the recent pipe failures and surveys that renewals of the water mains system of asbestos cement pipes needs to start now rather than waiting for the 65 year life expectancy which has been used as the basis of previous Asset Management Plans.

This Strategy proposes an increasing commitment in the coming years to replacement of the asbestos cement pipes. This will be refined as more survey work is undertaken.

The only concerns that Council has relate to the state of the asbestos cement pipes. We have had no issues with other pipes in the network, for example polyethylene or cast iron, and are confident that the estimated life of those pipes is accurate.

\$22 million of renewal work needs to be moved forward starting next year and due for completion in 2024. Council has assigned one sample to each 5 year time period. The sample is assumed to be representative of all pipes of the same diameter that were laid within that period. When representative samples have not been taken the historical 65 year asset life has been used. In doing this, Council has taken a proactive measure to manage and lessen the risk over time.

Having identified the problem, there are limitations on how much work can be done in any one year due to the availability of suitably qualified contractors. The renewal programme must be staged and gradually escalated to allow contractors time to prepare.

Should all of the \$22 million be required to be completed at an earlier stage than what we have planned, Council would look to fund this from loans and consider deferring other works.

Council accepts that with respect to data confidence and uncertainty, more investigation into the condition of the pipe network is necessary. Due to the uncertainty there is the potential for a variation to financial forecasts in the range of 20 up to 30%. This means that in the worst case scenario, there could be a variation in the amount of work needed to be undertaken of up to \$15 million (uninflated). However, if the actual costs vary significantly from the estimate, the Council will consult on possible

funding options. Should an unexpected variation in future renewal costs occur Council's preferred option would be to loan fund the necessary work over a twenty year period. Due to Council's good financial position and low debt ratio, Council can increase debt in the short term to meet increasing costs.

Council also considers that replacement of the original Branxholme pipeline, which is also AC pipe, will be necessary and anticipates that this project will be scheduled over the 2021 to 2023 period. This replacement is aligned to its expected life which may need revision subject to determination of its actual condition.

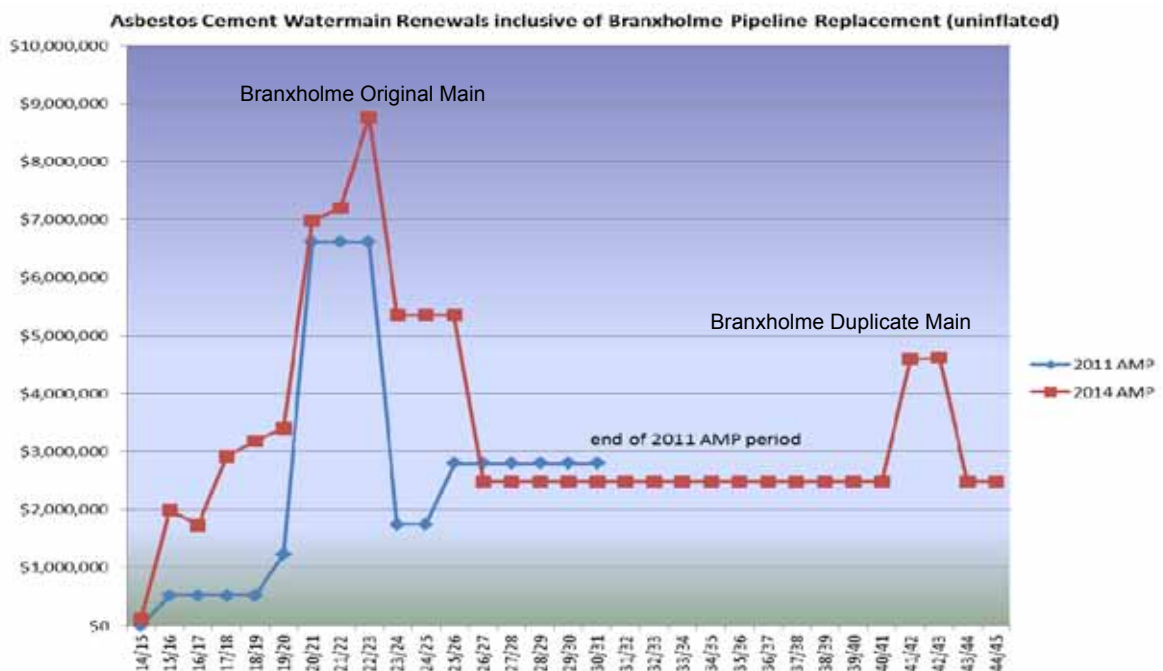
Similarly the replacement of the first part of the Branxholme duplicate pipeline has been scheduled in the 2041 to 2043 period, to be replaced at the end of its expected life. These replacements are high cost, but the pipes are significant in ensuring the ability to continue to transport water from Branxholme into the City reservoirs.

A low risk approach is being taken to renewal of

the supply network as the consequence of failure, and no water supply, is very high. The supply lines are regularly monitored and a sampling and testing regime is underway to better understand this asset.

The distribution watermain AC pipe replacement programme, used to bring water to homes of residents, has been moved forward. This is due to the recent failures, better data and an understanding that the pipes have shorter lives than was previously understood. Should it be found that the condition of the original Branxholme pipeline will also not meet its expected 65 year life, then the replacement programme for all AC pipe, both distribution and supply, will need review with adjustments made with respect to priority and affordability. The reduced life of AC pipe is being recognised nationally by councils.

The following graph shows the financial impact of bringing forward the asbestos cement pipe replacement programme in accordance with the earlier described assumptions.





**Water Reservoirs**

Council’s water storage reservoirs are large concrete structures important for holding enough water so that homes can be continuously supplied via the pipe distribution network. The reservoirs will reach the end of their planned service lives in 2029/30 (Doon Street) and 2044/45 (Waikiwi). Waikiwi is the largest reservoir and, as such, a significant and critical asset to be renewed. These structures are very important in the storage and delivery of water to Invercargill. While included in the budgets, further investigation continues to be undertaken to more clearly define the

end of life options and the key assumption is that a relatively conservative approach is taken and that the reservoirs will continue to operate to those expected lives.

Headworks and treatment plant renewals reflect normal planned renewal and replacement of mechanical plant and instrumentations expected of treatment and distribution equipment. Renewals in reservoirs, as outlined above, and pump stations similarly represent plant and equipment replacement.

Council had identified two options:

Option 1	COUNCIL’S PREFERRED OPTION Option 2
Do not bring forward the renewal programme for asbestos cement pipes.	Bring forward the rate of replacement for asbestos cement pipes.
<p><b>Impact on level of service</b></p> <p>Level of service will decrease with:</p> <ul style="list-style-type: none"> <li>• Increasing risk of more frequent disruption to water supplies to individual properties;</li> <li>• Supply disruption increasingly lasts longer;</li> <li>• Increasing risk of flood damage to private property;</li> <li>• Increasing deterioration of the road owing to undermining of the road by flooding;</li> <li>• Cost of emergency maintenance will increase.</li> </ul>	<p><b>Impact on level of service</b></p> <p>Maintain the current level of service.</p>
<p><b>Cost to ratepayers</b></p> <p>Unpredictable. Rather than spending on a predictable renewals programme and routine maintenance, emergency repairs would have to happen as and when failures occur.</p>	<p><b>Cost to ratepayers</b></p> <p>The water rate will increase above the rate of inflation. This option advances expenditure that was planned to occur in later years. A total of \$46.8 million will be spent between 2015/16 and 2024/25, which equates to an average of \$4.7 million per year.</p>

Following the consultation process Council determined to follow Option 2.

## Alternative Water Supply

Timing for the alternative water supply has been reprogrammed for the period 2025 through to 2027. This study had been anticipated to be undertaken during the 2019-2021 period however, Council proposes to delay this project to ensure better affordability can be maintained. Previous studies on potential water supplies indicate a substantial financial benefit of underground water supply over surface water, plus a different risk profile which would complement the existing Oreti scheme. The development of an underground water source will only be committed to if a suitable source, by way of quality and quantity, can be found. It is intended that

Council had identified two options:

the alternative water supply act as an emergency back up to the Oreti scheme to enable supply to continue, albeit to a reduced demand as would occur during an emergency.

