# ASSET MANAGEMENT PLAN

## FINAL REPORT

## for The Municipality of Dutton - Dunwich

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# EXECUTIVE SUMMARY

Public infrastructure is central to our prosperity and our quality of life. The majority of public infrastructure in Canada is the responsibility of the municipal government, and most people take for granted the important role of these assets. Adequate municipal infrastructure such as roads, bridges, and underground water and sewage pipes are essential to economic development, citizen safety, and quality of life. Well maintained infrastructure is critical in sustaining a municipality as an attractive place to live and do business.

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

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

## State of Local Infrastructure

It is often suggested in literature that 2% to 4% of the value of an asset should be spent yearly to ensure sustainability of the assets. Without asset management tools, it is almost impossible to determine the long term effect of inadequate budget allocations. Yet, it is important for a Municipality to determine if the current level of funding is appropriate to continue to provide an adequate level of service to its residents. It is also essential to allocate adequate funding to ensure sustainability of the assets in the future. The asset value considered for asset management purposes is determined based on the current full reconstruction costs for each type of asset. For the Municipality, the value of the assets included in this project was estimated at just over $84 million. The following table shows the specific distribution of the asset value.

| Asset Value | | |
|---|---|---|
| **Infrastructure Network** | **Quantity** | **Current Replacement Cost** |
| Sanitary Sewer | 16 km | $3,638,392 |
| Water | 204 km | $16,957,425 |
| Roads | 245 km | $49,352,475 |
| Sidewalks | 11 km | $1,029,510 |
| Building Facilities | 32 Buildings | $9,122,034 |
| Pumping Station | 7 Facilities | $1,169,230 |
| Bridges<br>Culverts | 3 Bridges<br>29 Culverts | $2,855,997 |
| **Total Asset Value** | | **$84,125,063** |

Based on these results and the recommended 2% yearly investment in maintenance, theoretically the municipality should allocate around $1.7M per year to ensure future sustainability of its assets.

## Current Needs Summary

An analysis scenario assuming an unlimited annual budget is utilized to gain insight on the state of local infrastructure. Although an unlimited budget is not a reality for any municipality, the scenario demonstrates the backlog of repairs that have been neglected over the years due to a lack of funding. The results define the extent of the infrastructure needs that currently exist in the Municipality, indicating in this case a backlog of needs.

Analysis was completed on the municipality networks and assets to determine the current needs of the system. The current needs summary was completed to understand the needs within the upcoming year for the municipal infrastructure.

Through the analysis, it was found that current needs are present within the paved road network. No immediate needs within one year were identified with the water, sanitary or sidewalk networks. The following table presents a summary of the current linear network needs.

| Summary of Current Linear Network Needs | | | | | |
|---|---|---|---|---|---|
| **Network** | **Total Length** | **Sections in Need** | **Total Current Needs** | **% of Network in Need** | **Estimated Expenditure** |
| Paved Roads | 45 km | 60 | 8.8 km | 20% | $632,780 |

Similarly, analysis was conducted for the point assets within the Municipality to determine current needs. Needs were identified for both buildings and facilities, and bridges and culverts. The following table presents a summary of the current point asset needs.

| Summary of Current Point Asset Needs | | | | |
|---|---|---|---|---|
| **Asset Type** | **No. of Facilities** | **Facilities in Need** | **% of Network in Need** | **Estimated Expenditure** |
| Buildings & Facilities | 32 | 3 | 9% | $240,000 |
| Bridges | 3 | 1 | 33% | $1,000 |
| Culverts | 29 | 8 | 28% | $338,450 |

In addition to the analysis results presented above, the Municipality identified multiple projects to be undertaken in 2014. This includes work to be done to the water infrastructure, this project having been selected for reasons other than physical condition: the addition of a rechlorination system at the existing Wallacetown Elevated Tank. This project has a $340,155 expenditure. A second project identified by the Municipality includes the replacement of the Gilbert Drain Thomson Line Culvert, to be undertaken at an $80,000 expenditure. Lastly, the Municipality has identified three sections of sidewalk to be rehabilitated, Sections SW64, SW72 and SW73, at an expenditure of $10,000 each.

## Asset Management Strategy

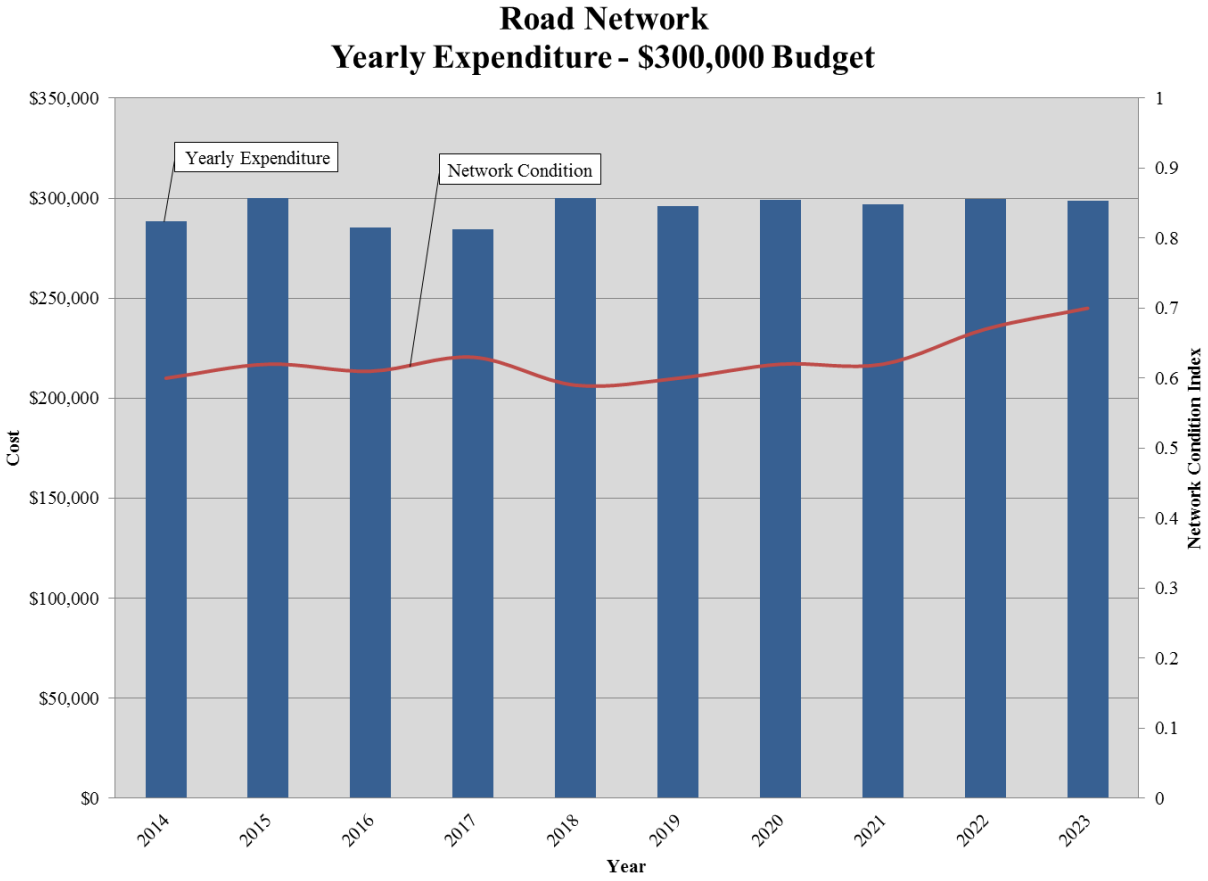
A 10 year capital plan was developed based on the condition of the infrastructure and levels of service being provided by the Municipality. Different yearly budget allocations were analyzed to determine the appropriate budget which would result in maintaining the current level of service offered to the residents for the next 10 years, and to analyze the impact of maintaining current budget amounts.

Using the DPSS asset management tool described in **Section 3.4**, it is possible to analyze the effect of different budget scenarios on the road network. Additional infrastructure improvement requirements were identified by the Municipality, and have been included in the plan. Depending on the allocated annual budget, the level of service may decrease, remain constant, or increase over time.

