

Infrastructure Strategy

Summary

With levels of service currently deemed satisfactory, a manageable program of asset renewals, limited projected variation of local population or economy and little other apparent need for change, Otorohanga District Council is generally in a very mature, stable and sustainable position in respect of its management of infrastructural assets.

One significant exception to this is however in respect of water quality issues for ODC's four potable water supplies in the rural area, all of which do not currently comply with the provisions of the NZ Drinking Water Standards as is now required by law, and which will only become able to comply if entirely new water treatment processes are implemented, which will have very substantial costs which would have to be borne by the relatively small numbers of customers using those supplies.

Whilst this is a serious issue it does however only affect a relatively small number of residents and ratepayers, and the broader picture for the district as a whole is positive, with no other substantial infrastructural challenges currently considered likely over the next 10 years.

Council is starting to enter into a period of increased asset renewal requirements but it is doing so from a favourable financial position in respect of debt and rates levels and as such these renewal requirements are considered to be manageable.

There are also no particularly notable infrastructural resilience issues, and surveys have clearly indicated that current levels of service are meeting the expectations of residents, and that no significant change is desired by ratepayers.

Perceived 'significant infrastructure issues' relating to the next 10 years are identified in Table 1, as required in section 101B(2) of the

Local Government Act. These issues are generally considered to be of limited severity and their associated impact on Council and the community (which the exception of the aforementioned water supply issues) is expected to be relatively low.

As such the essence of Council's strategy to manage its infrastructural assets will be to keep doing what it has done for many years, which is to focus on efficient delivery of current services, with a view to building a very sound financial position that will allow it to accommodate inevitable periods of increased cost in the future.

Table 1: Significant Infrastructure Issues – Listed In Perceived Order of Certainty

Activity	Issue Type	Issue	Principal Options For Response	Implications	Certainty of Response
Roading	Demand	Previous subdivision activity on Mangati, Te Tahu and Hanning Roads has created a situation where if all of the created new lots were occupied, traffic flows could exceed the safe carrying capacity of these narrow winding roads.	Continuing upgrading of these roads using funds from Development and Financial Contributions payable at time of development. Improvements to generally be conducted in conjunction with pavement renewals. Rate of improvements dependent on rate of occupancy of new lots.	Indicative ongoing annual budget of \$50,000 per annum for improvements, entirely funded by contribution. No impact on general ratepayer.	Certain; reflected in budget estimates
Water	Demand / Level of Service	Levels of residential water use in Otorohanga are high, and there is a desire to make such use more efficient to free water for potential economic growth. Current charging system for water also considered unfair.	Install water meters on all Otorohanga residential properties in 2015/16, implement metered charging in 2019	Approximately \$720,000 capital expenditure with some associated increase in operational costs	Certain; Installation completed, charging to commence July 2019
Roading	Level of Service	Uncertainty regarding appropriateness of current program of road improvements	Undertake review of improvement options including continued focus on sealed roads, resuming seal extensions and/or reducing overall improvement budgets	Unknown; in the interim continue annual capital expenditure of between \$600,000 and \$900,000 on major sealed improvements	Certain; Review will proceed
Water	Public Health	Otorohanga water treatment requires upgrading to consistently comply with requirements of NZ Drinking Water Standards	Upgrade in accordance with consultants recommendations	Capital cost \$200k+	Considered essential therefore certain
Water	Renewals	Data suggests a major phase of renewals of Otorohanga/Kawhia water pipes required between 2018 and 2035	Budget for replacement of all pipes based on Assetfinda condition rating through Staff experience and service requests. Investigation of pipe condition testing technologies to be explored.	Potentially \$4.5 million capital expenditure.	Consideration of initial half of works in the LTP

Activity	Issue Type	Issue	Principal Options For Response	Implications	Certainty of Response
Water	Public Health	Tihiroa rural water supply unable to comply with requirements of NZ Drinking Water Standards	Upgrade existing treatment plant Construct new treatment plant Re-purpose supply as non-potable (agricultural use only)	Capital cost in order of \$800,000, reliable compliance uncertain. Some increase of operating costs. Capital cost of \$2.2 to \$2.4 million, reliable compliance likely, some increase of operating costs. Potable users must develop their own supplies, some reduction of supply operating cost	Uncertain; consideration by RWS Committee with customer consultation outside of LTP
Water	Public Health	Arohena rural water supplies unable to comply with requirements of NZ Drinking Water Standards, not suitable for upgrading	Construct new treatment plants Re-purpose supply as non-potable (agricultural use only)	Total capital costs up to \$6 million. reliable compliance likely, some increase of operating costs. Potable users must develop their own supplies, some reduction of supply operating cost	Uncertain; consideration by RWS Committee with customer consultation Outside of LTP
Wastewater	Renewals	Data suggests renewals required of some Otorohanga sewer pipes between 2018 and 2021	Budget for replacement of all pipes based on expected life. There are plans for the procurement of a CCTV unit and with this a maintenance/renewal inspection program as a means to condition rating the network	Up to \$300,000 capital expenditure	Consideration in the LTP
Wastewater	Level of Service / Renewal	Possible requirements for further upgrade of wastewater treatment process at time of resource consent reviews or renewals	Upgrades would probably focus on lowering phosphorus concentrations	Potential capital expenditure of up to \$500,000 between 2018 and 2048 and some associated increase of OPEX.	Uncertain, not yet considered in the LTP
Roading	Renewals	Forecast 'spike' of basecourse and subbase renewal requirements commencing around 2035	Validation nearer to the time, probable need to raise substantial debt to fund	Potential \$12 million capital expenditure over a 5 year period	Uncertain

Strategy Context

District Geographic Context

The Otorohanga district covers an area of 1976 square kilometres (197,600 Hectares) comprising a strip of land approximately 30 kilometres wide that extends from the shores of the Tasman sea in the West to the Waikato River in the East. Falling within the boundaries of the Waikato Regional Council, the district is a varied area containing diverse topography, productive farmland, extensive native vegetation, ocean beaches and protected harbours. It is a district with strong historical and cultural associations, dating back to the arrival of the Tainui waka in the coastal community of Kawhia 600 to 700 years ago. Kawhia and other locations retain considerable significance for Maori.

The Otorohanga district has existed in its current physical form since it was formed by the amalgamation of the former Otorohanga County and Borough Councils in 1971. The district contains 5,173 rateable units, spread over two significant Communities (Otorohanga and Kawhia) and the surrounding rural areas. The administrative and commercial centre of the district is Otorohanga township, which has a resident population of approximately 3,000.

The district has a well developed roading network, including State Highways 3, 31/39 and more than 800 km of local roads, whilst the North Island Main Trunk Line Railway also runs through the centre.

Council provides water services to both of its main communities, though the services provided to Kawhia excludes a reticulated wastewater system. Water is also supplied to six distinct rural areas within the district, with this water primarily intended for agricultural purposes.

