



Asset Management Plan 2013-2022



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1 EXECUTIVE SUMMARY

The Province of Ontario, through its Mill Capital program, has provided funding designed to help Municipalities address necessary road, bridge, and other priority projects identified through the assembly of an Asset Management Plan. This program is the second phase of the Province's Municipal Infrastructure Strategy which aims to:

- Further strengthen municipal asset management practices;
- Support the most critical roads, bridges,; and
- Provide funding to municipalities that are unable to undertake projects without provincial support.

Infrastructure Solutions (Engineering) Inc., was contracted to build an Asset Management Plan for the City. We were well supported by Jack Kuzminski and Greenstone's staff to accumulate the Municipality of Greenstone's geometric and condition assessment data where it was available, and uploaded tangible capital assets into Ontario Good Roads Association's asset management application, Municipal DataWorks (MDW).

Infrastructure Solutions (Engineering) Inc. based its Asset Management Plan on linear asset types and their current replacement costs. Asset lifespans, condition and project requirements were determined by engineering assessments, and degradation curves (not accounting depreciation rates determined within the PSAB 3150 exercise). Where condition assessments were unavailable, ISI applied an age-based analysis. By replacement value, Municipality's assets are in roads, water network, sewer network, bridges and culverts with roads totaling to 40% with highest replacement value.

Through a comprehensive analysis of all asset types, ISI calculated the Municipality's "infrastructure deficit", defined as the added investment that would be required to maintain a Municipality's infrastructure at appropriate service levels and in a good state of repair today. The Municipality has an infrastructure deficit of approximately \$29.23 MM in 2013. The Municipality of Greenstone's 2013 infrastructure deficit is determined to be \$5,850 per person, much below the national average but very serious for a small community.

On average over the next ten years, Greenstone's capital investment should be \$2.58 MM per annum. The municipality is currently contributing \$1.82 MM to the capital program, resulting in a large infrastructure funding gap which will continue to grow without corrective action. As highlighted in the Report Card within, the Municipality's major linear asset, its roads, are generally in poor condition. On average, bridges and culverts are in fair and poor condition respectively. The water and sewer assets are in fair condition.

Significant benefits could be gained by adhering to the tenets of an Asset Management Plan. We quote Gordon Sparks, Ph.D., P.Eng., and Professor of Civil Engineering University of Saskatchewan who states that "managing existing, capital intensive, public sector infrastructure asset such as roads, bridges, sewer and water systems, buildings, etc. could provide very significant benefits (i.e. 20 – 40% reductions in life cycle costs) associated with managing the maintenance of public sector infrastructure. It is recognized that finding and operating in this "sweet spot" is no easy task and it is advocated that to do so successfully will require public sector agencies to abandon traditional departmental and professional silos and develop multidisciplinary, cross functional teams that can effectively exploit the collective wisdom of all. This includes politicians, chief administrative officers, chief financial officers, planners, accountants, engineers and others."



The optimal outcome involves doing the right thing, at the right time, consistently. In the case of managing existing infrastructure, doing the right thing, at the right time, involves knowing and actually doing the most cost-effective maintenance, repair, rehabilitation or replacement activity at the right time throughout the entire life cycle of the asset. The process for prioritizing, establishing levels of service and operating performance indicators are defined in this report and attached Appendices.

Asset management is a philosophy and may require a significant change in organizational culture. The State of the Infrastructure Report (SOTI), Capital Plan, financial projections and recommendations within this Asset Management Plan will provide Municipality staff with critical information and analytical tools to begin the education/communication process for the Municipality's asset management strategy.

2 SOTI REPORT

2.1 HISTORICAL OVERVIEW

All of the World's urban cities and municipalities are underpinned by a vast network of roads, water supply, sewage, drainage, power supply, flood protection, recreational and real estate assets. These assets, predominantly managed by local governments, constitute a major investment over many generations and represent the world's largest portfolio of assets.

In Canada, we are in a deficit. It is the deficit that involves the deterioration of our infrastructure, the roads and bridges we drive on, the water treatment facilities we depend on for clean drinking water, and the sewer systems that take away tainted water. Most Canadian municipalities are struggling to maintain existing infrastructure under current tax and rate levels. They continue to deal with new reporting responsibilities and expenses downloaded by both the Province and Federal Government. Municipalities are facing a growing need to maintain and renew aged infrastructure, without the tax base to do so. In 1962, 22 cents of every dollar was spent on infrastructure by the Federal Government and by 2002, only 12 cents. Public infrastructure has suffered from decades of extensive neglect and overuse. In Canada, it is estimated that the average infrastructure deficit runs in excess of \$10,000 for every man, woman and child. Much of this infrastructure deficit is found in the major urban centers, but the National deficit will double over the next 10 years as projects undertaken in the 1950's/1960's reach their projected lifespan.

This State of the Infrastructure (SOTI) assessment is based on an analysis of the replacement, rehabilitation, and maintenance requirements of the Municipality's asset inventory and its current condition. We include a Report Card on the current state of the major linear assets within the Municipality. The Capital Plan provides both a high-level assessment of projected Capital expenses and a detailed future project by project costing for the Municipality's review and confirmation. Our objective is to give the Municipality the analytical tools and information necessary to implement a comprehensive and cohesive asset management program.

Asset management is a philosophy and may require a significant change in organizational culture, as well as at the community and political levels. This change will not occur overnight; however, the State of the Infrastructure Report, Capital Plan, financial projections and detailed recommendations will provide Municipality staff with critical information and analytical tools begin the education/communication process for the Municipality's asset management strategy. The document was written in plain language, with explanatory text; it is a communication document, which is based upon proven engineering and carefully calculated financial assumptions.



2.2 STATE OF THE INFRASTRUCTURE REPORT (SOTI)

Infrastructure Solutions has been contracted to assist the Municipality of Greenstone in analyzing the State of the Infrastructure (SOTI) and the assembly of a Capital Plan as the initial components of a comprehensive Asset Management Plan. We have determined that the Municipality has a significant backlog of assets in need of betterment or replacement.

Dealing with aging infrastructure requires that the Municipality assess long-term capital project requirements and establish the funding of high-priority projects in an efficient, timely and cost-effective manner. With our engineering analysis and project identification, the Municipality can monitor, track and manage infrastructure assets to ensure that policy makers obtain sufficient funding in order to maintain, at minimum, and potentially enhance future service levels. Through capital budgeting, the Municipality of Greenstone can plan the future operating budget expenses and reserve funds to manage its financial position over a long term period. Capital planning provides the core information needed for the Council's planning and fiscal policies.

The Report Card produced within the SOTI has been developed to provide an easily understood reference that can be regularly updated to document investment gaps and progress the Municipality is making towards sustainability. The SOTI and associated analysis are strategic documents that identify trends and highlight possible issues involved in delivering services and maintaining the assets for those services. The SOTI will also assist in the development of more detailed tactical and operational plans aimed at identifying expenditures needed to provide service in a cost-effective, sustainable manner. Wherever provided, engineering assessments were used.

Encapsulated within this report ISI presents the Municipality's State of the Infrastructure report (SOTI), and a description of our methodology. The final Capital Plan contains a more detailed asset data and calculation process. All source information is readily available within the Municipal DataWorks software application for verification of asset conditions and lifespans by individual asset or by asset type and contain all data available and provided by the Municipality including asset location, a segmenting of linear assets into manageable lengths, asset ID's, geometrics of the asset (length, width and other appropriate dimensions). The comprehensive asset inventory in the Municipal DataWorks application includes PSAB data, the year constructed/purchased, estimated useful life, general description of asset, and geometrics.

The direction of this project was influenced by the Municipality's requirement for Asset Management Plan and the work of the National Guide for Sustainable Municipal Infrastructure. In November 2003, the National Guide to Sustainable Municipal Infrastructure published a Best Practice for Municipal Infrastructure Asset Management. It stated that the framework for an asset management plan can be described in terms of seven questions:

1. What do you have and where is it? (Inventory and Location)
2. What is it worth? (Costs/Replacement Rates)
3. What is its condition and expected remaining service life? (Condition and Capability)
4. What is the service level expectation and what needs to be done? (Capital & Operating Plans)
5. When do you need to do it? (Capital and Operating Plans)
6. How much will it cost and what is the acceptable level of risk? (Short/Long-term Financial Plan)
7. How do you ensure long-term affordability? (Short- and Long-term Financial Plan)



This report answers these questions.

2.3 INVENTORY AND THE VALUATION OF ASSETS

The aim of this section of the report is to provide an overview of the State of the Infrastructure (SOTI) by an analysis of the available data on the condition and/or age of the Municipality. The MIII SOTI requirements are restricted to linear assets only. Within the Capital Plan, ISI has included other critical asset types in its analysis for the Municipality's review. The grouping of these assets and asset replacements were taken from the PSAB files provided by the Municipality, and the current replacement value of the assets is comprised of these factors:

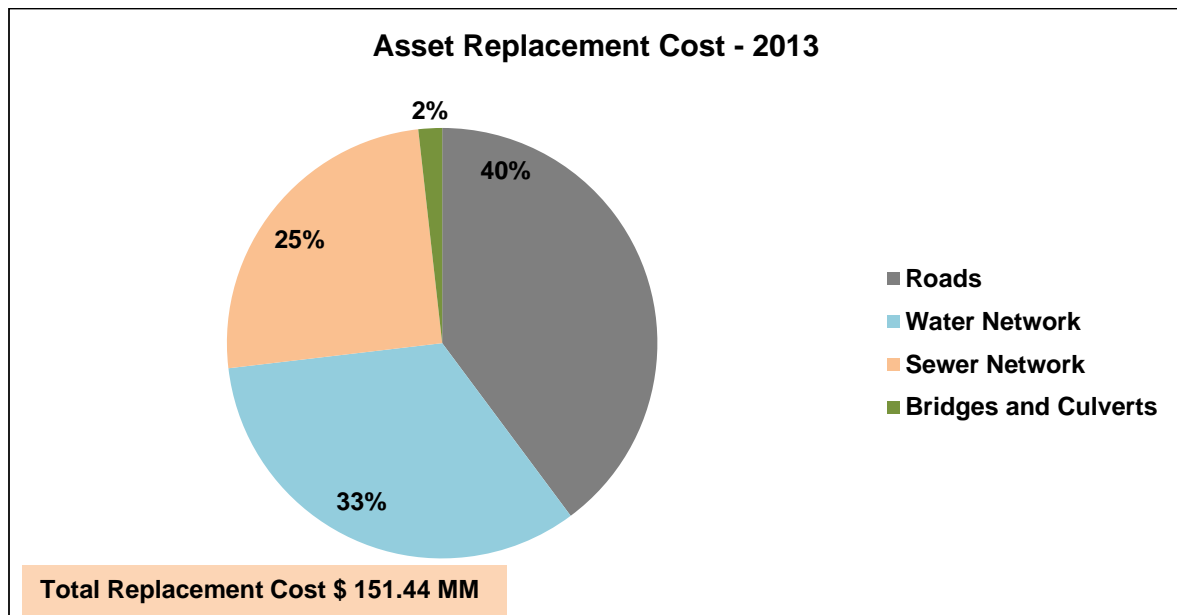
- Value of all the existing assets
- New assets acquired prior to 2013
- Adjustments in unit costs based on improved knowledge and inflationary impacts

The Municipality of Greenstone was created by the amalgamation of the former municipalities of the Town of Geraldton, Town of Longlac, the Township of Nakina and the Township of Beardmore, and an extensive area of unincorporated territory including numerous settlement areas such as; Caramat, Jellicoe and MacDiarmid. For the purpose of the Asset Management Plan report, we have grouped the assets as follows:

Linear Assets:

- Roads - Gravel, Surface Treated, and Paved (HCB)
- Structures- Bridges and Culverts
- Water and Sewer Network - Hydrant, Waterline, Water Tower, Well, Water Equipment, Water Treatment Plant, Pump House, Manhole(Storm), Manhole (Waste Water), Catchbasin (Storm), Waste Water Treatment Plant and Sewerline (Storm), Sewerline (Waste Water) ,Dewatering Trenches and Lift Station

Non-linear assets are not been included in this asset management plan.



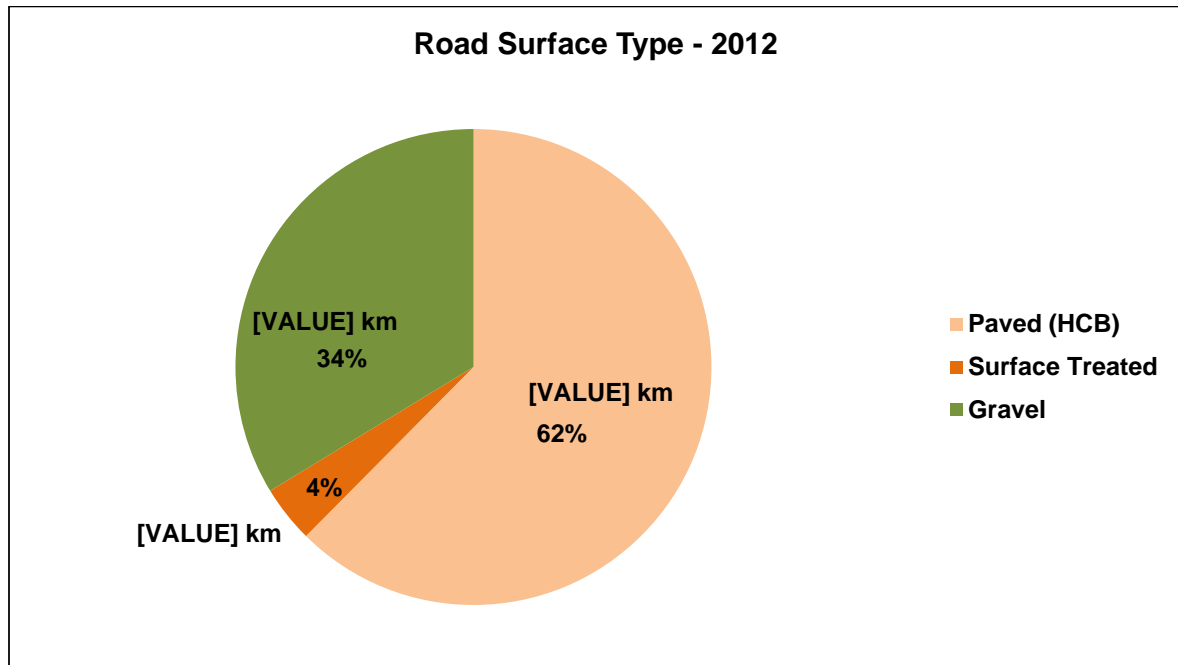
Assets Type	Replacement Cost
Roads	\$60,291,185
Water Network	\$50,469,759
Sewer Network	\$37,990,625
Bridges and Culverts	\$2,686,453
Total	\$151,438,022

2.3.1 ROADS

The Municipality of Greenstone has a total of 141.15 km’s of roads. The following summarizes the road surface types within the Municipality.

Road Surface Type:

Road Surface Type	Length (km)	%
Paved (HCB)	88.12	62%
Surface Treated	5.46	4%
Gravel	47.57	34%



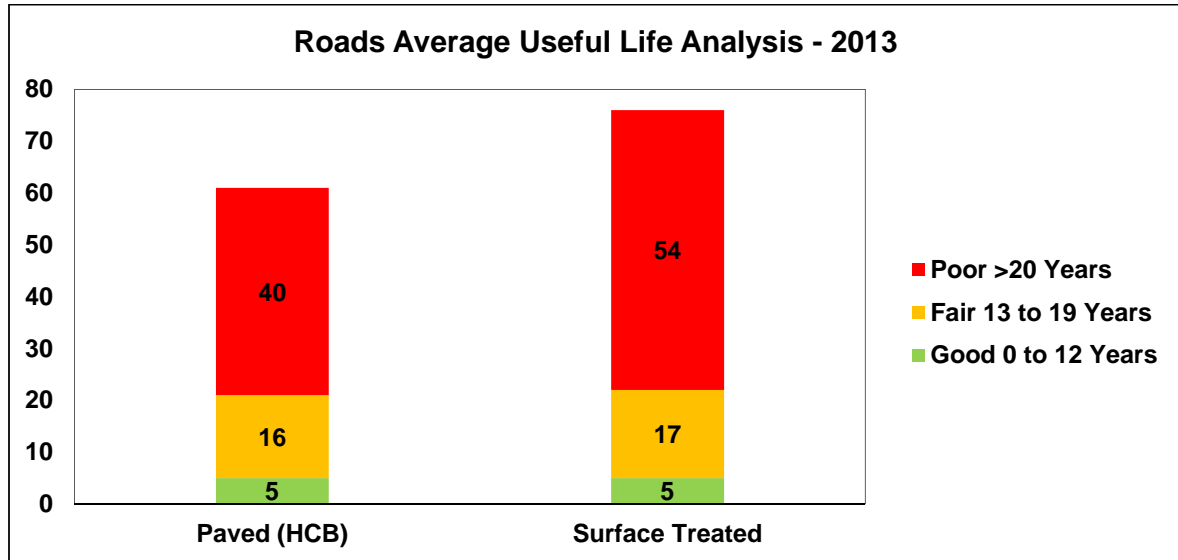
Age-Based Analysis for Roads

The Municipality has three type of roads- Paved (HCB), Gravel and Surface Treated. State of Infrastructure for roads is done based upon age based analysis due to non-availability of conditions for Surface Treated roads. The calculations, undertaken in this circumstance, were to determine the remaining life of the asset on age-based analysis with pre-defined criteria. The Gravel roads are assumed to be maintained periodically, therefore age based analysis is done only for Paved (HCB) and Surface Treated. The Paved (HCB) and Surface



Treated roads are in poor condition. The strategies for rehabilitation/reconstruction are suggested in the Capital Planning Module for the Municipality.

Road Average Condition:



2.3.2 BRIDGES AND CULVERTS

This group comprises:

- Bridges – There are 2 bridges in the inventory
- Culverts – This group comprises of storm culverts with diameter sizes from 500mm to 3000 mm, consists of total length of 411 meters

The most current bridge inspection was completed by the Municipality in 2011 for all of the bridges. The bridge inventory is a mix of steel and concrete bridges.

There are number of repairs and replacements recommended for abutments, railing system, posts, girders and bracing.