## Current Funding Level

### *Road Network*

A budget scenario of $300,000 annually was input into the program to analyze the expenditures incurred for the road network, and its effect on the overall condition index. The results in the following figure show that this allocation of funding will result in the overall network condition index generally being maintained around a 0.6 level, eventually increasing towards the end of a 10 year timeframe.




**Road Network Performance – Current Budget**

According to this scenario, the current allocation for funding is sufficient to maintain the current level of service for the Municipality.

Through the analysis, a plan was developed identifying road segments requiring rehabilitation. This information was reviewed by the Municipality, and adjustments made based on prior infrastructure rehabilitation commitments. Two road sections were identified through analysis to require rehabilitation in 2015. These segments had been identified by the Municipality to be scheduled for rehabilitation in 2014. Additionally, three road segments were noted to have been rehabilitated in 2013, and were therefore removed from the strategy.

### *Additional Infrastructure*

No detailed condition assessment survey was carried out on the remaining Municipality networks and assets. To develop a capital program, we have used the collected data, which included information on year of construction, service lives and replacement costs. Using that information, we have approximated timing for rehabilitation and replacement of each of the remaining linear network and point asset infrastructure.

*Water Network*

Within the analyzed ten-year timeframe, only two watermain sections were identified as requiring replacement. The two identified sections will require replacement in 2019; the total length of the sections equaling only 0.4% of the total length of the network. The anticipated expenditure for the watermain section replacement is $92,771.

The Municipality identified work to be undertaken on the water network, including the addition of a rechlorination system at the existing Wallacetown Elevated Tank, as noted previously. The project is anticipated to have a $340,155 expenditure in 2014. The condition of the remainder of the network is such that continuous repair is not required within a 10-year timeframe.

*Sidewalk Network*

Within a ten-year timeframe, rehabilitation work is only incurred on the sidewalk network during 2022. The yearly expenditure anticipated for the works totals $148,782, for 10 sidewalk sections. In addition to these identified sections, the Municipality has budgeted for three sidewalk sections to be rehabilitated in 2014, at an expenditure of $10,000 each.

*Sanitary Sewer Network*

The condition of the, sanitary sewer network is such that continuous repair is not required within a 10-year timeframe.

*Buildings, Facilities, Bridges and Culverts*

Analysis identified needs for the buildings and facilities, bridges and culverts. Although there were some needs incurred in 2014 for buildings, bridges and culverts as presented in Section 5.4, the Municipality will defer these projects until 2015, to be combined with the needs identified for 2015. Pumping stations, although point assets, did not require any rehabilitation within the analyzed timeframe.

## Financing Strategy

Financing infrastructure needs has become a very serious issue. Asset managers need to identify better practices and innovations in infrastructure financing if municipalities and other levels of government want to continue to provide an adequate level of service to tax payers in an affordable manner. Asset managers need to come up with innovative solutions to address that infrastructure deficit. Asset management systems are part of the solutions but innovative financing and finding alternate revenue sources are an even bigger part of the solution.

Through this assignment we have developed, in collaboration with staff, an Asset Management (AM) Strategy. The strategy included funding requirements that would ensure sustainability of the assets to continue to provide an adequate level of service to the residents. The strategy developed is realistic and affordable. The Municipality has identified revenue sources that will support the Asset Management Plan (AMP) developed through this report. The funding sources include:

- Reserves
- Federal Gas Tax
- Assessment Growth
- New Tax Base
- Debt Financing
- Water and Sewer User Fees

To develop a financing strategy to be implemented by the Municipality, the total of the expenditure requirements were summed annually. The Municipality provided details regarding their current and projected financial status, including anticipated reserve fund values, grants, subsidies, and municipal tax values. The available funding was compared with the required expenditures to determine where the municipality incurs a shortfall, and must address it through seeking additional funding (grants, subsidies), utilizing reserves, debt, or other methods to address infrastructure needs. It is noted that within the analyzed timeframe the Municipality is generally, through its funding sources, able to address the expenditures required to maintain their assets.

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# 1.0 INTRODUCTION

## 1.1. Significance of Municipal Infrastructure

Public infrastructure is central to our prosperity and our quality of life. The majority of public infrastructure in Canada is the responsibility of the municipal government, and most people take for granted the important role of these assets. Adequate municipal infrastructure such as roads, bridges, and underground water and sewage pipes are essential to economic development, citizen safety, and quality of life. Well maintained infrastructure is critical in sustaining a municipality as an attractive place to live and do business.

The recent *Canadian Infrastructure Report Card* (2012), which addresses municipal roads and water systems, stated that approximately 30% of municipal infrastructure is in "fair" to "very poor" condition across Canada. The replacement value of these assets alone totals over $170 billion. This illustrates the importance of municipalities protecting their investment in infrastructure, and finding creative financial solutions to keep infrastructure in good operating condition. One of the solutions to Canada's infrastructure issues is improved asset management practices.

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

## 1.2. Purpose of the AMP

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

The Ministry of Infrastructure of Ontario recognized that public infrastructure is central to prosperity and quality of life, as municipalities deliver many services that are critical to the public. Many of these services rely on well planned and maintained infrastructure. All levels of government also understand that they have an obligation to address the ever increasing infrastructure challenges, to ensure that they can continue providing an adequate level of service to tax payers. In an effort to commence addressing these challenges, the Ministry has initiated a program and plan called *Building Together*: *Guide for Municipal Asset Management Plans* (2012). This program is meant to assist municipalities in developing a municipal infrastructure strategy. This strategy provides an opportunity for municipalities to address current and emerging infrastructure challenges. One of the main components of the strategy is to improve the current municipal infrastructure asset management practices. The first step for municipalities is to develop an AMP.

The province has indicated that any municipalities seeking provincial infrastructure funding must demonstrate that they have or are in the process of developing an AMP and how its proposed project funding requests fit within a detailed AMP. The AMP should not only address the current needs in infrastructure, it should also identify future needs and a financing short and long-term strategy to fund those needs.

The AMP will assist municipalities in making the best possible decisions regarding the building, operating, maintaining, renewing, replacing and disposing of infrastructure assets. The intent of the plan is to make the best use of the funds available while managing risk and continuing to provide adequate levels of service to the public.

## 1.3. Municipality of Dutton-Dunwich

The Municipality of Dutton-Dunwich is within Elgin County in the Province of Ontario, with the southeastern border of the municipality along the shore of Lake Erie. The population of Dutton-Dunwich is approximately 3,800 people, and is composed of an area just under 300 square kilometers. ***Figure 1*** illustrates the location of the Municipality.


**Figure 1: Municipality of Dutton-Dunwich - Location Map**

# 2.0 PROJECT TEAM

To ensure that all technical and financial aspects of the plan were addressed, the Municipality included representatives from all relevant departments in the project. The project team representatives from the Municipality included:

- Laurie Spence-Bannerman – Chief Administrative Officer (CAO)
- Tiffany Farrell, CA – Treasurer
- Tim Hansen – Utility Employee
- Other technical staff

All of these individuals participated at different phases in the preparation of the plan. Their involvement will continue in the future to ensure that the plan remains relevant and useful in properly managing the Municipality's infrastructure assets.

## 2.1. Assets Included in the AMP

Ideally, municipalities should include all the capital assets owned and maintained by the municipality. However, the funds made available by the province were mostly for infrastructure assets such as roads, bridges, water and wastewater assets, and social housing. As recommended in the Guide for Municipal Asset Management Plans, the Municipality opted to develop a plan that includes all the primary assets. These infrastructure assets are considered essential to continue to provide an acceptable level of service to the public. The assets included in the AMP are:

- 17 kilometers of sanitary sewer network
- 204 kilometers of water network
- 12 kilometers of sidewalk network
- 45 kilometers of paved roads
- 200 kilometers of gravel road
- 32 bridge and culvert structures
- All municipal buildings and facilities (including wastewater treatment plant, water tower, pump stations, and recreational facilities)

Detailed information of the road, water mains, and sewer network can be found in the digital database delivered to the Municipality. The information is all included in the asset management tools delivered to the Municipality, to assist them in updating the AMP in the future. However, it is important to note that the AMP is not a static plan, and it will need to be updated as infrastructure is maintained and rehabilitated. The condition of the assets will also need to be reviewed as the assets continue to deteriorate over time.