Council anticipates that this project will cost approximately \$10 million and has, through consultation, established that if the public are happy with this timing given the other demands on the water reticulation piped networks through the AC renewals.

A key assumption made is that no catastrophic event occurs that will require an alternative water supply, prior to the alternative supply being available.

Option 1	COUNCIL'S PREFERRED OPTION Option 2
Carry out the Alternative Water Supply project in the 2019-2021 period.	Defer the work on the Alternative Water Supply project until 2025.
<p><b>Impact on level of service</b></p> <p>Level of service will increase as the Community has an emergency water supply.</p>	<p><b>Impact on level of service</b></p> <p>Maintain the current level of service, but acknowledge that the Community does not have an emergency water supply.</p>
<p><b>Cost to ratepayers</b></p> <p>\$10 million. This would be on top of critical infrastructure renewals, and Council has concerns regarding affordability.</p>	<p><b>Cost to ratepayers</b></p> <p>No increased cost in the immediate plan, but the project will need to be inflation adjusted from the \$10 million estimated for the 2025 year.</p>

Following the consultation process Council determined to follow Option 2.

**Branxholme Water Treatment Plant**

The Branxholme Water Treatment Plant will be upgraded over the 2015/16 period to address non-compliance with the Drinking Water Standard and the summer taste and odour issues. Total cost is estimated at approximately \$10 million. This upgrade will improve the level of service provided. The Branxholme Water Treatment Plant upgrades were consulted on as part of the 2014/15 Annual Plan

and are already underway and reflected in current budgets.

**Data Confidence and Reliability**

The confidence levels (as per description table in Rooding section) which have been allocated in the assessment of the financial forecasts are:

Asset Category	Confidence Level			
	A	B	C	D
Headworks / Treatment		✓		
Reservoir / Pump Station		✓		
Pipe Networks			✓	

**WATER - COSTS AND FUNDING**

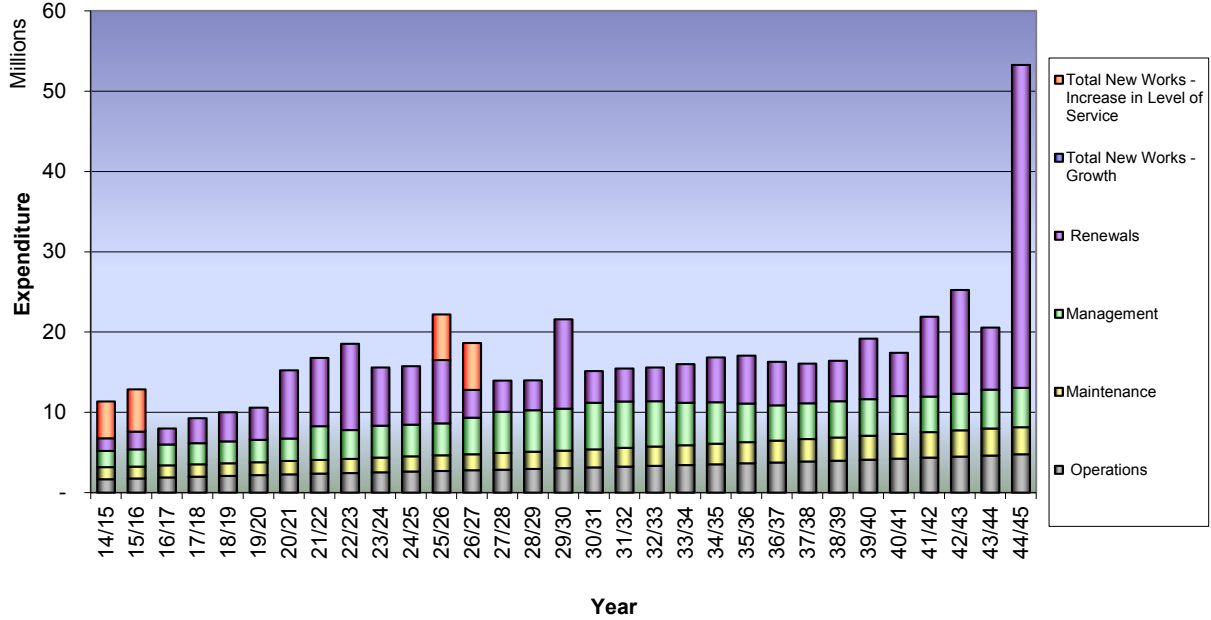
The following graph shows the total expenditure requirement for the water activity, inflated in accordance with the Local Government Cost Index, with annual inflation varying from 2.5% to 3.5%.

This expenditure is largely influenced by renewals and the one-off projects such as the development of an alternative water supply, reservoir renewals, supply

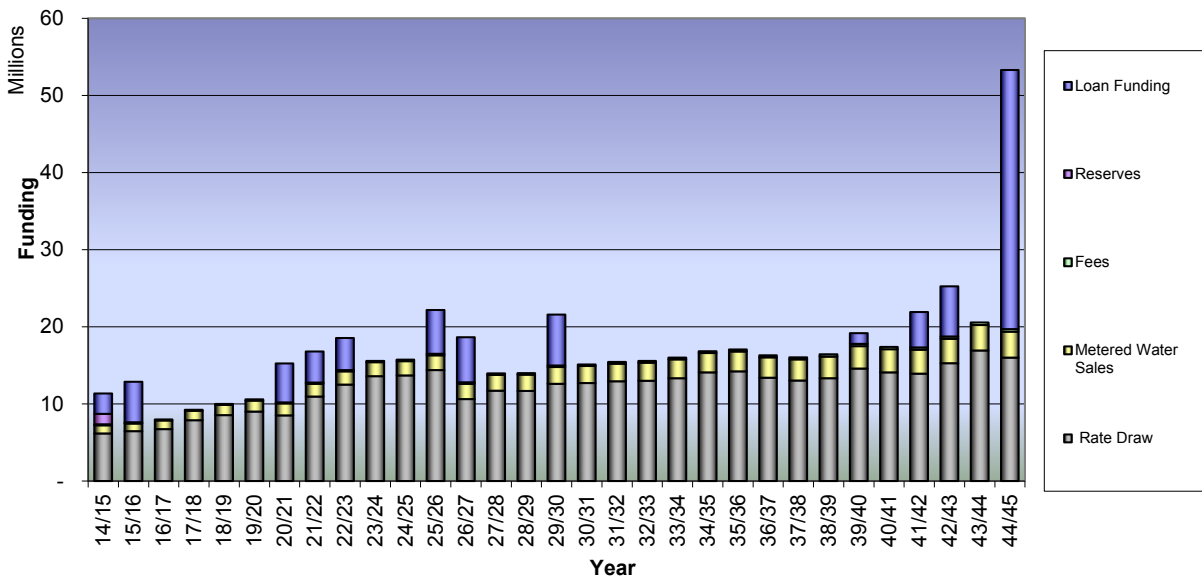
main renewals and the upgrade of the Branxholme Water Treatment Plant.

The rise in management cost is a direct reflection of increasing loan servicing costs to fund the Branxholme pipeline, reservoir renewals, the upgrade of the Branxholme Plant and development of an alternative water supply.

### Total Expenditure - Water - 30 year Financial Forecast (with inflation)



### Funding - Water - 30 year Financial Forecast (with inflation)



The following table shows how Council intends to fund the Key issues identified.

Key Issue	Sources of Funding
<b>Asbestos Cement Pipe Replacements.</b>	Loan and Rates
<b>Delaying the alternative water supply project.</b>	Loan

# what are our big issues?

## sewerage

The Council manages three sewerage networks consisting of a total of 364 kilometres of pipe in a variety of materials and in sizes ranging from 50 millimetres in diameter to 1,500 millimetres in diameter. The separate sewerage networks are located at Omaui, Bluff and Invercargill. The sewerage system includes 29 pumping stations ranging in size from those serving only a few households, to the Mersey Street station, serving a population of approximately 26,000. The three treatment plants produce high quality effluent, and Council holds discharge consents which will expire in 2025 for the Bluff plant and 2029 for the Omaui and Clifton (Invercargill) plants.