Assets associated with roads and water services make up the overwhelming majority (around 95%) of Council's infrastructural assets by value, with other asset holding activity groups such as

other buildings, facilities, land and parks and reserves being of relatively minor value.

Demographic Context

The Otorohanga District has been, and apparently continues to be, located in a relatively neutral development zone between growing urban communities to our north, and steadily declining rural communities to our south.

The Otorohanga District wide population has remained relatively static in range between 9,663 and 9,078 since 1986, with the 2013 census usually resident population of 9,138 being an increase of 0.69% over the 2006 census total. The average population movement between 2006 and 2013 in the Waikato region was +7% and 6.2% nationally.

The Statistics NZ population projections for the District (Low, Medium and High) all indicate a general population increase between 2013 and 2043, with the low projection showing a subsequent gentle decline to 8,940 in 2043, the high projection continuing to grow to 12,750 in 2043 and the medium projection fairly stable to 10,850 in 2043.

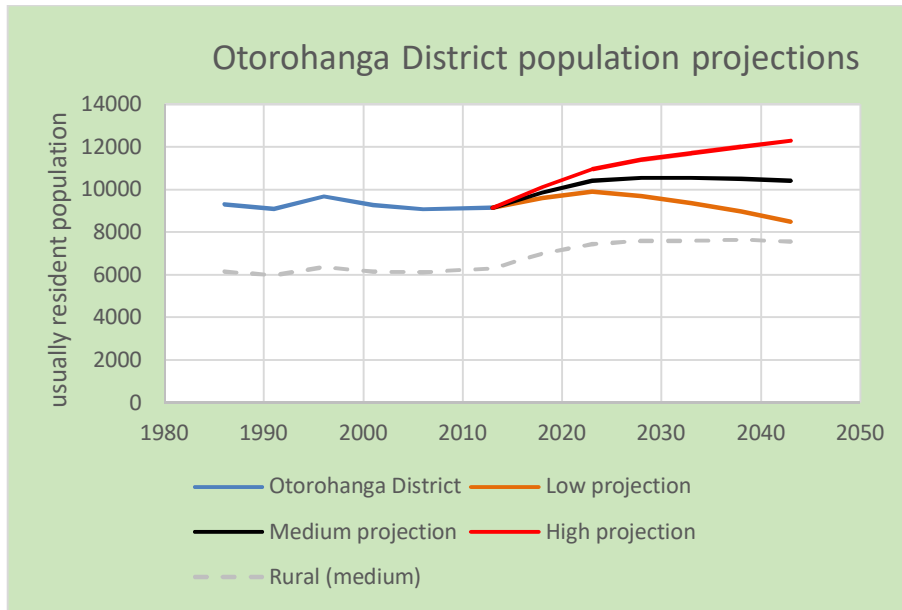


Figure 3 - Statistics NZ District Population Projections

That our district is positioned at this relatively neutral point between growing and declining regions has however made population trends weak and unreliable. In recent times projections have flip-flopped between decline and growth, and it is clear that unexpected events can easily render previous projections obsolete.

An example of this is the recent emergence of some potential major developments such as the Happy Valley milk processing facility and the proposed expansion of Waikeria Prison. Whilst neither of these developments has yet commenced construction, if they proceed they have potential to bring significant number of new residents to the area. With these weak trends and uncertainty it is believed that it is safest to assume the relatively neutral 'medium projection' population trend for the District.

A more significant demographic trend is however the projected rapid increase in the number of older (65 plus) district residents. Figure 4

below shows the SNZ projection of district population by age, in this case based on the 'low' growth assumption. It is notable that the number of residents over 65 is projected to more than double (increasing by over 1000) in the period from 2006 to 2028, and to continue increasing at a lesser rate until 2038.

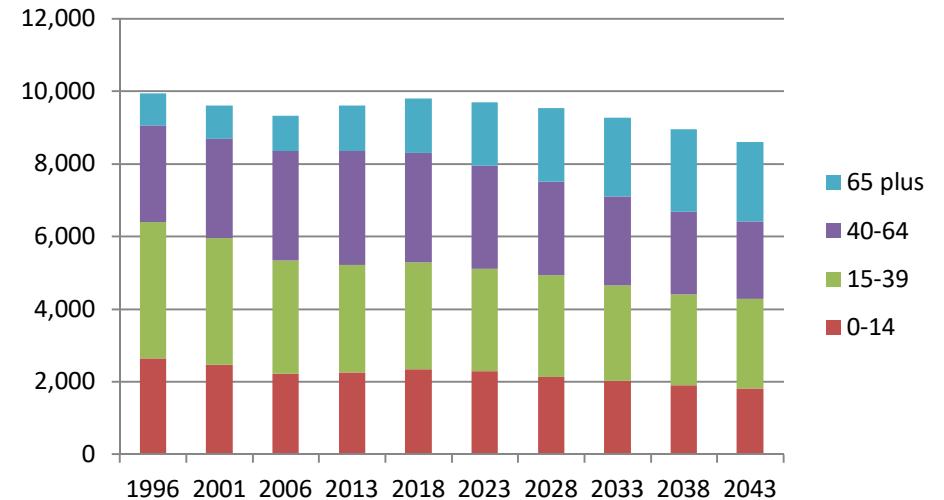


Figure 4 - Projected District Population by Age Groups, Low Growth

Whilst this aging of the population is likely to have significant social impacts, its effects on the roading and water services infrastructure currently operated by Council is however expected to be limited.

Economic Development Opportunities

The demographic projections presented in the previous section are largely based on an extension of pre-existing trends, and it is recognised that the possibility could exist for entirely new trends to be established during the relatively long period covered by this strategy.

Significant changes in national or regional policy settings, changes of global demand for certain commodities or other major events could, over a 30 year period, potentially confer some relative advantage or disadvantage on the district, particularly in relation to the establishment of new businesses.

Whilst in recent times there has been little economic growth within the district, a number of very significant new development projects are currently proposed and Council believes that changes in the availability of water for commercial purposes could, if effectively responded to by Council, potentially provide the district with some relative advantage in respect of economic development in the short or medium term.

There is also currently a shortage of residential properties in Otorohanga, and it is hoped that at least 60 new residential lots will be created in the town in the near future, which will progressively become occupied.

Whilst Council is optimistic in respect of such an opportunities, it is however believed that there is still too much uncertainty associated to allow this to be translated into growth projections that will have significant effect on infrastructure requirements.

Roading Infrastructure

Roading infrastructure (including footpaths) is by far the most significant activity of Council in financial terms, accounting for more than 80% of Council's total assets by value, and more than 40% of total operating expenditure.

Levels of Service Issues

The district's roads, footpaths and associated infrastructure have been consistently well designed, constructed and maintained, and provide levels of service that meet current and expected future needs, and no significant level of services issues are expected over the period of this strategy.

There are relatively stable or positive trends in respect of both technical and customer levels of service for district roads, reflecting the mature and consistent operation of the network.

