City of Belleville

Asset Management Plan

Final Report

May 2014

EXECUTIVE SUMMARY

Adequate municipal infrastructure such as roads, bridges, and underground water and sewage pipes are essential to economic development, citizen safety, and quality of life. Well maintained infrastructure is critical in sustaining a municipality as an attractive place to live and do business.

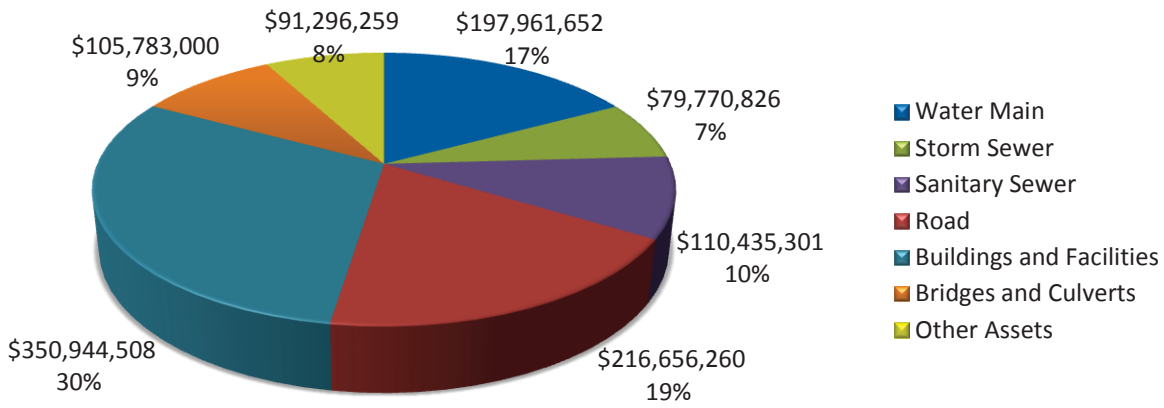
The City of Belleville (the City) has placed asset management as a strategic priority. The present Asset Management Plan (AMP) report, along with the asset management tools delivered to the City, will assist staff in making the most cost-effective decisions with regards to rehabilitation or replacement of their infrastructure. It will also ensure that the limited funds made available for infrastructure renewal are spent wisely, and that staff decisions are supported by sound technical data and analysis.

Dillon Consulting Limited (Dillon) was retained by the City to develop an AMP, which will contribute to the City's eligibility for provincial funding under the Municipal Infrastructure Investment Initiative (MIII) program. Eligibility rules for MIII funding indicate that municipalities must prepare an AMP to ensure that the funds provided by the Province are spent in a cost-effective manner. Municipalities must also prove in their submission that they have acquired suitable asset management tools that will assist staff in managing its infrastructure assets in the future. This AMP puts into place the tools and systems required to ensure that the municipality continues to provide an adequate level of service to their residents and create a solid foundation for economic prosperity.

STATE OF LOCAL INFRASTRUCTURE

Asset management best practices suggest that 2% to 4% of the total value of an asset should be spent annually to ensure sustainability infrastructure assets. That level of funding relates mostly to capital expenditure and not operational costs. Without asset management tools, it is almost impossible to determine the long term effect of inadequate budget allocations. Yet, it is important for a municipality to determine if the current level of funding is appropriate to continue to provide an adequate level of service to its residents. For the City, the financial accounting value and the replacement value of the assets included in this project were $440,497,392 and $1,152,847,805 respectively. The following table and figure show the distribution of that asset value. Based on these results and the recommended 2% yearly investment, theoretically the City should allocate around $23 M per year to ensure future sustainability of its assets.

Infrastructure Network	Quantity	Financial Accounting Value	Replacement Value	2% Annual Investment
Water Main	230 km	$37,586,304	$197,961,652	$3,959,233
Storm Sewer	115 km	$56,672,725	$79,770,826	$1,595,417
Sanitary Sewer	195 km	$46,069,070	$110,435,301	$2,208,706
Road	433 km	$84,493,035	$216,656,260	$4,333,125
Buildings and Facilities	95	$136,273,451	$350,944,508	$7,018,890
Bridges and Culverts	74	$16,232,959	$105,783,000	$2,115,660
Other Assets	-	$63,169,848	$91,296,259	$1,825,925
Total		**$440,497,392**	**$ 1,152,847,805**	**$ 23,056,956**