Bridges Condition Index

Condition assessment was provided to ISI by the Municipality, and was uploaded into Municipal DataWorks. Municipal DataWorks calculates the Bridge Condition Index based on the consultant’s report and condition assessments. Deterioration curves were used to determine the 2013 condition of these assets. The MTO Bridge Condition Index rating is provided by the Ontario Ministry of Transportation which describes maintenance requirements within each range as follows:

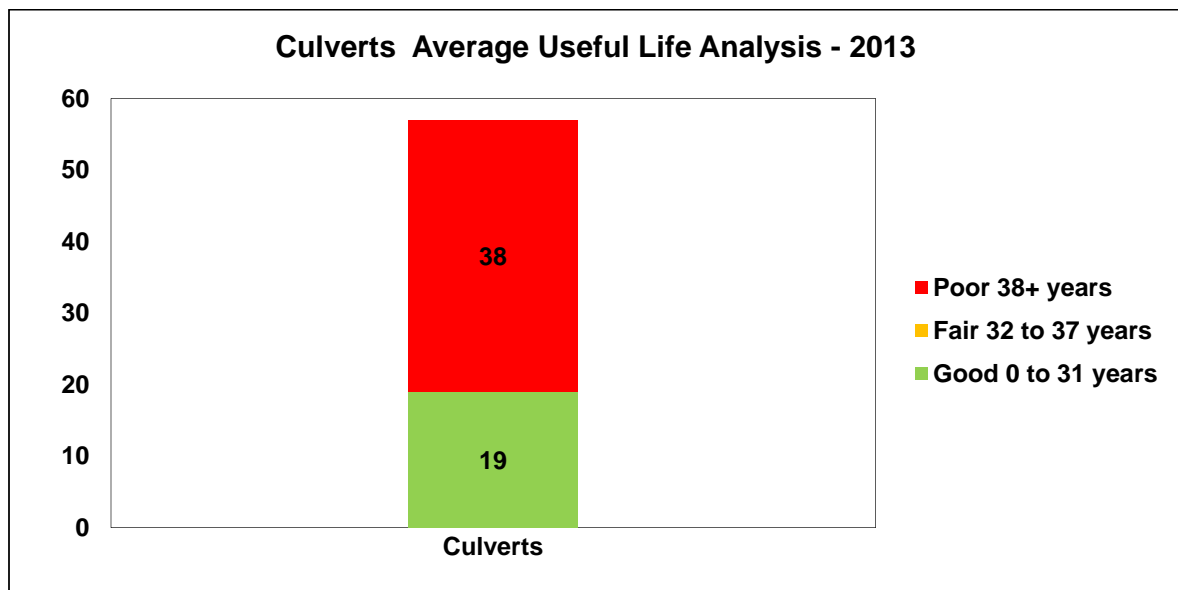
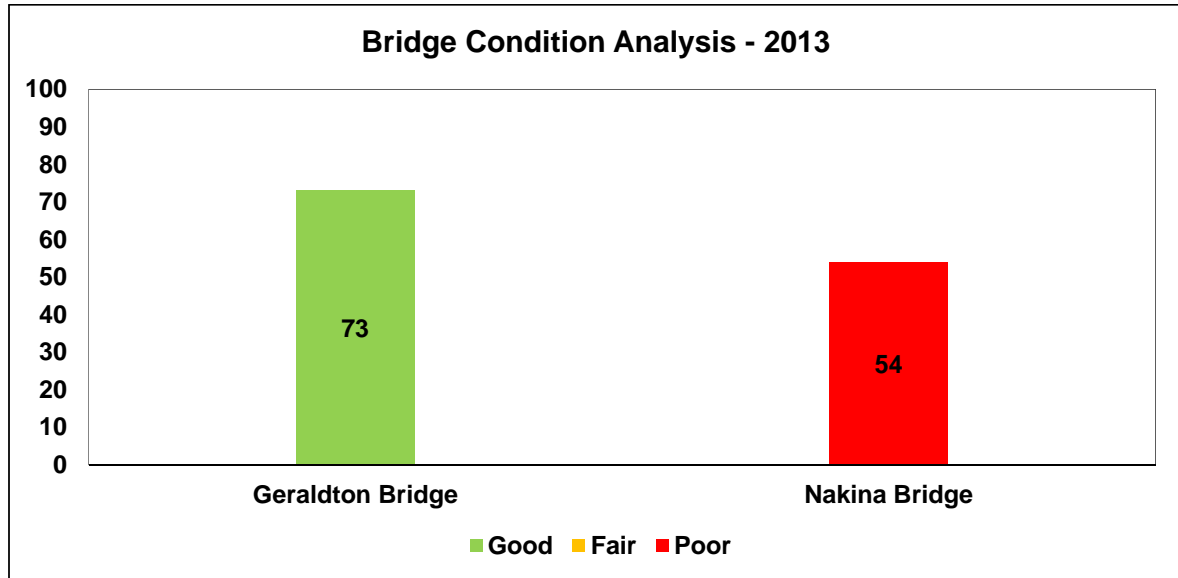
Good: BCI Range 70 - 100: It is usually not required to perform any maintenance work within the next five years

Fair: BCI Range 60 - 69: Maintenance work is usually required within the next five years

Poor: BCI Less than 60: Maintenance work is usually required within one year



An age based analysis on culverts has been undertaken due to non-availability of condition assessments.



2.3.3 WATER AND SEWER NETWORK

Water Network

- Hydrants
- Waterlines – consists of total length of 53,014 meters. Water Service Connection, Water Valves, Pipeline Intake Steel also included in Waterline inventory.
- Water Treatment Plant
- Pump House
- Water Tower
- Water Equipment

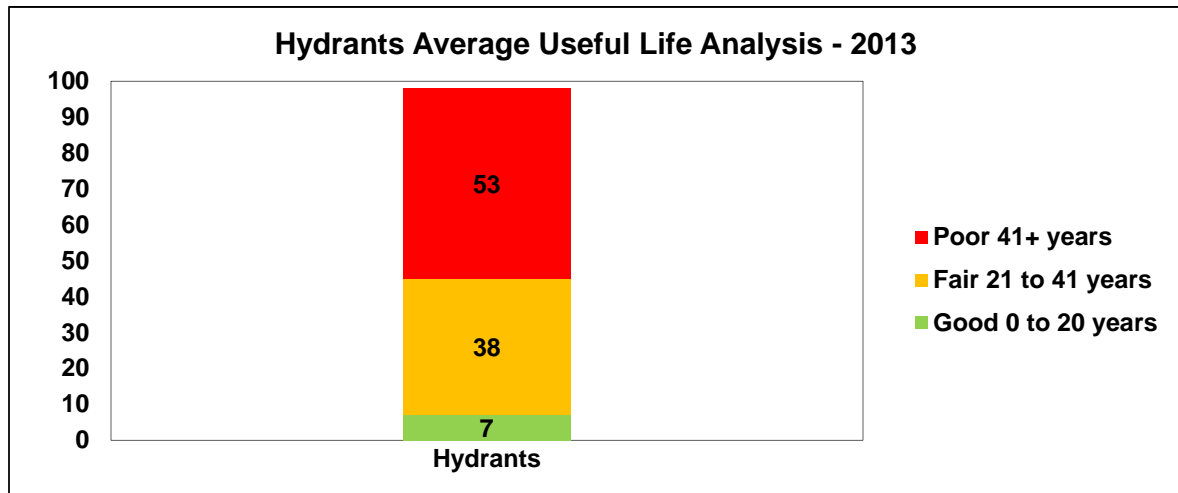


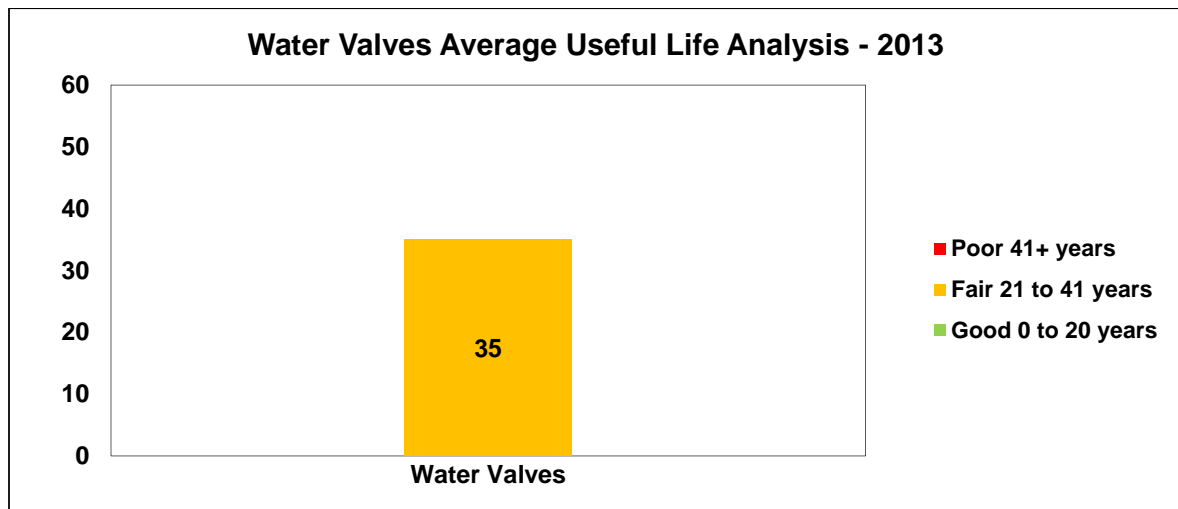
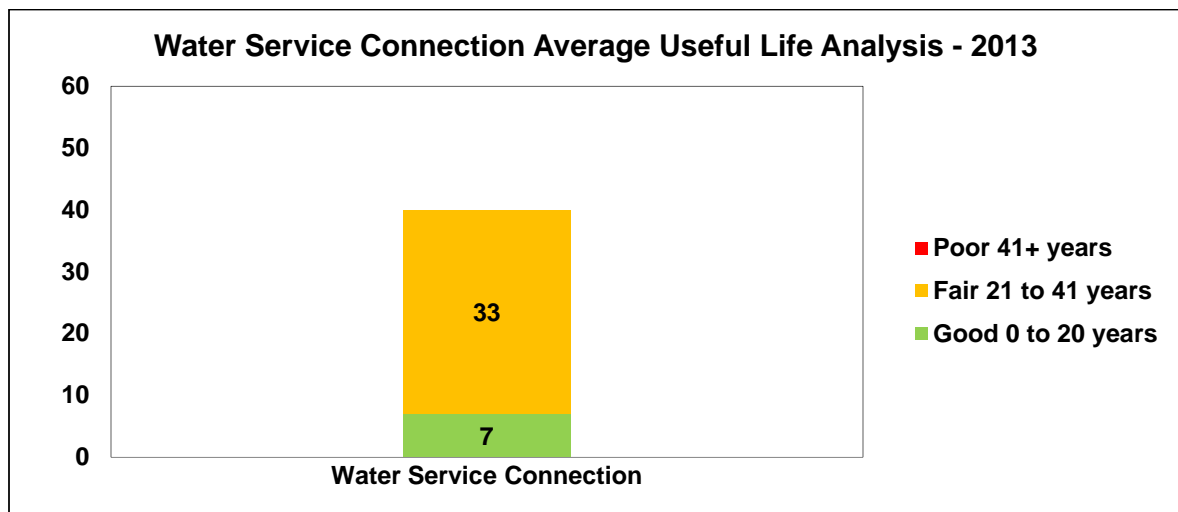
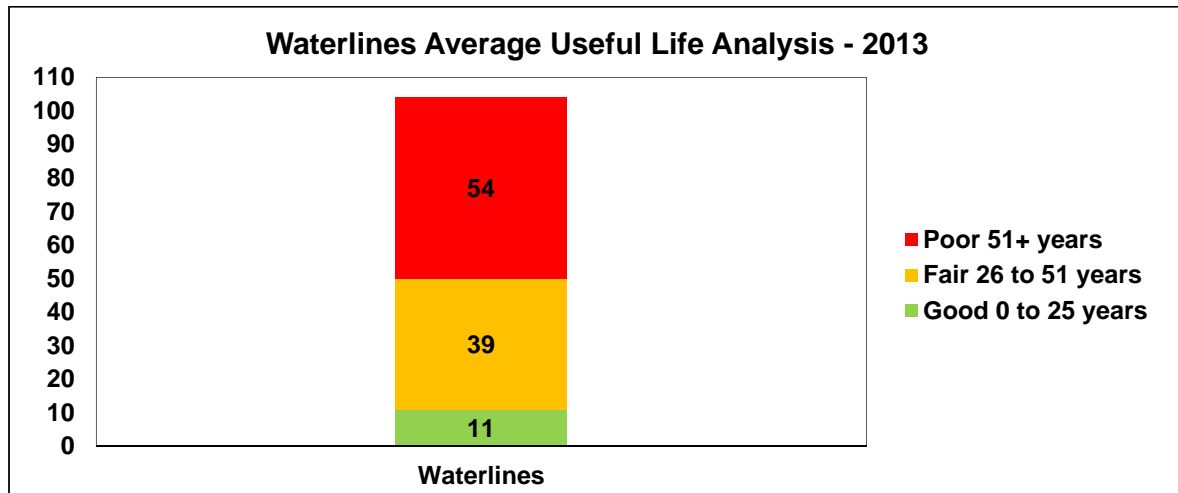
- Well – Water Tower Dry Well, Clear Well and Water Well Other

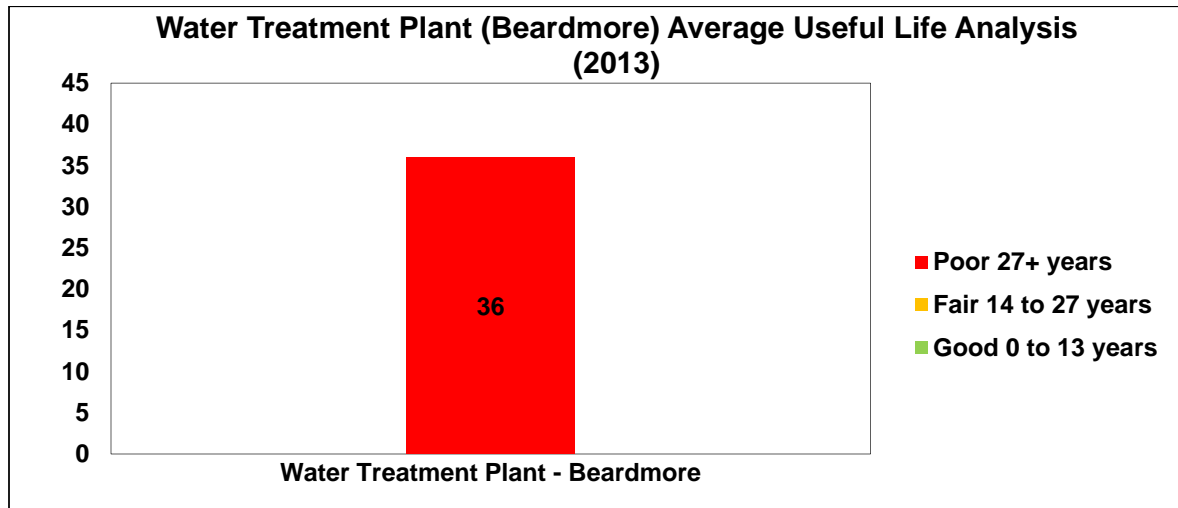
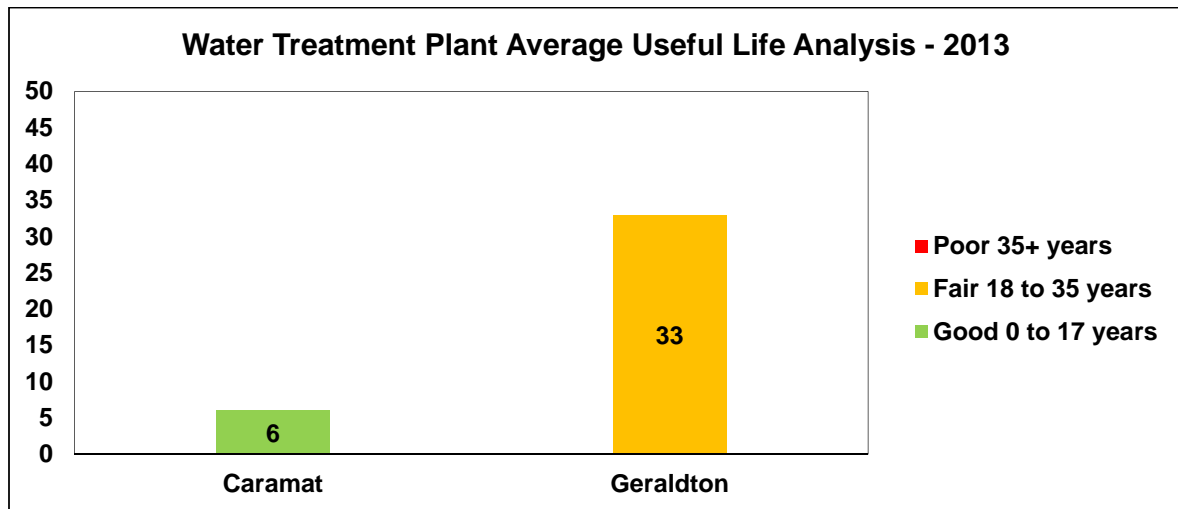
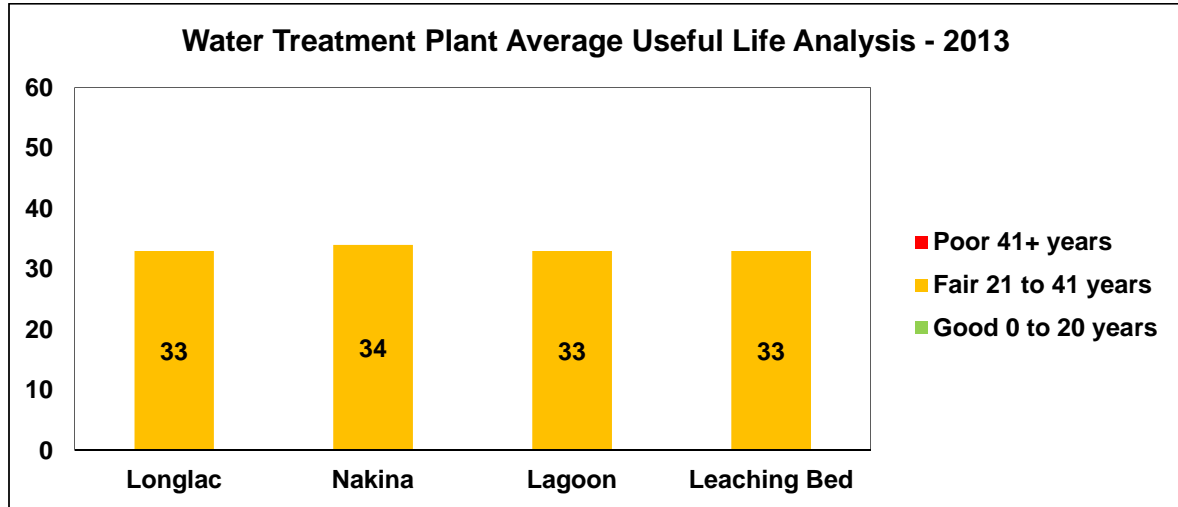
Sewer Network

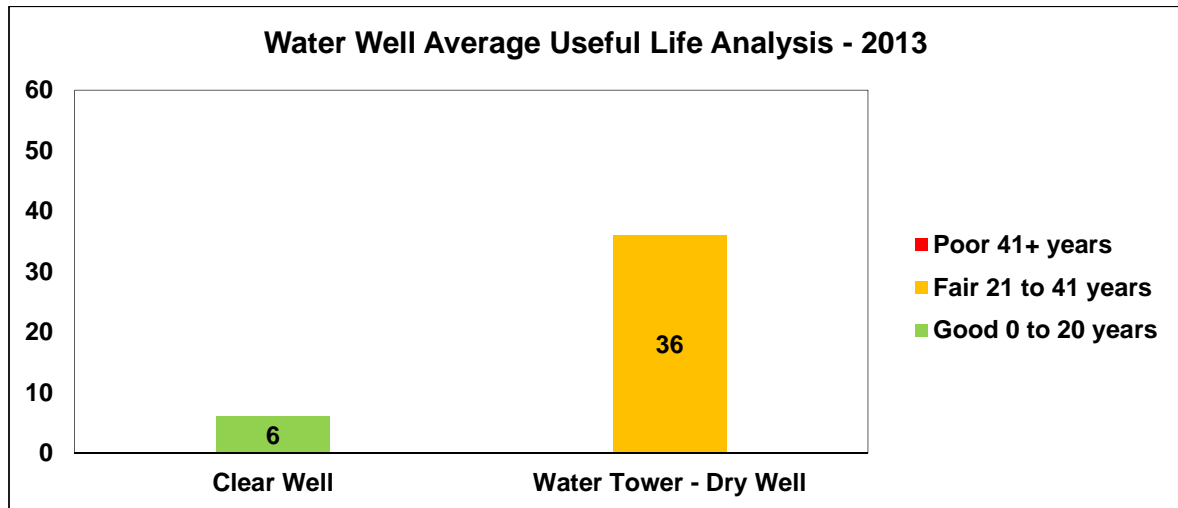
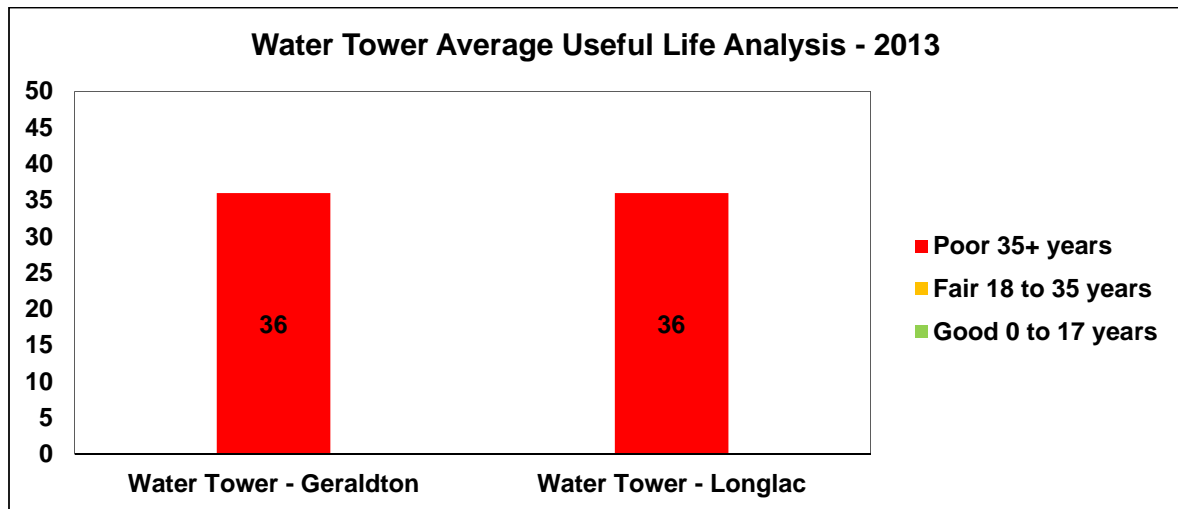
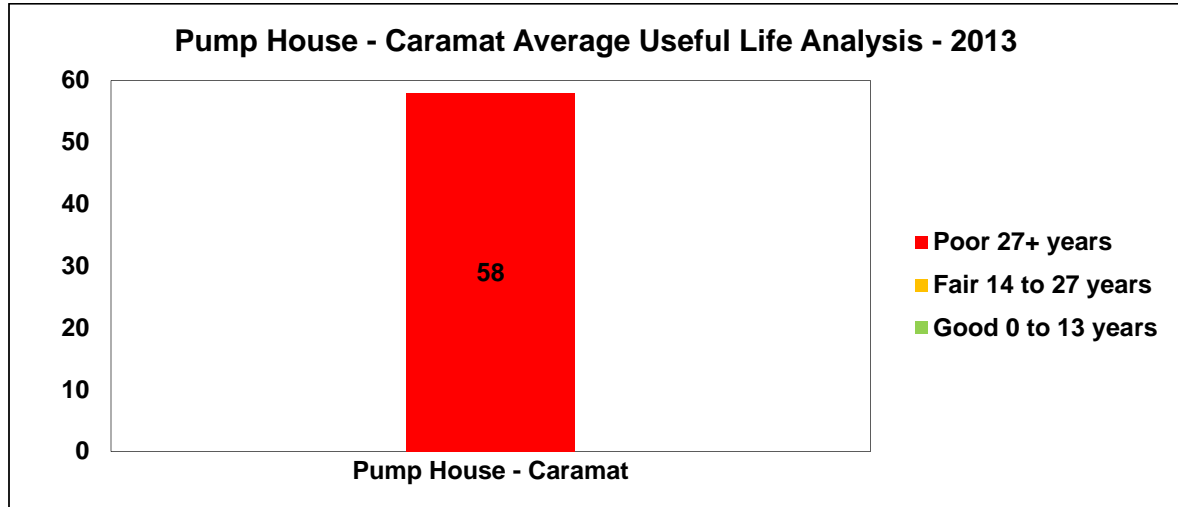
- Manholes (Storm)
- Manholes (Waste Water)
- Catchbasin (Storm)
- Sewerlines (Storm) - consists of total length of 16,008 meters
- Sewerlines (Waste Water) – consists of total length of 47,279 meters
- Dewatering Trenches
- Sewage Treatment Plant
- Waste Water Treatment Plant
- Lift Station