As shown in Figure 5 and **Error! Reference source not found.**, available technical indicator data from the NZTA on the physical condition of road pavement such as NAASRA road roughness, Smooth Travel Exposure index, Condition Index and Pavement Integrity Index have all displayed relative consistency during recent years years at levels that are generally similar to or in some cases better than levels being achieved in other comparable districts.

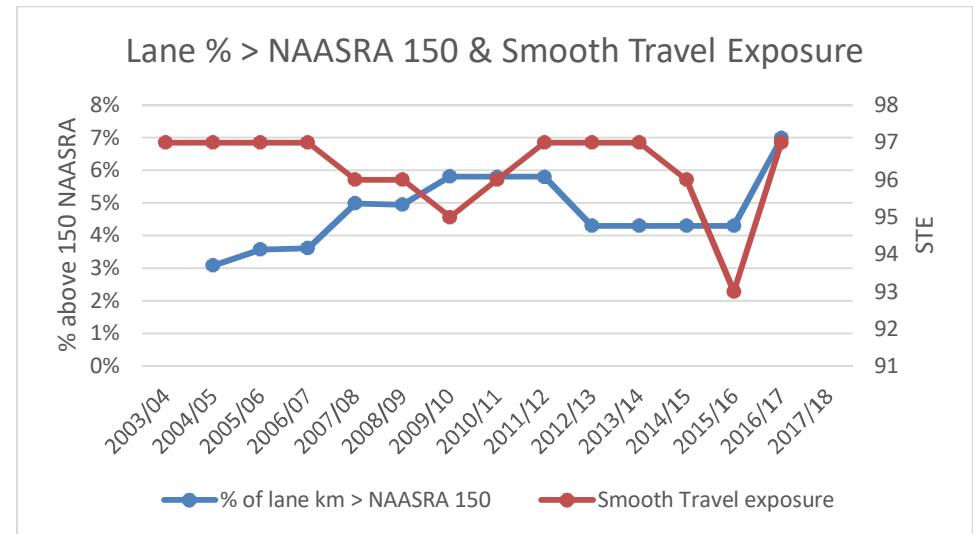


Figure 5 - Road Smoothness Trends

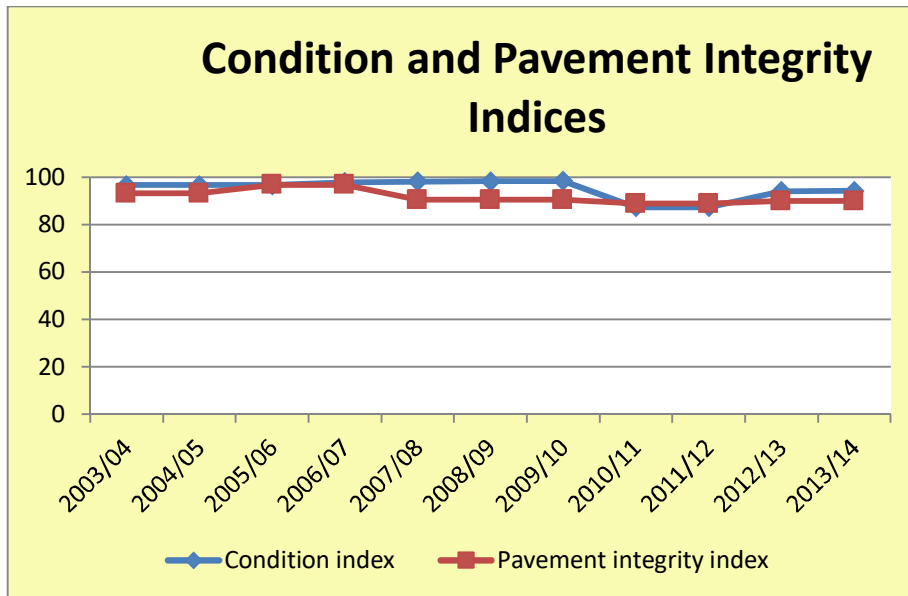


Figure 6 - Road Condition Trends

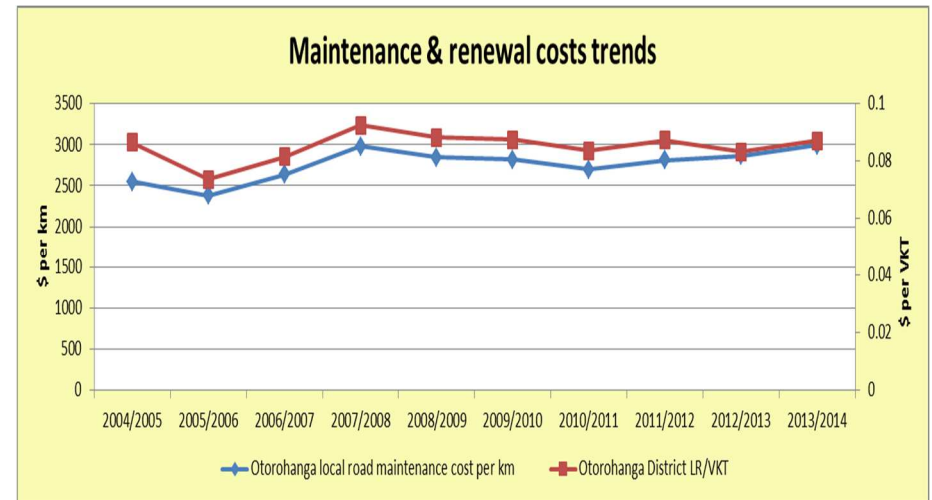


Figure 7 - Road maintenance and Renewal Cost Trends

The associated costs of maintenance and renewal works to achieve these road conditions have also been very consistent despite the effects of inflation, as reflected in Figure 7 for the data available from NZTA, which does not appear to extend beyond 2013/14.

This has translated into Council’s road maintenance costs being consistently similar to or below those of the comparable peer group, as shown in Figure 8 and Figure 9 below.