### The Key Issues are:

- Planned Renewals of Pipes
- Clifton Wastewater Treatment Plant and Pump Stations
- Kennington Sewerage Scheme

### The key assumptions are:

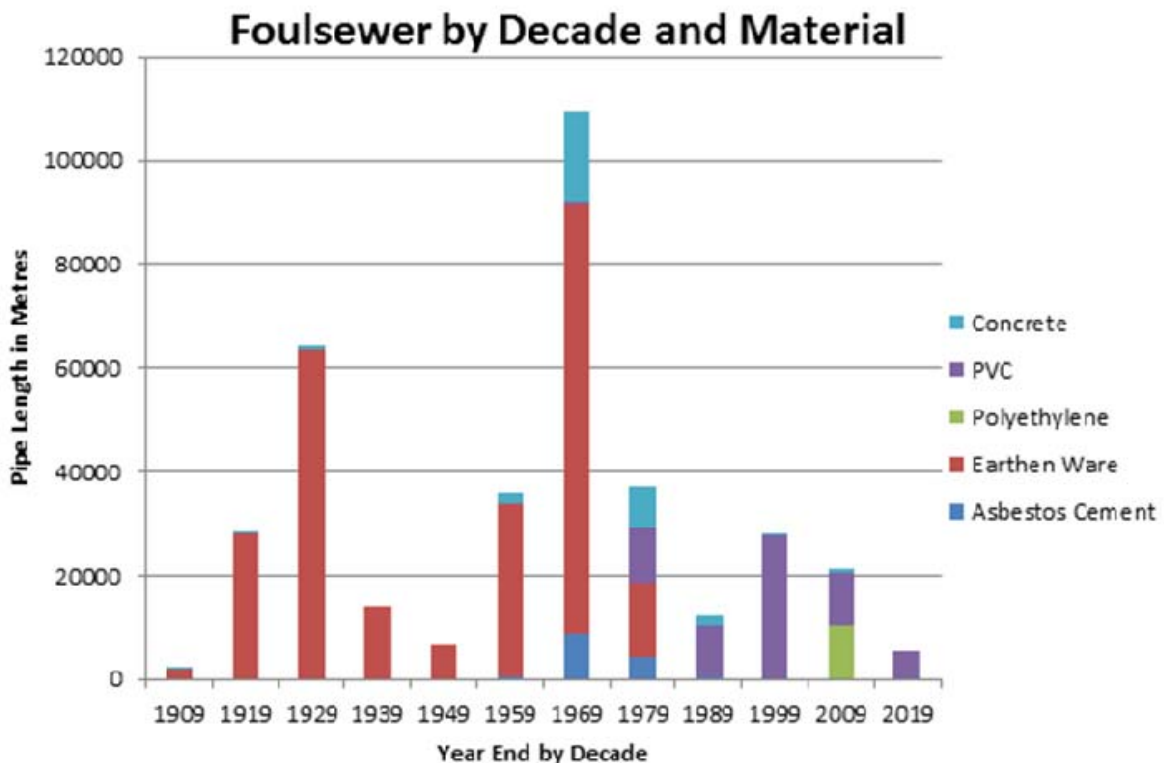
- Assets will continue to operate satisfactorily until they reach their useful lives
- No further areas of the community (aside from Kennington) will require access to the sewerage network
- Discharge consents will be renewed in 2025 (Bluff) and 2029 (Omaui and Clifton), with no significant new consent conditions.

### Planned Renewals of Pipes

The pipe network is ageing with the oldest parts of the network now over 100 years of age, the assumed economic life of the pipes. Council has begun funding the renewal of ageing pipelines. The network is generally in good condition. This has been confirmed by the CCTV inspections undertaken to date, together with the low numbers of system blockages and collapses. However, a flow monitoring survey has revealed high levels of stormwater infiltration in some areas and renewal work will focus on these areas to address the impact of sewage overflows. High stormwater infiltration means during rain storms the sewer pipes become full and could overflow.

The Sewerage renewal programme is intended to maintain the overall standard of the sewerage network by providing for the rehabilitation or replacement of individual assets as they reach the end of their useful life. The overall decline in service standards is approximately measured, in financial terms, by the depreciation rate. In the past Council has only partially matched depreciation and Council intends, over the next seven years, to increase renewal expenditure to equal the rate of depreciation. This will lead to an improvement in the level of service and was included as an option in the Long Term Plan Consultation Document.

The graph below shows the age of the City's sewerage network. Renewals are closely linked to the age of the asset.



Pipes laid in the decades ending 1900-1929 are typically made of earthenware (kiln fired clay) and have been demonstrating a life expectancy of approximately 100 years. By 2030 it would be expected that these pipes will need to be replaced and Council's strategy of increasing the investment in sewer pipe renewals supports this renewal approach. The peak renewals occurring due to the initial placement of pipes during the 1920s will be completed before the second peak of renewal activity is required during the 2050 - 2080 period to replace pipes originally laid in the 1950 - 1980 period.

Failure of asbestos cement (AC) pipes, as noted in Water Supply above, is not a significant issue for the sewerage network as the proportion of AC pipe is small and the pipes are not pressurised as they are for water supply. AC pipes within the sewerage network are performing adequately and are expected to last the assigned service life of 65 years.



Council had identified three options:

Option 1	COUNCIL'S PREFERRED OPTION Option 2	Option 3
Retain current expenditure on replacement sewerage pipes.	Increase ratepayer funding to match depreciation levels within the next seven years.	Increase expenditure in Option 2 by another 50% which would allow pipes to be replaced at a faster rate.
<b>Impact on level of service</b> Level of service will reduce due to increased pipe failure and more blockages.	<b>Impact on level of service</b> Level of service will increase due to fewer pipe failures and blockages. There will be some reduction in the cross contamination of stormwater and sewerage systems.	<b>Impact on level of service</b> Level of service will increase due to faster reduction of pipe failures, blockages and cross contamination of stormwater and sewerage systems.
<b>Cost to ratepayers</b> Maintain current level of expenditure at \$1.072 million per year.	<b>Cost to ratepayers</b> By 2021 expenditure will increase to \$1.674 million per year.	<b>Cost to ratepayers</b> Increase in expenditure by another 50% per year, to \$1.627 million per year in 2016/17, followed by annual inflationary adjustments.

Following the consultation process Council determined to follow Option 2.

### Clifton Wastewater Treatment Plant and Pump Stations

Planned renewal projects are required at Invercargill's main treatment facility to replace the original 1960s floating lids on two of the three digesters as well as to improve screening by renewing ageing screening equipment. These works are planned in 2015/16. Improvements to screening are intended to reduce

accumulation of fibrous material in the digester to improve their operation. The budgeted cost of this project totals \$1,739,000. Ongoing equipment renewal is an expected part of managing treatment facilities and pump stations but at times these components are of high value.

Council had identified two options:

Option 1	COUNCIL'S PREFERRED OPTION Option 2
Do not replace lids and screens.	Replace the lids and screens.
<p><b>Impact on level of service</b> Level of service will decrease due to the potential failure of the assets, which could result in major odour issues in the Clifton residential area.</p>	<p><b>Impact on level of service</b> The level of service will be maintained due to more adequate screening and ensuring the security of the asset.</p>
<p><b>Cost to ratepayers</b> No additional cost to ratepayers, but Council could incur legal costs if breaches to resource consents transpire.</p>	<p><b>Cost to ratepayers</b> \$1.739 million in the 2015/16 year.</p>

Following the consultation process Council determined to follow Option 2.

### Kennington Sewerage Reticulation

The small community of Kennington, consisting of approximately 50 homes, most of which exceed 50 years in age, has no reticulated sewerage system, and relies on on-site septic tanks and disposal fields for effluent disposal.

Many of these systems have been found to be failing, resulting in contamination of waterways and land within the community, and carrying an associated health risk.

Council plans to install a reticulated sewer network for the community. This work and the funding split have been included as part of the 2015-25 Long Term Plan development.

The preliminary price estimate for this project is \$1,000,000. Council has planned to undertake this work in the 2015/16 year.