Replacement Value per Asset Type

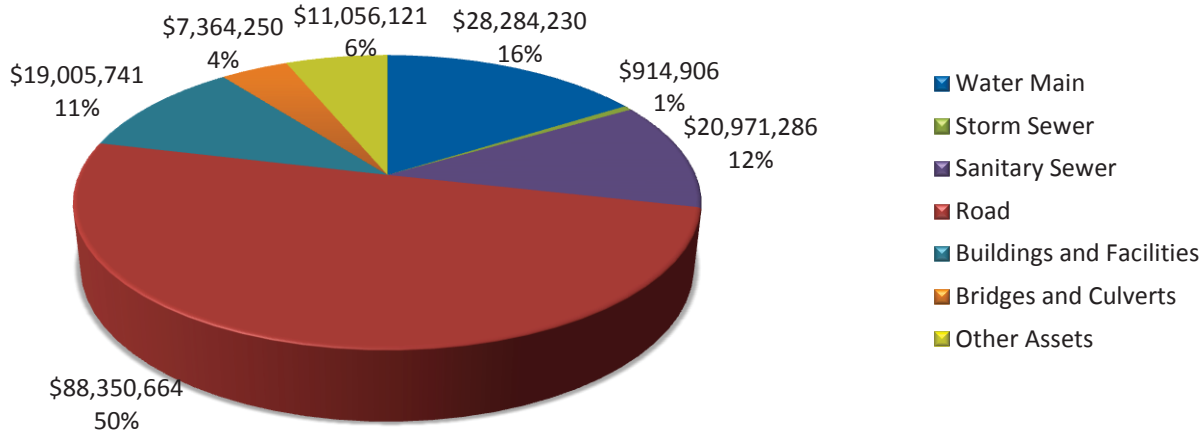
AMP LIMITATIONS

It should be understood that the AMP is a tool and living document which is meant to be used to inform decision making. Political, social, environmental and operational considerations should also be taken into account in planning capital investments. However, the AMP should provide a foundation on which those decisions are made. In addition, the usefulness of the AMP is directly related to the quality of data used in its analysis. Both the City Staff and Dillon Team involved in the project were committed to data accuracy, yet some assumptions had to be made in extenuating circumstances. As a whole, the AMP provides an accurate approximation of the City's current and future infrastructure needs. However, since minimal condition assessment data was available on the assets included in this plan, **the current and projected needs are mostly based on the year of construction of the assets and their expected service lives.** Recommendations were provided to City staff to conduct field condition assessment in the future and develop a plan that would better represent the actual condition of the assets.

CURRENT NEEDS SUMMARY

To gain insight on the current condition of local infrastructure, an analysis of unlimited annual budget is modeled. The process assumes that all infrastructure is replaced as soon as it is identified as a need. Although an unlimited budget is not a reality for any municipality, the scenario demonstrates the backlog of repairs that have been neglected over the years due to a lack of funding. As expected, the results show a significant backlog of repairs for most asset types. The following table and figure present the magnitude of the current backlog.

Infrastructure Network	Quantity of Repairs Required	Percent of Network Requiring Repairs	Cost of Repairs Required
Water Main	33.1 km	14%	$28,284,230
Storm Sewer	1.7 km	1%	$914,906
Sanitary Sewer	40.4 km	21%	$20,971,286
Road	192.7 km	45%	$88,350,664
Buildings and Facilities	-	-	$19,005,741
Bridges and Culverts	-	-	$7,364,250
Other Assets	-	-	$11,056,121
Total			**$175,947,198**



Current Repair Costs per Asset Type

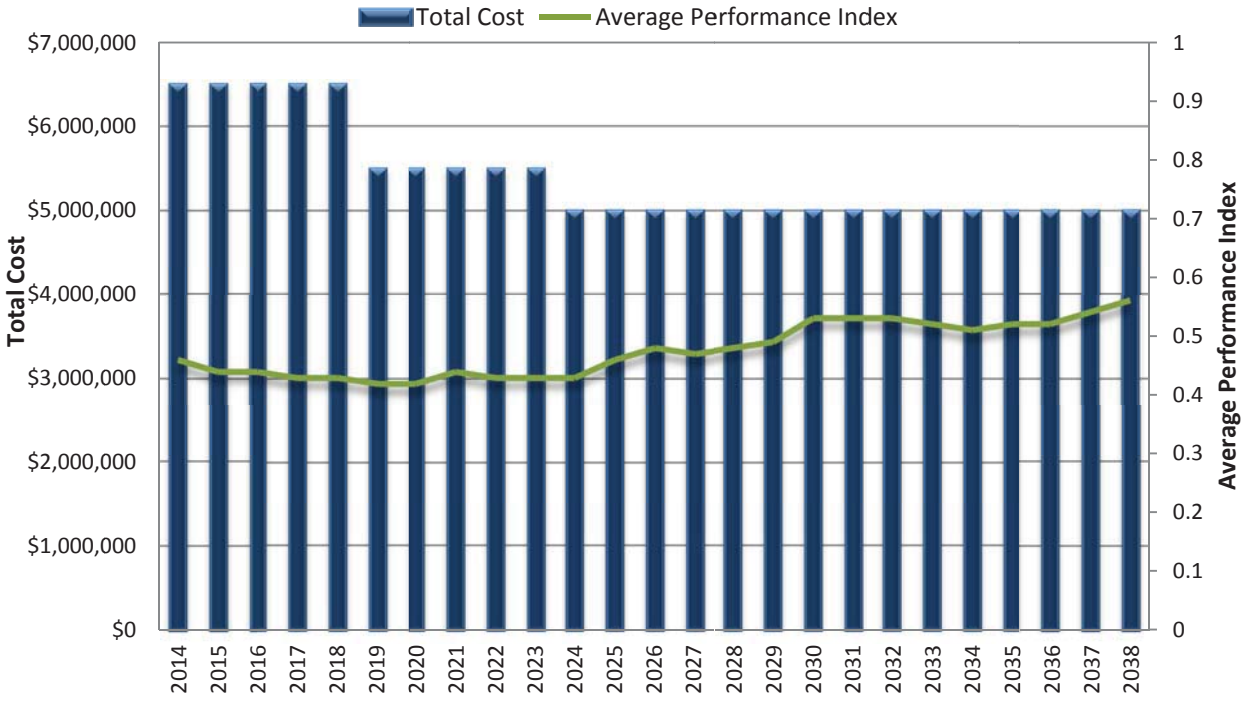
Most municipalities in Canada are in a similar situation. They are aware of the problem but are unable to properly assess the long term effect of current funding levels on the sustainability of their infrastructure. The only way for a municipality to take control and properly manage its backlog, in a realistic manner, is through the implementation of asset management tools. These tools enable asset managers to assess the long term effect of different levels of funding.

ASSET MANAGEMENT STRATEGY

Using the asset management application delivered to the City, we analyzed the effect of different budget scenarios on the linear infrastructure networks. Depending on the allocated annual budget, the level of service may decrease, remain constant, or increase over time. This level of service is represented by a Network Performance Index of the overall infrastructure network. Thematic maps illustrating potential 10 year capital programs for all linear assets that would result in improving the current condition can be found in **Appendix C**.