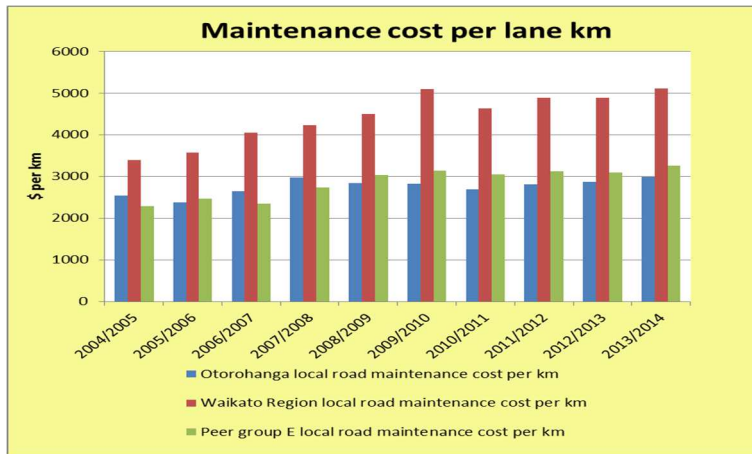


Figure 8 - Maintenance Cost Comparison*

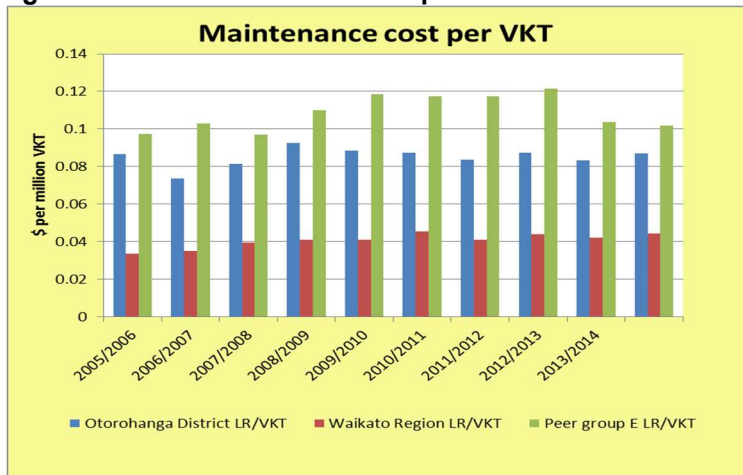


Figure 9 - Maintenance Cost Comparison*

- *Notes:
1. 'VKT' is Vehicle Kilometre Tonne, a measure of road usage.
 2. Comparison with Waikato Region on a VKT basis reflects large extent of low traffic volume roads in the Otorohanga district.
 3. LR – Local Roads ie excluding State Highways.

The performance of the roading network in respect of safety is also considered to be sound, with an average of 13% of crashes associated with road factors over the period from 2000 to 2018. There is no significant trend for road factors crashes as a percentage of total crashes over this period, with the large majority of crashes remaining due to driver error or other factors over which Council cannot easily exercise control.

This sound performance in respect of technical levels of service is also mirrored in assessment of customer levels of service, which reflect the perceptions and satisfaction of road users.

These levels of service encompass both the maintenance of existing roading assets, and the progressive improvement of the network, which has been steadily undertaken and which is believed to have become an expectation, particularly of rural ratepayers, of which many pay substantial rates for roading purposes. These improvements are largely discretionary enhancements rather than essential improvements required to address significant deficiencies, and hence the technical justification for them is questionable.

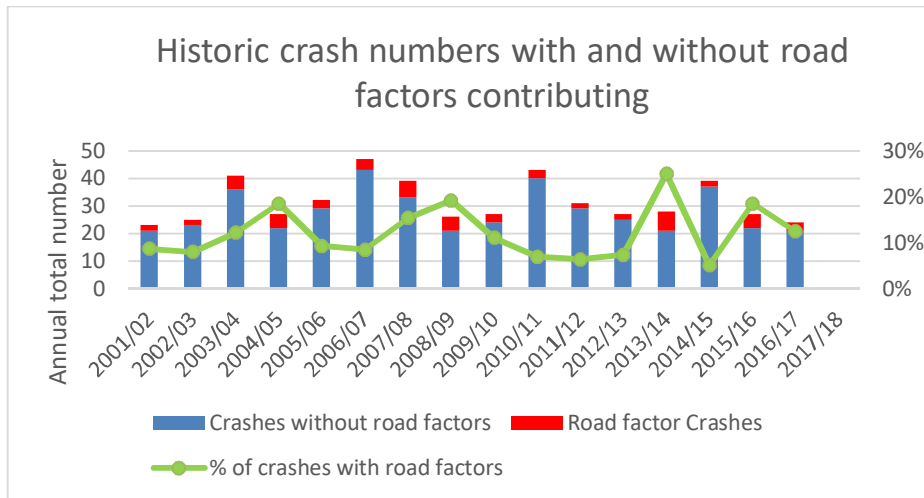


Figure 10 - Crash Number and Factor Trends

Major district-wide surveys of customer satisfaction in respect of roading conducted in 2002, 2008 and 2014, all indicated high levels of satisfaction with existing activities (including on-going improvements) and levels of service, though exact quantification of this satisfaction is hindered by a high level of non-response from those surveyed.

In the most recent of these surveys 79% of those responding indicated a preference for retaining existing levels of service in respect of road maintenance, and around 65% indicated a similar view in respect of road improvements.

The indicated level of satisfaction is however much higher if, as was clearly stated in the survey, a lack of response is interpreted as a preference for no change from the status quo. If this interpretation is adopted (as is believed to be reasonable) levels of satisfaction above 98% are indicated for both groups of activities.

In recent times the New Zealand Transport Agency (NZTA) has established standardised levels of service for different types of roads under its ‘one network’ road classification (ONRC). If these levels of

service were made mandatory this would affect Council’s infrastructure strategy, but at this stage no indication of this has been made, and hence it is not reflected at this time.

With no apparent significant drivers for change, the proposed strategy in respect of levels of service is to maintain existing road operating standards.

In recent times questions have however become increasing asked by ratepayers in respect of whether Council’s approach to road improvements is appropriate, and this is discussed further in the following section.

Demand Issues

No significant road capacity issues are currently expected to arise over the period of this strategy, other than those that already exist on Mangati, Te Tahī and Hanning Roads on the eastern flanks of Pirongia Mountain that arose from ‘lifestyle’ residential developments on these relatively long, narrow and winding rural roads in the early 2000’s. These issues are to be managed through a program of progressive improvements funded by Development and Financial Contributions from properties on those roads.

Over the district as a whole there is a total of 96km of roads (12% of total network length) that have pavement widths less than the target minimum design widths that have been adopted by Council since 1993. It is however not considered that these roads having widths below these targets necessarily means that they have inadequate capacity, since the targets adopted are arguably arbitrary, perhaps aspirational rather than essential, and potentially over-conservative.

Similar comments can also potentially be made about the road standards specified under the NZTA’s One Network Roding Classification (‘ONRC’).

The assessment of safe road traffic carrying capacity does however involve more than just the width of the road, and an analysis conducted on road capacities in 2007 that looked beyond issues of pavement width alone suggested that if this broader consideration is given and the Pirongia Roads are excluded, only a very small amount of network – probably less than 1%, approximately 8km in total - could reasonably be considered to potentially have capacity issues, and most of these roads had very low traffic volumes.

The traffic volumes on local roads are too low for any real traffic congestion and the perception of Council's roading staff is also that there are not currently any immediate or latent road capacity issues, other than on the previously mentioned Pirongia Mountain Roads.

The average rate of traffic growth on sealed roads in the district has historically been between 1.0% and 1.5% per annum, whilst there has been a trend of declining traffic numbers (at a rate of around minus 1.0% per annum) on the district's unsealed roads.

Neither of these rates of traffic growth is considered sufficiently large to have significant impact on the capacity of district roads during the period of this strategy if such growth was to continue, and it seems probable that traffic growth would decline during the later stages of this period if district population decreased and aged (with a probable associated reduction in mobility) as projected.