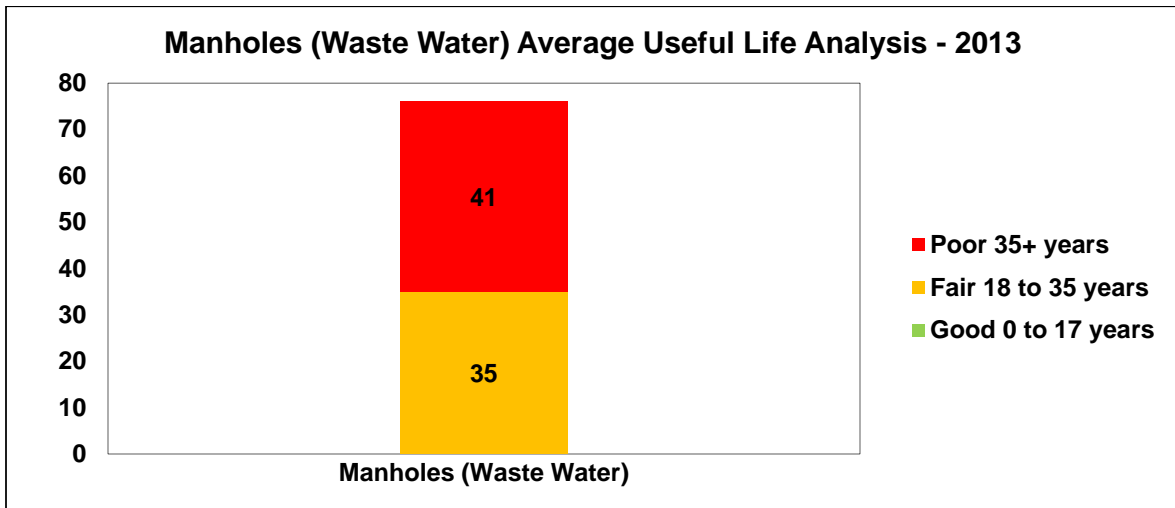
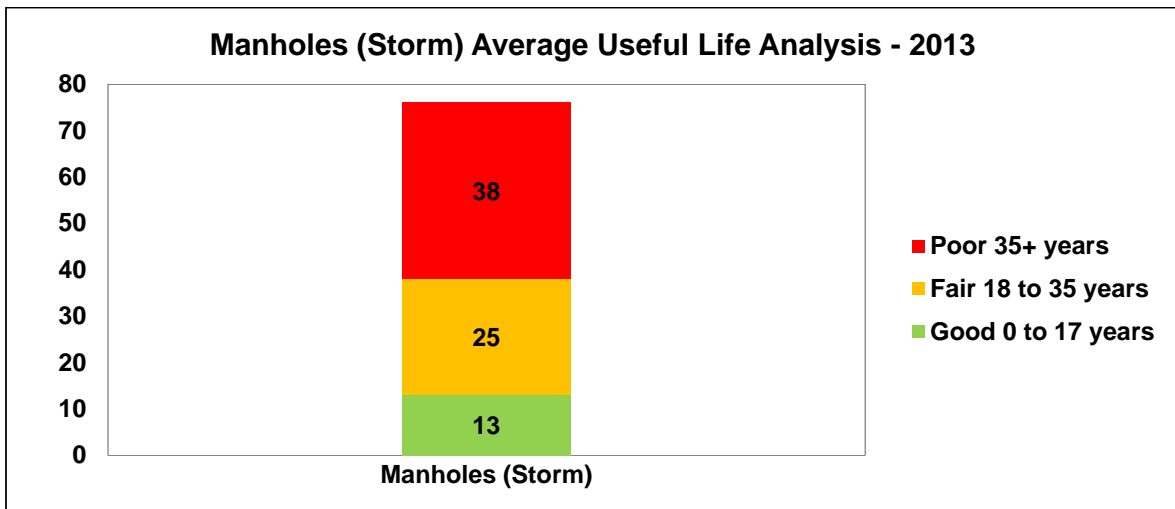
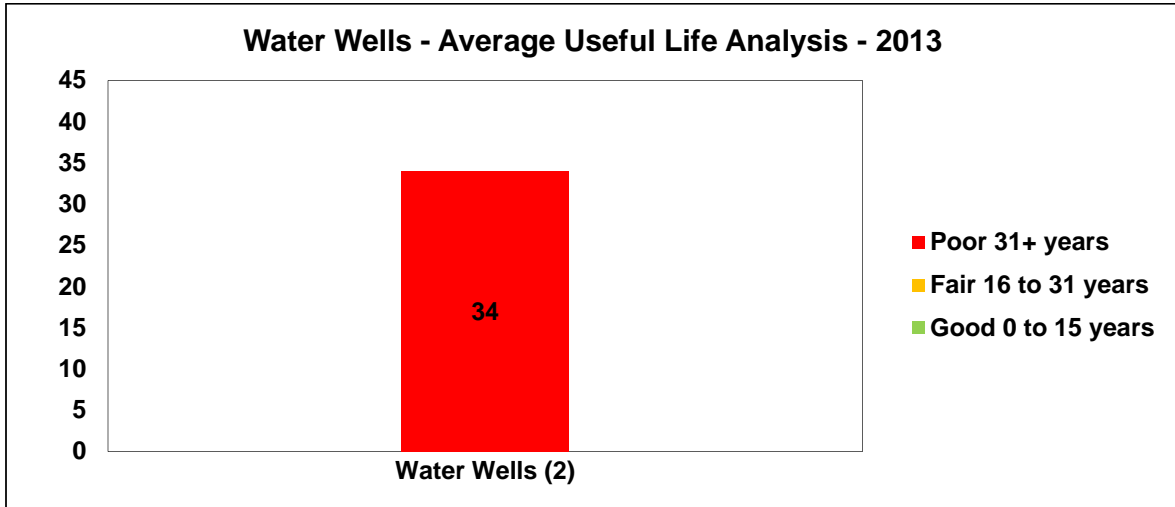
An age-based analysis is done on the water and sewer assets due to the non-availability of condition assessments. The calculations, undertaken in this circumstance, were to determine the remaining life of the asset on age-based analysis with pre-defined criteria. Due to variation in the useful life of water equipment and lift station an age-based analysis has not been performed. Age-based condition assessment has **the least level of confidence to determine the current State of the Infrastructure.** The graphs below show the age-based analysis for each asset mentioned above.

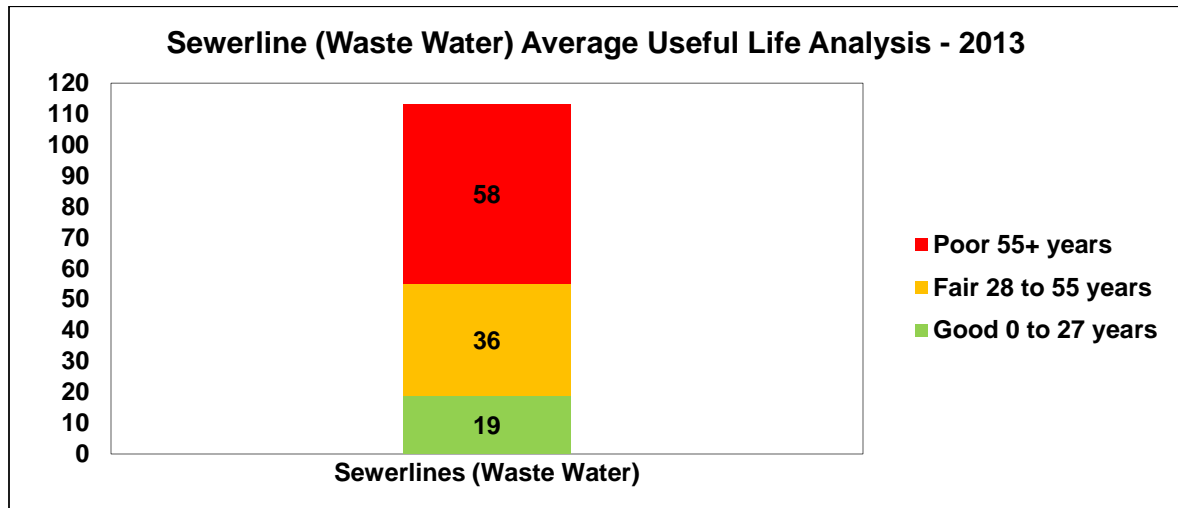
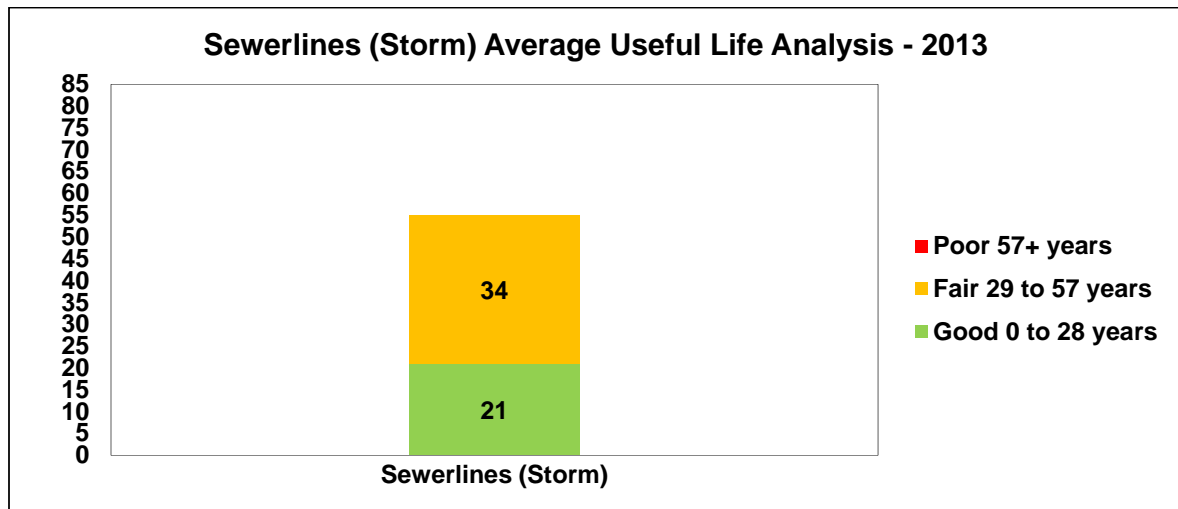
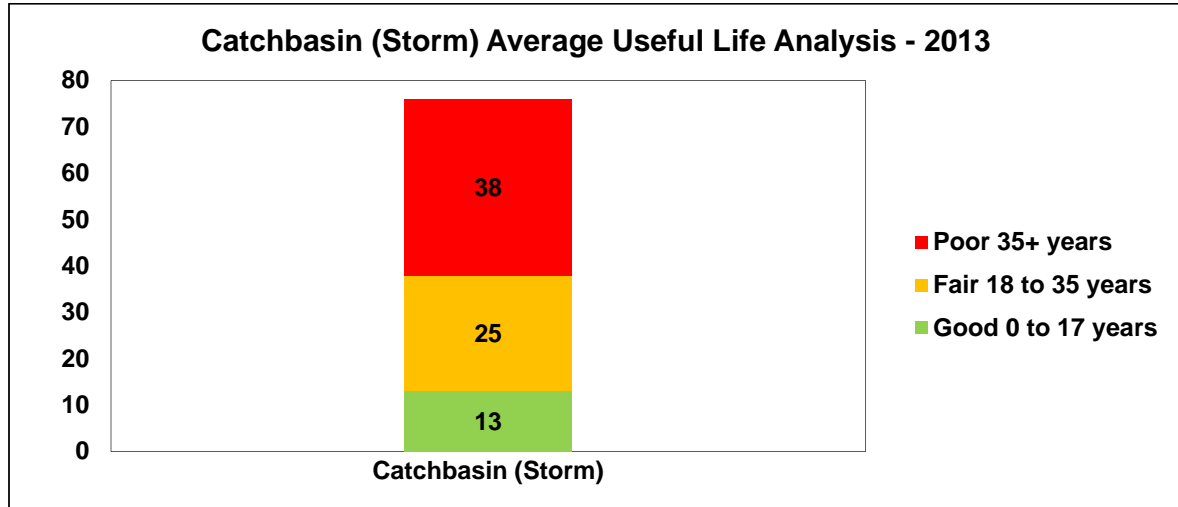


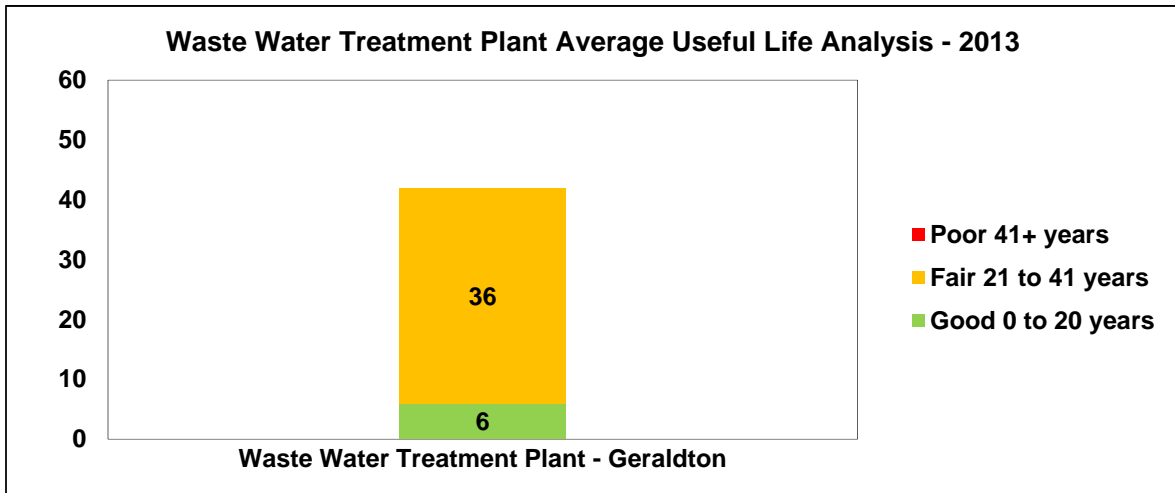
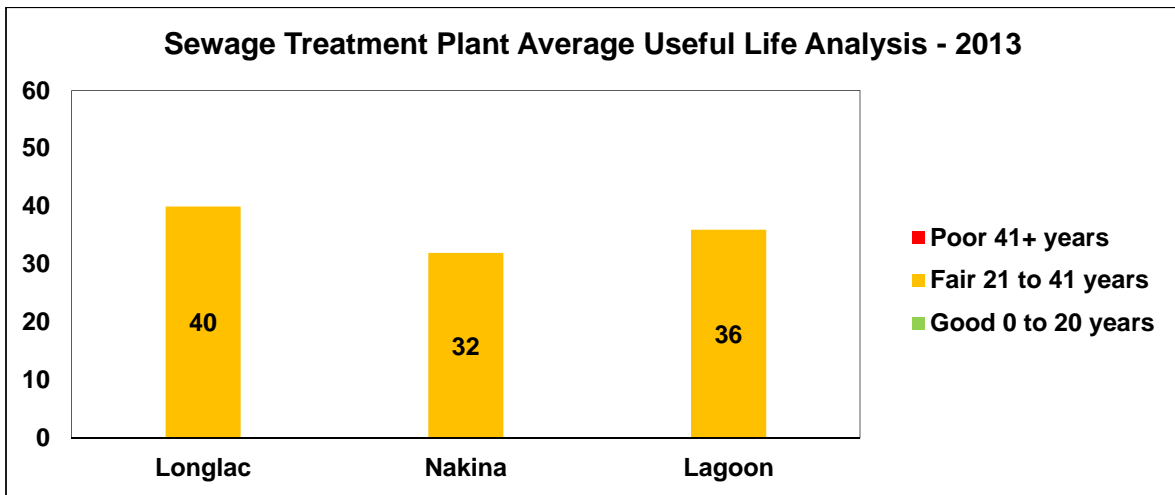
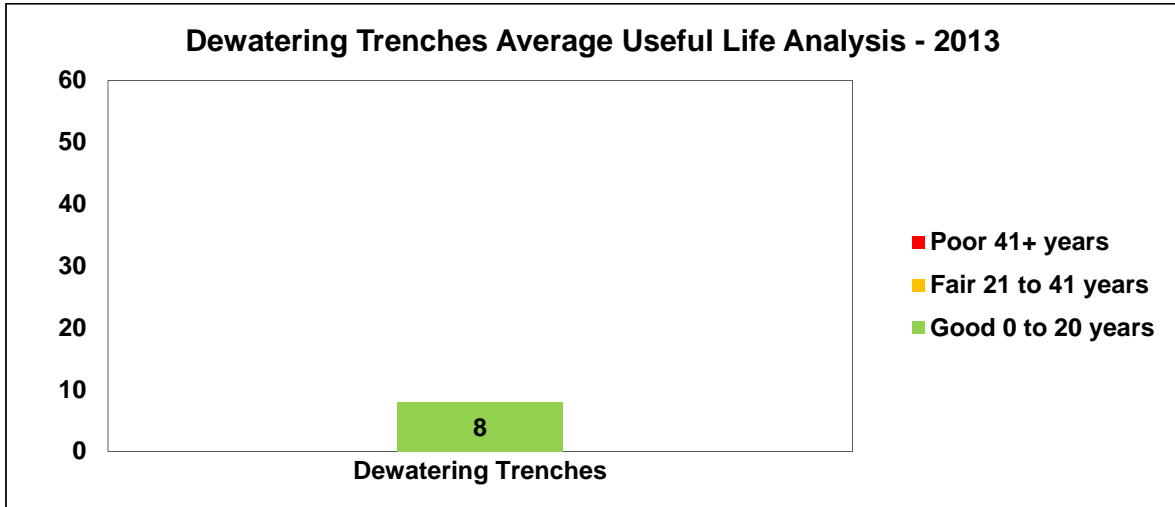












2.4 CONDITION RATING REPORT CARD

Asset Group	Overall Condition Rating	Condition Rating	Range	Comments



Water Network	B	A	Good	Different ranges based upon total useful life for each asset type	Condition rating based on age-based analysis
		B	Fair		
		C	Poor		
Sewer Network	B	A	Good	Different ranges based upon total useful life for each asset type	Condition rating based on age-based analysis
		B	Fair		
		C	Poor		
Road Network	C	A	Good	0-12	Condition rating based on age-based analysis
		B	Fair	13-19	
		C	Poor	>20	
Bridges	B	A	Good	70 to 100	Condition rating based on bridge inspection reports
		B	Fair	60 to 69	
		C	Poor	0 to 59	
Culverts	C	A	Good	0-31	Condition rating based on age-based analysis
		B	Fair	32-37	
		C	Poor	38+	

2.5 SOTI CONCLUSION

As highlighted in the Report Card above, the current state of the linear infrastructure, based on available condition rating analysis, presents a picture of the Municipality’s linear assets. The roads are reported in poor condition. The condition analysis according to the surface type is as follows:

- Water and Sewer Network is in fair condition
- Paved (HCB) and Surface treated roads are generally in poor condition
- Bridge is rated in fair condition
- Culvert is rated in poor condition

The overall or average non-critical state of the linear infrastructure at the Municipality of Greenstone, is in line with the condition of a vast majority of municipalities in this Province. The Municipality should continue to be proactive in their strategies, so as to extend asset useful life and avoid major rehabilitation/reconstruction or replacement costs.