Road Network

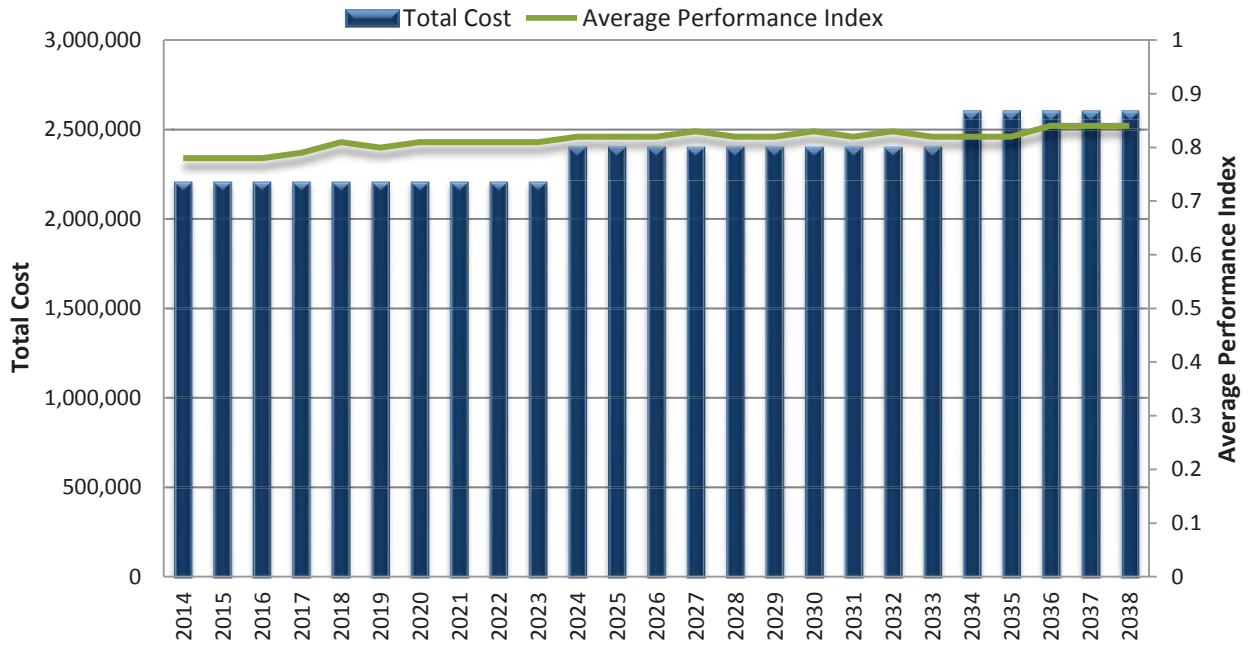
The road network was analyzed considering three scenarios: maintaining the current average network performance index, improving it by 5%, and improving it by 10%. Based on the results of these analyses, the City decided to select the latter strategy of improving the road network by 10% over the next 25 years. Due to a substantial backlog of repairs, a more significant investment is required in the short-term, and the required budget decreases over time. It should be noted that road condition data from a previous study completed in 2009 was utilized to estimate the current condition of each individual road segment, and the network as a whole. It is recommended that a road condition survey be carried out in the near future to obtain a more accurate assessment of the current road condition. The results of our analysis are presented graphically in the following figure.



Road Network – Budget Required to Improve Average Performance Index by 10%

Water Main Network

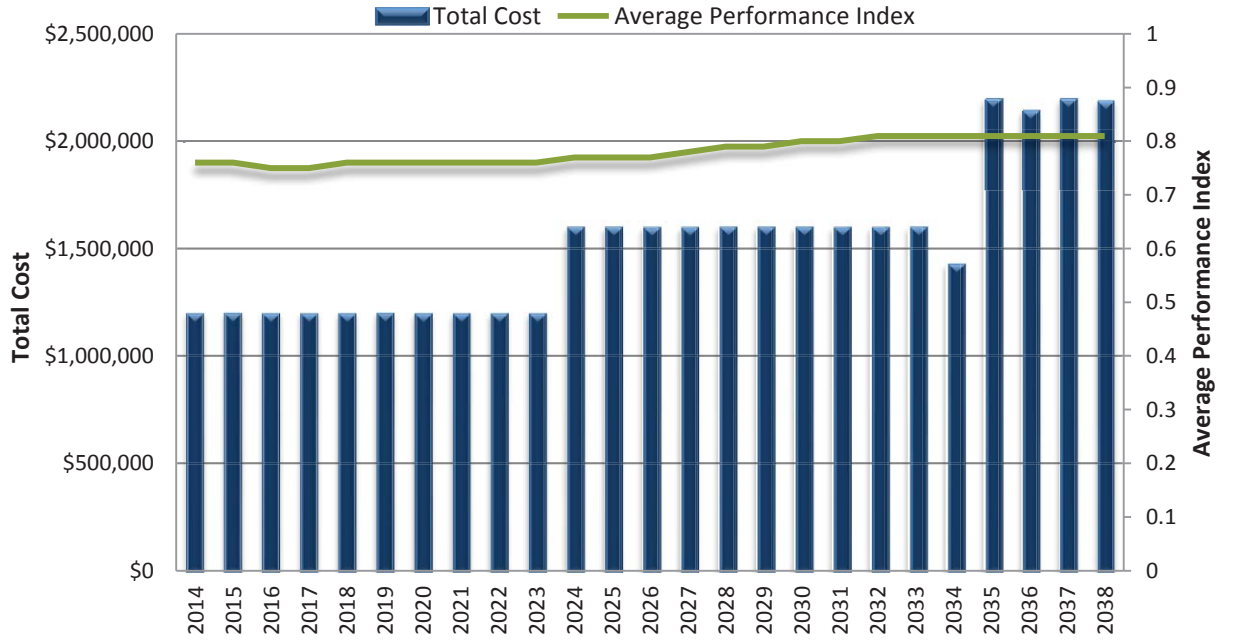
The water main network was analyzed considering two scenarios: maintaining the current average network performance index, and improving it by 5%. The latter scenario was selected by the City as the long term asset management strategy. The water main network performance index is already quite high. Therefore, a larger investment is required in the long-term, as opposed to the short-term, as water mains age.