In the interests of conservatism however a higher level of traffic growth, at a likely worse case value of 3% per annum, has been assumed for the purpose of planning pavement renewals.

Despite the fact that there are arguably few significant capacity issues on the network, for the last 10 years the focus of Council in respect of road improvements has been on the straightening and widening of sealed roads.

This focus was put in place following the withdrawal of NZTA subsidy for seal extensions, which substantially reduced the 'bang for buck'

of such works relative to sealed road improvements, which generally did quality for such subsidy.

In addition to targeting particular sections of sealed road that have been considered particularly worthy of widening or realignment it has become the practice that where pavement renewal work is conducted, efforts are also made to create pavement widths that meet or exceed the targets previously adopted by Council, taking account of the projected traffic volumes on those roads assuming 3% growth. Allowance has been made for this in pavement renewal budgets.

All of the road improvement work that is currently being undertaken is discretionary since NZTA has not yet made compliance with ONRC standards mandatory, and the progressive improvement of the District sealed roads has now brought those roads to a standard where questions are being asked regarding whether further such work is justified. In most cases there are very small volumes of traffic on sealed roads that are now of a high standard.

In recent years the questions asked have included whether it would be more appropriate to resume progressive sealing of the remaining unsealed roads, or to reduce or cease road improvements entirely. This discussion has been further stimulated by a very recent change of NZTA funding policy in respect of minor improvement works, which appears to possibly have potential to once again make seal extension works able to qualify for subsidy at the prevailing 58% rate.

At this point reliable answers to a number of important associated questions have not yet been obtained, but there is considered to be a need to undertake a major review of Council's approach to road improvements once the relevant information is available.

It is hoped that such a review will be completed before the end of the 2018/19 year, and improvement works based on the current strategy will continue until that time.

Asset Renewals

Council has good knowledge of its roading assets and the associated renewal requirements, and intends to progressively carry out such renewals to maintain current levels of service.

Renewal requirements are not linear, and renewal profiles vary in form between asset groups, being 'echoes' of original construction schedules. Full details of renewal profiles and strategies are presented in the roading asset management plan.

With roading assets comprising such a large part of ODC's overall infrastructure inventory, renewal expenses can potentially have a major impact on Council and the community. The general form of projected renewals expenditure over the next 30 years is shown in Figure 11.

It is clear that Council currently is, and has been, in a period of low renewal requirements, with many assets still within their initial expected lives. This situation is however expected to change in the relatively near future as we enter a period of more intensive pavement renewals, particularly from the mid 2030's onwards.

Whilst it is not yet clear how pronounced the associated peak of renewal activity will be because of uncertainty in respect of asset lives, it does appear clear that there must be an extended period when renewals costs are more than twice what they are at present.

A significant proportion (around a quarter) of the total value of Council's roading assets is also comprised of items with relatively long lives, such as bridges and underpasses, for which only very limited replacement is scheduled within the 30 years of this infrastructure strategy and hence substantial associated renewal peaks are likely to exist in the more distant future.

Resilience Issues



In general the level of resilience of council's roading assets is considered to be high. The topography, geology and climate of the district is such that risks to roads from most common forms of natural disaster, including storms, floods and earthquakes are relatively low.

Recent experience of a very localised but extremely severe weather event that caused over \$400,000 worth of damage to a few minor roads has however raised concern over the potential effects of climate change, and Council has increased its budget allocations for emergency works in future years to better accommodate such events.

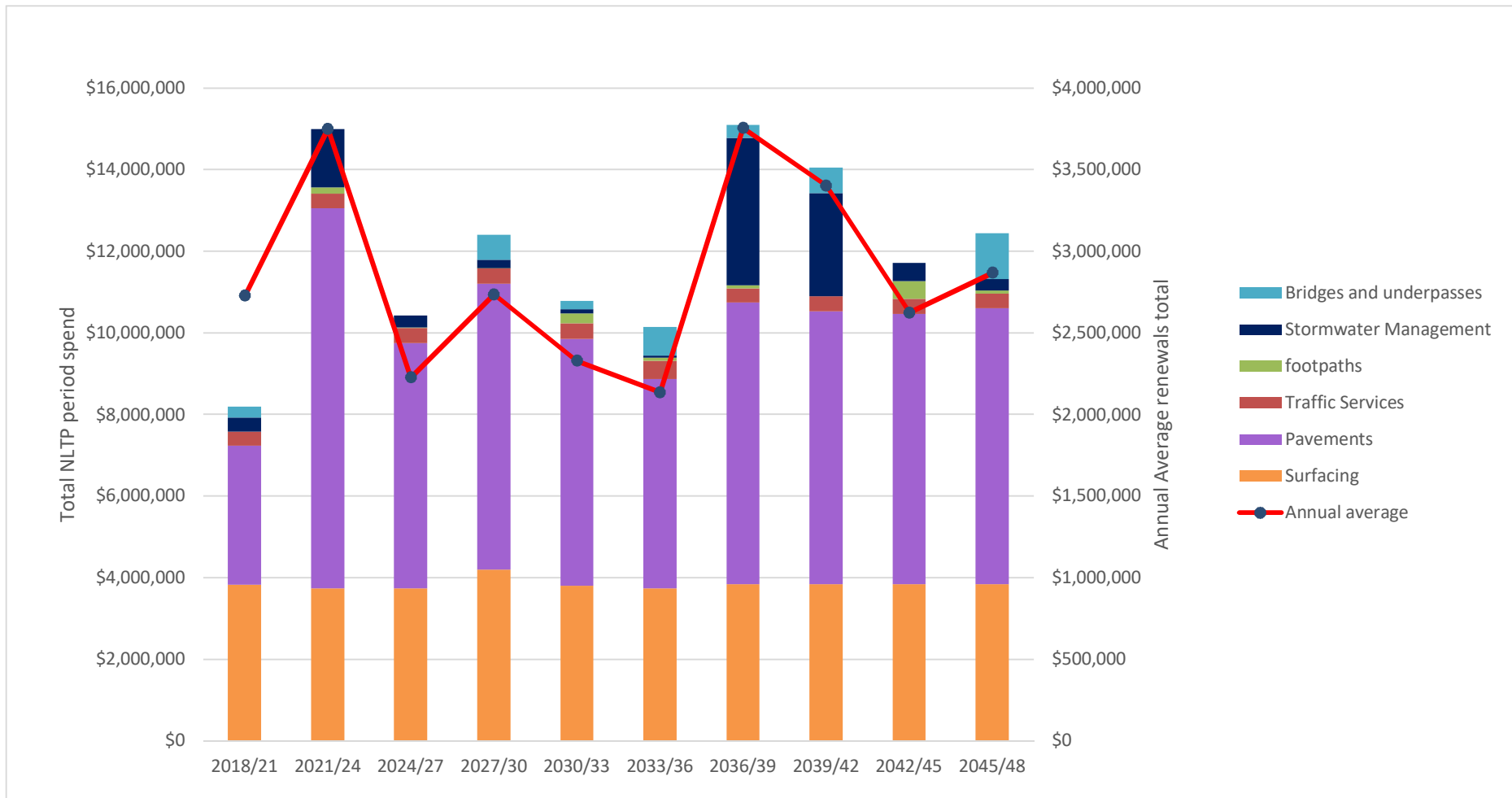


Figure 11 - Roading Asset Renewal Cost Projection (2018 dollar terms)