Council had identified three options for the funding split:

Option 1	COUNCIL'S PREFERRED OPTION Option 2	Option 3
100% of the cost is paid for by all ratepayers who received the sewerage service.	37% of the cost is paid for by the Kennington ratepayers that are connecting to the scheme and the remaining 63% is paid for by all ratepayers who receive the sewerage service.	100% of the cost is paid for by the Kennington ratepayers connecting to the scheme.

Following the consultation process Council determined to follow Option 2.

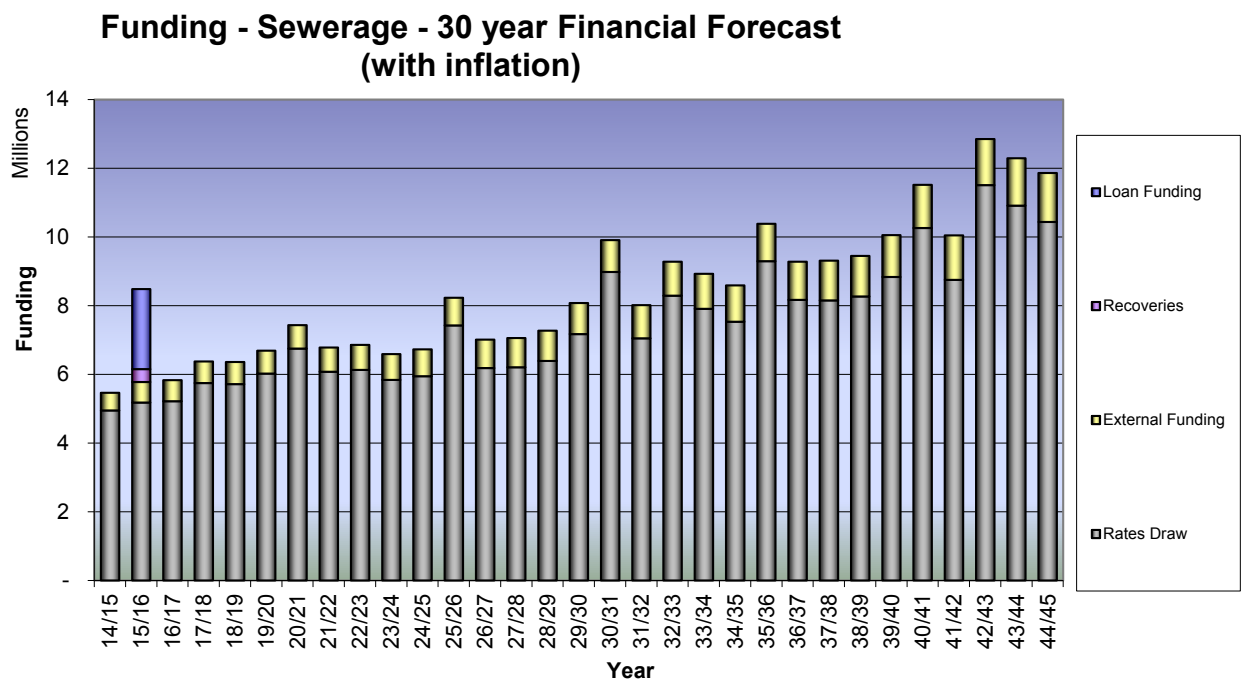
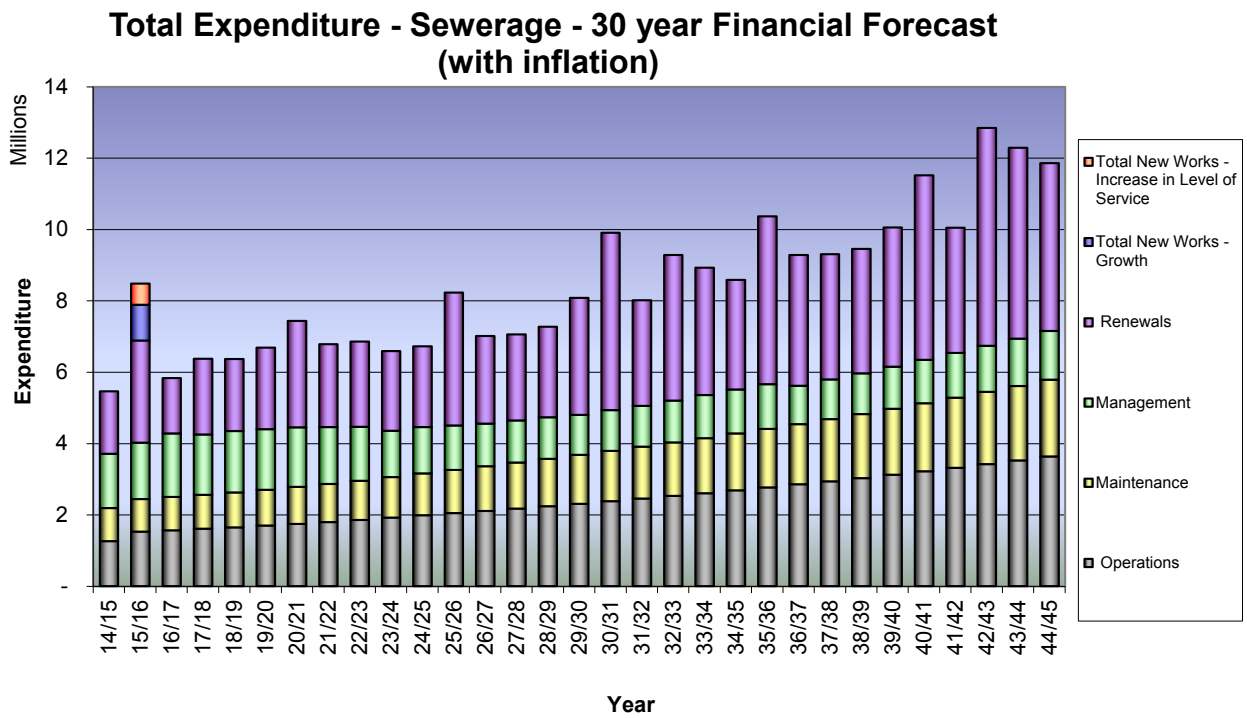
### Data Confidence and Reliability

The confidence levels (as per description table in Roading section) which have been allocated in the assessment of the financial forecasts are:

Asset Category	Confidence Level			
	A	B	C	D
<b>Treatment Plants</b>		✓		
<b>Pump Stations</b>		✓		
<b>Pipe Network Renewals</b>		✓		

**SEWERAGE - COSTS AND FUNDING**

The following graph shows the total expenditure requirement for the sewerage activity, inflated in accordance with the Local Government Cost Index, with annual inflation varying from 2.5% to 3.5%.



The expenditure is influenced largely by renewals, with peak requirements coinciding with major plant renewals anticipated for treatment plants and pump

stations. Management expenditure is forecast to decrease over the initial twenty years of the period as loans for major developments are paid off.

The following table shows how Council intends to fund the Key issues identified above.

Key Issue	Sources of Funding
<b>Planned Renewals of Pipes.</b>	Rates
<b>Clifton Wastewater Treatment Plant and Pump Stations.</b>	Rates
<b>Kennington Sewerage Scheme.</b>	Loan and User Charges (Recoveries)

## what are our big issues?

# stormwater

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The Council manages a stormwater network consisting of 412 kilometres of pipes in the Invercargill urban area, Bluff and Otatara, and approximately 15 kilometres of open drains, situated in the rural residential area of Otatara.

### **The Key Issues are:**

- Planned renewals of pipes.

### **The key assumptions are:**

- Assets will continue to operate satisfactorily until they reach the end of their useful lives.
- Predicted increase in climate change and rainfall does not change the pipe design approach, being based upon storm intensity, for stormwater piped networks meaning planned pipe diameters and budgets remain appropriate.
- Council will continue to hold discharge resource consents for the Stormwater activity and conditions of the new consents will not be significantly different from current conditions.