Water Main Network – Budget Required to Improve Average Performance Index by 5%

Sanitary Sewer Network

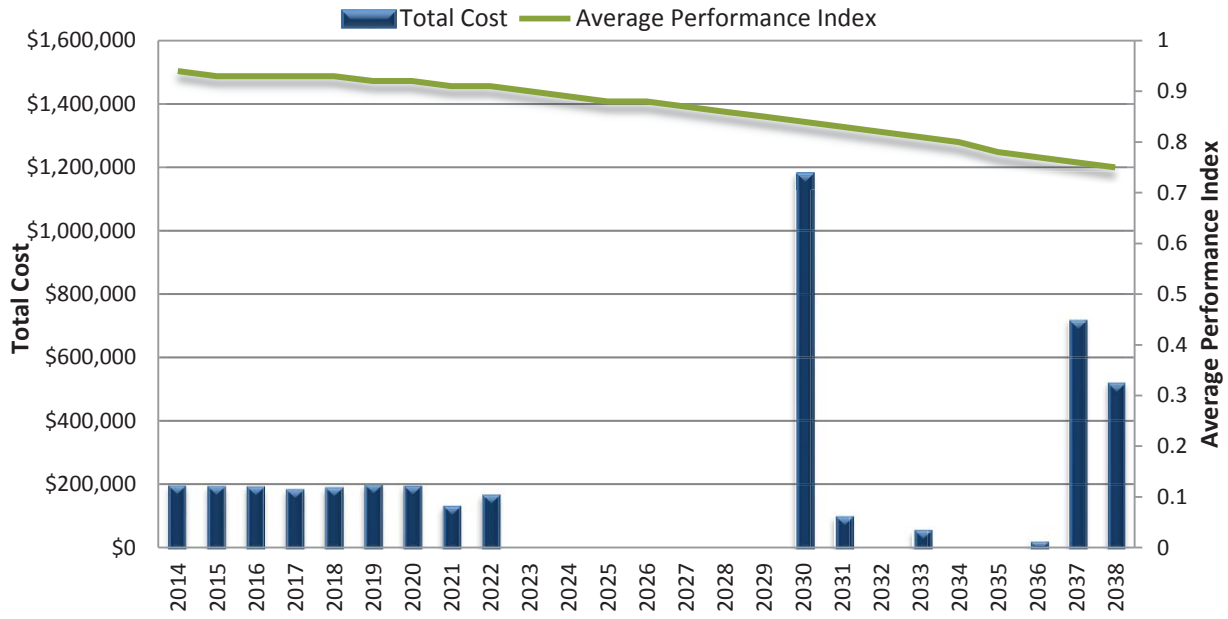
The sanitary sewer network was also analyzed considering two scenarios: maintaining the current average network performance index, and improving it by 5%. The 5% improvement over a 25 year period was selected by the City. The sanitary sewer network performance index is already quite high at almost 0.8 on a scale of 0 to 1.0 with 1 representing a pipe in excellent condition. Therefore, a larger investment is required in the long-term as the pipes age, as opposed to the short-term.



Sanitary Sewer Network – Budget Required to Improve Average Performance Index by 5%

Storm Sewer Network

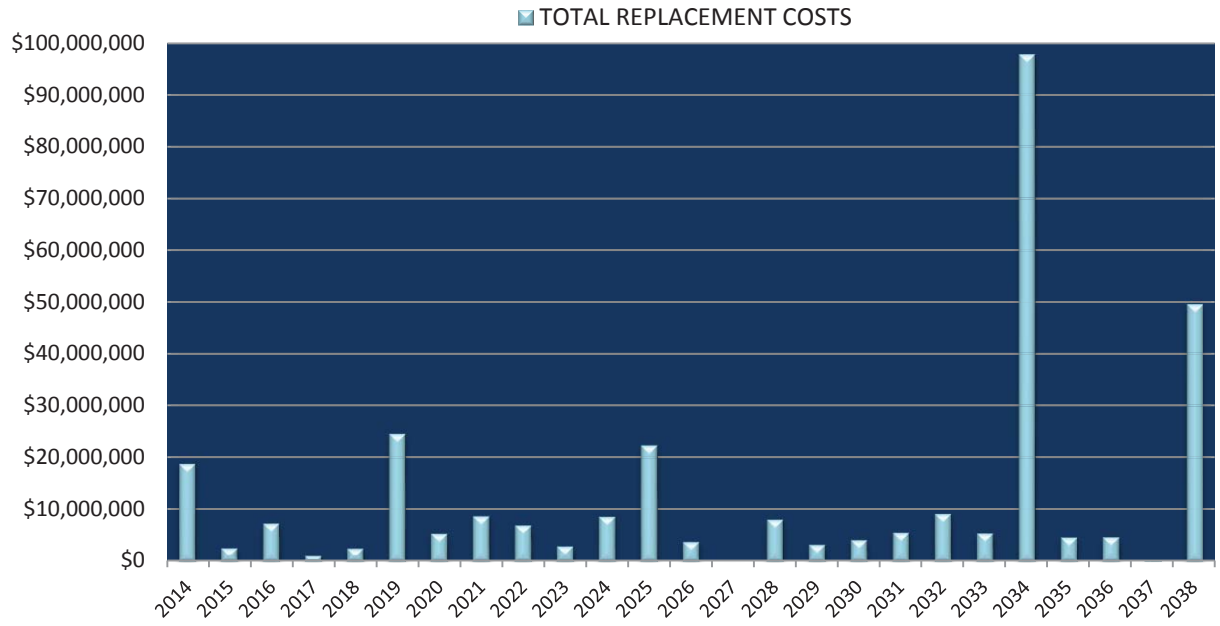
The storm sewer network currently has a high average performance network, and few repairs are needed in the 25-year time frame. Given the relatively young age of the City's storm sewer infrastructure, and the longer service lives of pipe infrastructure, it is not feasible to maintain the storm sewer current network's performance index. However, the figure below illustrates the expected repair costs required over the long-term once again based on the age of the pipes compared to expected service life.