3 CAPITAL PLAN

3.1 BACKGROUND

Managing the Municipality’s capital assets requires an assessment of the long-term capital project requirements and the establishment of the funding for high-priority projects in an efficient, timely and cost-effective manner. As a result of this analysis, the Municipality will be able to more effectively monitor, track and manage infrastructure assets, to ensure that policy makers obtain sufficient funding in order to maintain, at minimum, and potentially enhance future service levels. Through capital planning, the Municipality of Greenstone can plan the future operating budget expenses and reserve funds to manage the financial position over a long term period. Capital planning also provides the core information needed for implementing the Council’s planning and fiscal policies.

Support has been provided by the Province of Ontario through its MIII Capital program, designed to help Municipalities address necessary road, bridge, and other priority projects identified through their asset management plans. This program is the second phase of the Province’s recently released Municipal Infrastructure Strategy which aims to:



- Further strengthen municipal asset management practices;
- Support the most critical roads, bridges, and drainage projects; and
- Provide funding to Municipalities that are unable to undertake projects without provincial support.

The Provincial strategy relies heavily on the requirement for Municipalities to demonstrate how proposed projects fit within an asset management plan, which is a key component to ensuring infrastructure sustainability. An Asset Management Plan provides many benefits including:

- A systematic evaluation of all potential projects at the same time.
- The ability to stabilize debt and consolidate projects to reduce borrowing costs.
- To serve as a public relations and economic development tool.
- A focus on preserving a municipal government's infrastructure while ensuring the efficient use of public funds.
- An opportunity to foster cooperation among departments and an ability to inform other units of government of the Municipality's priorities.



3.2 OVERVIEW

The Capital Plan, an integral part of an Asset Management Plan, is a blueprint for planning a community's capital expenditures and is one of the most important responsibilities of local government officials. It coordinates community planning, financial capacity and physical development. It is a tool to assess the long-term capital project requirements of a Municipality and to establish funding of high-priority projects in a timely and cost-effective fashion. The development of a Capital Plan is intended to ensure that policy makers are responsible to residents and businesses of the community with respect to the expenditure of public funds. It also promotes the provision of continuous efficient services. This plan identifies and describes capital projects, the years in which funding each project is likely to occur and the method of funding. While a Capital Plan may be designed to forecast any period of time, it generally extends beyond the current operating cycle and usually covers a five to ten year time frame. The Municipality of Greenstone has requested a 10 year Capital Plan.

The Capital Plan provides a detailed understanding of anticipated investments into tangible capital assets. These assets include basic facilities, services and installations needed for the functioning of the community. The development of a CIP that will insure sound fiscal and capital planning requires effective leadership and the involvement and cooperation of all municipal departments. A complete, properly developed CIP has the following benefits:

- Facilitates coordination between capital needs and the operating budgets
- Enhances the community's credit rating, control of its tax rate, and avoids sudden changes in its debt service requirements
- Identifies the most economical means of financing capital projects
- Increases opportunities for obtaining federal and provincial aid
- Relates public facilities to other public and private development and redevelopment policies and plans
- Focuses attention on community objectives and fiscal capacity
- Keeps the public informed about future needs and projects
- Encourages careful project planning and design to avoid costly mistakes and help a community reach desired goals

A municipal government must take care of two key responsibilities in managing its infrastructure:

- The first major responsibility is the maintenance and repair of existing infrastructure. Given the high cost to replace linear assets and the fact that they are essential to providing programs and services to the public, it is extremely important that regular maintenance and periodic refurbishments be done to keep facilities and other assets in good working condition for as long as possible.
- The second major responsibility that municipal governments have is to plan and construct new community infrastructure. This involves several steps including deciding what services are to be provided, identifying community needs, careful planning, determining priority investments, figuring out how to finance projects and good management to ensure projects are completed on time and on budget.

Typically, a municipal government manages many diverse assets. Each asset type is considered a "capital" asset if it has the following characteristics:

- It is held for the purposes of delivering a program or service or to produce something
- It is to be used on a continuing basis and is not intended for sale
- It has a life expectancy of greater than one year



- It has as a value greater than a certain minimum threshold (as established in the TCA policy)

Common examples, such as roads, buildings and equipment, all meet these criteria and are considered capital assets from a planning and financial perspective. Other types of expenses, such as salaries, purchased services (e.g. janitorial), consumable items (coffee, office supplies etc.) or regular maintenance, do not meet these criteria and are categorized as expenses. These types of expenditures are paid for from operations budgets.

Local governments can make significant capital expenditures, sometimes undertaking projects without first analyzing the impact such expenditures may have on future operations and expenditures for other important capital projects. A Capital Plan is intended to assist Municipalities in making choices about which projects should be implemented, how they should be financed and when, to establish priorities for its spending on services, while controlling the ultimate impact on the tax rate or user fees. It also provides a mechanism for controlling future debt levels, thereby ensuring that a reasonable amount of financial flexibility is maintained.

Although the Capital Plan is generally maintained separately from the operating budget, they do work in unison since the debt charges on funds borrowed for capital expenditures become expense items in the annual operating budget. In addition, operating and maintenance costs of capital assets have an impact on the operating budget. In order to have a realistic, workable Capital Plan, therefore, it is necessary to estimate the effect that debt service and operating costs will have on future tax rates. In this way, non-essential capital expenditures will not be undertaken at the expense of pending essential capital projects and the Municipality will thus be in a better position to control future debt levels.

To determine how much money should be allocated to existing infrastructure, the following factors need to be considered:

- **Inventory** – keep an up-to-date inventory of all physical assets that the municipal government owns or manages including fixed assets (buildings, facilities, etc.) and mobile assets (heavy equipment, trucks, smaller equipment.)
- **Condition rating** – complete an assessment of the condition of each significant asset and determine what needs to be repaired and when.
- **Upgrades** – existing facilities may need to be upgraded to meet new standards or legislative requirements or to meet demands due to population growth, etc.
- **What does the community need for new infrastructure?** This can be a tricky subject to resolve as a Council and community residents may have very different opinions about what the community needs most. This stage of the process requires community consultation which can include meetings, surveys etc. One approach is to organize needs starting with the basics (survival, safety, and shelter) and moving to more advanced needs (recreation, social / cultural, leisure). Once an initial list of potential projects is identified, it can be further refined on the basis of urgency:
- **Immediate or short term** – these are needs that won't wait such as water shortages, equipment breakdowns etc.
- **Predictable growth** – these are needs driven by population growth and increasing demands on infrastructure that will need to be addressed in the next few years. Examples include housing supply, water treatment and delivery capacity, need for expanded recreation facilities etc.
- **Future** – these are long term needs that will occur in the next 20 years, often as a result of priorities established in other community plans (Strategic Plan, Recreation Plan, Land Use Plan etc.). An example may be the development of new residential lots or the refurbishment or replacement of an old building.



3.3 METHODOLOGY

The Municipality of Greenstone's Capital Plan addresses infrastructure deficiencies and future capital expenditures. It includes existing service infrastructure not meeting engineering standards, the cost of renovation or replacement of infrastructure which has exceeded its service life and which as a consequence, is not meeting required service standards. Provision is required to renovate or replace infrastructure constructed previously, when it reaches the end of its service life. These costs do not include on-going operational and regular maintenance (which typically represent the greatest cost component of a facility's service life, for example). Unless informed by the City, requirements such as investments required to support industrial, commercial and residential development in accordance with the growth projections required to serve the community and social needs as well as supply the increasing population and to service to the boundaries of new subdivisions have not been analyzed.

The Municipality's Capital Plan includes:

- Development of parameters for each asset class
- Development of rehabilitation and replacement unit costs
- Identifying the asset types to be included in the Capital Plan and determining and confirming the components of each asset class
- Identification of services to be provided and the capital expenditures to be incurred
- Determination of secondary cost estimates of capital expenditures (consideration of such cost elements as remoteness of the City, land, architect/engineering fees, construction, legal fees, taxes, etc.) The non-rebatable portion of HST at 1.76% has been applied, for example
- Determination of the time periods over which the asset is to be constructed or acquired and the costs prorated accordingly

Municipal DataWork's Capital Infrastructure Planning (CIP) module allows Municipalities to plan necessary rehabilitation work on the right asset at the right time. The CIP module also allows Municipalities to produce a Capital Expenditure Plan for all asset types included in the Morley's MDW asset repository. The CIP allows different work or renewal strategies to be selected for each asset type or category.

The trigger for a strategy within the Municipal DataWork's capital planning tool can be age-based or condition-based. For roads and sidewalks, condition-based triggers have been used, whereas for the sewer and water network, age-based analysis have been used. The Capital Planning parameters, subsequent to the timeline within the road needs studies were condition-based on degradation curves developed by OGRA and the Ministry of Transportation, as defined within a Road Strategy document earlier circulated to the Municipality for its review and attached as Appendix F to the Asset Management Plan report.

The Life Expectancy parameters, the estimated useful life or number of years before an asset needs to be replaced, were provided by the City. The Condition Trigger Point, the number of years after initial installation that the renewal strategy is triggered or the rehabilitation work is to take place, were thoroughly researched, based on engineering principles and established standards.

All analysis to measure the impact of this Capital Plan on future operating budgets will be considered in the final report taking into consideration the average current contribution and the average required contribution to be able to sustain current infrastructure and service



levels. The capital costs required for each year were determined using MDW's Capital Investment Plan (CIP) module.

The methodology used for building this Capital Plan was to:

- 1) Use the tools within MDW for error checking and data gap analysis
- 2) Determine the "unconstrained" rate of capital expenditure (assuming an unlimited budget). A constrained rate of capital expenditure will be provided in the final report.
- 3) Identify the Municipality's current infrastructure deficit.
- 4) Determine the Municipality's future requirements using MDW's Capital Investment Plan module.
- 5) Prepare a report detailing the capital required for each asset class based on current rehabilitation and replacement unit costs
- 6) Establish the cost of maintaining existing infrastructure while addressing the infrastructure deficit.

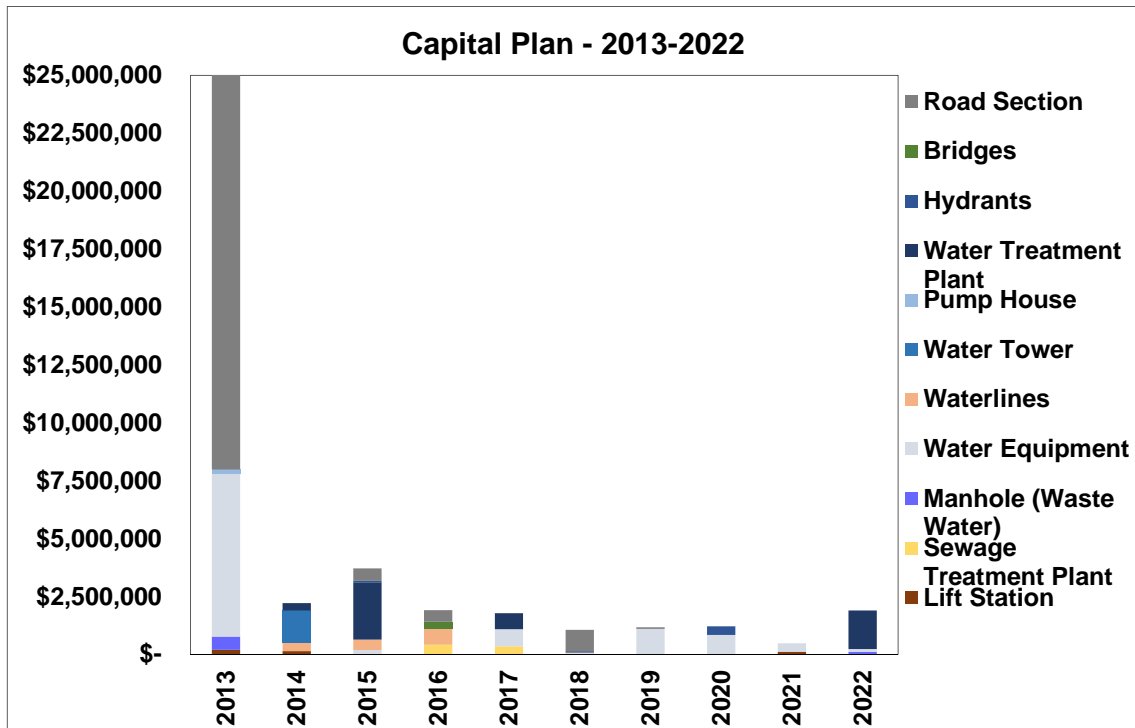
3.4 RESULTS

The Municipality of Greenstone's infrastructure deficit is determined to be approximately \$5,850 per person (2013 figure), below the national average but serious for a small Municipality. The vast majority of the deficit is in dealing with the roads infrastructure. Like most other local governments in this province, Greenstone will struggle with aging infrastructure and constrained budgets.

Upon completion of the collection of all the pertinent data, the capital plan was generated using MDW's Capital Investment Plan (CIP) module. A 10 Year Capital Plan, broken down by asset class for the years 2013 to 2022 (with PST and without inflationary factor), was developed. Inflation will be incorporated in the financial analysis. The results are as follows:

Timeframe	Year	Total Capital Projects (Incl. PST)
Year 2013-2022	2013	\$29,231,211
	2014	\$2,214,960
	2015	\$3,714,486
	2016	\$1,920,173
	2017	\$1,780,953
	2018	\$1,066,131
	2019	\$1,173,608
	2020	\$1,218,288
	2021	\$487,830
	2022	\$1,895,845
Total		\$44,703,485



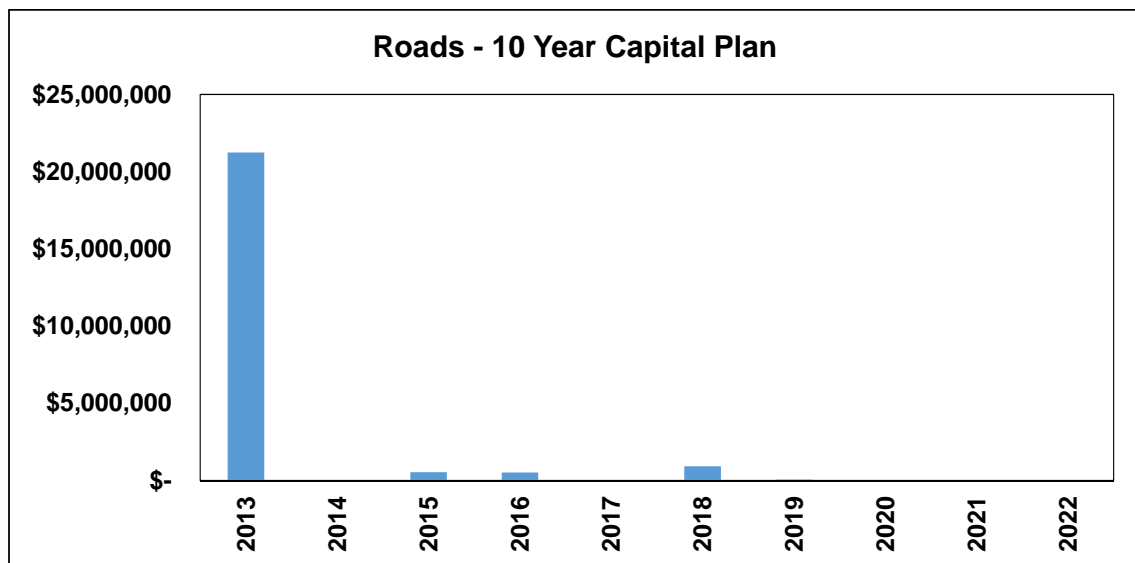


A detailed, project-by-project breakdown of this final Capital Plan and all proposed or study recommended projects are included in the detail capital project list in Appendix A.

3.5 BREAKDOWN BY ASSET TYPES

3.5.1 ROADS

The road replacement cost is based on the contractor cost for the region. ISI used numerous deterioration curves for the various roads. ISI also used the general OGRA road management strategy and the gravel road expenses are treated as operating expenses and not included the Capital Plan expenses.



LIFECYCLE ACTIVITIES – LOOSETOP (UNPAVED)

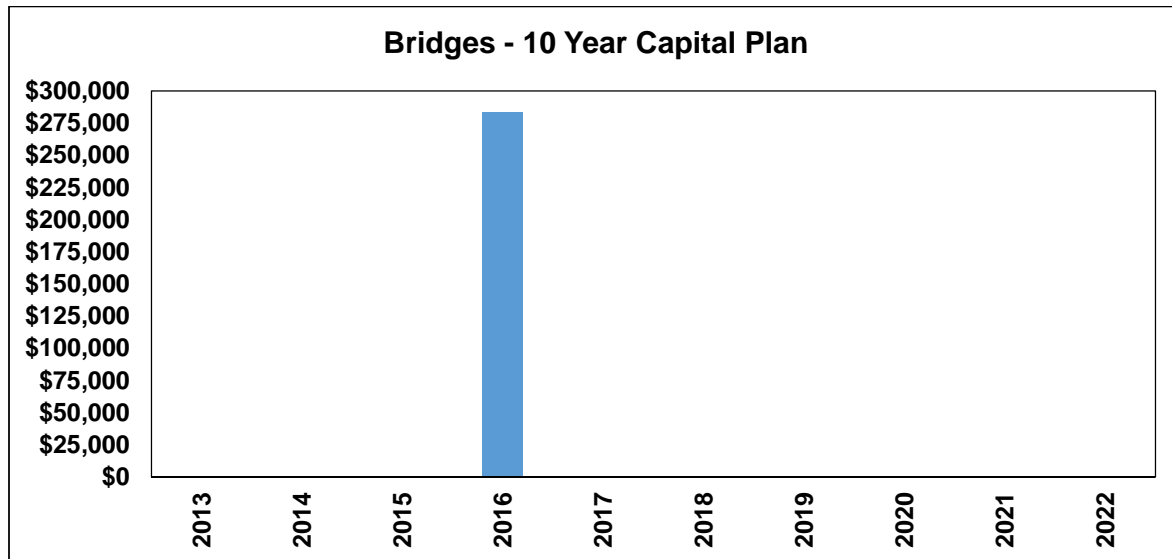
We are only dealing with paved (HCB) and surface treated roads in your Capital Plan. Gravel road expenses are being captured in your operating expenses, and inserting them into your Capital Plan would be a redundant entry. Our only concern is that you establish whether you are allocating sufficient funds in your Operating Budget to cover the gravel road expenses.