### **Planned Renewals of Pipes**

The majority of pipes in the stormwater network are earthenware or reinforced concrete, and have an assumed service life of 100 years. Work plans have been developed on the assumed service lives of pipes. Planned renewal of assets is a significant part of the activity's costs.

Information on the condition of the pipe network is limited due to the pipes being old and difficult and deep to dig down to, to undertake sampling and testing. There are a relatively small number of pipe system blockages indicating that for its age, the system is in reasonable condition. Approximately 5.3% of the network has been inspected by CCTV, and some visual inspection has been done from manholes and excavations during maintenance work to validate condition and expected lives.

The network also includes 9 pumping stations. Planned pump station renewals vary throughout the thirty year period as pumps and electrical components reach the end of their economic life.

Council intends to increase renewal expenditure to equal the rate of depreciation by 2020.

This will result in a level of service improvement.

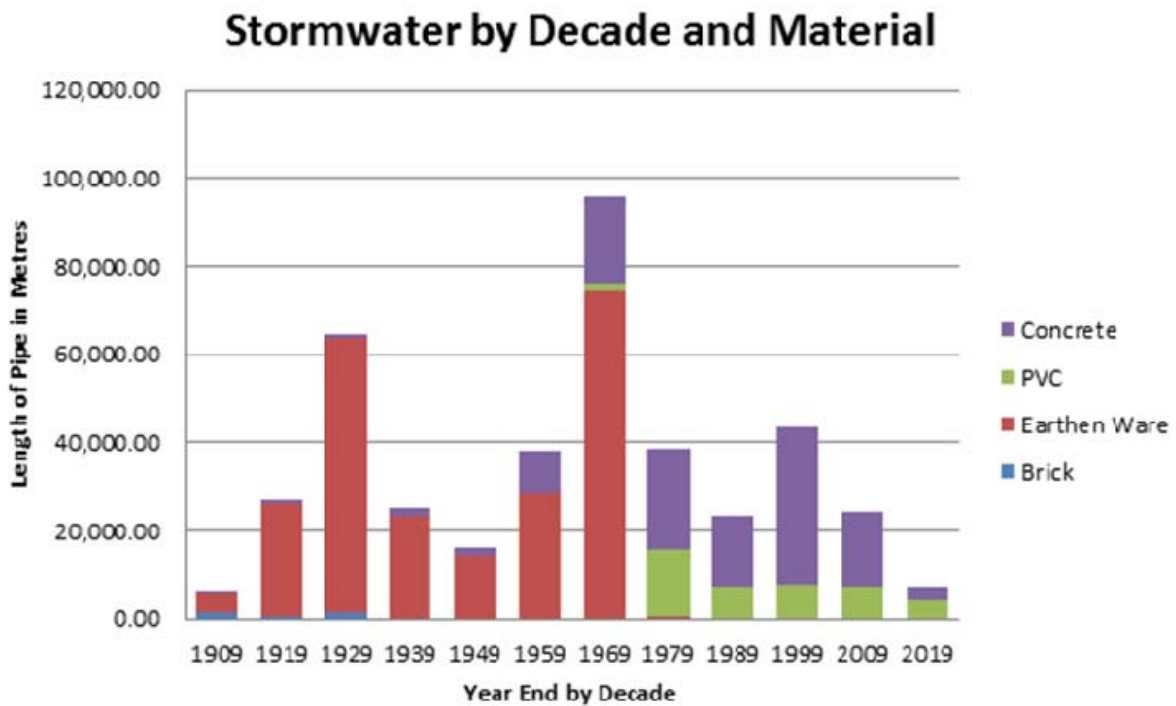
In the past Council has partially matched depreciation, however over the last 20 years, following the flooding in 1984, Council has been investing in "improvements" to the large capacity mains so that a reliable core high capacity network exists. This has enabled Council to extend the lives of low risk, smaller piped, assets and these are now the planned renewal programme. These smaller pipes connect to the high capacity mains.

The Stormwater activity renewal programme is intended to maintain and improve the performance of the network.

The graph below shows the age of the City's stormwater network. Renewal requirements are closely linked to the age of the asset.

Pipes laid in the decades ending 1900-1929 are typically made of earthenware (kiln fired clay) and

have been demonstrating a life expectancy of 100 years. By 2030 it would be expected that these pipes will need to be replaced and Council's strategy of increasing the investment in stormwater pipe renewals supports this renewal approach.





Council had identified three options:

Option 1	COUNCIL'S PREFERRED OPTION Option 2	Option 3
Don't increase ratepayer funding to begin to match depreciation levels.	Increase ratepayer funding to match depreciation levels within the next seven years.	Increase ratepayer funding to match depreciation levels sooner than in seven years.
<b>Impact on level of service</b> Level of service will reduce due to increased failure of pipes within the network and the possibility of non-compliance with the conditions of our discharge consents.	<b>Impact on level of service</b> Level of service will increase due to the replacement of the oldest pipes in the worst condition. There will also be some reduction in the cross contamination of stormwater and sewerage. The possibility of flooding will also decrease owing to the increased pipe capacity.	<b>Impact on level of service</b> Level of service will increase as pipes will be replaced at a faster rate than under Council's preferred option.
<b>Cost to ratepayers</b> Maintain current level of expenditure at \$1.289 million per year.	<b>Cost to ratepayers</b> By 2021 expenditure will increase to \$2.439 million per year.	<b>Cost to ratepayers</b> Increase in expenditure by a further 50% per year to \$2.216 million per year in 2016/17, followed by annual inflationary adjustments.

Following the consultation process Council determined to follow Option 2.

#### Data Confidence and Reliability

The confidence levels (as per description table in Roading section) which have been allocated in the assessment of the financial forecasts are:

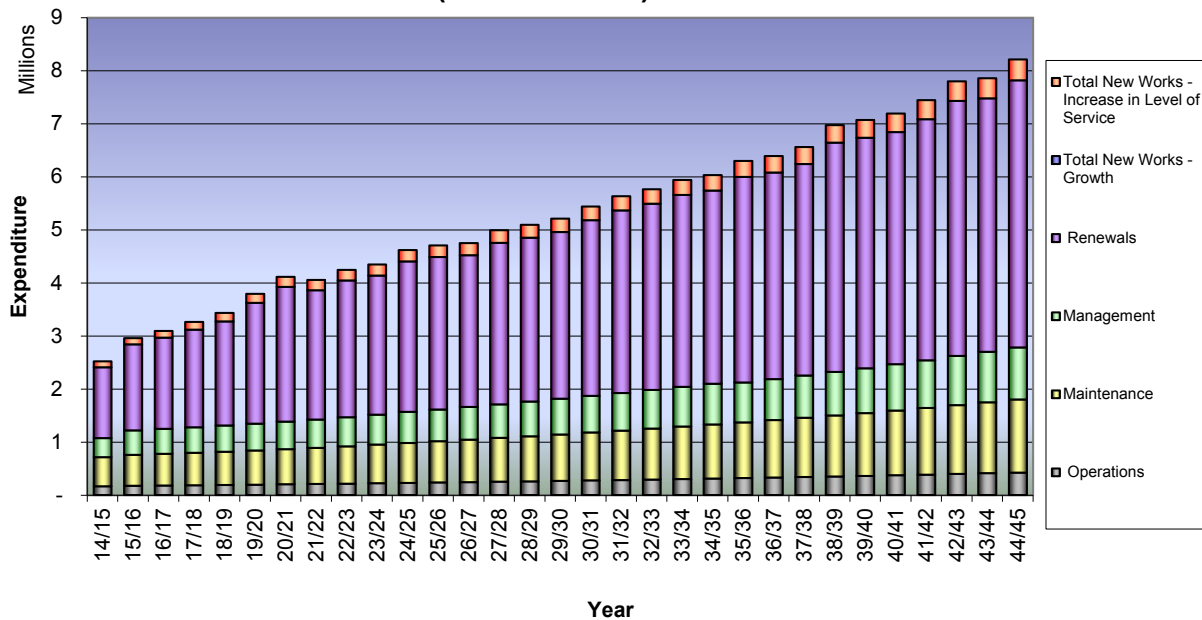
Asset Category	Confidence Level			
	A	B	C	D
Pump Stations		✓		
Pipe Networks Renewals		✓		