The information provided to the Dillon team originated from the Municipality's existing databases, particularly those which were developed for Public Sector Accounting Board (PSAB) purposes. Less significant assets such as street signs and street lights were not included in this project. The maintenance of these assets is funded primarily through the operating budget on an as-needed basis, rather than being planned strategically in advance.

## 2.2. AMP Limitations

The AMP is a tool which is meant to be used to inform decision making. Other political, social, and environmental considerations should also be taken into account in planning capital investments. However, the AMP should provide a foundation on which those decisions are made.

In addition, the usefulness of the AMP is directly related to the quality of data used in its analysis. Both the Municipality Staff and Dillon team involved in the project were committed to data accuracy, yet some assumptions had to be made in extenuating circumstances. As a whole, the AMP provides an accurate approximation of the Municipality's current and future infrastructure needs.

# 3.0 PROJECT METHODOLOGY

The general methodology we have adopted has been to follow the best practices from the *National Guide to Sustainable Municipal Infrastructure (2002),* also known as the *InfraGuide*. The approach is described in five steps and was designed to help asset managers assess the level of service currently provided by their tangible assets. It allows asset managers to make fact-supported infrastructure investments decisions, while maximizing the effectiveness of available funds. In developing an AMP for the Municipality, each of the five steps, and their key elements, as presented below, were addressed. Each step is described in detail in the sections below.

1. **Infrastructure Data Inventory - *What infrastructure do you own?***
   - Analysis of existing data and optimization of data sources
   - Transfer of physical characteristic information into databases
   - Document inventory of all assets

2. **Replacement Costs - *What is it worth?***
   - Define bench-marking unit prices for replacement
   - Calculate replacement costs of all assets
   - Input information in analytical tools

3. **Condition Assessment - *What is its condition and remaining service life?***
   - Review of condition assessment data
   - Transfer of condition data to analytical tools
   - Computing condition assessment indices where appropriate
   - Statistical analysis of defects to assess life expectancy
   - Determination of service life of all infrastructure assets
   - Comparison with industry standards and definition of acceptable level of service

4. **State of Local Infrastructure Analysis-** ***What needs to be done to rehabilitate, replace, operate and maintain these assets?***

   - Upload condition data in asset management tools and process information
   - Review the effect of different repair alternatives
   - Consideration of lifecycle costs and extension of service life
   - Determine financial requirements to address needs identified

5. **Asset Management Strategy -** ***What should be done first and how much will it cost?***

   - Consideration of selected "what if" expenditure scenarios
   - Production of a prioritized short and long term AMP

The final part of this report which could be incorporated as an additional question to the list above is "How will you finance your plan?". To answer that question we have reviewed a variety of financing strategies which could be implemented to address the needs of all assets while maintaining an acceptable level of service to the residents.

## 3.1. Infrastructure Data Inventory

The Municipality possesses a large amount of inventory data in a variety of formats; therefore, no field data collection was required on this project. We worked closely with the Municipality staff to make best use of the valuable information they had.

We have developed a data prioritization process that identifies what data is considered essential, desirable or complementary in municipal infrastructure asset management. We followed that prioritization process for this assignment. Our experience has shown that much can be accomplished using only essential data to manage infrastructure assets. This approach produces valuable results at a much earlier stage in the development of a plan without large expenditures on asset condition assessment. The results can be refined over the years as more data becomes available. However, obtaining results, early in the implementation, will generate an immediate return on the investment.

It is recommended in the development of an AMP not to collect and store data just because the data is available. If the data does not add any value to the business processes, it should not be incorporated in the system. Usually, the financial investment and time spent keeping that information current could be better used elsewhere in the development of an AMP.

### *3.1.1. Linear Infrastructure Inventory – Road, Sewer, Water and Sidewalk Networks*

Prior to project initiation, the Municipality staff had already created a database for their linear infrastructure. The Dillon team reviewed that information and identified data gaps that needed to be addressed before processing data for the development of the AMP. Information such as year of construction, pipe diameter, material type, and pavement widths were some of the attribute information that was required in the development of the AMP. The project team worked closely with staff to address missing data or to make educated assumptions where the information was not available.

### *3.1.2. Point Asset Inventory –Bridge, Culvert, Building and Facility Assets*

The main source of information for the point assets was the database created to respond to the requirements of the Public Sector Accounting Board (PSAB). To meet the PSAB requirements, all municipalities must now produce an annual financial statement that takes into consideration the depreciation of all their Tangible Capital Assets (TCA). Municipalities had to generate an inventory of all their TCA, determine the year of construction or acquisition, estimate the acquisition cost based on historical cost or current replacement cost, and depreciate all assets to determine current residual value of those assets. Depreciating the asset involved assigning an expected service life to their assets. The PSAB information was very valuable to initiate the development of an asset management system, and the Dillon team took full advantage of it.

Although the PSAB information is a useful starting point, it was created to address financial accounting requirements. Engineering judgment must be applied to the PSAB information in order to make sound technical decisions with regards to renewal of municipal infrastructure.

The Dillon team, in collaboration with Municipality staff, reviewed all PSAB data and made appropriate adjustments to parameters such as service lives and replacement cost of an asset. The goal was to cater the existing information on current infrastructure conditions to the AMP development process.

## 3.2. Replacement Costs

Calculating the replacement costs of infrastructure assets provides insight on the existing financial investments on municipal infrastructure networks. To calculate overall replacement costs, each type of linear infrastructure was assigned an average unit cost per meter or square meter of construction. Unit construction costs were developed in collaboration with Municipality staff, based on recent construction activities in the area. For the point assets such as bridges and buildings, the main source of information was the PSAB database. The values provided in the PSAB were inflated where required to obtain an approximation of the current replacement cost of the point assets.

## 3.3. Condition Assessment

The generation of condition indices, using consistent and repeatable techniques, is essential in comparing assets and identifying needs in all types of infrastructure. These indices are used to track improvements to the level of service in the condition of the asset network in the form of financial investment. All condition indices for linear and point assets ranged from 0 to 1, with 1 representing an asset in perfect condition. Once all assets were assigned a condition rating, knowledge of assets and technical expertise were used to determine rating level which represented the minimal level of service that can be provided to the residents. This was determined in consultation with Municipality staff. Any components of infrastructure rated below the minimal rating are to be repaired to improve the level of service. The minimum rating, or level of service, is called the "Threshold of Acceptability" of an asset.

The following ***Figure 2:*** Deterioration Model and Threshold of Acceptability (PVC Water Pipe) illustrates graphically an example of performance thresholds and deterioration model used for water networks.

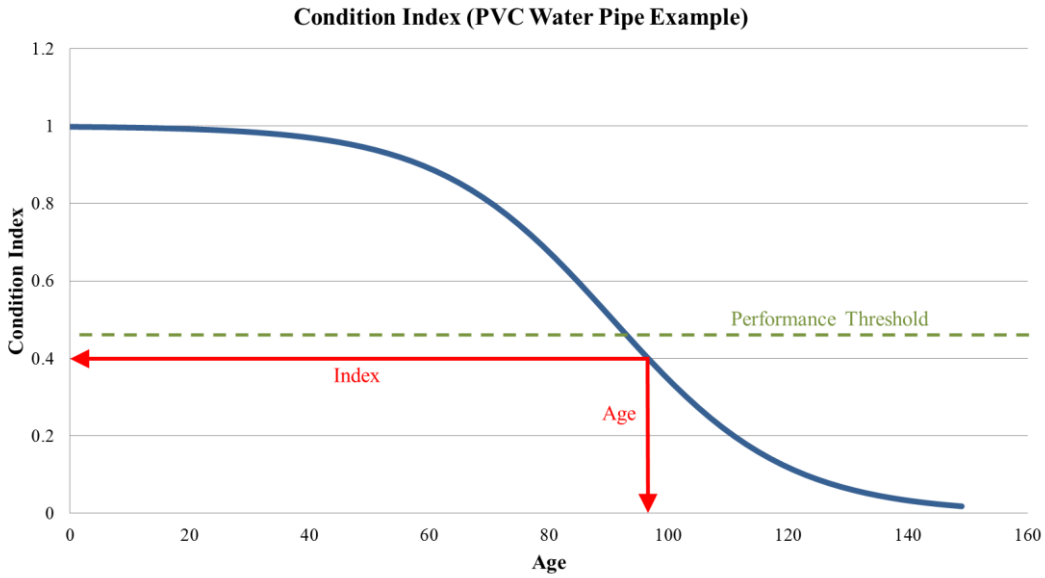


**Figure 2: Deterioration Model and Threshold of Acceptability (PVC Water Pipe)**

### *3.3.1. Road Network Condition Assessment Process*

The Municipality had recently conducted a high level surface evaluation survey to rate the condition of the roadway sections in the network. This information was used to analyze the overall condition of the road network and identify rehabilitation needs in the network. It is recommended that the Municipality conduct these types of road condition surveys on a regular basis (3 to 5 years) following the PCI method recommended by the Ministry of Transportation. The results of such a survey provides a much better indication of the current condition of the road network and provides a better base of information to predict the deterioration of road sections over time.