The OGRA strategy for gravel roads is to re-gravel roads 75 mm every 3 to 5 years depending on the AADT. Every Municipality we work with does annual maintenance rather than a 5 year resurfacing to 75 mm Granular A.

Timing	Activity	Activity Quantity		
		Class of Road		
		4	5	6
Annual	Grading	8 x per year	6 x per year	6 x per year
	Dust suppression	4t per kilometer	4t per kilometer	4t per kilometer
Annual	Ditching	1 x per year	1 x per year	1 x per year
	Culvert cleaning	as required	as required	as required
Annual	Safety devices	as required	as required	as required
3 years	75mm Granular A	All roads	All roads	
5 years	75mm Granular A			All roads
6 years	75mm Granular A	All roads	All roads	
	Spot repairs	10%	10%	
6 years	Drainage replacement	12%	12%	
10 years	75mm Granular A			All roads
	Spot repairs			10%
10 years	Drainage replacement			12%

3.5.2 BRIDGES

The replacement cost is based on the historical cost and the project's cost given in the 2011-bridge inspection report, provided by the Municipality of Greenstone that have been indexed based on the Consumer Price Index and the "Municipal Cost Index".

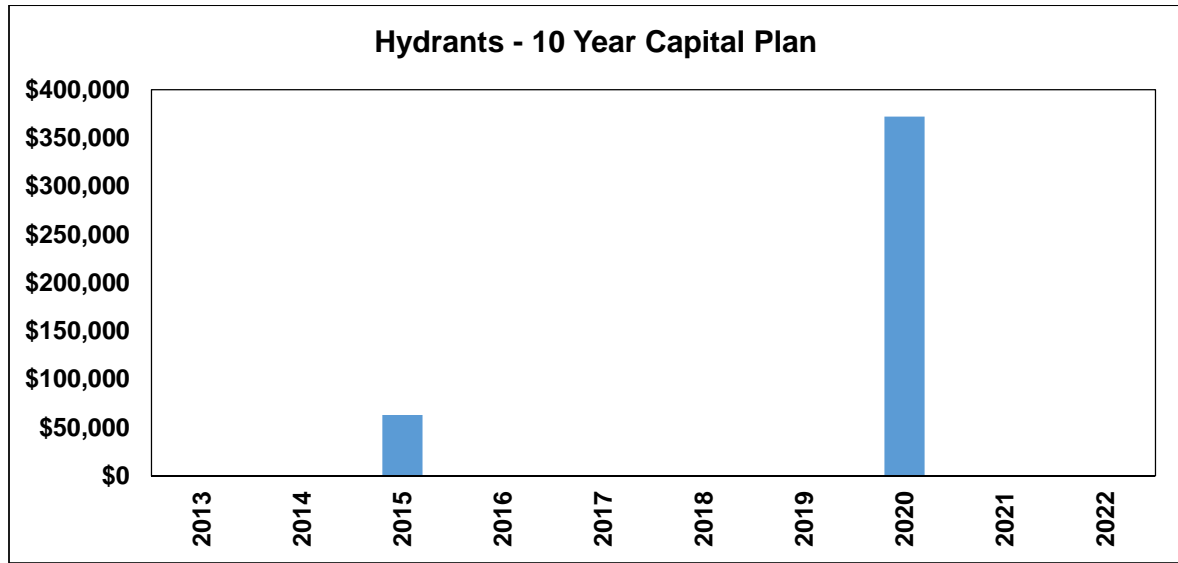


3.5.3 CULVERTS

No culverts fall into the window of this Asset Management Plan.

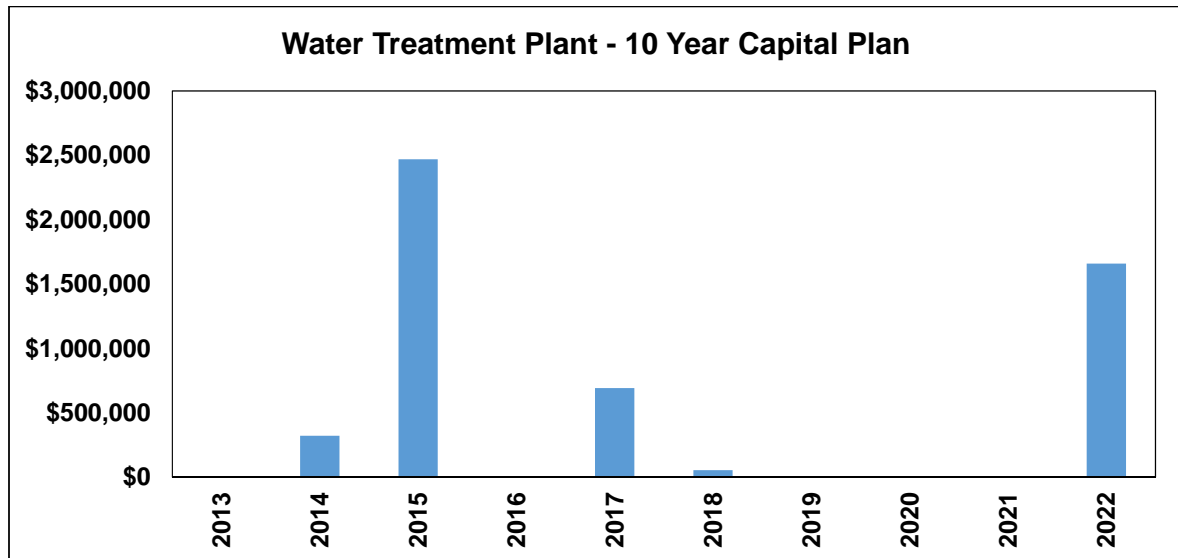
3.5.4 HYDRANTS

The Hydrant replacement costs are taken from similar geographic areas that has been indexed to 2013 based on our “Municipal Cost Index”.



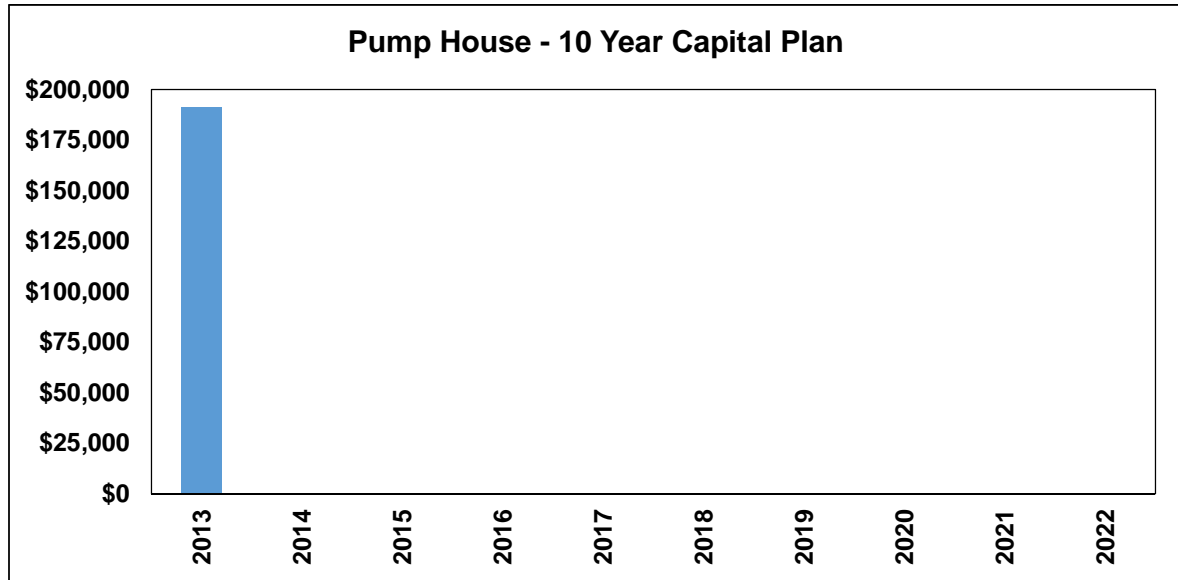
3.5.5 WATER TREATMENT PLANT

The replacement cost is based on the historical cost and the project’s cost given in the Water Financial Plan 2013, provided by the Municipality of Greenstone that have been indexed based on the Consumer Price Index and the “Municipal Cost Index”. This graph also shows the project’s cost of Water Treatment Plant upgrades in 2014, 2015, 2017 and 2018 at Longlac, Geraldton and Beardmore, provided by the Municipality.



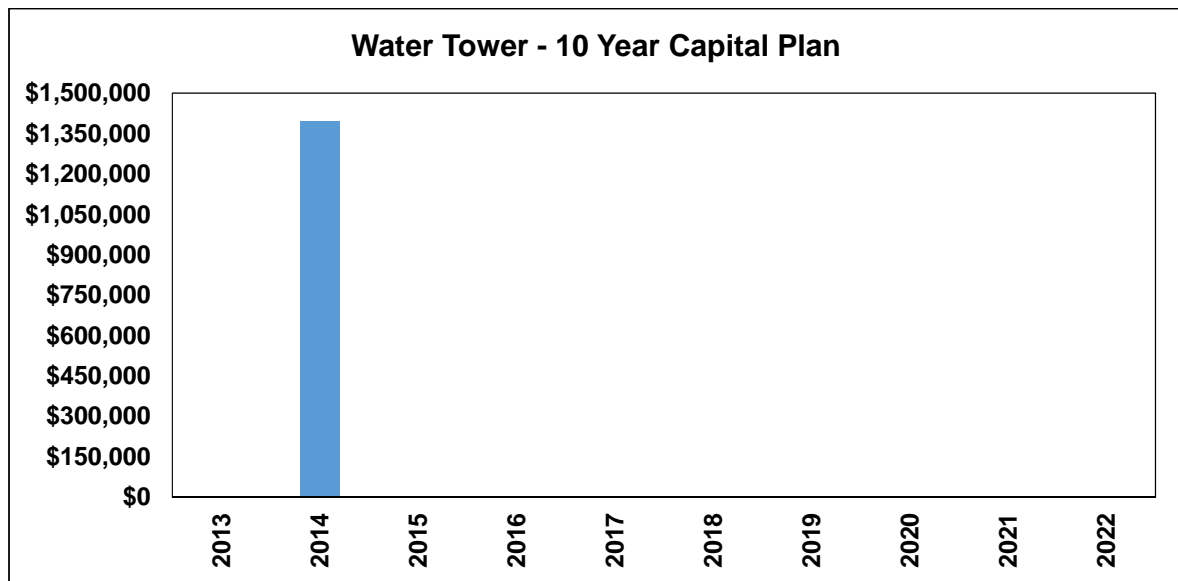
3.5.6 PUMP HOUSE

The replacement cost is based on the historical cost, provided by the Municipality of Greenstone that has been indexed based on the Consumer Price Index and the “Municipal Cost Index”.



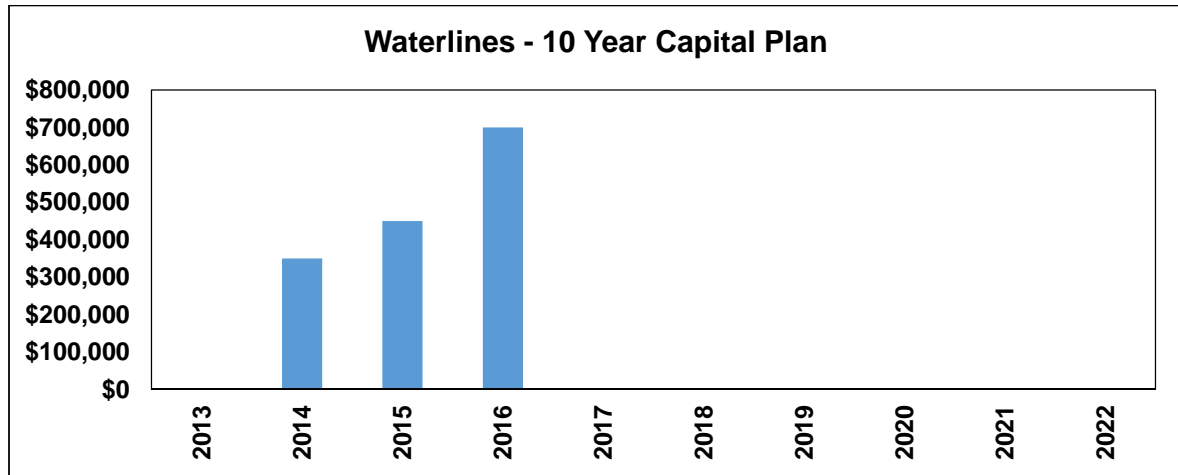
3.5.7 WATER TOWER

The water tower (Geraldton and Longlac) replacement cost is based on the project's cost given in the Water Financial Plan 2013, provided by the Municipality of Greenstone that has been indexed based on the “Municipal Cost Index”.



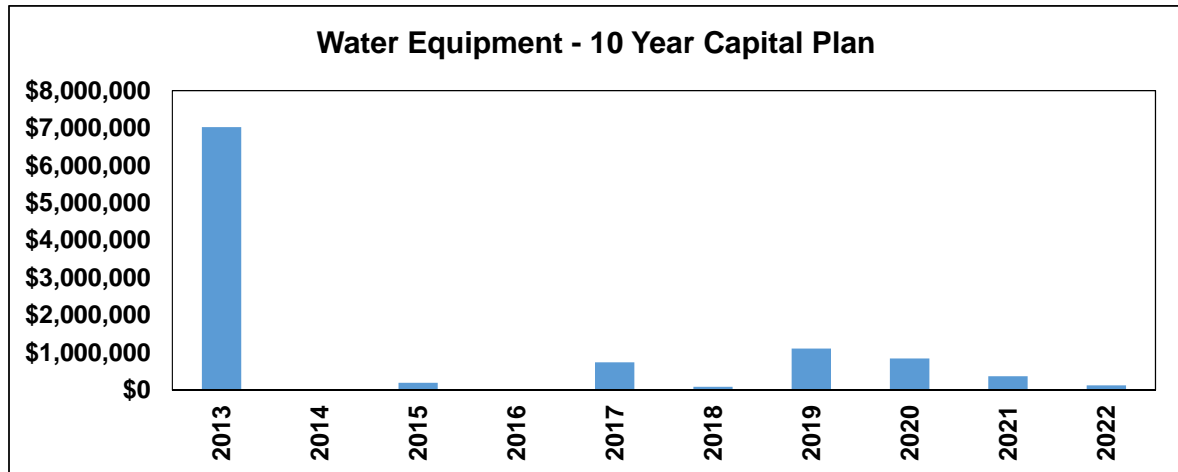
3.5.8 WATERLINES

The replacement cost is based on the project’s cost given in the Water Financial Plan 2013 for water relining and water distribution system, provided by the Municipality of Greenstone.



3.5.9 WATER EQUIPMENT

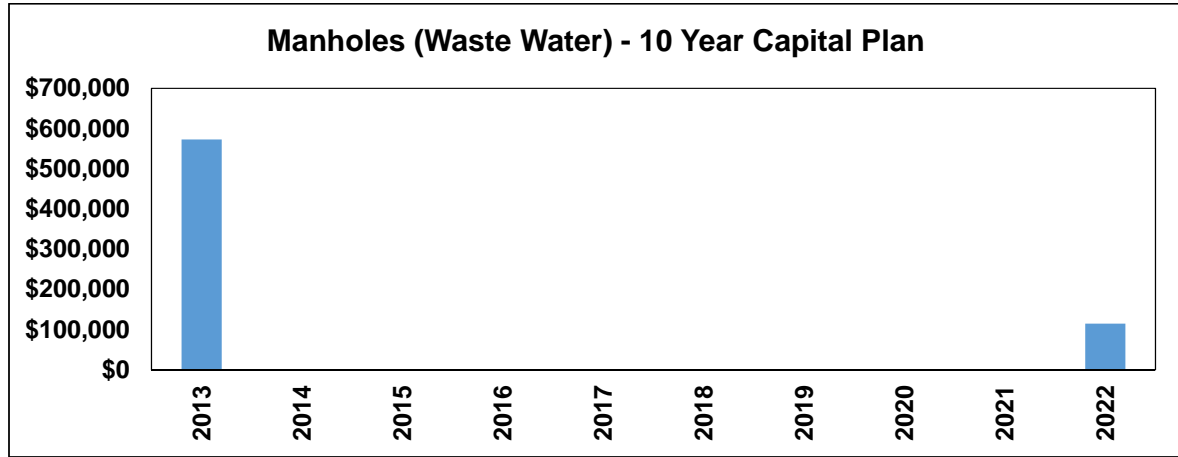
The replacement cost is based on the historical cost, provided by the Municipality that has been indexed based on the Consumer Price Index and the “Municipal Cost Index”



3.5.10 MANHOLES (WASTE WATER)

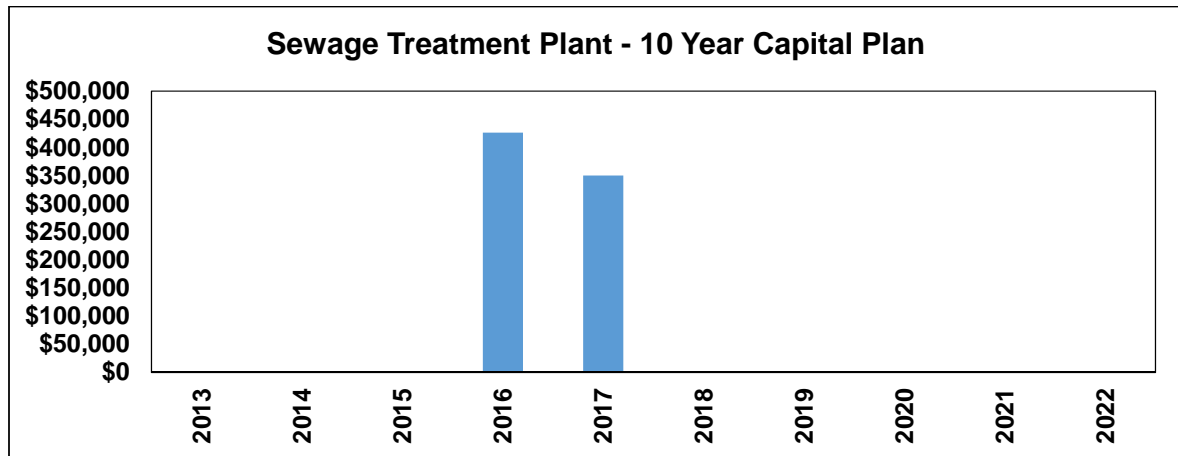
The Manhole (Waste Water) replacement costs are taken from similar geographic areas that has been indexed to 2013 based on our “Municipal Cost Index”.





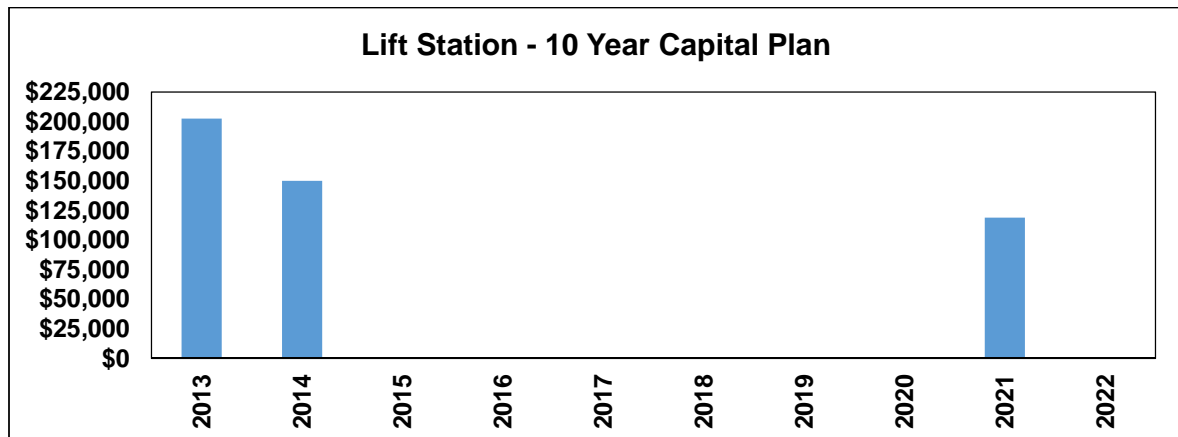
3.5.11 SEWAGE TREATMENT PLANT

The replacement cost is based on the historical cost, provided by the Municipality that has been indexed based on the Consumer Price Index and the "Municipal Cost Index"



3.5.12 LIFT STATION

The replacement cost is based on the historical cost, provided by the Municipality. This graph also shows the project cost of installing back up power at lift stations- Longlac in 2014.