**STORMWATER - COSTS AND FUNDING**

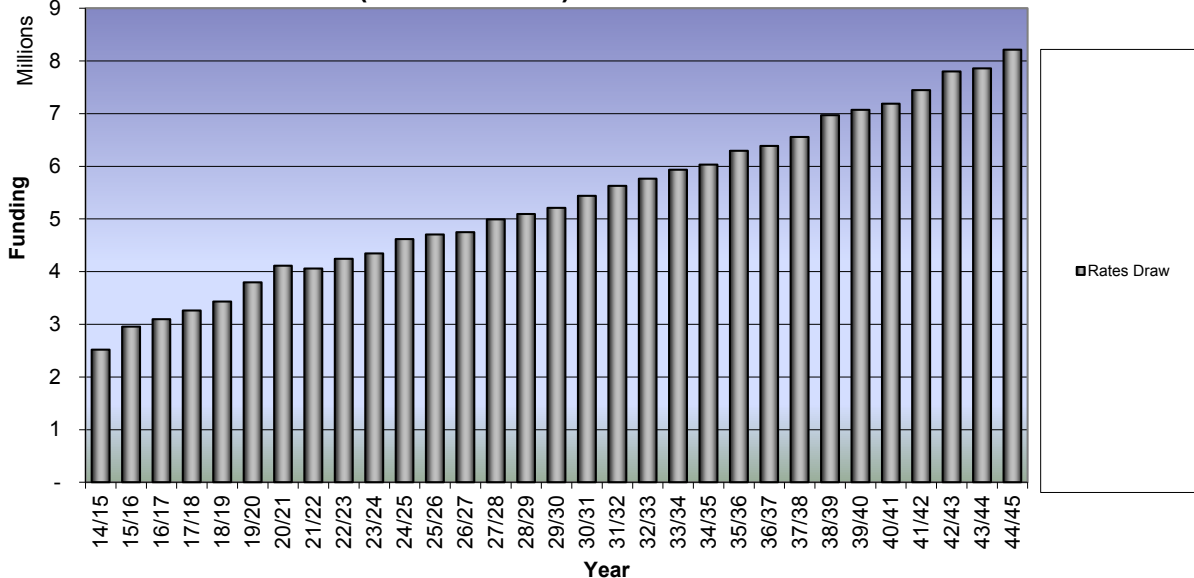
The following graph shows the total expenditure and income sources for the Stormwater activity, inflated in accordance with the Local Government Cost Index, with annual inflation varying from 2.5% to 3.5%.

The expenditure is influenced by asset renewal requirements, with an additional allocation for service improvement, which provides for infrastructure of a greater capacity to meet current design standards.

**Total Expenditure - Stormwater - 30 year Financial Forecast (with inflation)**



**Funding - Stormwater - 30 year Financial Forecast (with inflation)**



The following table shows how Council intends to fund the Key issues identified above.

Key Issue	Sources of Funding
<b>Planned Renewals of Pipes.</b>	Rates

# what are our big issues?

## other infrastructure

The Council provides a range of services to provide for the current and future interests of its Community. Some of these services require specialist buildings including swimming pools, libraries and theatres. The Council provides these buildings as an essential part of providing the services to the community. These buildings are referred to as the Core Buildings.

Developing an Asset Management Plan for Core Buildings ensures that they are designed, constructed, developed, enhanced and maintained for their specific purposes throughout their lifecycle.

### The Key Issues are:

- Planned renewals of buildings.
- Fitness Centre at Splash Palace.
- Deferring the Archives Building Expansion.

### The key assumptions are:

- Council continues to deliver services that require Core Buildings.
- The Archives building will not be at capacity prior to it being expanded.

### Core Buildings Issues.

Ageing buildings require increasing renewals over time. Council has provisionally allocated \$4.4 million for renewals to the Civic Administration Building over the next two years.

Ageing buildings also require increasing development over time to enable them to fulfil their service delivery requirements.

Council has consulted on two projects. Council is proposing to spend \$2.1 million to expand the foyer, office and change rooms and to develop a gym at Splash Palace during the 2015/16 year and a further \$6.74 million to expand the current Archives building in the 2025/26 year. The Archives building expansion has been deferred from its original proposed timing of 2016/17 to ensure that the cost to ratepayers remains affordable. The change in timing may result in the Archive building being full prior to the expansion being started.

Core buildings are generally in good condition for their age and the main issues are replacement of

Council had identified two options for the Fitness Centre at Splash Palace:

Option 1	COUNCIL'S PREFERRED OPTION Option 2
Do not build the Fitness Centre.	Build the Fitness Centre.
<b>Impact on level of service</b> Level of service will remain inadequate for the current number of pool users.	<b>Impact on level of service</b> The level of service will increase with further services offered at Splash Palace.
<b>Cost to ratepayers</b> No additional cost to ratepayers.	<b>Cost to ratepayers</b> No additional cost to ratepayers as the extension is to be funded through user charges.

Following the consultation process Council determined to follow Option 2.

Council had identified two options for the Archives Building Expansion:

Option 1	COUNCIL'S PREFERRED OPTION Option 2
Carry out work on the Archives Building in 2016/17.	Defer work on the Archives Building until 2025/26.
<b>Impact on level of service</b> Level of service is maintained.	<b>Impact on level of service</b> The level of service will slowly decrease as the archives building moves towards capacity.
<b>Cost to ratepayers</b> \$6.74 million in the 2016/17 year.	<b>Cost to ratepayers</b> \$6.74 million plus inflation in the 2025/26 year.

Following the consultation process Council determined to follow Option 2.

building components as they reach end of life or inability to provide a required level of service. The Southland Museum and Art Gallery is the only core building identified which may require earthquake strengthening dependent on the Building Act

Amendment adopted.

### Data Confidence and Reliability

The confidence levels (as per description table in Roading section) which have been allocated in the assessment of the financial forecasts are:

Asset Category	Confidence Level			
	A	B	C	D
<b>Structural Condition</b>		✓		
<b>Condition</b>		✓		
<b>Replacement Costs</b>	✓			

### City Centre Revitalisation

Over the period comprising 2015/16 - 2019/20 Council is anticipating spending \$8.03 million on the City Centre Revitalisation project. This funding will enable Council to carry out physical work in the City Centre area. These works are intended to make the City Centre the heart of the Community. To do so it needs to be an exciting and relevant place for all

ages, accessible and an attractive place for business and property developers. As Council prepares to undertake each stage of the City Centre Revitalisation project we will be seeking public input. This will occur prior to each stage being signed off. You can read more about the City Centre Revitalisation project in the Council Activities Section.

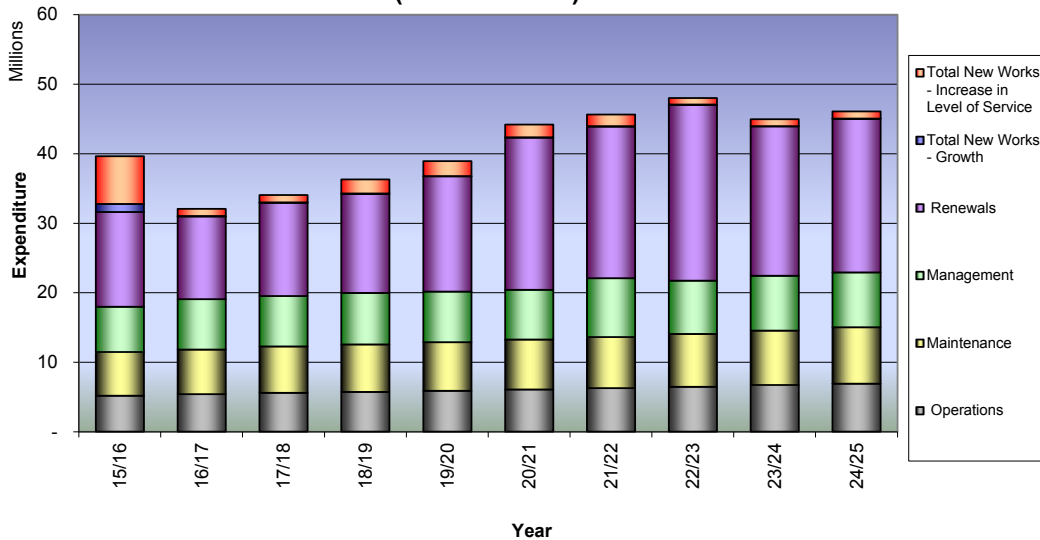
# what are our big issues? infrastructure - what will it cost

The two graphs below show, in detail for the first 10 years and then in five year blocks, the total infrastructure expenditure anticipated over the next 30 years.