### *3.3.2. Water and Sewer Networks Condition Assessment Process*

Budgetary constraints prohibited the possibility of conducting a condition assessment survey of the sewer and water networks. To overcome this limitation, statistically developed deterioration trends were used to approximate pipe condition based on the pipe's age and material type. This approach involved the usage of linear and exponential deterioration models, based on the age of the infrastructure and the life expectancy attributed to the asset material type. For high level financial analyses focused on asset sustainability of an infrastructure network, this approach is quite adequate.

Some water and sewer pipe segments had unknown ages and/ or material types. Where the information was unable to be located, assumptions were made based on the age and material of surrounding pipes.
All the assumptions made as part of the condition assessment process have been documented in the database.

### *3.3.3. Point Asset Condition Assessment Process*

The condition assessment of the point assets, including bridges, culverts, buildings and facilities, was done using a similar approach to the linear assets. The PSAB database contained information including year of construction, service lives and replacement costs, which was used with a linear deterioration model to approximate timing for rehabilitation and replacement of those assets. The approximations were reviewed by staff and adjusted in some cases to better reflect known condition of some assets. The final results were reviewed and endorsed by staff.

## 3.4. State of Local Infrastructure Analysis

For road network assets, the Dillon Predictive Scenario Software (DPSS) was used in preparing the capital investment analysis of the AMP. The tool is a Microsoft Access application that relies on an overall assessment of the infrastructure condition to produce investment scripts based on degradation curves, which are adjusted to the Municipality's particular operations and thresholds of acceptability.

The DPSS tool assesses the condition, and puts the Asset Manager in control of the life cycle of assets. It also allows for planning as to where, when, how and how much to invest in the renewal and replacement of infrastructures for the coming year, or for the next 5, 10, 20 or 50 years. ***Figure 3*** provides a view of a screen capture of the DPSS analytical tool. Based on unit costs for rehabilitation of roadways provided by the Municipality, an AMP was developed using the tool.

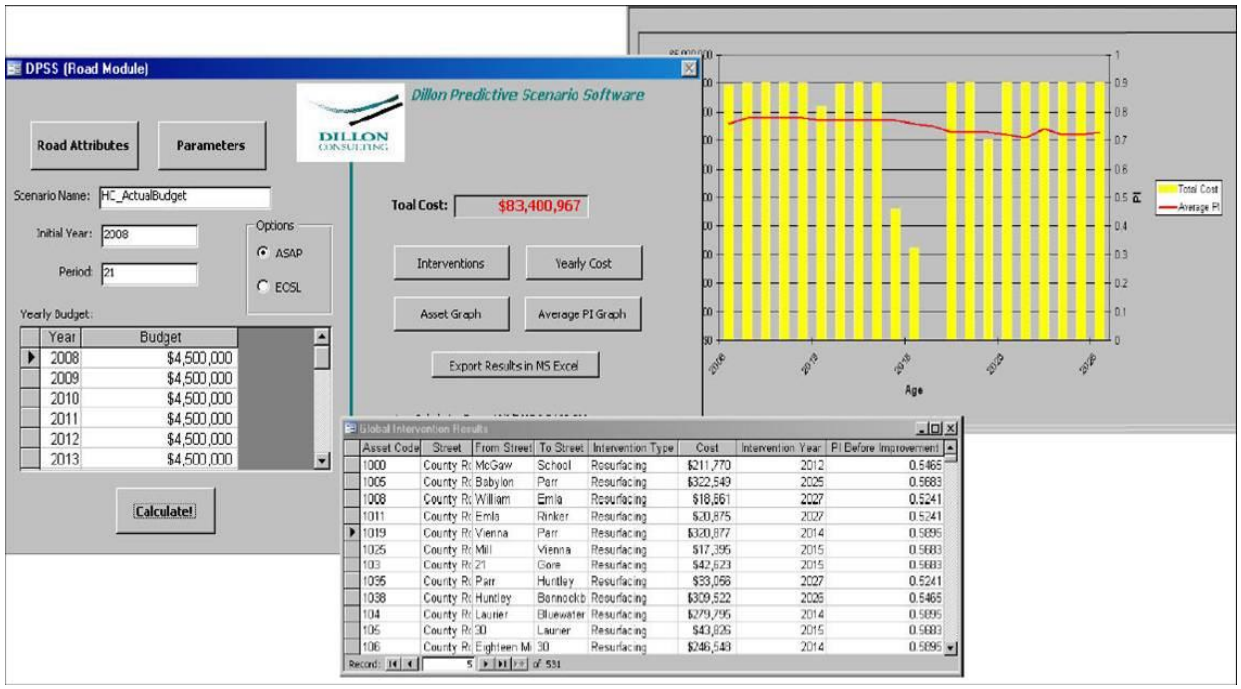


**Figure 3: Dillon Predictive Scenario Software (DPSS)**

Dillon also developed a simple and practical tool to manage point assets, which can also be used for additional linear assets. Point assets are assets such as bridges and culverts, buildings, facilities, treatment plants and pump stations. Point assets usually behave differently than linear assets because they are composed of many different components that have variable service lives. The service lives of these components can usually be obtained from sources such as:

- The supplier's suggested service life
- The experience of the technical expert performing condition assessment
- Published industry guides on service life and maintenance requirements

The AMP tool developed by Dillon has been designed to summarize in tabular and chart forms the maintenance and renewal costs of the components of the assets. The tool considers factors such as year of construction, expected service life, infrastructure needs, maintenance and replacement costs, and year of intervention. It has been successfully implemented in a many communities in across Canada. ***Figure 4*** illustrates the AMP tool interface.

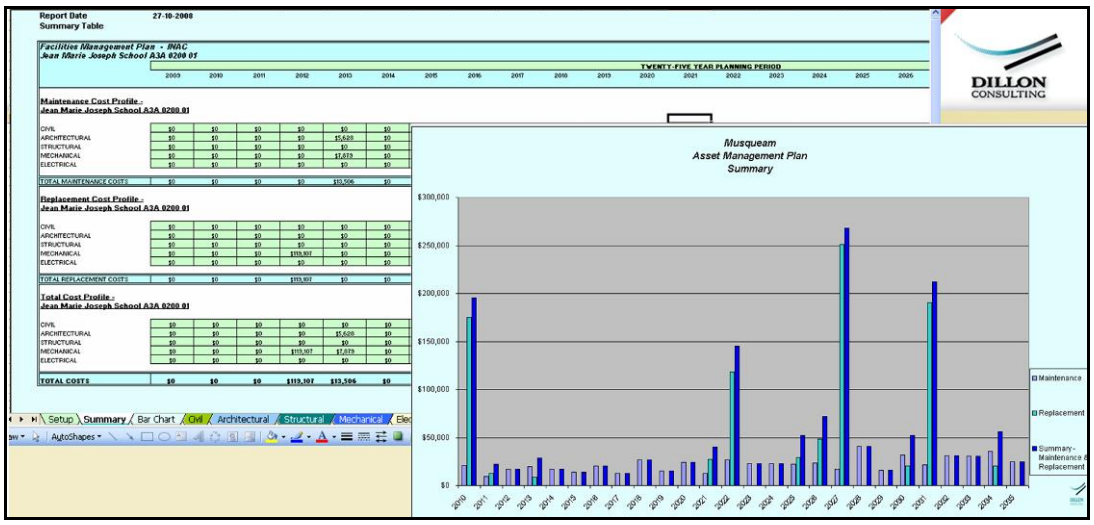


**Figure 4: Condition Assessment Tool**

This tool was used to develop the multi-year AMP for the point and linear assets included in this project. The results were delivered in digital form in MS Excel format. Municipality staff will continue to use the applications described above to assist them in managing their infrastructure assets.