4 LEVELS OF SERVICE

4.1 OVERVIEW

Levels of Service (LOS) are statements of service performance delivery. LOS is established based on Council direction, the needs or wants of the community as well as legislative and regulatory requirements. This report includes Operating Performance Indicators (OPI's) for current levels of service. Through the ongoing Asset Management process LOS will be further defined for the Municipality, the Municipality's assets, and the community. All are interconnected.

There is likely further effort required by the Municipality to address and formally define levels of service from a customer perspective. Asset management, at its root, is really about balancing between the full life cycle costs of various services and the levels of service being provided. It is about knowing what levels of service customers expect and what they are willing to pay. The level of service is a reflection of the quality, function and capacity of the services being provided. As a Municipality, you might consider:

- The level of service you are currently providing to users
- The annual cost to continue to provide the current level of service
- How the current level of service is expected to change in the future given current funding levels
- If you are meeting the level of service expectations of your users given the costs to provide current, increased or decreased levels of service

Many municipalities cannot currently answer these questions, although many are working towards this goal. If you can't answer questions about the current, future and desired levels of service (with associated costs), then it will be difficult to understand the financial implications of owning the asset going forward. The levels of service that you provide as a Municipality directly impact many parts of asset management including both life cycle costs and risk management.

As a rough generalization, the higher the level of service provided, the higher the life cycle costs of providing that service. Levels of service drive the expected treatments in the management of infrastructure. Customer levels of service outline the overall quality, function, capacity and safety of the service being provided. Technical levels of service outline the operating, maintenance, rehabilitation, renewal and upgrade activities expected to occur within the Municipality. When practicing asset management it is important to first document the current level of service being provided. As asset management becomes more established within your Municipality, levels of service may be set through consultation with the community. However, it is critical that prior to consulting with the public, the current levels of service along with associated life cycle costs are understood.

It is also important to discuss how various levels of service may have different risks associated with them. These risks may play an important role in determining if certain levels of service are acceptable. As with all economic analysis, a sensitivity analysis should be carried out on those parameters which are more likely to be beyond the control of the organization, such as market forces affecting the opportunity cost of capital, community expectations/perception on risk and factors in the long-term, health and safety effects, community economic effects, environmental and social effects, feasibility including public support and the Municipality's readiness.



4.2 METHODOLOGY

The implementation of a formal Maintenance Management System (MMS), among many other items, measures the response time, lag time, total time to resolution, resources involved, and communication logs for all issues identified internally and by customers. Going forward, this type of information not only provides the basis of resource and program management decisions, but is key information that will provide council and the public with the service level information in relation to the cost of service. Historically a significant portion of activities have been provided at a 'best we can do with what we have' basis. Through a review of design guidelines, and metrics being captured by the MMS, the Municipality of Greenstone can re-orientate service delivery that is driven by service level expectations that incorporate Level of Service factors.

To assist in better establishing Levels of Service, the Municipality should also consider collecting technical performance measures need to provide information on:

- the types of failure
- the number of customers affected
- the duration of the failure
- the severity of the failure

This kind of technical performance measurement and monitoring is undertaken to support decision-making by the asset managers within an organization. It addresses issues for consideration in effective management of the assets, such as:

- Assessing the effectiveness of the operational, maintenance and capital works program
- Review and refinement of maintenance and rehabilitation strategies and standards
- Assistance in strategic decision-making through definition of remaining life, based on the measure being assessed e.g. capacity of a pipe versus demand.

Benchmarking and other comparison management techniques are used both internally and for external regulation and monitoring, to assess the performance of infrastructure groups and asset owners. Each Municipality needs to consider developing rating systems to judge the assets from both a Municipality's perspective with the values that it brings to the organization, and also from a user's or regulator's perspective, in terms of the functionality, suitability, cost and service performance of the asset.

4.3 LEVELS OF SERVICE PROCESS

Some Levels of Service (LOS) for the Municipality can be attained through documents developed in the industry and by internally focusing on technical requirements that meet generally expected levels of operation and safety:

- Provincial Minimum Maintenance Standards (MMS) for roads, water and drainage
- Drinking Water Quality Management System (DWQMS)
- Engineering Standards Manuals

Operating Performance Indicators – These are the main activities within each operating budget cost center. These activities (OPI's) link directly to the level of service provided by the Municipality. The OPI's also include maintenance tasks that help extend asset life. A good balance between asset replacement through capital funding and ongoing maintenance provides the best-cost efficiency and service productivity. The process is outlined in **Appendix D**.



5 FINANCIAL PROJECTIONS

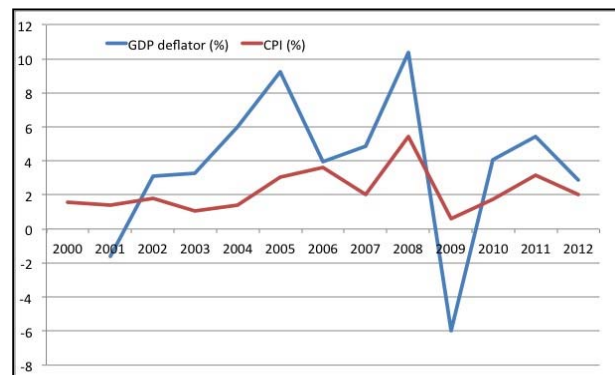
Our first steps in Financial Forecasting include compounding/inflating historical costs to Present Value (2012/13) number and then further compounding/inflating these numbers to meet future requirements. To maximize the accuracy of our projections, we have developed a comprehensive “*Municipal Cost Index (MCI)*”. To further fine-tune our projections, we do a micro analysis of your geographic region.

Our basic assumptions and calculations, included within this document, are key to the planning process and serve as the base for the forecasting and predicting your future budgetary requirements and needs.



5.1 CONSUMER PRICE INDEX: OUR PERSPECTIVE

A price index measures the change in the costs of purchasing a fixed basket of goods and services in the current period, compared to a base period, typically month-over-month or year-over-year. The most widely applied measure of inflation/price index is the Consumer Price Index (CPI). Given its pervasive use in setting cost-of-living adjustments, it can be the appropriate metric when calculating the rate of consumer inflation at the national level. Major components within the CPI include housing, food, and transportation.



Source: www.marketmonetarist.com



Extending the use of the CPI into discussions about the appropriate level of tax and fee rate increases becomes problematic, however, because a government's actual experience with inflation can differ greatly from the CPI. This is because the largest expenditures for governments are typically labor, materials, and contractual services — different factors than those found in the CPI. Spending patterns that are different than those of other economic sectors. A price index that does not reflect the municipal purchasing structure does not truly reflect changes in the cost experience, and thus the purchasing power, of local governments. For instance, the CPI reflects household spending patterns that focus on shelter (27.7 percent of the Statistics Canada CPI basket), transportation (19.5 percent), food (15.5 percent), and recreation (12.9 percent) — none of which registers as leading purchase categories for local governments.

There are two main parts to the MCI calculation: the weightings of the expenditure categories (showing the relative importance of items in the index), and the inflation factor used for each component. The inflation factors for expected price changes are based on economic data from two main sources, the Conference Board of Canada (CBOC) and Statistics Canada. The key issue is to match an appropriate inflator from these external sources to the types of expenditures in each budget category. MCI can be used in the following ways:

- To measure the increase in overall municipal expenditures attributed to inflation;
- To allow managers to more closely monitor the increase in spending by expenditure category, thus making inflationary price increases or decreases more visible;
- To provide an indication of the historical, current, and future direction of prices relative to municipal expenditures;
- To explain increased expenditures attributed to inflation when submitting annual budgets.

5.2 MUNICIPAL COST INDEX

Municipal Cost Index (MCI), entails both inflationary and non-inflationary components along with their Weight and Inflators. MCI has been created in such a way that it focuses on the overall yearly impacts of basket of goods that our clients has maximum exposure to and represents the operational/working capital needs on an ongoing basis. MCI will be used to a part of the assumptions in the following calculations:

- Municipal Cost Index is used as an integral part of Capital Planning Module, MCI served as the base for inflating/compounding historical costs to Present Value
- Financial Forecasting Municipal Cost Index will be used as an compounding/inflation factor till the 2013 financial year and then the compounding/inflationary factor will be based upon the reliable research reports like RBC, TD, Scotia Bank, Stats Canada to predict the rest of the years (basis Inflation rate, GDP growth rate, Population, Risk Free Rate, Market Premium Rate etc. will be considered for a constant growth rate)
- Break down of revenue and expenditure and predicting the sources of funds and expenses

Greenstone's Municipal Cost Index is attached as Appendix E.



5.3 FINANCIAL STRATEGY ASSUMPTIONS

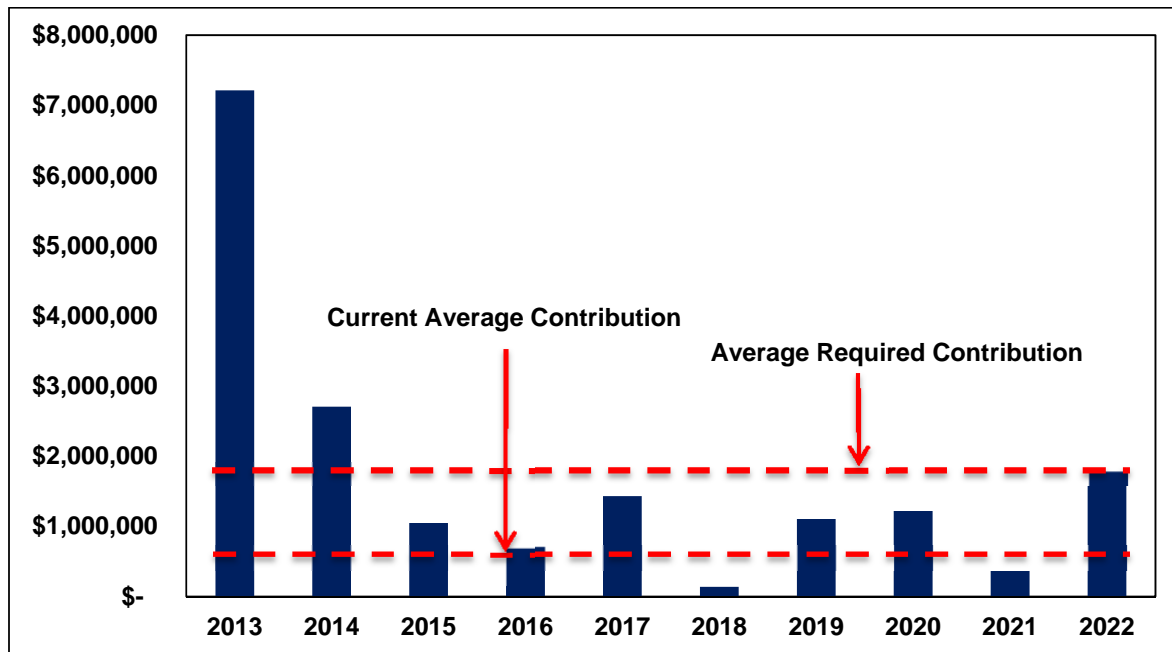
The following summarizes the key assumptions used in the preparation of the financial strategy for water, wastewater, roads and bridges:

- 2.3% annual operating income increase (property taxation, base scenario)
- 2% annual increase in User fees and 1% increase in other revenues
- 2% annual operating expenditure increase
- 2% annual increase in capital replacement costs
- Gas Tax Fund \$863,323 (not inflated)
- Existing funding sources, as identified in the 2012 FIR
- No growth related capital has been included in analysis as the financial strategy relates to the replacement of existing assets.
- Capital replacement needs as identified in the previous section of this report

It is important to keep in mind that assumptions may significantly change over time. In addition, capital replacement cost estimates may vary from current projections. As such, there is a need to monitor the financial strategy over time.

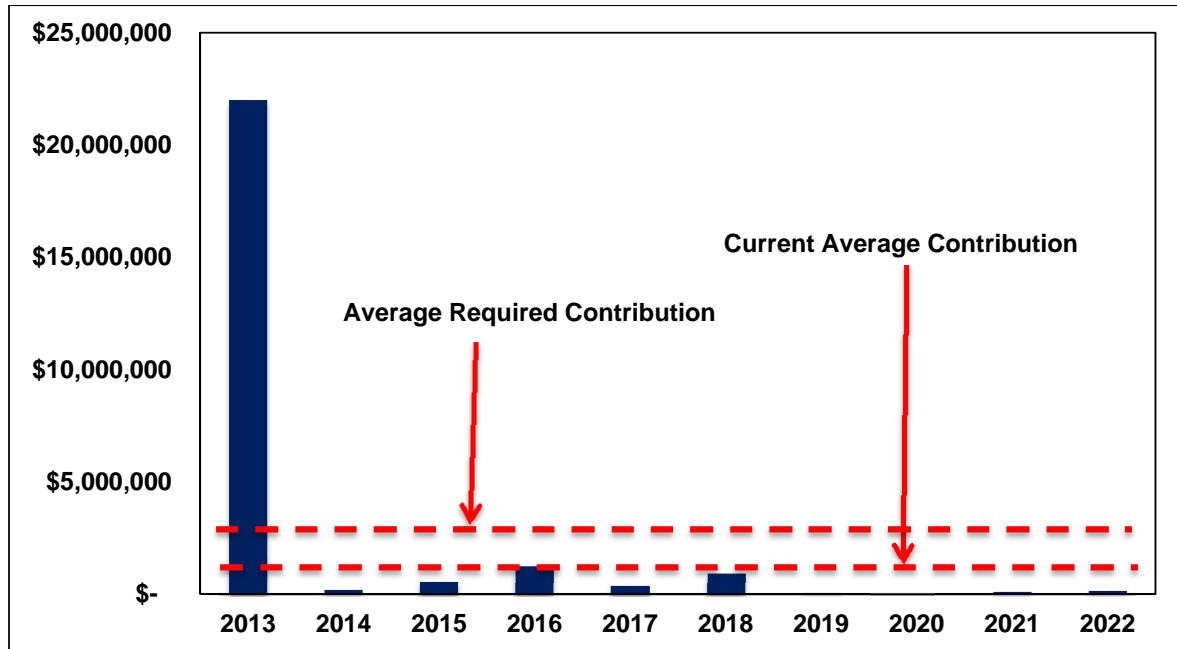
5.4 EXISTING WATER FUNDING REQUIREMENTS

The following graph reflects the annual requirements over the next 10 years to provide an understanding of the timing of the replacement requirements for water services. Over the next 10 years, the average annual replacement requirement for water is \$1.91 MM, however the requirements vary on an annual basis. As illustrated below the average annual capital contributions in water are not sufficient to address the existing backlog over the next 10 years.



5.5 FUNDING REQUIREMENTS

By our calculations, the average capital requirement is \$2.58 MM and the existing contribution to the capital program is approximately \$1.82 MM. The Municipality is facing an infrastructure deficit like many other similarly sized Municipalities. The Municipality needs to maintain current contribution and to continue to build reserves so that it can prepare to maintain service levels and meet capital requirements in future. Municipality strategies to close/reduce the gap will be discussed in the next section of the report.



5.6 FINANCIAL STRATEGIES – THE INFRASTRUCTURE GAP

Financial sustainability requires that a Municipality ensure that there are sufficient resources to support the delivery of services for which the Municipality bears responsibility. Given the need and benefit for further infrastructure investment in order to protect, sustain, and maximize the use of Greenstone’ infrastructure assets, a number of options and strategies have been considered.

5.6.1 STRATEGY 1: SPECIAL LEVY

General Infrastructure

An option that could be implemented is to establish a special infrastructure levy for the replacement of existing infrastructure. For example, a special infrastructure annual levy increase of 1% would generate sufficient revenues to reduce the tax related infrastructure gap beyond 10 years. Municipality should continue using additional funds to create healthy reserves to sustain infrastructure and service levels. These contributions would be dedicated to the replacement of existing reserves. By increasing the levy by an additional 1% annually will increase the funds available over the 10-year period by approximately \$6.27 MM. This reflects the significant power of compounding:



- In year one, the additional 1% special levy would generate an additional \$120,031
- In year 10, with an assumed 1% special infrastructure levy, this would generate an additional \$1.34 MM

The following table is provided for illustrated purposes to help explain the significant potential through a modest levy increase to address the tax infrastructure gap:

1% Special Infrastructure Levy	
2014	\$120,031
2015	\$246,784
2016	\$380,544
2017	\$521,607
2018	\$670,281
2019	\$826,884
2020	\$991,749
2021	\$1,165,219
2022	\$1,347,650
Total Income	\$6,270,748
Average Income	\$696,750

Water System

For water services, a special water infrastructure levy can be established for the replacement of existing infrastructure. For example, a special water levy increase of 5% would generate sufficient revenues to reduce the tax related infrastructure gap beyond 10 years. These additional contribution would be dedicated to the replacement of existing reserves. By increasing the levy by an additional 5% annually will increase the funds available over the 10 year period by approximately \$4.96 MM.

The following table is provided for illustration purposes to help explain the significant potential through a modest levy increase to address the tax infrastructure gap:

5% Special Water Levy	
2014	\$85,272
2015	\$178,730
2016	\$281,017
2017	\$392,824
2018	\$514,892
2019	\$648,019
2020	\$793,061
2021	\$950,940
2022	\$1,122,644
Total Income	\$4,967,399
Average Income	\$551,933

5.6.2 STRATEGY 2: RETHINKING INFRASTRUCTURE

There is the potential to reduce infrastructure costs by determining the most cost-effective options for all capital programs for new or rehabilitated infrastructure by pursuing life cycle costing analysis which was discussed earlier in the report. Further, as indicated previously, the timing to replace assets is based on the analysis undertaken using theoretical assumptions in some cases. Due to the funds available, there will be a need to identify where the replacement of some assets may be deferred. A strategy frequently used by



Municipalities is to establish priorities based on funds available and to gradually increase contributions to reserves.

Many Municipalities develop rehabilitation and replacement programs on a system wide program basis versus annual project by project basis. This will allow for improved prioritization and co-ordination of required works with in similar geographic areas.

5.6.3 STRATEGY 3: STRATEGIC USE OF DEBT

Due to the backlog in the tax-supported programs, there is a need to examine the cost/benefit of addressing these needs through the issuance of debt. Using debt strategically can provide capital funding flexibility by allowing certain infrastructure to be built and used before sufficient revenue has accumulated to offset the needed investment. Debt is frequently issued and considered a standard practice in Municipalities for capital projects that are long term in nature and that benefit future taxpayers, thereby spreading the costs across future years. As such, debt promotes inter-generational equity in that infrastructure is paid for by those who use it. With favorable interest rates and significant backlog, the Municipality may wish to consider the need to issue debt to expedite capital replacement. Infrastructure Ontario interest rates at the time of this report are as follows:

- 10 year – 3.12%
- 15 year – 3.62%
- 20 year – 3.93%

For example, if the Municipality were to issue \$1 million in debt to address a portion of the backlog deemed to be highest priority that was beyond reserve availability, the debt payments would be approximately \$88,000 (assuming 15 year term).

*A debt management policy improves the quality of decisions, identifies policy goals and demonstrates a commitment to long-term financial planning, including a multi-year plan. Adherence to a debt management plan signals to rating agencies and capital markets that the Municipality is well managed and is well positioned to meet its obligations in a timely manner. The Province regulates the amount of debt Municipalities issue by setting an annual repayment limit for each Municipality (25% of a City's own source revenues). Based on our experience, Municipalities typically establish thresholds below the Provincial limit to take into consideration taxpayer affordability and to ensure flexibility.

In addition to a debt guideline, monitoring also becomes important when considering the idea of the increased use of debt as a funding source to ensure that it is being used in a fiscally responsible manner. Government Finance Officers Association recommends that Municipalities adopt policies that specify appropriate uses for debt.

The following strategies are recommended to determine the most appropriate time to issue debt

- Debt will be proportionate to the City's tax base and will not put an excessive burden on operating expenditures.
- Outstanding and planned debt levels will not exceed an amount that can be supported by the existing and projected tax revenue base. Debt policies will focus on:
 - projected debt requirement
 - limits and benchmarks
 - term and structure of debt
 - use of reserves to offset debt issuance



- Long term debt for the replacement and refurbishment of existing capital assets will be reduced and a planned process will be developed whereby an annual contribution will be made to meet lifecycle needs of all assets.