Water Services Infrastructure

Council's water services comprise the following:

- Potable 'on demand' water supplies for Otorohanga and Kawhia urban communities
- Potable 'trickle feed' water supplies for five distinct rural areas as follows: Waipa (fed from the Otorohanga treatment plant), Tihiroa and Arohena (3 separate supplies), with the large majority of this water used for agricultural purposes
- A non-potable 'agricultural purposes only' trickle feed water supply for the Ranginui rural area.
- Reticulated wastewater system for Otorohanga Community
- Stormwater drainage systems for Otorohanga and Kawhia.

The assets associated with these activities have a total depreciable replacement value of \$51.5 million, comprising water supply (\$26.8 million). Wastewater (\$14.7 million) and stormwater (\$10.1 million).

Levels of Service Issues

Technical Issues

In general all of Council's water services are considered to currently provide appropriate technical levels of service, though this is not without challenges.

Demands on treatment systems are increasing in respect of water quality, and the 'simple' solution is to commission new systems specifically designed to meet these needs. The downside of this approach is the very substantial costs of such new system, particular

when the supply only serves a relatively small number of customers, as is the case with ODC's rural supplies.

Given these very high costs for complete new systems it is understandable that there is often a desire to use the existing aging treatment system as a base for upgrading. To obtain the required performance from these existing plants typically needs a combination of applying new technologies and having operational staff with the skill necessary to use those technologies to good effect. Effectively delivering this combination is not always possible, and as such this approach needs to be exercised with caution to avoid wasting money on 'cheap' solutions that prove not to be solutions at all.

Public Health Issues

The drinking water quality compliance instrument used to satisfy the Ministry's expectation as watch dog is the Drinking-Water Standards for New Zealand 2005 (Revised 2008) tied to the (Ministry's guidelines-drinking-water-quality-management-New-Zealand-Mar16).

Currently all of the six potable water treatment plants operated by ODC are in conflict with the requirements of the Drinking-Water Standards for New Zealand 2005 (Revised 2008) to various degrees.

Five of these conflicts are sufficiently serious to be reflected as Significant Infrastructure Issues in Table 1 of this Strategy.

There has over the last 20 years been recurring discussion of the potential for a reticulated wastewater system in Kawhia, for reasons that include potential benefits to public health, but significant barriers to this have been encountered, and in recent times the performance of the existing on-site wastewater systems in the community has generally been satisfactory. With a steadily diminishing permanent population as the proportion of holiday homes increases, issues relating to wastewater in Kawhia are currently believed to be diminished and it now appears extremely unlikely that a reticulated

wastewater system will be installed in that community in the near future.

Environmental Issues

No significant environmental issues are currently believed to be associated with any Council water services. All activities are of relatively small scale and conducted in compliance with resource consent conditions.

The resource consents for the Council water activity with greatest potential for adverse environmental effect – the discharge of wastewater from Otorohanga – were renewed in 2012 for a 25 year term with associated upgrading to the wastewater treatment system that is now functioning effectively and no further substantial upgrading works are expected at this time.

Customer Perception

Customer feedback on standards of water services has been obtained from district wide surveys conducted in 2008 and 2014. In both cases the level of satisfaction with existing services was very high, though there were a significant number of responses (though still a minority) that indicated a desire for increasing the water storage capacity in Otorohanga (which has now been responded to) and for Council to spend more to provide a slightly more proactive approach to asset maintenance.

Demand Issues

The existing water services generally have adequate capacities to meet current needs, and there are no well developed trends, either positive or negative, in the demand for these services over the past 15 years. Demand fluctuations that have occurred between these

years appear to have been primarily driven by short-term variations in weather or other unpredictable factors. Previous belief of a possible general 0.5% to 1% per annum underlying growth trend in respect of water use on most ODC supplies has not subsequently been reflected in actual data. Effects of climate change on drainage services are also not yet clearly apparent.

With little projected change in population or economic activity it is currently believed that demand for water services will remain at around current levels for the duration of this strategy.

Council currently believes that the availability of water is an advantage that the Otorohanga Community could use to perhaps use to attract new businesses, and this is one of two primary factors (the other being issues of fairness) that is also driving a proposal to introduce metered charging for all water taken from the Otorohanga supply, to improve the efficiency of that use and leave a greater amount of water potentially available for new businesses.

Renewals

The earliest Council water services infrastructure in the district (water mains that were first installed in the 1930s in Otorohanga) has now all been replaced, and most of the other pipe infrastructure was put in place between the late 1950's and late 1980's, and hence is generally in the mid stages of its expected life. Recent experience has however indicated that some asbestos cement water mains in Otorohanga may have suffered accelerated deterioration, and may require replacement in the near future. Further investigation is required to confirm the extent of this.

Figure 12 below shows projected annual renewal expenditure on all ODC water services assets (water, wastewater and stormwater) and associated current depreciation over the period from 2018 to 2048, in 2018 dollar terms.

Whilst these renewal costs are relatively modest in relation to those for roading assets, their general allocation to particular communities rather than the district as a whole can amplify the effect that spikes in this expenditure can have on customers.

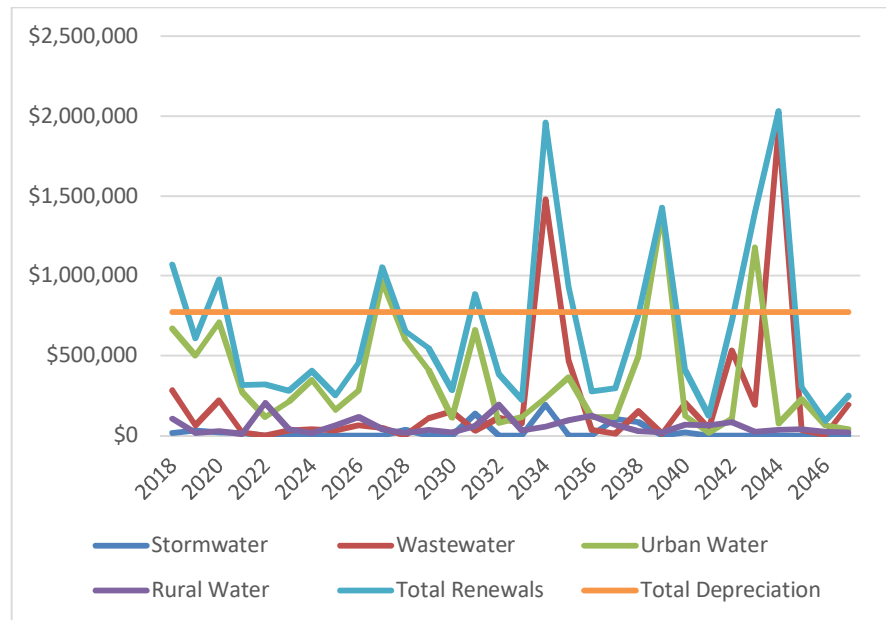


Figure 12 - Water Services Annual Renewal Cost Projection

It is however believed that the renewal programs, the associated costs should be easily accommodated through increasing debt, which is projected to be at very low level at the commencement of the period from 2030 onwards when the larger renewal ‘spikes’ for the urban services are likely to be encountered.