Storm Sewer Network – Budget Required to Adequately Maintain Performance Index

Buildings and Facilities

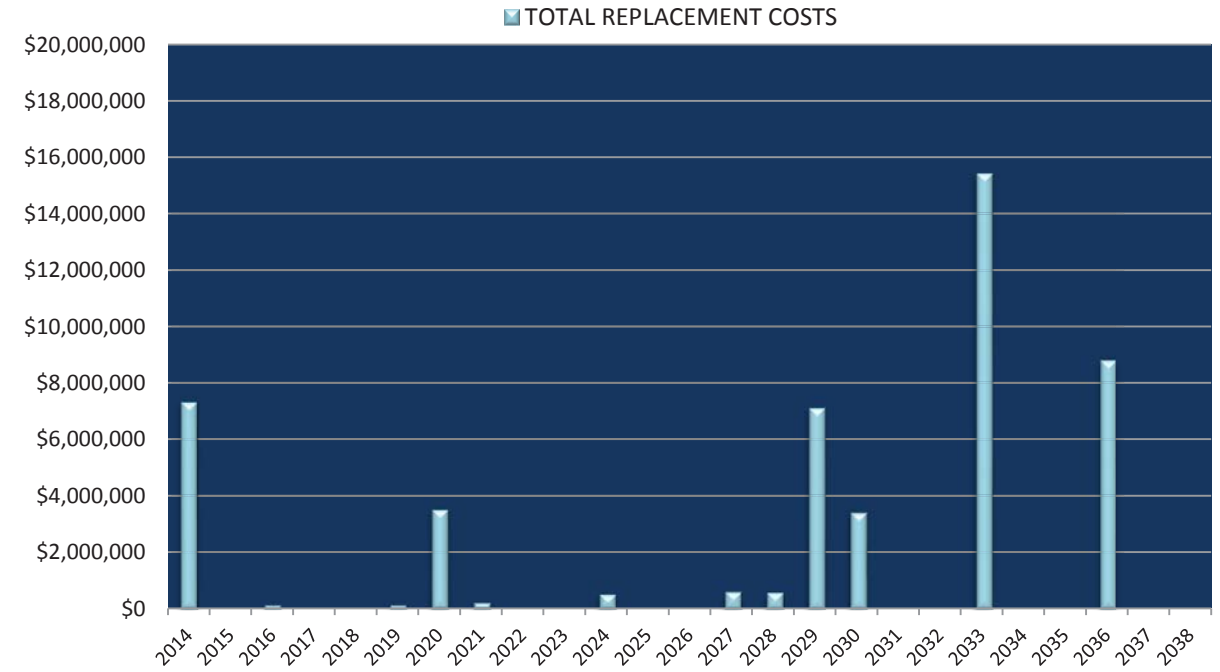
The figure below demonstrates the required investments in buildings and facilities over the next 25 years based on year of construction and expected service lives of the assets.



Buildings and Facilities – Proposed Annual Expenditures

Bridges and Culverts

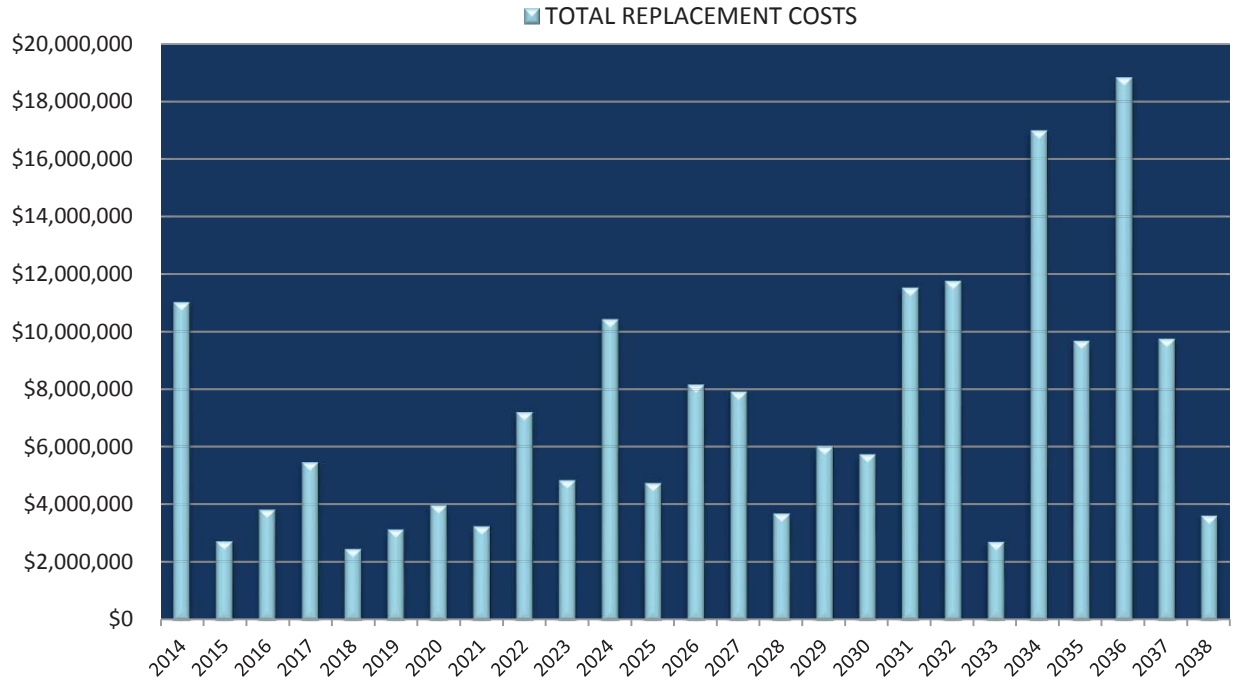
The figure below demonstrates the required investments in bridges and culverts over the next 25 years also based on year of construction and expected service lives.