The following policies are recommended to manage debt within the City:

- Tax Debt Charges as a percentage of Tax Own Source Revenues will not exceed 10%.
- Long term debt financing will be restricted to specific project types:
 - Increased/new services to residents for new initiatives
 - New, non-recurring infrastructure requirements
 - Projects which are supported by a business plan that show revenues will cover capital and interest costs
 - Projects where the cost of deferring expenditures exceeds debt servicing costs
 - Project costs not recovered from Development Charges
 - Projects tied to third party matching funding
 (Note: These restrictions may have to be phased in to meet short term budget challenges.)
- The length of the term of debt will not exceed the useful life of the underlying asset.
- The Municipality will monitor and report on all forms of debt annually.

5.6.4 STRATEGY 4: USE OF GRANTS

It is well established that the condition of Canada's municipal infrastructure is one of the keys to underpinning, maintaining and enhancing Canada's economic productivity and competitiveness. It is therefore clearly in the national and provincial interests for the federal and provincial government to institute permanent and sustainable infrastructure funding. Along with the strategic use of debt, the Municipality can also apply for the grants available from the Provincial and Federal governments. Some significant components of the infrastructure deficit can be dealt with through close monitoring of grant programs and a careful expression of interest to access these funds.

Kathleen Wynn's Provincial Liberal minority government passed its budget bill this past spring, with plans to inject \$13.5 billion in 2013-14 toward the province's infrastructure deficit. The Province, with its partners, plans to continue to revitalize infrastructure in Ontario with programs like the Building Together and the Small, Rural and Northern Municipal Infrastructure Fund.

Steven Harper's Conservative majority government has just announced the New Federal Building Canada Plan with 53 billion over the next 10 years including over \$47 billion in new funding including the Gas Tax Fund (\$21.8 billion), now indexed and will now give Municipalities flexibility for a broader range of infrastructure priorities, an incremental Goods and Services Tax Rebate for Municipalities (\$10.4 billion), a new Building Canada Fund with two components:

- A \$4-billion, merit-based, National Infrastructure Component
- A \$10-billion Provincial-Territorial Infrastructure Component

Finally, the Federal Government is adding an additional \$1.25 billion in funding for **P3 Canada**, which will continue to be administered by [PPP Canada Inc.](#)



6 RECOMMENDATIONS

6.1 SOTI RECOMMENDATIONS

The SOTI/Capital Plan identifies a number of asset-specific recommendations. However, there are six recurring recommendations that should be addressed in future strategic asset management initiatives:

1. Develop, through more detailed analysis, a plan for allocating the additional funds to the operating and/or capital budgets, as required, in order to successfully develop, implement, and maintain the required asset management plans;
2. Develop a policy and implement a strategy to reach long term sustainable funding for each of the assets covered in this SOTI Report;
3. Implement a comprehensive budget structure along service delivery lines, so that service managers can adequately know what the true total cost of their service is (including asset management, operations, capital, and borrowing costs).
4. Review the selection and use of rehabilitation strategies on life-cycle costing and on a return-on-investment (ROI) basis.
5. Review operating and maintenance practices balancing least life-cycle cost against level of service and risk exposure, on a business-case basis using InfraGuide Best Practices and other industry sources;
6. Provide regular updates to the SOTI Report Card and Analysis

6.2 CAPITAL PLAN RECOMMENDATIONS

- 1) That asset condition assessment of capital assets should be considered wherever feasible. The application of a standard life expectancy of an asset reflects a financial approach (PSAB 3150). Age-based condition assessment has **the least level of confidence for building a capital plan**.
- 2) That the Municipality of Greenstone could consider releasing a policy defining its strategy and intention as it pertains to the infrastructure deficit, including communications to the general public.
- 3) That the Municipality address their infrastructure deficit.
- 4) That the Municipality proactively define organizational responsibilities to maintain the asset inventory including proposed and actual project cost information, updating the data as assets are acquired or betterments are added to existing assets and projects are started and completed. In this manner, the accuracy of future Capital Plans will increase over time.
- 5) That the Municipality consider establishing as policy the following guiding principles, that it be:
 - a) **Customer Focused:** To have clearly defined Levels of Service and applying asset management practices to maintain the confidence of residents in how the Municipality of Greenstone assets are managed.
 - b) **Forward Looking:** To make the appropriate decisions and provisions to better enable its assets to meet future challenges, including changing demographics and populations, customer expectations, legislative requirements, technological and environmental factors.
 - c) **Service Focused:** To consider all the assets in a service context and taking into account their interrelationships as opposed to optimizing individual assets in isolation.
 - d) **Risk-based:** To manage the asset risk associated with attaining the agreed levels of service by focusing resources, expenditures, and priorities based upon risk assessments and the corresponding cost/benefit recognizing that public safety is the priority.



- e) **Value-Based/Affordable:** To choose practices, interventions and operations that aim at reducing the life cycle cost of asset ownership, while satisfying agreed levels of service. Decisions are based on balancing service levels, risks, and costs.
 - f) **Holistic:** To take a comprehensive approach that looks at the “big picture” and considers the combined impact of managing all aspects of the asset life cycle.
 - g) **Systematic:** To adopt a formal, consistent, repeatable approach to the management of its assets that will ensure services are provided in the most effective manner.
 - h) **Innovative:** To continually improve its asset management approach, by driving innovation in the development of tools, practices, and solutions.
- 6) To meet the goals and objectives of this policy, senior management could consider:
- a) The creation and maintenance of a Comprehensive Asset Management (CAM) governance structure to lead the development of AM tools and practices and to oversee their application across the organization.
 - b) Adopt a Comprehensive Asset Management Strategy (AMS) to:
 - Establish, document and continually adhere to industry recognized asset management protocols;
 - Develop asset management knowledge and competencies aligned with recognized competency frameworks;
 - Entrench lifecycle costing when evaluating competing asset investment needs across the Municipality assets;
 - Monitor the performance of the assets and track the effectiveness of AM practices with a view to continuous improvement;
 - Where practical, strive to go beyond minimum legislative requirements as an enabler to make the Municipality of Greenstone assets more resilient to changing social, environmental and economic conditions.
 - **Establish a capital projects prioritization matrix, as per Appendix C**

6.3 LEVEL OF SERVICE RECOMMENDATIONS

1. We recommend that the Municipality incorporate a Level of Service analysis prior to resolving the infrastructure deficit in order to maximize the impact of their capital investments with the objective to:
 - Refine levels of service that balance customer expectations with risk, affordability and timing constraints as it pertains to the City’s unique requirements;
 - Adopt risk-based decision-making processes that consider the likelihood of asset failure and the consequence of a failure with regards to impacts on safety and levels of service;
2. To assist in better establishing Levels of Service, the Municipality should consider collecting technical performance measures required to provide information on:
 - the types of failure
 - the number of customers affected
 - the duration of the failure
 - the severity of the failure
3. To support decision-making for effective management of the assets, the Municipality should consider technical performance measurement and monitoring, undertaken by the Municipality such as:
 - Assessing the effectiveness of the operational, maintenance and capital works program



- Review and refinement of maintenance and rehabilitation strategies and standards
- Assistance in strategic decision-making through definition of remaining life, based on the measure being assessed
- **The Municipality should use the Appendix D document as an example of how they might establish reasonable Levels of Service for the community.**

6.4 FINANCIAL STRATEGY RECOMMENDATIONS

It is well recognized that a Financial Strategy to support the asset management plan is a dynamic document that should be updated and re-evaluated on an ongoing basis. The Municipality should give due consideration to the following points:

1. The Municipality has insufficient funds from existing sources to proactively manage its infrastructure and will need to prioritize its requirements to maximizing the impact of existing financial resources.
2. The Municipality has a growing infrastructure deficit which is serious considering its population and tax base. A special infrastructure levy will help the Municipality to reduce the gap over time and should be taken into consideration.
3. In the event that the Municipality implements an infrastructure levy, a percentage of the additional funds should be transferred into a reserve so that the Municipality has some flexibility to prioritize and sustain future infrastructure and service level requirements.
4. The Municipality requires a rate review and should consider a special infrastructure levy for its Water Projects based on a detailed analysis, so as to create reserves to be able to sustain the current and future service levels and begin to close the infrastructure deficit.
5. The Municipality needs to be proactive in reviewing and capitalizing on the upcoming Province and Federal programs, as the Municipality will need financial assistance to close its infrastructure deficit. It should seek government grants to be able to undertake the capital projects outlined in this Asset Management Plan.
6. The Municipality needs to be proactive in reviewing funding options including Infrastructure Ontario Lending Policies, Private Public Partnerships, user fees and other funding options to have an understanding of financing options.
7. The Municipality needs to embrace the principles of Asset Management to formulate assumptions, projections and strategies going forward. The Plan should be modified on an ongoing basis based on changes in the municipal environment.
8. The Municipality should track and build awareness of the results of its projections on current operating and capital spending and funding levels with the objective of fine tuning the forecasting process.
9. The Municipality should continue the analysis and examination of key financial goals and strategies that guide future priorities and expenditures.



7 CONCLUSION

As a general comment, the Municipality of Greenstone is hampered by limited revenue and extensive infrastructure. ISI worked with staff who were knowledgeable and committed. The information we received was, by in large, accurate and well organized. The overall state of the linear infrastructure at the Municipality of Greenstone is in line with the vast majority of municipalities in this Province.

As highlighted in the Report Card, the current state of the linear infrastructure, based on available condition rating and age analysis, presents a picture of the City's linear assets to be in need of substantial work and the Municipality should continue to be proactive in their strategies, so as to extend asset useful life and avoid major rehabilitation/reconstruction or replacement costs.

It is highly recommended that the Municipality of Greenstone embrace the principles of Asset Management. Managing existing infrastructure, doing the right thing, at the right time, involves knowing and actually doing the most cost-effective maintenance, repair, rehabilitation or replacement activity at the right time throughout the entire life cycle of the asset. Beyond cost savings, assets need to be viewed in terms of their ability to enhance quality, function, capacity and safety of the service being provided.

The process of implementing Asset Management is rife with challenge. It requires clear direction from Council. It requires significant cross-departmental cooperation. It requires the allocating of time, energy, and resource to assume new responsibilities. It requires consultation with the community. It requires working with constrained budgets to balance priorities. Because infrastructure management deals with assets that have long lifespans, it may take years before a substantial financial return on investment (ROI) becomes apparent. Still, managing existing, capital intensive, public sector infrastructure asset could provide very significant benefits (i.e. 20 – 40% reductions in life cycle costs).

Finally, the Municipality will likely be faced with difficult decisions over the next years, and the infrastructure deficit will continue to widen without corrective action. The Council should put together a public communication program to engage the community in discussing the true cost of services and the assets required to provide those services. Develop and implement service levels that are in line with public expectations and willingness to pay.

We appreciate having been awarded the contract to build your Asset Management Plan and trust that this work is the beginning of a long and positive relationship with Greenstone. Infrastructure Solutions Engineering provides Strategic Plans, condition assessments, financial analysis, and a wide range of consulting and engineering services. Please consider us a resource.



APPENDIX A - DETAILED LIST OF CAPITAL PROJECTS

Click on the hyperlink below for a detailed list of your Capital Projects over the next 10 years:

[APPENDIX A - DETAILED LIST OF CAPITAL PROJECTS](#)

Refer to End of Document



APPENDIX B – ASSET USEFUL LIFE

Departments	Assets	Useful Life as per CIP (Years)	Source
Transportation Network	LCB Roads	50 (Total Reconstruction)	Infrastructure Report
	Gravel Roads	(Recurrent Resurfacing)	Infrastructure Report
Bridge	Concrete	75	Infrastructure Report
	Steel	65	Infrastructure Report
Culvert	Culvert	50	Infrastructure Report
Water Network	Hydrant	60	As per the TCA Policy
	Waterline	75	Infrastructure Report
	Water Service Connection	60	As per the TCA Policy
	Water Valve	60	As per the TCA Policy
	Pump House	40	As per the TCA Policy
Sewer Network	Manhole (Storm)	50	As per the TCA Policy
	Manhole (Waste Water)	50/60	As per the TCA Policy
	Catchbasin (Storm)	50	As per the TCA Policy
	Sewerline (Waste Water)	80	Infrastructure Report
	Sewerline (Storm)	85	Infrastructure Report
Facility	Treatment Plant	60	As per the TCA Policy
	Lift Station	40/50/60	As per the TCA Policy
	Water Treatment Plant	45/50/60	As per the TCA Policy
	Waste Water Treatment Plant	60	As per the TCA Policy
	Water Tower	50	As per the TCA Policy
	Sewage Treatment Plant	60	As per the TCA Policy
	Well	45/60	As per the TCA Policy



APPENDIX C – CAPITAL PLAN PRIORITIZATION MATRIX

	Definition	Maximum Points	Percentage Weightage
Goals/Objectives	Extent to which project meets goals & objectives of the Municipality's council	25	15.9
Safety	Extent to which project eliminates, prevents, or reduces an immediate hazard to safety	14	8.9
Mandates	Extent to which project helps council meet existing or new mandates	13	8.3
Timing/Linkages	Extent to which project is timely, a continuation of project currently underway, related to other high priority projects etc.	12	7.6
Economic Impact	Extent to which project enhances economic development in Municipality or directly/indirectly adds to tax base	11	7
Efficiencies	Extent to which project contributes to savings in Municipality's operating/capital expending	10	6.4
Maintain Current Level of Service	Extent to which project is necessary for Municipality to continue to provide one or more services at current standards	9	5.7
Improving Access	Extent to which project improves citizen access to current services	8	5.1
Service Improvement	Extent to which project improves the quality of exiting services	7	4.5
Service Addition	Extent to which project increases the quantity of exiting services	3	1.9
Operating Budget Impact	Projects that lower future operating expenses receive a positive score, ranging from 0 to 15. Projects that have no effect on operating expenses receive a score of 0. Projects that increase operating expenses score anywhere from 0 to -15	0-15, 0, 0-(-15)	9.5
Community Support	Extent to which project has broad and/or strong support from the community	10	6.4
Financing	Extent to which project can be financed with non-general fund revenue sources	15	9.5
Timeliness of Submission	Extent to which project request is submitted in a timely way	5	3.2
		142	100



APPENDIX D - OPERATING PERFORMANCE INDICATORS

ROADS				
Service	Operating Performance Indicators (OPI)	Current Performance	Target Performance	Timeframe
Examples for Roads below:				
Road Maintenance & Repairs	Complete approximately X work orders per year for service requests including pot hole repair, minor asphalt patching, alley maintenance, sightline improvement, MVA clean-up.	1500	500	3 Years
Major Asphalt Resurfacing	Annual repair of approximately X km's of asphalt pavement resurfacing.	15	30	3 Years
Brushing and Roadside Mowing	Complete approximately X km's of brushing on roadsides annually.	N/A	50 km	2 Years
	Complete roadside mowing X times annually	2	3	3 years
Boulevard Maintenance	Twice per year cut every boulevard in the city.	2	3	3 Years
	Annual weeding, cleaning and caulking of X km of sidewalk and curb.	7	7	
	Maintain sight lines at intersections for vehicle and pedestrian safety.	14 Days	14 Days	Timeline Achieved
Road Construction	Roads Total Re-Constructed and Surface Treated ___km's - Annual Average	3.5	20	2 Years
	Roads Recapped ___km's - Annual Average	8	30	2 Years
	Gravel Roads Surface Treated ___km's - Annual Average	3.5	20	2 Years
Curbing/Shoulders	Annual repair, by August, of all curbing damage in previous winter.	September	July	1 Year
Sidewalks & Walkways	Completed Inspections ___ times per year	1	1	Timeline Achieved
	Sidewalks / Walkways swept ___ times per year	1	1	Timeline Achieved
Vandalism	Within X hours of notification, remove graffiti.	48	24	1 Year



Street Lighting	Service requests for street light repair completed within X hours.	5 days	48 hours	1 Year
Signs	Annual inspection and maintenance of all X stop signs.	1225	1225	Timeline Achieved
	Annual inspection of crosswalk, pedestrian, school and playground signs and beacons.	September	July	1 Year
	Annual Upgrade of X signs to diamond grade	12	25	1 Year
Street Marking	Annual repaint of all X km of directional centre lines.	13	20	1 Year
	Annual repaint of all X km of trim line.	3	10	1 Year
	Annual painting, prior to _____ of all street markings.	September	July	1 Year
	Annual inspection and repair of all X crosswalks and thermal plastic markings.	4	4	Timeline Achieved
Bridge Maintenance	Annual engineering inspection of bridges and completion of repairs as recommended	2 years	2 years	Timeline Achieved
Snow and Ice Control	Major roads including emergency routes during winter events.	16 Hours	16 Hours	Timeline Achieved
	Residential areas – through roads first then cul-de-sacs and dead ends.	16 Hours	16 Hours	Timeline Achieved
	Residential areas will be ploughed and maintained within 96 hours unless snow and icy conditions return crews back to major roads.	16 Hours	16 Hours	Timeline Achieved
VEHICLES - FLEET				
Service	Operating Performance Indicators (OPI)	Current Performance	Target Performance	Timeframe
Examples for Fleet below:				
Fleet Maintenance	Undertake preventative maintenance and repairs to meet industry standards for safety and operation.	Daily	Daily	Timeline Achieved
	Maintain fleet availability at X%.	80	100	3 Years



Small Equipment	Inventory, maintain and repair X pieces of small equipment for use by all departments.	40	40	Timeline Achieved
Preventative Maintenance Services	X units inspected every X months to maintain safety and fleet efficiency.	32 Units every 250 Hours	32 Units every 250 Hours	Timeline Achieved
Leases	Lease vehicles for summer projects and operations.	1 Tractor for Roadside Mowing	None	2 Years
Communications	License, repair and purchase fleet and handheld communications to maintain dependable operation	Annual	Annual	Timeline Achieved
WATER				
Service	Operating Performance Indicators (OPI)	Current Performance	Target Performance	Timeframe
Examples for Water below:				
Valves & Air Valves	Exercise all line valves X per year with monthly/quarterly/yearly reporting	1	1	present
Water Main Breaks	Upon notification emergency response and water shut down within X minutes.	60	60	present
	Repair completed and water service re-instated within X hours.	12	12	present
	Currently experiencing X breaks per year on average	0	>2	present
Service Connection Renewals	X renewals completed each year on average.	0		
	Service connections associated with Road Rehab Program and capital projects are checked and replaced as necessary.	at that time	at that time	present
Water Towers - Reservoirs	Weekly inspections	no	every 6 months	2014
	X year cycle - drain, inspect, clean and repair	every 10 years	every 10 years	present
Pump Stations	Annual painting	no	yes	2014
	Annual vegetation control	yes	yes	present
	X year cycle – rebuild control valves.	as necessary	10 years	2014



	X year cycle – rebuild or replace pumps.	as necessary	15 years	2014
	Weekly trouble shooting and repairs	yes	yes	present
	X weekly visual inspections	7	7	present
Stations	Maintain all pressure reducing stations to operate without failure.	as necessary	every 5 years	2015
	X year cycle - complete replacement of each station	as necessary	as necessary	present
	X year cycle - complete rebuild of system.	as necessary	every 10 years	2015
	Annual painting and vegetation control.	n/a	n/a	n/a
Water Testing	100% of water samples contain no bacteriological contaminants.	100%	100%	present
	Monthly reporting	no	no	present
WPC Chlorination	Disinfects X% of Municipality supply.	100%	100%	present
	Daily data acquisition and inspection	yes	yes	present
	Daily water testing	yes	yes	present
	Monthly chlorine cylinder replacement.	n/a	n/a	n/a
	Semi-annual chlorination equipment replacement and repairs	n/a	n/a	n/a
	Annual painting and vegetation removal	n/a	n/a	n/a
	X year cycle - replacement of small piping and control valves.	as necessary	every 10 years	2014
Reservoir Chlorination	Disinfects X% of Municipality supply	n/a	n/a	n/a
Water Main Flushing	Annually flush all supply lines.	annual	annual	present
Service Call-outs	Provide 24/7 on call coverage for emergency response.	yes	yes	present



DRAINAGE				
Service	Operating Performance Indicators (OPI)	Current Performance	Target Performance	Timeframe
Examples for Drainage below:				
Flushing	Annual flushing of X km of the X km storm system			
Video Inspections	Annual video inspection of X km of the storm system.			
Manholes / Cleanouts	Install and repair manholes and cleanouts.			
Catch Basins	Annual inspection and cleaning of all X catch basins			
Detention Systems	Annual inspection of all X detention systems.			
Inlet / Outlet Structures	As needed Inspect and clean all critical inlet and outlet structures and service before, during and post-storm events.			
	Annual inspection and maintenance of approximately X inlet and outlet structures.			
Ditch Cleaning	Annual inspection of all X km of ditch and clean as needed.			
Culverts	Repair driveway and road crossing culverts as assigned through work orders.			
Service Call-outs	Provide 24/7 on call coverage for sewer and drainage emergency response.			