## 4.0 DESIRED LEVELS OF SERVICE

As described in the best practice document in the *National Guide to Sustainable Municipal Infrastructure* (2003), also known as *InfraGuide*, levels of service fall into two broad categories: those that are mandated by regulations (codes, standards, etc.); and those that result from community plans or objectives.

In general, mandated levels of service are very specific in their description of the measures to be used. This can take the form of, for example, the number of a type of bacteria per unit volume in drinking water. Community objectives tend to be less defined measurement in terms of schemes. They are future oriented, and focus less on technical measures and more on social, cultural and environmental concerns.

## 4.1. Mandated Levels of Service

Regulations exist to ensure the health and safety of the users of public facilities or the products delivered by a utility to the public. These regulations are enforced through codes, standards, or guidelines adopted by government authorities.

The most common regulations that apply to infrastructure include:

- Minimum Maintenance Standards for Municipal Highways
- National Drinking Water Guidelines
- National Building Code of Canada
- National Fire Code of Canada

This list is not comprehensive and the owners and managers of infrastructure need to be fully familiar with the regulations that apply to their facilities.

## 4.2. Community Objectives

Every community has developed objectives on the expected quality of life in their community and a vision for the future. These are established either through a structured process (such as a comprehensive community plan) or by other means. The objectives and vision usually include elements of health and safety, social wellbeing, economic and cultural development, and other factors. Community objectives rely heavily on the ability of the existing infrastructure to support such plans. In many instances, the objectives call for new infrastructure that the community will have to operate and maintain for generations.

The *InfraGuide* describes the steps required to successfully establish a community's levels of service. The key elements that relate to the development of levels of service as described in the *InfraGuide* best practice are illustrated in ***Figure 5.***


**Figure 5: Levels of Service (*InfraGuide* 2002)**

*Asset understanding* refers to the knowledge about the inventory, condition and performance of infrastructure that provide the community its services: potable water, wastewater collection and treatment, solid waste management, roads and bridges, community buildings, etc. This information is provided by the AMP and is used to ensure existing and planned infrastructure can support the levels of service established.

*Consultation and communication* are important elements of developing community levels of service. Key stakeholders must be involved; including community leaders, operators of the assets, education and health professionals, and other levels of government officials. The consultations should be properly managed to avoid creating a "wish list", as consultations have a tendency to raise expectations amongst those involved. Instead, the consultation process should provide adequate background material, and the context and constraints (e.g., financial, environmental, material and human resources, etc.) which face the municipality. This will help generate realistic levels of services that the community can achieve and afford.

Levels of service have to be aligned to the *strategic direction* of the community. Appropriate levels of service must consider the community's ability and willingness to *tolerate risk*. The costs associated with the levels of service need to be established and evaluated in view of the capacity of the community to support them.

Ideally, each community should use this process to define their acceptable level of service. Once determined, all assets would need to be reviewed and compared to the community's expectations. Action plans on remedial measures would have to be developed to close the gap between expectations and reality, if physically and financially possible.

## 4.3. Determining Appropriate Levels of Service for Dutton-Dunwich

For this project, due to time constraint and budget limitations, a full community consultation process for establishing levels of service was not conducted. The process followed was mostly based on the *Asset Understanding* component of the process, which considered the physical and functional characteristics of an asset to define a measurable index that can be monitored over time.

Condition indices were determined as described in **Section 3.3: Condition Assessment.** The Municipality's current levels of service, measured in terms of condition index, were determined in consultation with the Municipality's project team. By combining that information with staff knowledge and current complaint records, it was possible to determine if the current levels of service provided to the residents were appropriate. Once acceptable levels of service were established, the information was used to identify current and future infrastructure investment requirements. The asset management tools described previously were provided to staff to monitor the levels of service over time, and to assess the effect of different budget scenarios on the current and future levels of service. The results of our analysis are presented in **Section 6.0: Asset Management Strategy**.

# 5.0 STATE OF LOCAL INFRASTRUCTURE

## 5.1. Existing Infrastructure and Condition

The current state of existing infrastructure has significant bearing on the replacement or rehabilitation profile for the assets. An average condition index was developed for each network and group of point assets, rated on a scale from 0 to 1, 1 indicating an asset in perfect condition.

### *5.1.1. Road Network*

Analysis of the road network included the deterioration and rehabilitation of the road surface. The road bed was omitted, as the integrity of the road bed is not likely to be compromised if the surface is kept in good condition. The municipal road network consists of tar and chip, asphalt, and gravel road surfaces. Gravel roads within the Municipality are maintained on a continual basis using an allotted operation and maintenance fund. Gravel roads were not included in the linear asset analysis, as the yearly maintenance allotment provided by the municipality is not considered within the capital budget.

The road network is approximately 245 kilometers in length with varying road widths, including approximately 200 kilometers of gravel roads, and 45 kilometers of paved roads. On average, the road surfaces within the network have an age of 16 years, and the average condition index of the network, as provided by the Municipality, is 0.60.

### *5.1.2. Water Network*

The watermain network totals nearly 204 kilometers in length, and is relatively new with an average age of 15 years. The average network condition index based on a 75 year asset life expectancy is 0.79.

### *5.1.3. Sanitary Sewer Network*

The sanitary sewer network has a total length of approximately 16 kilometers, and is composed of concrete and PVC pipe; both material types carry a normal life expectancy of 75 years. The average age of the system components is 34 years. An average network condition index was calculated to be 0.50.

### *5.1.4. Building and Facility Assets*

A standard value of 50 years was used for the life expectancy of the buildings, as provided by the Municipality based on historical averages. Deviations from the use of this value were also provided by the Municipality, and are present at buildings where a more accurate life expectancy could be defined, or where recent rehabilitation projects on building components have occurred. The average age of the building and facility assets is 16 years. The average condition index is 0.55.

### *5.1.5. Pumping Station Assets*

A value of 80 years was used for the life expectancy of the assets, as provided by the Municipality. The average age of the pumping stations is 17 years, and the average condition index is 0.86.

### *5.1.6. Bridge and Culvert Assets*

The 3 bridge structures are constructed with concrete, and vary in age from 5 to 84 years. The 29 culvert structures consist of both concrete construction and corrugated steel pipe, and range in age from 2 to 84 years. The normal life expectancy for concrete bridges and culverts is 80 years, and 35 years for corrugated steel pipe. The average condition index for the bridges and culverts was determined to be 0.61.

### *5.1.7. Sidewalk Network*

The sidewalk network has a total length of approximately 11 kilometers. The network is constructed in concrete, and has an average age of 21 years. Using the normal life expectancy of 35 years, an average index condition for the network was calculated to be 0.41.

## 5.2. Estimated Current Asset Value

It is often suggested in literature that 2% to 4% of the value of an asset should be spent yearly to ensure sustainability of the assets. Without asset management tools, it is almost impossible to determine the long term effect of inadequate budget allocations. Yet, it is important for a Municipality to determine if the current level of funding is appropriate to continue to provide an adequate level of service to its residents. It is also essential to allocate adequate funding to ensure sustainability of the assets in the future. The asset value considered for asset management purposes is determined based on the current full reconstruction costs for each type of asset. For the Municipality, the value of the assets included in this project was estimated at just over $84 million. The **Table 1** and ***Figure 6*** show the specific distribution of the asset value.