A much larger ‘spike’ is however evident around 20 years later (outside the period of this Infrastructure Strategy) when the projected renewals for all of the rural water schemes (which were all originally constructed with the same relatively brief period in the 1980’s) overlaps with a number of water, wastewater and stormwater renewals in the urban community to create a theoretical need for up to \$13 million of renewal expenditure over a period of between 5 and 8 years. 2055 is still far off and such cost must however be considered uncertain, but if such a pronounced spike in such costs was real, it could pose a significant challenge, because the rural water schemes only have relatively small numbers of customers to fund this cost.

Resilience Issues

In general the level of resilience of council’s water services infrastructure is considered to be high. The topography, geology and climate of the District is such that risks from most common forms of natural disaster, including storms, floods and earthquakes are relatively low.

The type of event with greatest potential to cause significant damage to Council’s water services infrastructure is a severe earthquake, but the District is located well away from more seismically active areas, and as such the probability of such an event is very low.

Council does however have insurance to cover associated losses in these circumstances, and it would be expected that some form of temporary arrangement to restore essential water services could be relatively easily put in place after such an event.

Overall Infrastructure Investment Program

Estimated total capital and operational expenditure on roading and water services over the period of this strategy are listed in the table below in 2018 dollar and inflated 'money of the day' terms.

Table 4 - Capital and Operation Expenditure

Asset Category	OPEX* – 2018 Dollars	CAPEX – 2018 Dollars	OPEX – Inflated	CAPEX – Inflated
Roads and Footpaths	\$311,842,678	\$174,072,686	\$431,456,387	\$256,075,894
Water Supply	\$66,041,438	\$12,964,197	\$89,532,273	\$19,459,551
Sewerage Treatment & Disposal	\$19,448,435	\$5,302,397	\$24,036,545	\$8,256,227
Flood Protection & Control	\$3,767,563	\$223,868	\$5,085,274	\$288,345
Stormwater Drainage	\$6,782,429	\$303,182	\$7,573,317	\$482,903

*OPEX includes depreciation based on 3 yearly asset revaluations. As such there is still an element of inflation contained in this figure

The breakdown of operational* and capital expenditure on a year by year basis in inflated terms is presented in Figure 13 below.

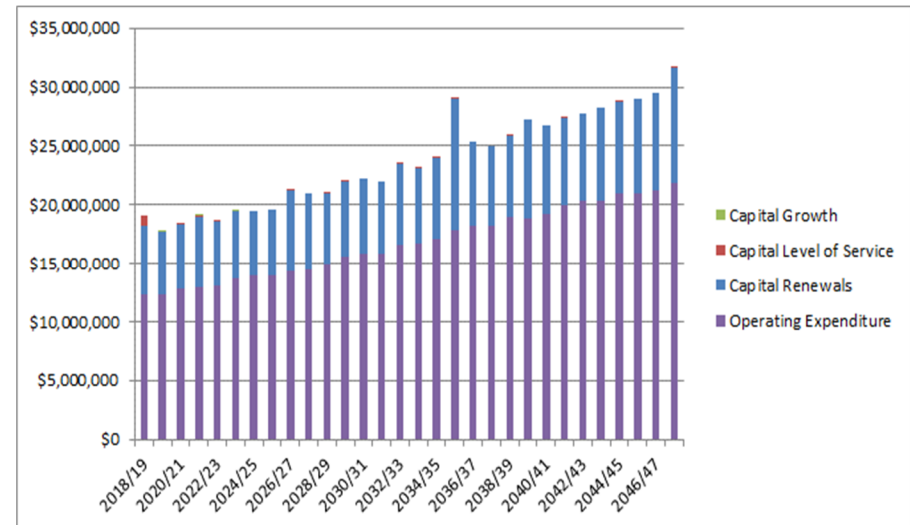


Figure 13 - Total Annual Expenditure - Roading and Water (Inflated Terms)

As explained previously the growth or demand related capital expenditure is negligible, and capital expenditure associated with level of service improvements is also very modest, being largely confined to a continuing program of road improvements. As such overall expenditure is almost entirely dominated by operating and renewal costs.

Operational Expenditure

With little expected change to levels of service or demand, very little real change of operational expenditure in current dollar terms is projected over the period of this strategy, with increases in actual costs being almost entirely due to inflation. Projected annual operational costs on an inflated basis for the various asset groups over the first 10 years of the strategy period is presented in Figure 14.

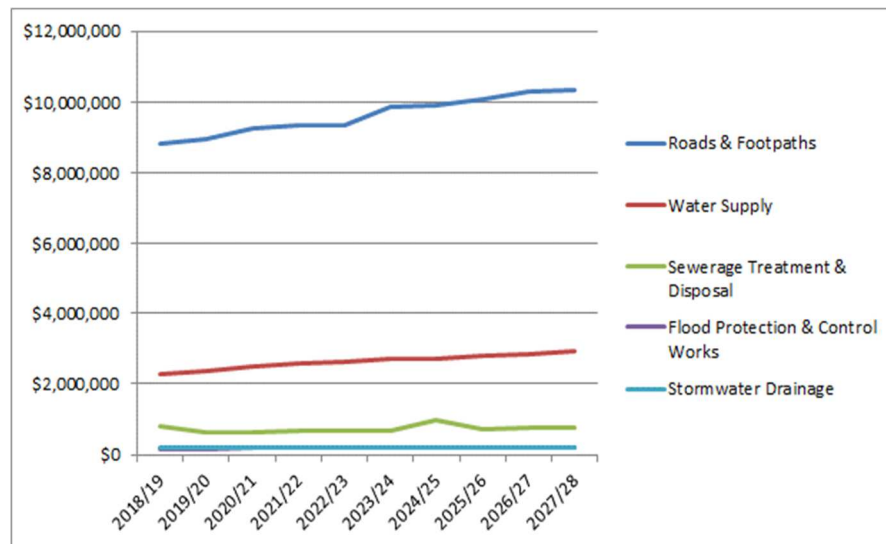


Figure 14 - Annual Operational Costs 2018-2028 (Inflated Terms)

Projected operational costs for 5 year periods on an inflated basis for the various asset groups over the whole of the strategy period is presented in Figure 15.