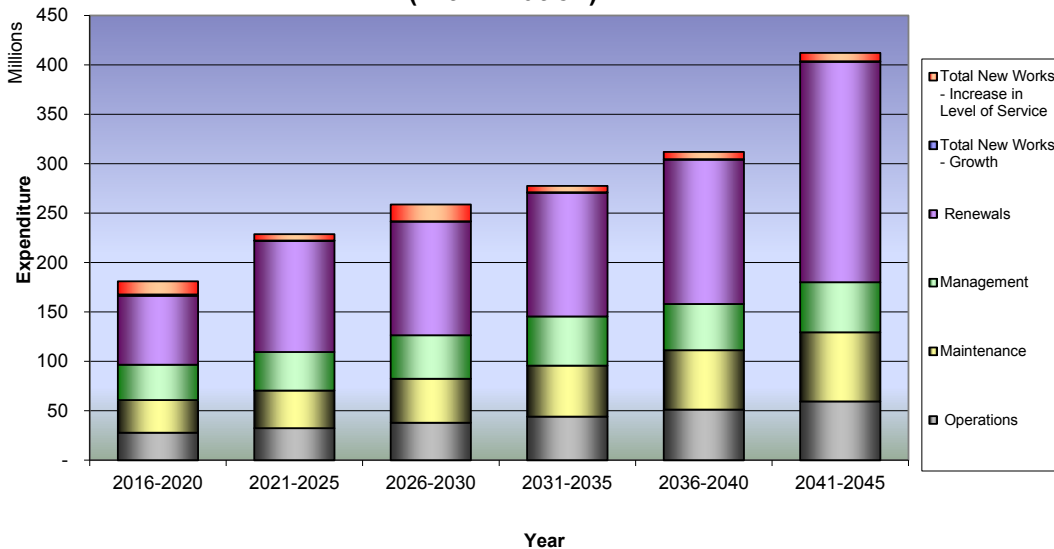
The graphs indicate that while operating expenditure continues to steadily increase, there is a significant increase in capital expenditure over the 2025-30 period and also during the 2040-45 period.

The increase in capital expenditure in the 2025-30 period can be attributed to a number of renewals being scheduled for Council’s pipe network assets. The increase in the 2040-45 period is mainly attributable to the major capital reservoir project within the Water Supply activity.

**Total Expenditure - Infrastructure - 10 year Financial Forecast (with inflation)**



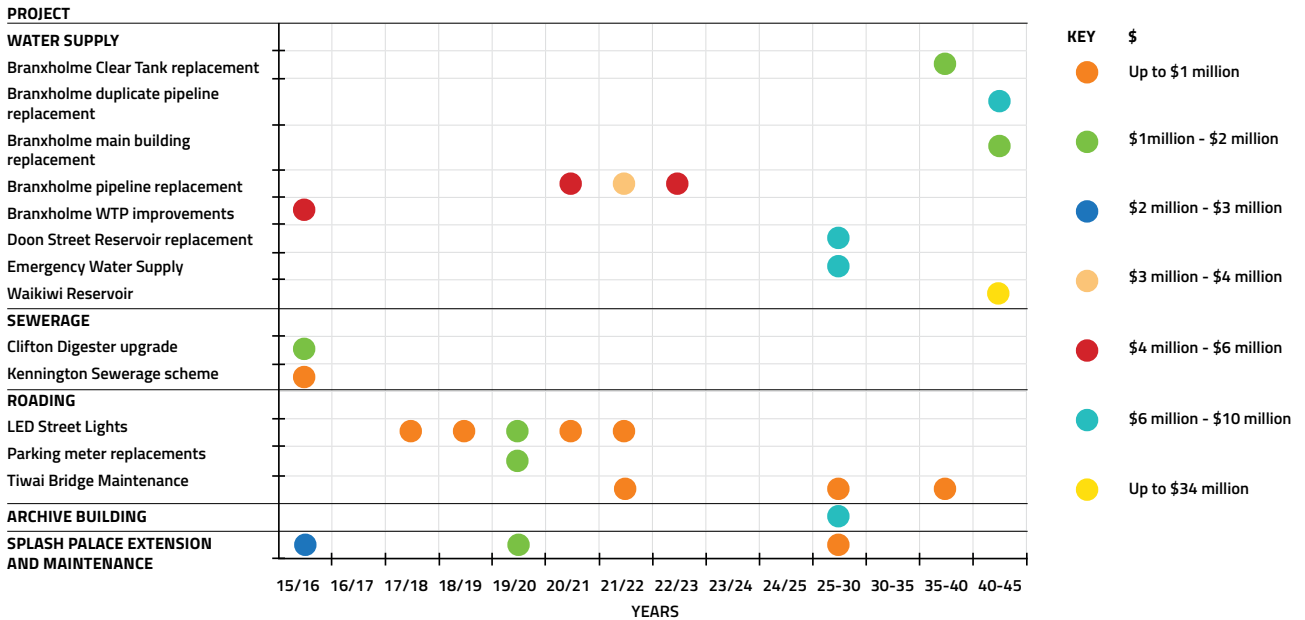
**Total Expenditure - Infrastructure - 5 yearly Financial Forecast (with inflation)**



The table below shows the scheduled timetable for the major loan funded capital projects being undertaken in the next 30 years. The different coloured dots indicate the level of expenditure

anticipated for the project. The table demonstrates that some years have a higher level of expenditure anticipated than other years.

Loan Funded Capital Spends for Maintaining Core Infrastructure Services





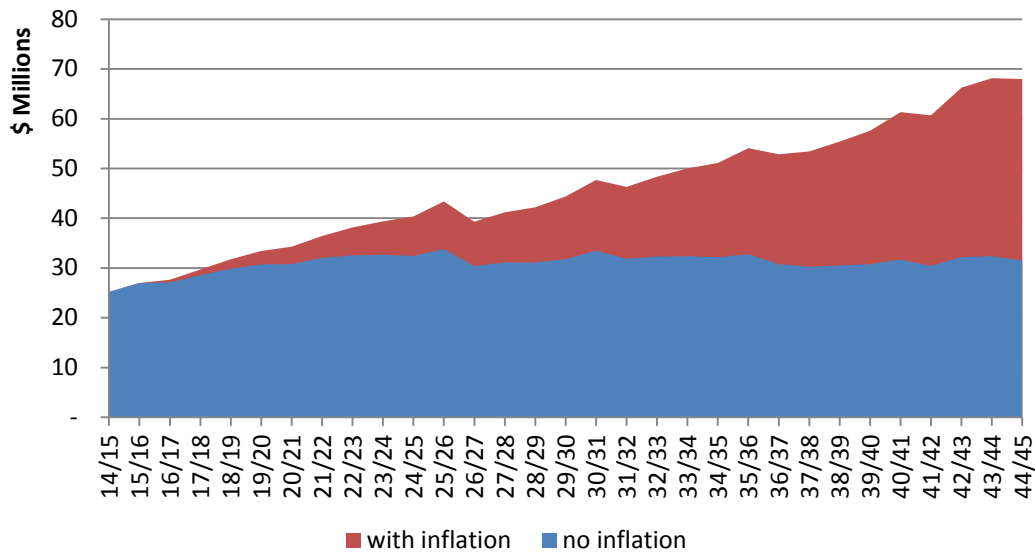
**HOW ARE WE PROPOSING TO FUND THIS**

Council's strategy is to ensure that both current and future ratepayers pay their fair share of the cost of providing services. This intergenerational equity is achieved through loan funding long-term assets and drawing rates to pay for the loan over an extended period of time. This ensures that both current and future users pay for the service.