**Table 1 – Asset Value**

| Infrastructure Network | Quantity | Current Replacement Cost |
|---|---|---|
| Sanitary Sewer | 16 km | $3,638,392 |
| Water | 204 km | $16,957,425 |
| Roads | 245 km | $49,352,475 |
| Sidewalks | 11 km | $1,029,510 |
| Building Facilities | 32 Buildings | $9,122,034 |
| Pumping Station | 7 Facilities | $1,169,230 |
| Bridges<br>Culverts | 3 Bridges<br>29 Culverts | $2,855,997 |
| **Total Asset Value** | | **$84,125,063** |

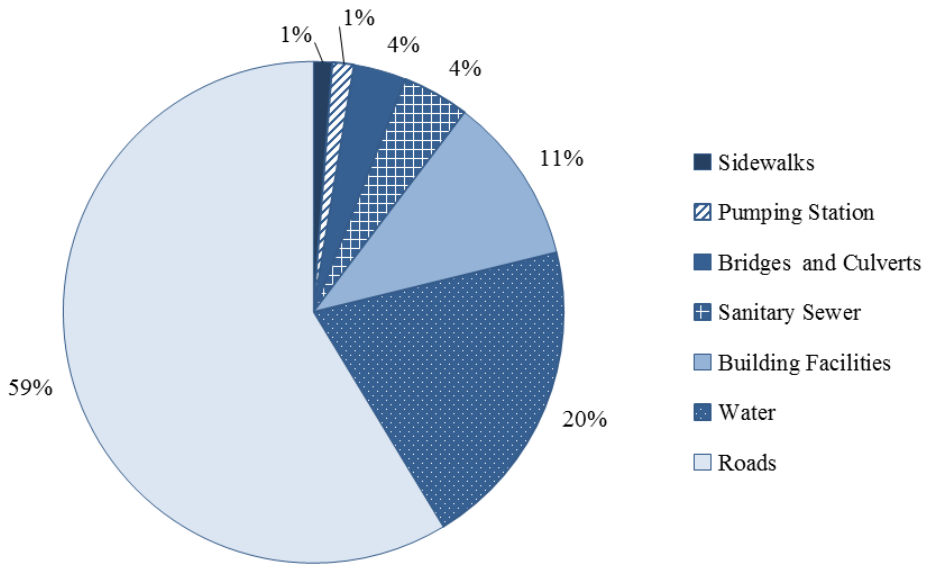


**Figure 6: Current Asset Value**

Based on these results and the recommended 2% yearly investment in maintenance, theoretically the municipality should allocate around $1.7M per year to ensure future sustainability of its assets.

## 5.3. Unlimited Budget Scenario

An analysis scenario assuming an unlimited annual budget is utilized to gain insight on the state of local infrastructure. Although an unlimited budget is not a reality for any municipality, the scenario demonstrates the backlog of repairs that have been neglected over the years due to a lack of funding. The results define the extent of the infrastructure needs that currently exist in the Municipality, indicating in this case a backlog of needs.

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

## 5.4. Current Needs Summary

Analysis was completed on the municipality networks and assets to determine the current needs of the system. The threshold of acceptability used to qualify the condition of the asset was based on the experience of the project team and in consultation with staff, as discussed in **Section 3.3**. The current needs summary was completed to understand the needs within the upcoming year for the municipal infrastructure.

Through the analysis, it was found that current needs are present within the paved road network. No immediate needs within one year were identified with the water, sanitary or sidewalk networks. **Table 2** presents a summary of the current linear network needs.

**Table 2 – Summary of Current Linear Network Needs**

| Network | Total Length | Sections in Need | Total Current Needs | % of Network in Need | Estimated Expenditure |
|---|---|---|---|---|---|
| Paved Roads | 45 km | 60 | 8.8 km | 20% | $632,780 |

Similarly, analysis was conducted for the point assets within the Municipality to determine current needs. Needs were identified for both buildings and facilities, and bridges and culverts. Table 3 presents a summary of the current point asset needs.

**Table 3 – Summary of Current Point Asset Needs**

| Asset Type | No. of Facilities | Facilities in Need | % of Network in Need | Estimated Expenditure |
|---|---|---|---|---|
| Buildings & Facilities | 32 | 3 | 9% | $240,000 |
| Bridges | 3 | 1 | 33% | $1,000 |
| Culverts | 29 | 8 | 28% | $338,450 |

In addition to the analysis results presented above, the Municipality identified multiple projects to be undertaken in 2014. This includes work to be done to the water infrastructure, this project having been selected for reasons other than physical condition: the addition of a rechlorination system at the existing Wallacetown Elevated Tank. This project has a $340,155 expenditure. A second project identified by the Municipality includes the replacement of the Gilbert Drain Thomson Line Culvert, to be undertaken at an $80,000 expenditure. Lastly, the Municipality has identified three sections of sidewalk to be rehabilitated, Sections SW64, SW72 and SW73, at an expenditure of $10,000 each.

***Figure 7*** shows the percentage breakdown of the estimated expenditures incurred in 2014.

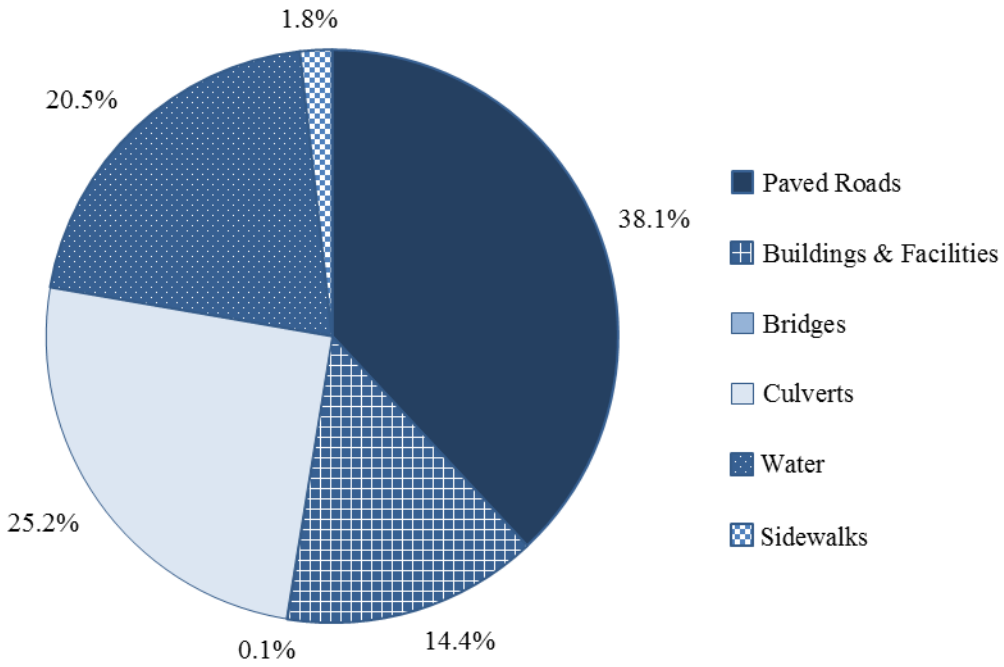


**Figure 7: Estimated Percent Breakdown of Network Repair Costs**

## 6.0 ASSET MANAGEMENT STRATEGY

A 10 year capital plan was developed based on the condition of the infrastructure and levels of service being provided by the Municipality. Different yearly budget allocations were analyzed to determine the appropriate yearly budget which would result in maintaining the current level of service offered to the residents for the next 10 years, and to analyze the impact of maintaining current budget amounts.

Using the DPSS asset management tool described in **Section 3.4**, it is possible to analyze the effect of different budget scenarios on the road network. Additional infrastructure improvement requirements were identified by the Municipality, and have been included in the plan. Depending on the allocated annual budget, the level of service may decrease, remain constant, or increase over time.

### 6.1. Current Funding Level

#### *6.1.1. Road Network*

A budget scenario of $300,000 annually was input into the program to analyze the expenditures incurred for the road network, and its effect on the overall condition index. The results in ***Figure 8*** show that this allocation of funding will result in the overall network condition index generally being maintained around a 0.6 level, eventually increasing towards the end of a 10 year timeframe.