APPENDIX E – MUNICIPAL COST INDEX

MCI (Region 1)								
COMPONENTS	Weights	Inflators for Each Component						
		2006	2007	2008	2009	2010	2011	2012
Wages and Salaries and Benefits	32%			2%	-2%	2%	-4%	6%
Interest on Long Term Debt	2%			5%		19%	4%	1%
Materials	28%			18%	-2%		12%	7%
Contracted Services	22%		9%	-2%		5%	2%	2%
Rents and Financial Expenses	2%				-9%			3%
External Transfers	6%		-13%					9%
Amortization	8%							
Average MCI		2.40%						

Notes:

- Municipal Cost Index, is calculated to better represent the municipal purchasing power and cost experience, so ISI will use 2.40% as the compounding/inflationary factor up until 2013
- Municipal Cost Index represents the basket of goods and services which is consumed/used by municipalities and represents the operational/working capital needs on an on-going basis
- Assigned weights represents the percentage of services/goods consumed out of total spend
- Inflators represent the year on year changes in the components
- Component's weight and inflators, sum all represents the overall cost experience for the municipalities/region as compared to CPI
- MCI is created as to minimize the variation/deviations of cost/purchasing experience in the region
- The source of Municipal Cost Index are the Financial Statements for your specific region
- Outliers have been removed from the data for Municipal Cost Index calculation to average out/standardized data



Equipment: C1210 PUMP, CHEMICAL METERING, GROUP OF 6	C1210 Pump, Chemical Metering, Group Of 6	Purchased	\$14,623									\$14,623						
Equipment: C1214 PUMP, VERTICAL TURBINE, SUBMERSIBLE	C1214 Pump, Vertical Turbine, Submersible	Purchased	\$28,489	\$28,489														
Equipment: C1215 PUMP, VERTICAL TURBINE, SUBMERSIBLE	C1215 Pump, Vertical Turbine, Submersible	Purchased	\$28,489	\$28,489														
Equipment: C1216 PUMP, VERTICAL TURBINE, SUBMERSIBLE	C1216 Pump, Vertical Turbine, Submersible	Purchased	\$28,489	\$28,489														
Equipment: C1217 PUMP, VERTICAL TURBINE, SUBMERSIBLE	C1217 Pump, Vertical Turbine, Submersible	Purchased	\$28,489	\$28,489														
Equipment: C1218 PUMP, VERTICAL TURBINE, SUBMERSIBLE	C1218 Pump, Vertical Turbine, Submersible	Purchased	\$28,489	\$28,489														
Equipment: C1220 SHOP EQUIPMENT AND TOOLS, GROUP OF	C1220 Shop Equipment And Tools, Group Of	Purchased	\$13,984	\$13,984														
Equipment: C1221 TANK, ALUM, STEEL	C1221 Tank, Alum, Steel	Purchased	\$43,924	\$43,924														
Equipment: C1225 VALVE, MOTORIZED	C1225 Valve, Motorized	Purchased	\$17,997	\$17,997														
Equipment: C1226 VALVE, MOTORIZED	C1226 Valve, Motorized	Purchased	\$17,997	\$17,997														
Equipment: C1227 VALVE, MOTORIZED	C1227 Valve, Motorized	Purchased	\$17,997	\$17,997														
Equipment: C1228 VALVE, MOTORIZED	C1228 Valve, Motorized	Purchased	\$17,997	\$17,997														
Equipment: C1229 VALVE, MOTORIZED	C1229 Valve, Motorized	Purchased	\$17,997	\$17,997														
Equipment: C1230 VALVE, MOTORIZED	C1230 Valve, Motorized	Purchased	\$17,997	\$17,997														
Equipment: C1231 CONTROL PANEL	C1231 Control Panel	Purchased	\$82,973	\$82,973														
Equipment: C1235 CONTROL PANEL	C1235 Control Panel	Purchased	\$82,973	\$82,973														
Equipment: C1239 CONTROL PANEL	C1239 Control Panel	Purchased	\$82,973	\$82,973														
Equipment: C1240 CONTROL PANEL	C1240 Control Panel	Purchased	\$82,973	\$82,973														
Equipment: C1243 GENERATOR, DIESEL, 6 CYLINDER	C1243 Generator, Diesel, 6 Cylinder	Purchased	\$102,495	\$102,495														
Equipment: C1244 PROCESS PIPING, GROUP OF, WITH FITTINGS	C1244 Process Piping, Group Of, With Fittings And Valves	Purchased	\$122,945										\$122,945					
Equipment: C1245 PROCESS PIPING, GROUP OF, WITH FITTINGS	C1245 Process Piping, Group Of, With Fittings And Valves	Purchased	\$122,945										\$122,945					
Equipment: C1249 CONTROL PANEL	C1249 Control Panel	Purchased	\$82,973	\$82,973														
Equipment: C1250 PROCESS PIPING, GROUP OF, WITH FITTINGS	C1250 Process Piping, Group Of, With Fittings And Valves	Purchased	\$122,945										\$122,945					
Equipment: C1254 CONTROL PANEL	C1254 Control Panel	Purchased	\$82,973	\$82,973														
Equipment: C1267 CONTROL PANEL	C1267 Control Panel	Purchased	\$82,973	\$82,973														
Equipment: C1272 LAB EQUIPMENT, GROUP OF	C1272 Lab Equipment, Group Of	Purchased	\$14,016										\$14,016					
Equipment: C1277 PROCESS PIPING, GROUP OF, WITH FITTINGS	C1277 Process Piping, Group Of, With Fittings And Valves	Purchased	\$122,945	\$122,945														
Equipment: C1278 CLARIFIER DRIVE AND MECHANISM	C1278 Clarifier Drive And Mechanism	Purchased	\$233,896	\$233,896														
Equipment: C1279 COMMUNATOR	C1279 Commnutator	Purchased	\$42,427	\$42,427														
Equipment: C1280 PIPING, AERATION	C1280 Piping, Aeration	Purchased	\$36,065	\$36,065														
Equipment: C1282 VALVE, SLUICE GATE, GROUP OF 4	C1282 Valve, Sluice Gate, Group Of 4	Purchased	\$17,997	\$17,997														
Equipment: C1283 CLARIFIER DRIVE AND MECHANISM	C1283 Clarifier Drive And Mechanism	Purchased	\$233,896	\$233,896														
Equipment: C1284 COMMUNATOR	C1284 Commnutator	Purchased	\$42,427	\$42,427														
Equipment: C1285 PIPING, AERATION	C1285 Piping, Aeration	Purchased	\$36,065	\$36,065														
Equipment: C1286 PROCESS PIPING, GROUP OF, WITH FITTINGS	C1286 Process Piping, Group Of, With Fittings And Valves	Purchased	\$122,945										\$122,945					
Equipment: C1287 CONTROL PANEL	C1287 Control Panel	Purchased	\$82,973	\$82,973														
Equipment: C1291 CHLORINATOR	C1291 Chlorinator	Purchased	\$16,734	\$16,734														
Equipment: C1292 CHLORINATOR	C1292 Chlorinator	Purchased	\$16,734	\$16,734														
Equipment: C1293 CLARIFIER DRIVE AND MECHANISM	C1293 Clarifier Drive And Mechanism	Purchased	\$233,896	\$233,896														
Equipment: C1294 CLARIFIER DRIVE AND MECHANISM	C1294 Clarifier Drive And Mechanism	Purchased	\$233,896	\$233,896														
Equipment: C1295 COMPUTER EQUIPMENT, GROUP OF	C1295 Computer Equipment, Group Of	Purchased	\$12,638	\$12,638														
Equipment: C1296 CONTROL PANEL	C1296 Control Panel	Purchased	\$82,973	\$82,973														
Equipment: C1297 CONTROL PANEL	C1297 Control Panel	Purchased	\$82,973	\$82,973														
Equipment: C1298 CONTROL PANEL, GENERATOR	C1298 Control Panel, Generator	Purchased	\$14,964	\$14,964														
Equipment: C1302 FILTER	C1302 Filter	Purchased	\$300,361	\$300,361														
Equipment: C1303 FILTER	C1303 Filter	Purchased	\$300,361	\$300,361														
Equipment: C1306 GENERATOR, DIESEL, 12 CYLINDER	C1306 Generator, Diesel, 12 Cylinder	Purchased	\$102,495	\$102,495														
Equipment: C1309 LAB EQUIPMENT, GROUP OF	C1309 Lab Equipment, Group Of	Purchased	\$14,016										\$14,016					
Equipment: C1313 MIXER, CHEMICAL, GROUP OF 2	C1313 Mixer, Chemical, Group Of 2	Purchased	\$15,128										\$15,128					
Equipment: C1317 PROCESS PIPING, GROUP OF, WITH FITTINGS	C1317 Process Piping, Group Of, With Fittings And Valves	Purchased	\$122,945										\$122,945					
Equipment: C1318 PROCESS PIPING, GROUP OF, WITH FITTINGS	C1318 Process Piping, Group Of, With Fittings And Valves	Purchased	\$122,945										\$122,945					
Equipment: C1319 PROCESS PIPING, GROUP OF, WITH FITTINGS	C1319 Process Piping, Group Of, With Fittings And Valves	Purchased	\$122,945										\$122,945					
Equipment: C1320 PUMP, CENTRIFUGAL	C1320 Pump, Centrifugal	Purchased	\$14,623										\$14,623					
Equipment: C1324 PUMP, VERTICAL TURBINE, SUBMERSIBLE	C1324 Pump, Vertical Turbine, Submersible	Purchased	\$28,489	\$28,489									\$28,489					
Equipment: C1325 PUMP, VERTICAL TURBINE, SUBMERSIBLE	C1325 Pump, Vertical Turbine, Submersible	Purchased	\$28,489	\$28,489									\$28,489					
Equipment: C1326 PUMP, VERTICAL TURBINE, SUBMERSIBLE	C1326 Pump, Vertical Turbine, Submersible	Purchased	\$28,489	\$28,489									\$28,489					
Equipment: C1327 PUMP, VERTICAL TURBINE, SUBMERSIBLE	C1327 Pump, Vertical Turbine, Submersible	Purchased	\$28,489	\$28,489									\$28,489					
Equipment: C1330 TANK, ALUM, STEEL	C1330 Tank, Alum, Steel	Purchased	\$43,924	\$43,924														
Equipment: C1331 TANK, CLARIFIER, 1.6M3	C1331 Tank, Clarifier, 1.6M3	Purchased	\$43,924	\$43,924														
Equipment: C1332 TANK, CLARIFIER, 1.6M3	C1332 Tank, Clarifier, 1.6M3	Purchased	\$43,924	\$43,924														
Equipment: C1336 VALVE, MOTORIZED	C1336 Valve, Motorized	Purchased	\$17,997										\$17,997					
Equipment: C1337 VALVE, MOTORIZED	C1337 Valve, Motorized	Purchased	\$17,997										\$17,997					
Equipment: C1338 VALVE, MOTORIZED	C1338 Valve, Motorized	Purchased	\$17,997										\$17,997					
Equipment: C1339 VALVE, MOTORIZED	C1339 Valve, Motorized	Purchased	\$17,997										\$17,997					
Equipment: C1340 VALVE, MOTORIZED	C1340 Valve, Motorized	Purchased	\$17,997										\$17,997					
Equipment: C1341 VALVE, MOTORIZED	C1341 Valve, Motorized	Purchased	\$17,997										\$17,997					
Equipment: C1342 VALVE, MOTORIZED	C1342 Valve, Motorized	Purchased	\$17,997										\$17,997					
Equipment: C1343 VALVE, MOTORIZED	C1343 Valve, Motorized	Purchased	\$17,997										\$17,997					
Equipment: C1344 CONTROL PANEL	C1344 Control Panel	Purchased	\$82,973	\$82,973														
Equipment: C1347 CONTROL PANEL	C1347 Control Panel	Purchased	\$82,973										\$82,973					
Equipment: C1350 CONTROL PANEL	C1350 Control Panel	Purchased	\$82,973	\$82,973														
Equipment: C1351 CONTROL PANEL	C1351 Control Panel	Purchased	\$82,973	\$82,973														
Equipment: C1356 GENERATOR, DIESEL, 4 CYLINDER	C1356 Generator, Diesel, 4 Cylinder	Purchased	\$102,495	\$102,495														
Equipment: C1357 BLOWER	C1357 Blower	Purchased	\$25,931	\$25,931														
Equipment: C1358 BLOWER	C1358 Blower	Purchased	\$25,931	\$25,931														
Equipment: C1359 BLOWER	C1359 Blower	Purchased	\$25,931	\$25,931														
Equipment: C1360 CONTROL PANEL	C1360 Control Panel	Purchased	\$82,973	\$82,973														
Equipment: C1364 PROCESS PIPING, GROUP OF, WITH FITTINGS	C1364 Process Piping, Group Of, With Fittings And Valves	Purchased	\$122,945										\$122,945					
Equipment: C1365 PROCESS PIPING, GROUP OF, WITH FITTINGS	C1365 Process Piping, Group Of, With Fittings And Valves	Purchased	\$122,945										\$122,945					
Equipment: C1368 PROCESS PIPING, GROUP OF, WITH FITTINGS	C1368 Process Piping, Group Of, With Fittings And Valves	Purchased	\$122,945										\$122,945					
Equipment: C1369 CLARIFIER DRIVE AND MECHANISM	C1369 Clarifier Drive And Mechanism	Purchased	\$233,896	\$233,896														
Equipment: C1370 PIPING, AERATION	C1370 Piping, Aeration	Purchased	\$36,065	\$36,065														
Equipment: C1372 CONTROL PANEL	C1372 Control Panel	Purchased	\$82,973	\$82,973														
Equipment: C1375 GENERATOR, DIESEL, 4 CYLINDER	C1375 Generator, Diesel, 4 Cylinder	Purchased	\$102,495	\$102,495														
Equipment: C1377 PROCESS PIPING, GROUP OF, WITH FITTINGS	C1377 Process Piping, Group Of, With Fittings And Valves	Purchased	\$122,945										\$122,945					
Equipment: C1378 PROCESS PIPING, GROUP OF, WITH FITTINGS	C1378 Process Piping, Group Of, With Fittings And Valves	Purchased	\$122,945										\$122,945					
Equipment: C1379 PUMP, VERTICAL TURBINE, SUBMERSIBLE	C1379 Pump, Vertical Turbine, Submersible	Purchased	\$28,489	\$28,489														
Equipment: C1380 PUMP, VERTICAL TURBINE, SUBMERSIBLE	C1380 Pump, Vertical Turbine, Submersible	Purchased	\$28,489	\$28,489														
Equipment: C1388 CONTROL PANEL	C1388 Control Panel	Purchased	\$82,973	\$82,973														
Equipment: C1390 CONTROL PANEL, MCC	C1390 Control Panel, Mcc	Purchased	\$71,922	\$71,922														
Equipment: C1393 GENERATOR, DIESEL, 6 CYLINDER	C1393 Generator, Diesel, 6 Cylinder	Purchased	\$102,495	\$102,495														
Equipment: C1399 PROCESS PIPING, GROUP OF, WITH FITTINGS	C1399 Process Piping, Group Of, With Fittings And Valves	Purchased	\$122,945										\$122,945					
Equipment: C1400 PROCESS PIPING, GROUP OF, WITH FITTINGS	C1400 Process Piping, Group Of, With Fittings And Valves	Purchased	\$122,945										\$122,945					
Equipment: C1401 PUMP, VERTICAL TURBINE, SUBMERSIBLE	C1401 Pump, Vertical Turbine, Submersible	Purchased	\$28,489	\$28,489														
Equipment: C1402 PUMP, VERTICAL TURBINE, SUBMERSIBLE	C1402 Pump, Vertical Turbine, Submersible	Purchased	\$28,489	\$28,489														
Equipment: C1403 PUMP, VERTICAL TURBINE, SUBMERSIBLE	C1403 Pump, Vertical Turbine, Submersible	Purchased	\$28,489	\$28,489														
Equipment: C1404 PUMP, VERTICAL TURBINE, SUBMERSIBLE	C1404 Pump, Vertical Turbine, Submersible	Purchased	\$28,489	\$28,489														
Sewage Treatment Plant - Proposed Project			\$426,323										\$426,323				Proposed	January 1, 2016
Sewage Treatment Plant - Proposed Project			\$350,000										\$350,000				Proposed	January 1, 2017
Road Section: ROSS STREET																		

Low Lift Pump and Drive Longlac WTP		Water Treatment Plant	Replaced	\$50,000		\$50,000									Proposed	January 1, 2014	
Filter to Waste System WTP Longlac		Water Treatment Plant	Replaced	\$160,000	\$160,000										Proposed	January 1, 2014	
High Lift Pump and Drive Geraldton WTP		Water Treatment Plant	Replaced	\$55,000		\$55,000									Proposed	January 1, 2014	
Low Lift Pump and Drive Geraldton WTP		Water Treatment Plant	Replaced	\$50,000											Proposed	January 1, 2014	
Filter System Repair and Upgrade Geraldton WTP		Water Treatment Plant	Replaced	\$850,000		\$850,000									Proposed	January 1, 2014	Jack changed price from \$360,000 to \$850,000
Filter to Waste System WTP Beardmore		Water Treatment Plant	Replaced	\$180,000	\$160,000										Proposed	January 1, 2014	
Emergency Generator (Natural Gas) WTP Beardmore		Water Treatment Plant	Replaced	\$70,000		\$70,000									Proposed	January 1, 2014	
Longlac Waste Treatment Plant Emergency Generator Replacement		Water Treatment Plant	Replaced	\$65,000		\$65,000									Proposed	January 1, 2015	
Longlac Kenogami Emergency Generator Replacement		Water Treatment Plant	Replaced	\$65,000		\$65,000									Proposed	January 1, 2015	
Nakina WTP Plant Upgrades		Water Treatment Plant	Replaced	\$120,000		\$120,000									Proposed	January 1, 2015	
Nakina WTP Plant Generator Replacement		Water Treatment Plant	Replaced	\$80,000		\$80,000									Proposed	January 1, 2015	
Nakina WTP Plant Generator for Well House		Water Treatment Plant	Replaced	\$72,000			\$72,000								Proposed	January 1, 2017	
Nakina WTP Plant Replacea Well Pump		Water Treatment Plant	Replaced	\$54,000				\$54,000							Proposed	January 1, 2018	
High Lift Pump and Drive Nakina WTP		Water Treatment Plant	Replaced	\$65,000		\$65,000									Proposed		
Chemical Pump Upgrade Longlac		Water Treatment Plant	Replaced	\$40,000											Proposed		
Geraldton Main Street Sewer UpGrade (McKenzie to Wardrope)		Water Treatment Plant	Replaced	\$650,700		\$650,700									Proposed		
Nakina WTP Electrical Upgrades		Water Treatment Plant	Replaced	\$180,000		\$180,000									Proposed		
Beardmore WTP Electrical Upgrades		Water Treatment Plant	Replaced	\$24,000											Proposed		
Longlac WTP Electrical Upgrades		Water Treatment Plant	Replaced	\$40,000		\$40,000									Proposed		
Total (incl. PST+inflation)				\$ 44,705,484	\$ 29,231,211	\$ 2,214,960	\$ 3,714,486	\$ 1,920,173	\$ 1,780,953	\$ 1,066,131	\$ 1,173,608	\$ 1,218,288	\$ 487,830	\$ 1,895,845			
Total (incl. PST+inflation)				\$ 45,012,930	\$ 29,231,211	\$ 2,239,259	\$ 3,788,776	\$ 1,958,576	\$ 1,816,572	\$ 1,087,454	\$ 1,197,080	\$ 1,242,854	\$ 497,586	\$ 1,933,761			

inflation @ 2% from 2014-2022

Note: Proposed projects are based upon the recommended future projects by the Municipality