Bridges and Culverts – Proposed Annual Expenditures

Other Point Assets

The figure below demonstrates the required investments in other point assets (such as piers, playgrounds, signs, monuments and fixtures, vehicles, heavy equipment, etc.) over the next 25 years.



Other Point Assets – Proposed Annual Expenditures

It should be noted that all the computer applications and results of our analysis have been delivered to City staff in digital format due to the size of all databases and reports.

FINANCING STRATEGY

SCOPE AND PROCESS

The financing strategy outlines the suggested financial approach to funding the recommended asset management strategy outlined in the previous chapters, while utilizing the City's existing budget structure. This section of the asset management plan includes:

- Annual expenditure forecasts broken down by:
    - Maintenance/non-infrastructure solutions;
    - Renewal/rehabilitation activities;
    - Replacement/disposal activities; and
    - Expansion activities.
- Actual expenditures in the above named categories for 2012 and budget expenditures for 2013 and 2014;
- A breakdown of annual funding/revenue by source; and
- Identification of the funding shortfall, including how the impact will be managed.

The long-term financing strategy forecast (including both expenditure and revenue sources) was prepared, consistent with the City's departmental budget structure, so that it can be used in conjunction with the annual budget process. Various financing options, including taxation, reserves, reserve funds, debt, user fees and grants were considered and discussed with City staff during the process.

A detailed twenty (20) year plan was generated for several scenarios, but the following scenarios were retained by the City:

Tax Supported Assets (Goal to minimize future debt):

- Scenario 3: All tax supported assets (excluding land), Roads forecast established to increase current condition by 10%;

Tax Supported Assets (Goal to minimize taxation impact through utilizing debt):

- Scenario 4: All tax supported assets (excluding land), Roads forecast established to increase current condition by 10%;

Water & Wastewater Assets (each):

- Scenario 2: All water/wastewater supported assets (excluding land), Water main/Wastewater main forecasts established to increase current condition by 5%;

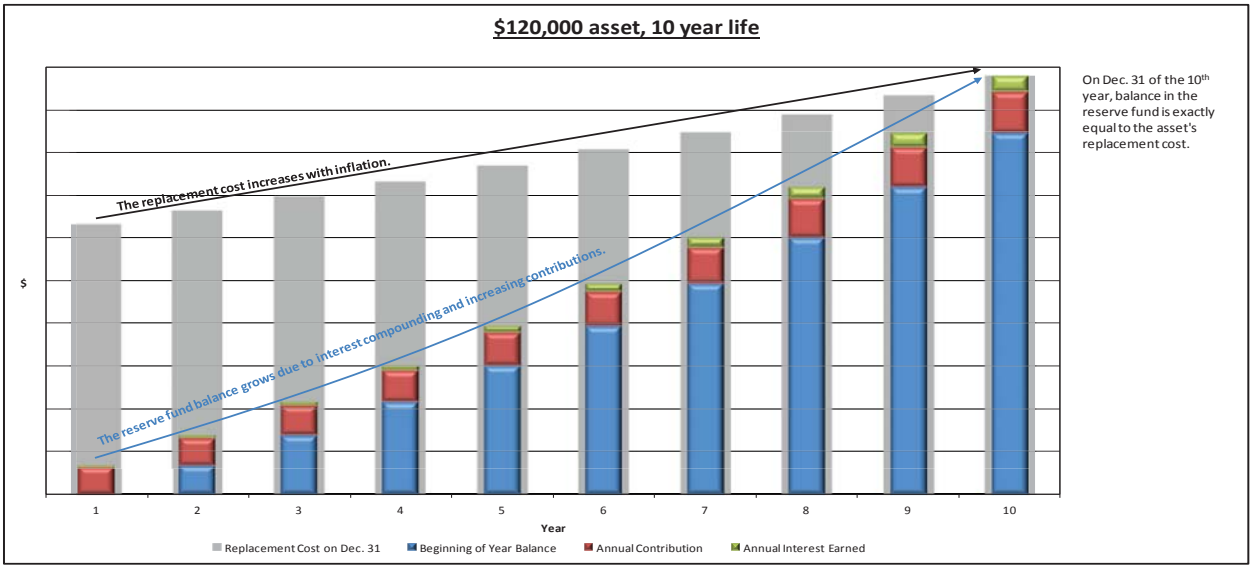
Parking Assets:

- Scenario 1: All parking services related assets;

FUNDING SHORTFALL

Assuming the City maintains adequate capital reserve funds, the recommended asset management strategy discussed in Chapter 4 will be fully funded. It is believed this can be accomplished through each annual budget process. However, in the event that any deferred capital needs result in increased risks and/or projected asset failures, further funding may be required to address the costs associated with accelerating replacement timelines.

A fundamental approach to calculating the cost of using a capital asset and for the provision of the revenue required when the time comes to retire and replace it is the "sinking fund method". This method first estimates the future value of the asset at the time of replacement, by inflating the current value of the asset at an assumed annual capital inflation rate. A calculation is then performed to determine annual contributions which, when invested in a reserve fund, will grow with interest to a balance equal to the future replacement cost. The contributions are calculated such that they also increase annually with inflation. Under this approach, an annual capital investment amount is calculated where funds are available for short-term needs while establishing a funding plan for long-term needs. Annual contributions in excess of capital costs in a given year would be transferred to a "capital replacement reserve fund" for future capital replacement needs. This approach provides for a stable funding base, eliminating variances in annual funding requirements, particularly in years when capital replacement needs exceed typical capital levy funding. Please refer to the following figure for an illustration of this method.