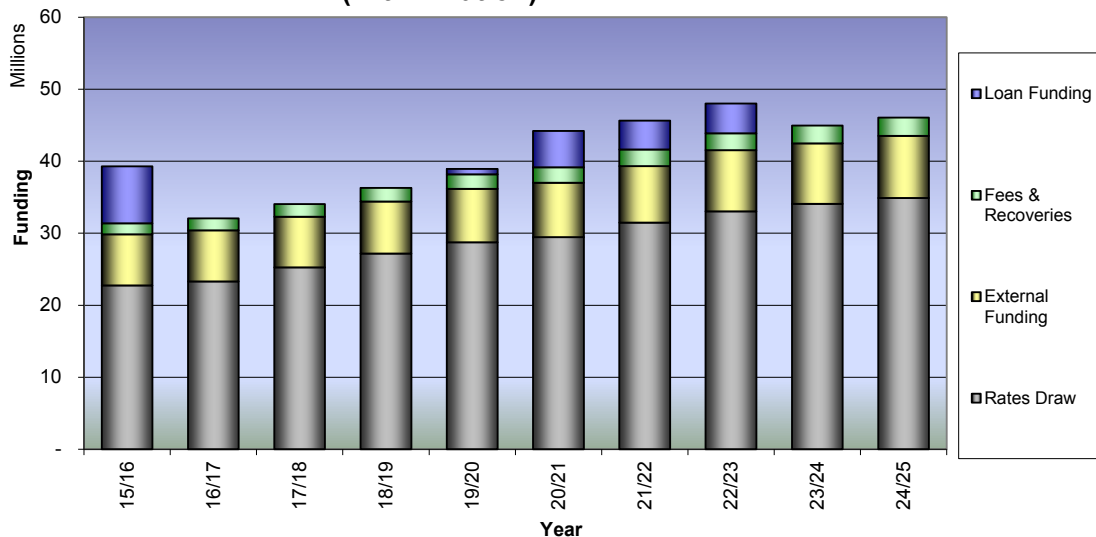
The graph below shows the overall impact of the anticipated infrastructure spend (inflated) on the required rates revenue for the 30 year period.

There is an increasing trend in the level of rates required over the 30 year period and this is predominantly related to inflation costs.

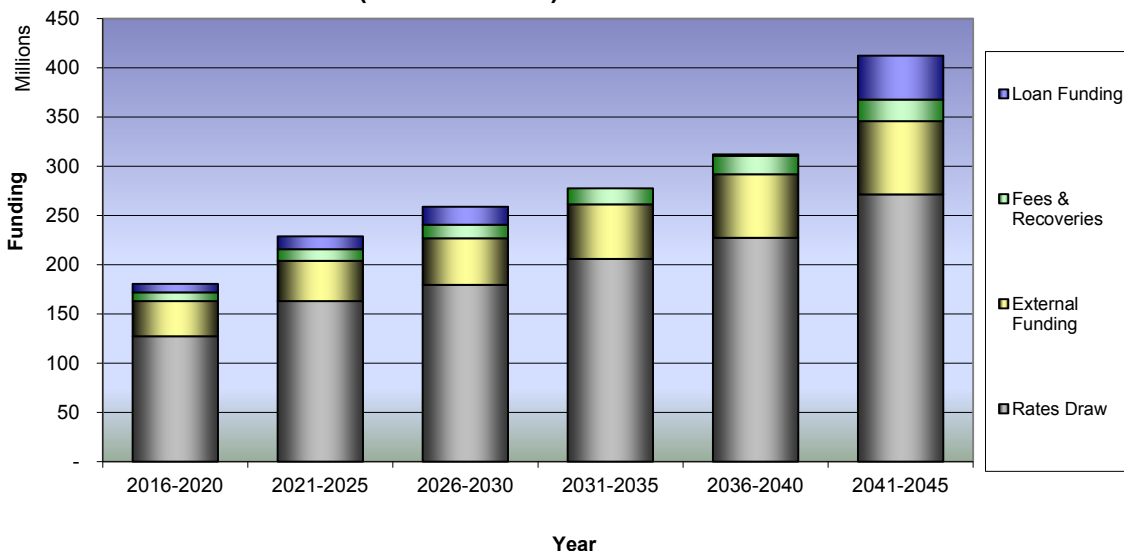
**Infrastructure - Rates Required**



**Funding - Infrastructure - 10 year Financial Forecast (with inflation)**



### Funding - Infrastructure - 5 yearly Financial Forecast (with inflation)

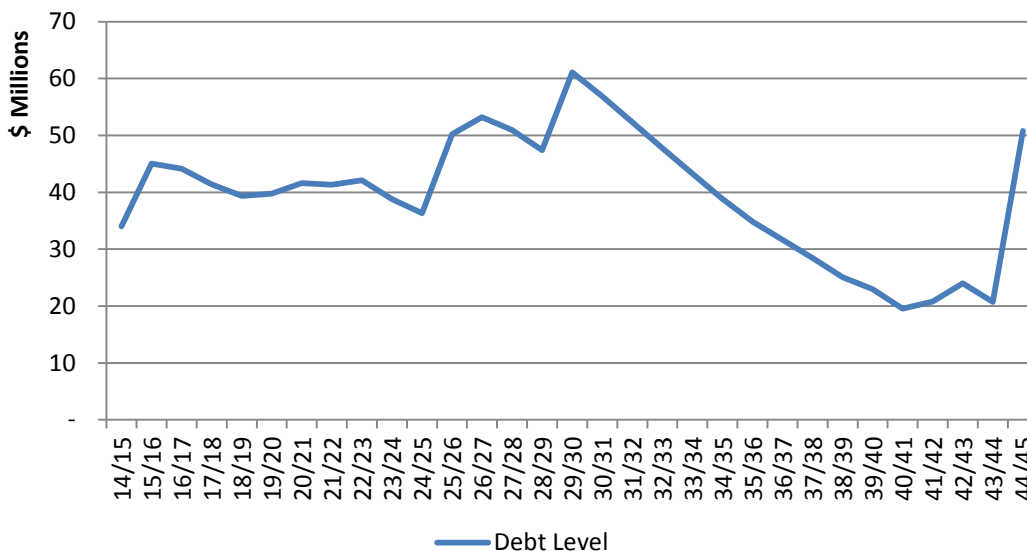


The graph below shows Council’s debt levels due to the anticipated infrastructure spend over the 30 year period. This shows a peak in debt levels for the 2029/30 year and, as loans are repaid, the debt level falls. There are three significant loans in 2025/26, 2029/30 and 2044/45 which increase debt levels. The peak in debt is predominantly due to the

Civic Theatre upgrade, the Doon Street and Waikiwi Reservoir replacement projects.

Most of the renewal works (including roads, footpath, pipes and treatment equipment) are funded from rates rather than loan.

### Infrastructure - Debt Levels (with inflation)



## CONCLUSION

The major issues identified in this strategy are the age of the infrastructure and the requirement to renew large numbers of these assets over the next thirty years. When read in conjunction with the Financial Strategy, Council considers that an appropriate level of service can be maintained at a cost that is affordable to the community, both now and into the future.

Council has developed detailed Asset Management Plans and this Strategy to deliver reliable and affordable infrastructure to the Community. Levels of service are indicated to change with the ability to fund these activities. Council believes it has made appropriate assumptions and identified how risks will be managed. It further believes that it has sufficient financial security to be able to manage any unforeseen failure of assets.

## GLOSSARY

NZTA	New Zealand Transport Agency.
ONRC	One Network Road Classification. The One Network Road Classification System is categorising roads based on the functions they perform in the national roading network.
RAMM database	Roading Asset and Management
AMP	Asset Management Plan
dTIMS	Deighton's Total Infrastructure Management System. A software application which has been designed for multi-year programming of road works. It primarily enables a user to find the optimal set of maintenance strategies to apply to a network under a given set of constraints, usually cost.
NAASRA	National Association of Australia State Road Authorities
LED	Light-emitting Diode
IIMM	International Infrastructural Management Manual