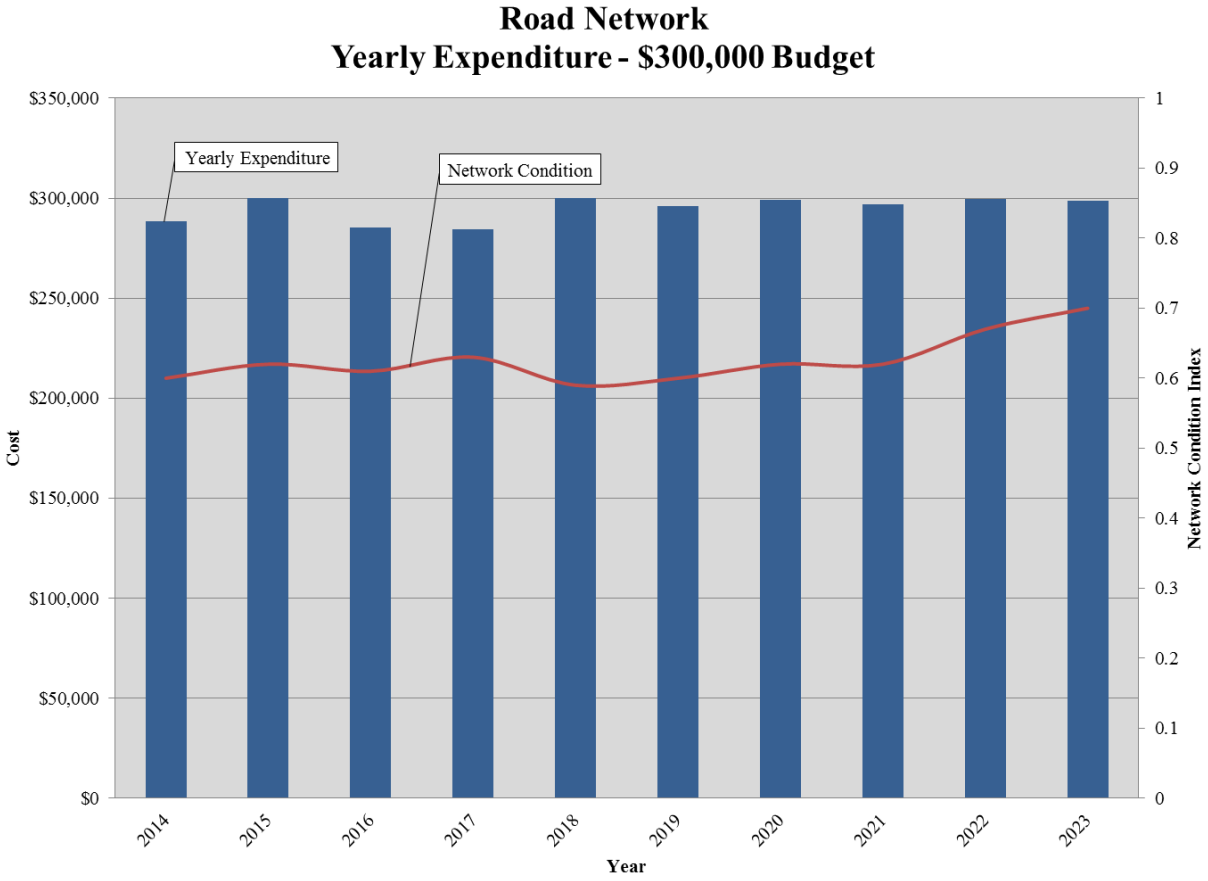


**Figure 8: Road Network Performance – Current Budget**

This capital allocation will generally maintain a good level of service, even increasing the average level towards the end of the analyzed timeframe. The current level of service is consistent with the level recommended in best practices. It is recommended that the current level of budget be used to maintain the road network.

Through the presented analysis, a plan was developed identifying road segments requiring rehabilitation. This information was reviewed by the Municipality, and adjustments made based on prior infrastructure rehabilitation commitments. Two road sections were identified through analysis to require rehabilitation in 2015. These segments had been identified by the Municipality to be scheduled for rehabilitation in 2014. Additionally, three road segments were noted to have been rehabilitated in 2013, and were therefore removed from the strategy. A detailed list of all road assets requiring repair or replacement within the next 10 years, including adjustments, can be found in **Appendix A.**

### *6.1.2. Additional Infrastructure*

No detailed condition assessment survey was carried out on the remaining Municipal networks and assets. To develop a capital program, we have used the collected data, which included information on year of construction, service lives and replacement costs. Using that information, we have approximated timing for rehabilitation and replacement of each of the remaining linear network and point asset infrastructure.

*6.1.2.1. Water Network*

Within the analyzed ten-year timeframe, only two watermain sections were identified as requiring replacement. The two identified sections will require replacement in 2019; the total length of the sections equaling only 0.4% of the total length of the network. The anticipated expenditure for the watermain section replacement is $92,771. A detailed list of incurred water network projects within the next 10 years can be found in **Appendix A.**

The Municipality identified work to be undertaken on the water network, including the addition of a rechlorination system at the existing Wallacetown Elevated Tank, as noted previously. The project is anticipated to have a $340,155 expenditure in 2014. The condition of the remainder of the network is such that continuous repair is not required within a 10-year timeframe.

*6.1.2.2. Sanitary Sewer Network*

The condition of the sanitary sewer network is such that continuous repair is not required within a 10-year timeframe. The Municipality should not require significant expenditure to maintain these assets.

*6.1.2.3. Sidewalk Network*

Within a ten-year timeframe, rehabilitation work is only incurred on the sidewalk network during 2022. The yearly expenditure anticipated for the works totals $148,782, for 10 sidewalk sections. In addition to these identified sections, the Municipality has budgeted for three sidewalk sections to be rehabilitated in 2014, at an expenditure of $10,000 each. A detailed list of sidewalk network projects incurred within the next 10 years can be found in **Appendix A.**

*6.1.2.4. Buildings, Facilities, Bridges and Culverts*

Analysis identified needs for the buildings and facilities, bridges and culverts. Although there were some needs incurred in 2014 for buildings, bridges and culverts as presented in Section 5.4, the Municipality will defer these projects until 2015, to be combined with the needs identified for 2015. The following ***Figure 9*** and ***Figure 10***, illustrates the results of our analysis for bridges and culverts, and buildings and facilities including scheduling modifications identified by the Municipality. Pumping stations, although point assets, did not require any rehabilitation within the analyzed timeframe. A detailed list of all point assets requiring repair or replacement within the next 10 years can be found in **Appendix A**.