Sinking Fund Method

TAX SUPPORTED

From a tax supported asset base perspective, the estimated annual sinking fund requirement, based on using the calculations discussed above, is approximately $20.6 million (in 2014 dollars). Current annual capital investment is approximately $6.1 million. This would provide a high level estimate of the City's annual tax supported infrastructure funding deficit at $14.5 million (in 2014 dollars).

WATER

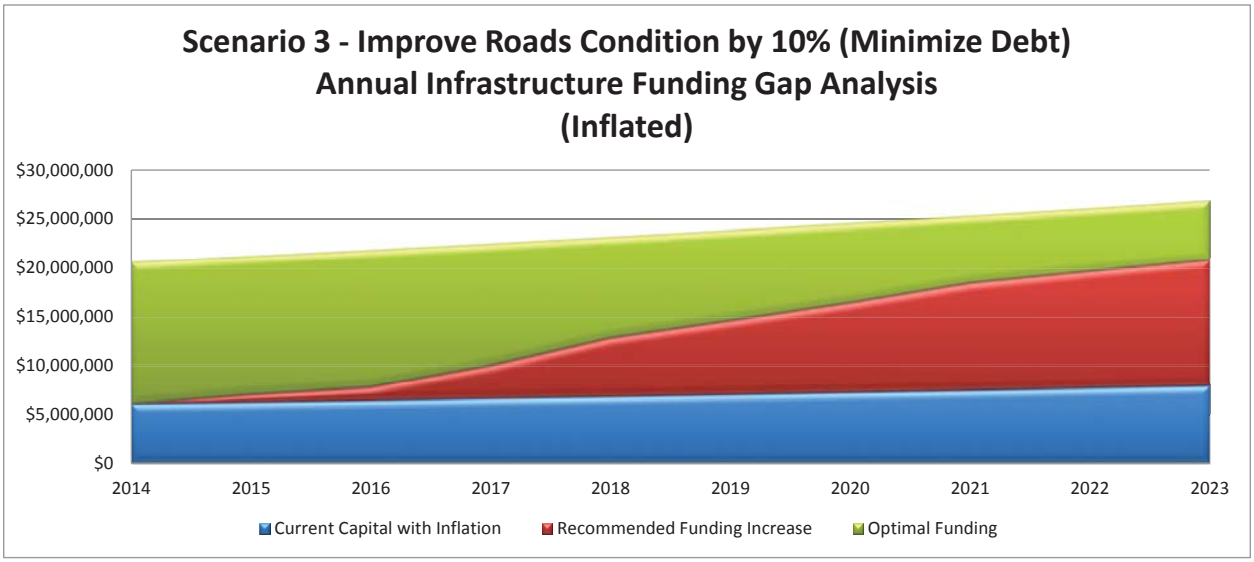
From a water asset base perspective, the estimated annual sinking fund requirement, based on using the calculations discussed above, is approximately $8.22 million (in 2014 dollars). Current annual capital investment is approximately $3.98 million. This would provide a high level estimate of the City's annual water infrastructure funding deficit at $4.24 million (in 2014 dollars).

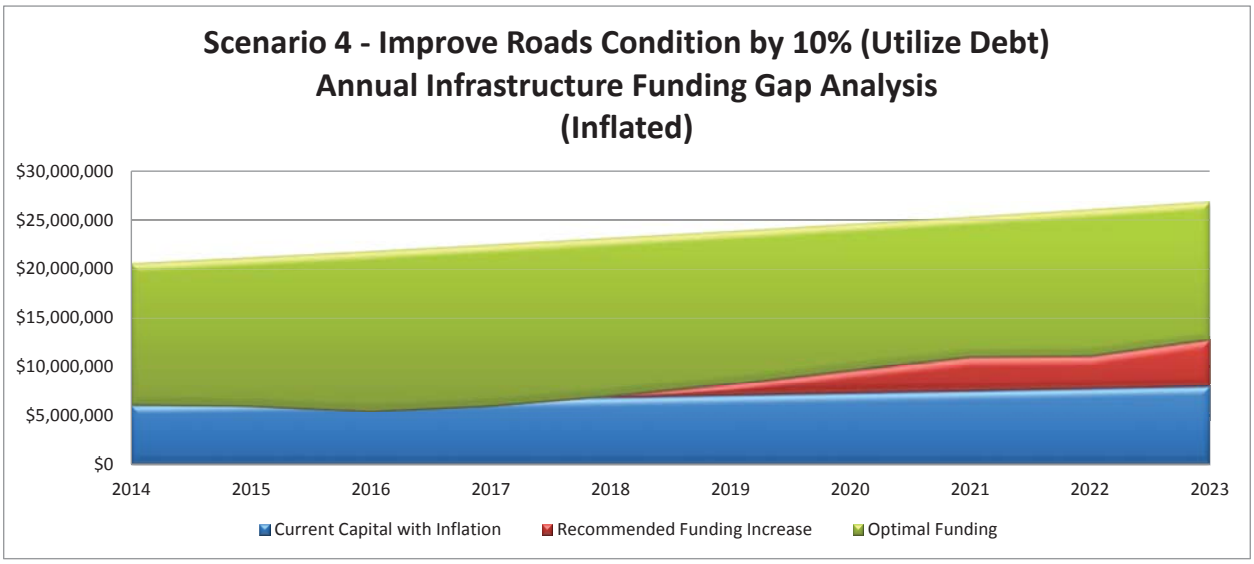
WASTEWATER

From a wastewater asset base perspective, the estimated annual sinking fund requirement, based on using the calculations discussed above, is approximately $4.94 million (in 2014 dollars). Current annual capital investment is approximately $2.74 million. This would provide a high level estimate of the City's annual wastewater infrastructure funding deficit at $2.20 million (in 2014 dollars).