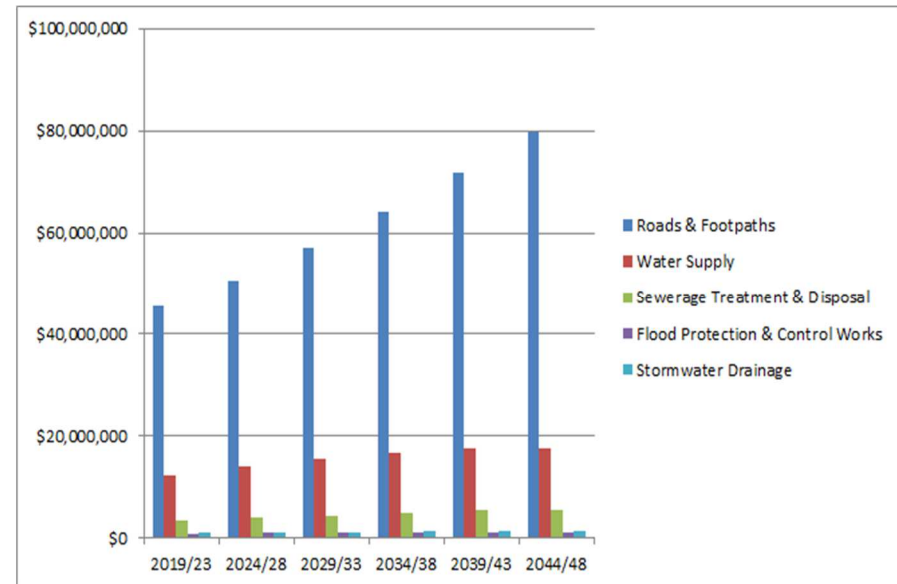


Figure 15 - 5 Yearly Operational Costs 2018-2048 (Inflated Terms)

Capital Expenditure

As described previously the great majority of the capital expenditure is on asset renewals, details of which have been described in section 2 of this strategy. Projected annual capital costs on an inflated basis for the various asset groups over the first 10 years of the strategy period is presented in Figure 16.

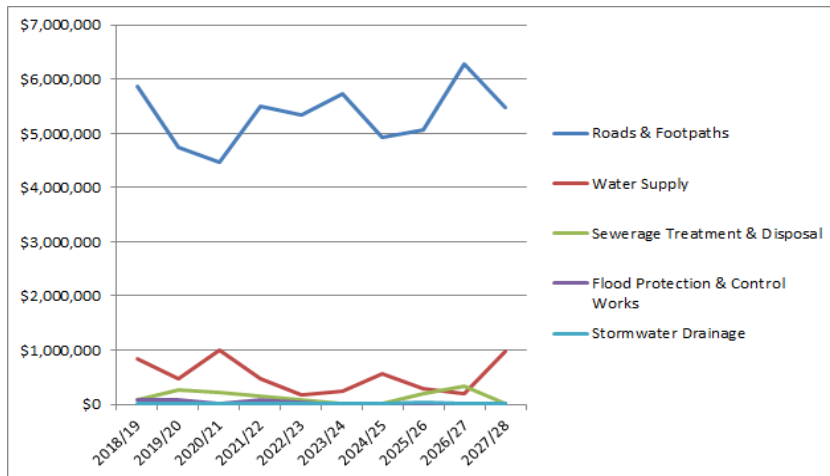


Figure 16 - Annual Capital Costs 2018-2028 (Inflated Terms)

Projected operational costs for 5 year periods on an inflated basis for the various asset groups over the whole of the strategy period is presented in Figure 17.

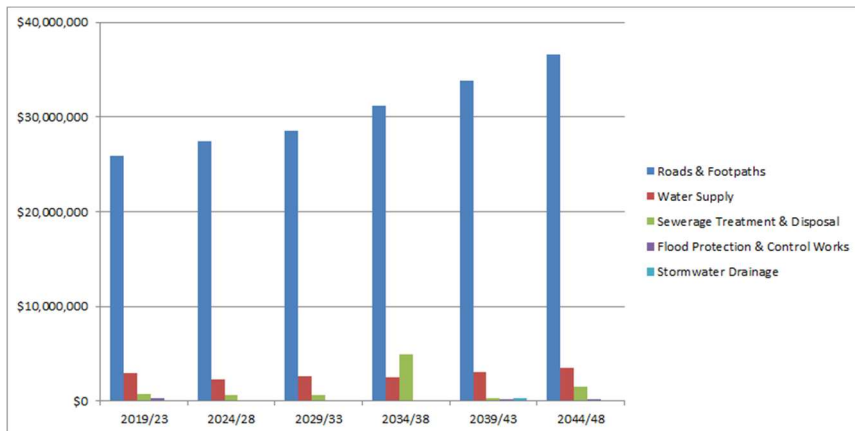


Figure 17 - 5 Yearly Capital Costs 2018-2048 (Inflated Terms)

Projected total renewal costs for all roading and water assets are presented in the Figure 18 below.

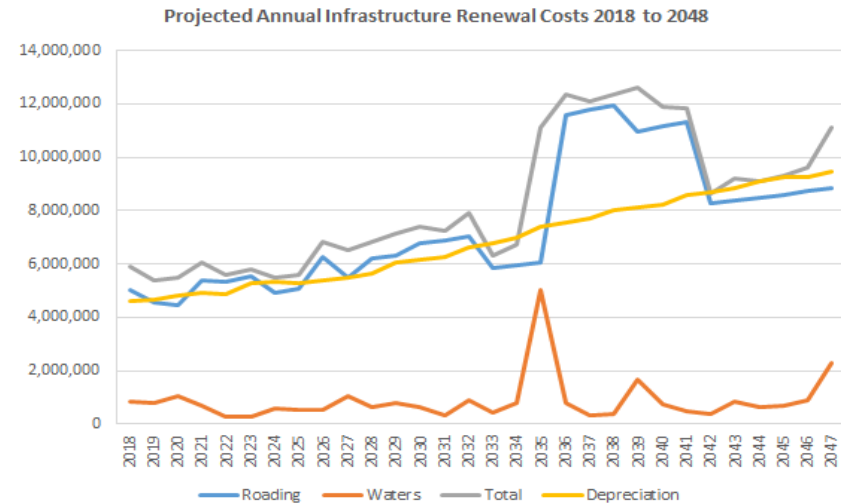


Figure 18 - Annual Total Renewals Costs 2018-2028 (Inflated Terms)

It would be presumed that a combination of increased rates and debt would be required during this period between 2034 and 2041 to accommodate these costs, and to ensure that this is manageable it is important that debt and rates are kept as low as possible leading up to the commencement of this period.

Currently Council’s forecasts suggest that external debt will be near zero by 2025, with potential to perhaps even build a significant positive balance by the onset of a major phase of renewals commencing in the early 2030’s. For this reason a continuing regime of tight Council financial management appears important for the foreseeable future to ensure that this healthy ‘starting position’ is reached.