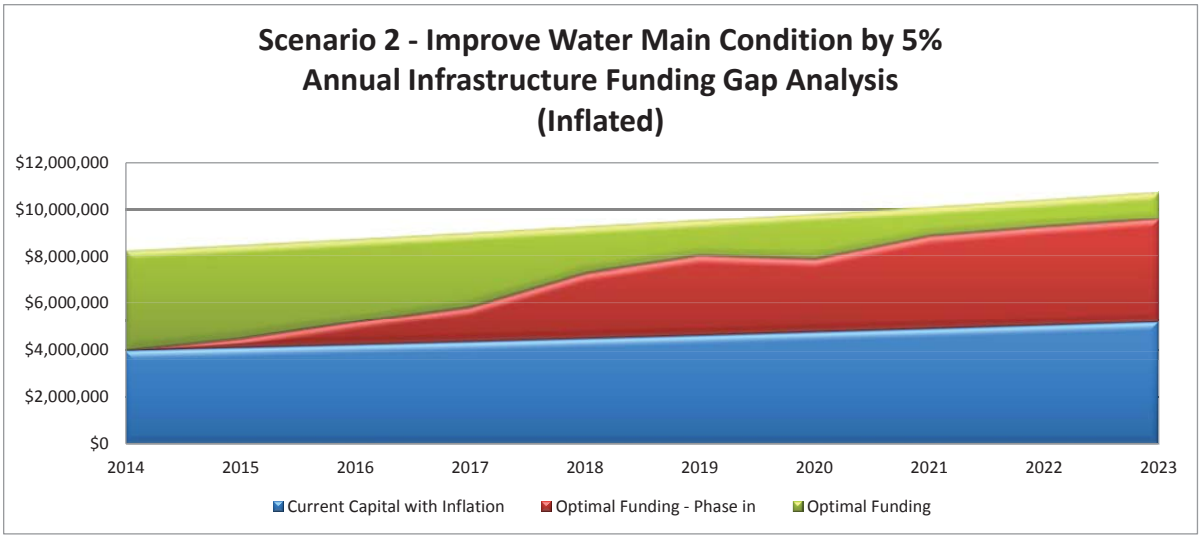
Using the financing strategies presented above, the City would be making proactive attempts to mitigate this funding gap over the forecast period. Please see the figures below for 10 year forecasts of implementing this strategy for tax supported, water and wastewater assets under the selected scenarios. The blue portion of the graph outlines the current capital investment amounts, increasing at inflation. The red portion indicates the result of implementing recommended increases in available funding sources (resulting in increases in capital investment annually). The green represents optimal annual capital investment amounts (calculated as described above). Please note "optimal" capital investment funding can come from a number of additional sources, such as grants, donations, debt and other contributions. Please refer to Appendices F (tax supported), G (water) and H (wastewater) for 20 year versions of these

graphs, indicating that if recommended annual funding levels are achieved, the annual infrastructure funding gap would be eliminated during the forecast period.

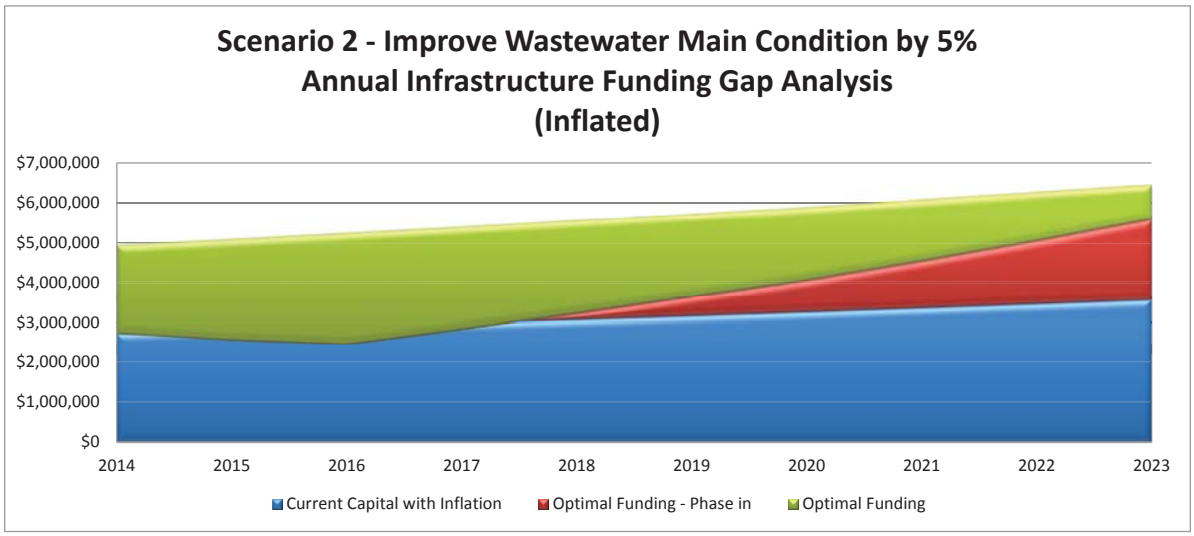




Tax Supported Assets



Water Assets



Wastewater Assets

To further mitigate the potential infrastructure funding deficit, the City could consider:

- Decreasing expected levels of service to make available capital funding;
- Issuing debt for significant and/or unforeseen capital projects, in addition to the debt recommended within this report, while staying within the City's debt capacity limits (this would have the impact of spreading out the capital repayment over a defined term);
- Actively seeking out and applying for grants;
- Consider approaching the development community for funding assistance with respect to growth/expansion related projects;
- Rate increases, where needed (i.e. taxation, user fees, parking); or
- Implementing operating efficiencies (i.e. reduced operating costs to allow more capital investment).