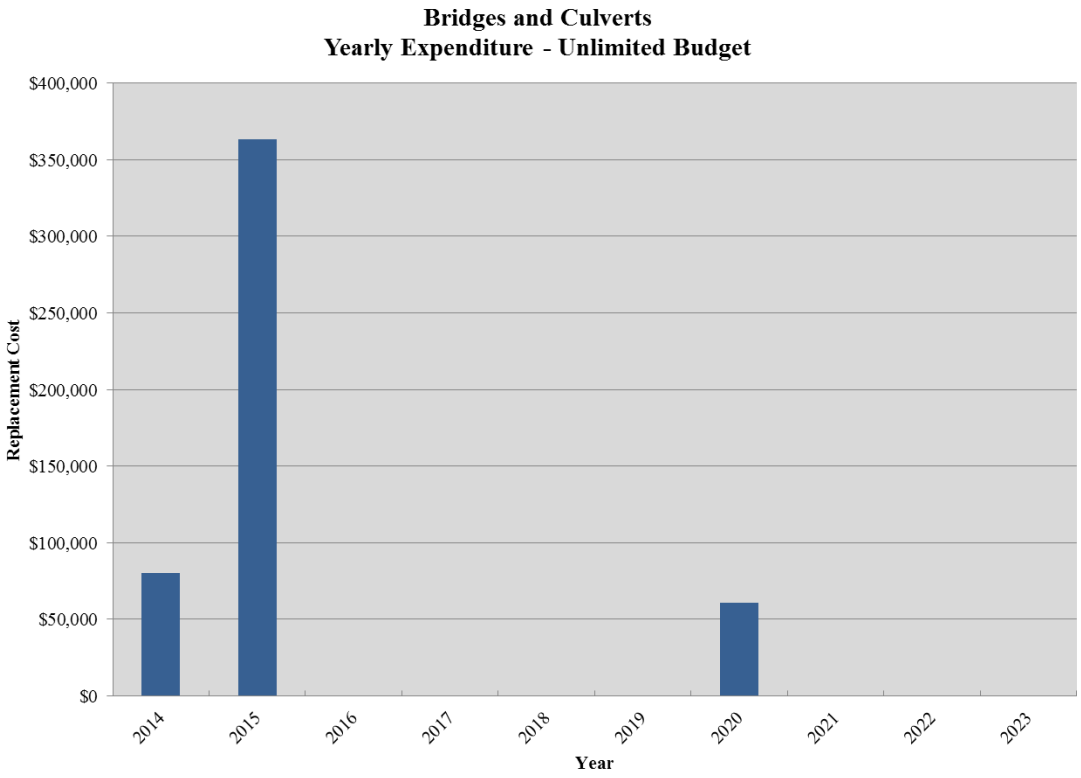


**Figure 9: Bridges and Culverts – Proposed Yearly Expenditure**

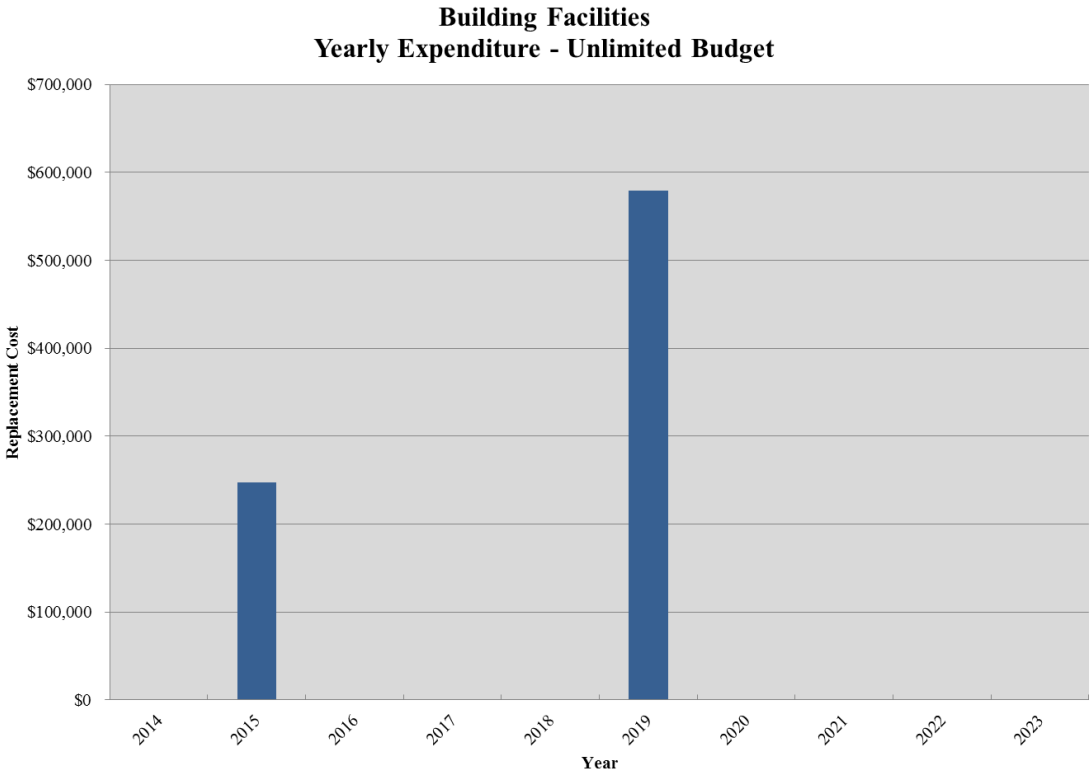


**Figure 10: Buildings and Facilities – Proposed Yearly Expenditure**

## 6.2. Asset Management Policies

### *6.2.1. Approach to Data Assembly*

The Municipality currently manages a large amount of infrastructure data and information. It is recommended to continue to incorporate additional information related to all assets and create what is referred to as an enterprise database. This is critical for on-going infrastructure management activities within the Municipality's organization. The database used in preparation of the AMP encompasses asset information that can support multiple business functions. ***Figure 11*** and ***Figure 12*** illustrate the concept of going from an ad-hoc data environment to a structured enterprise database.

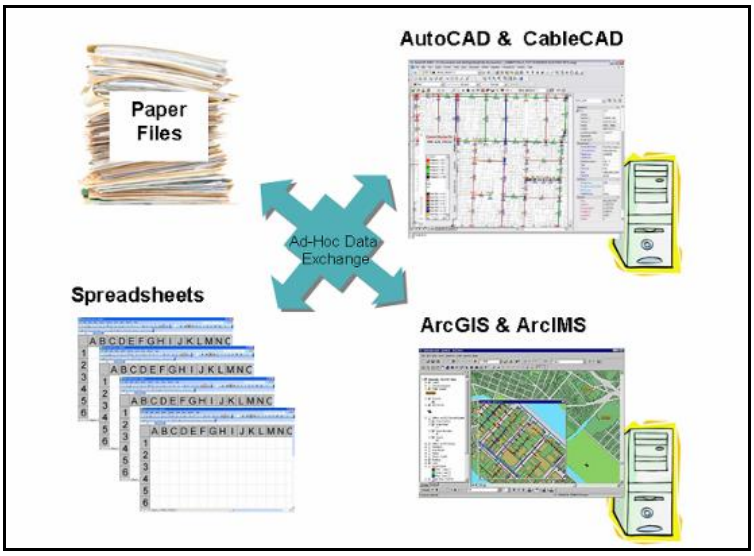


**Figure 11: Ad Hoc Environment**

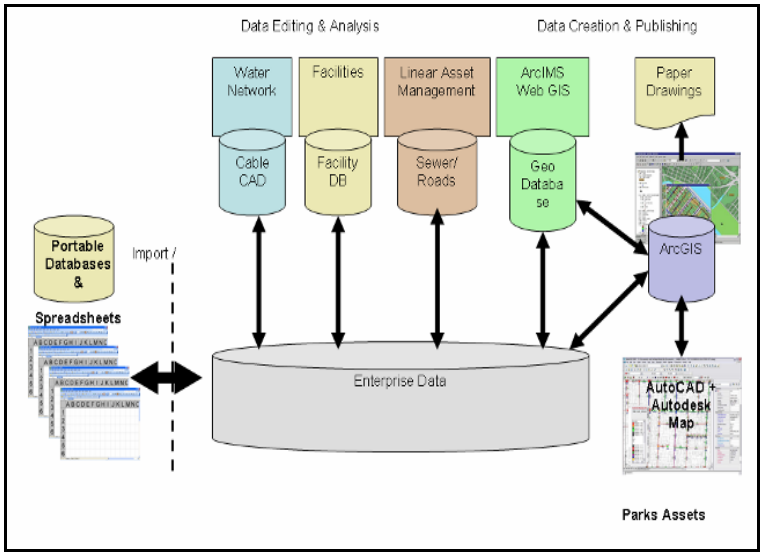


**Figure 12: Recommended "Enterprise" Environment**

The recommendation to use the Corporate GIS as the enterprise database is common practice in many municipalities across Canada. Data is maintained in one environment, and accessible by many users. Relevant information can be exported in external applications for processing of data. The results can then

be imported back in the GIS database and accessed/displayed graphically which add value to the information stored in databases. An enterprise database system reduces data redundancy and increases access to information across the organization.

### *6.2.2. Condition Assessment Strategy*

In continuing to maintain a detailed AMP over time, it is highly recommended that the Municipality acquire detailed condition assessment data on all components of their infrastructure assets. It is critical to ensure the data is current and accurate, in order to maintain a useful AMP.

Roads should undergo a full condition assessment every 3-5 years. Given the shorter lifespan of road structures, and high variability in road construction and environment, pavement condition indices are more difficult to estimate over time. Therefore, their condition should be evaluated on a more frequent basis.

Underground pipe assets historically undergo far fewer condition assessments. A sampling approach for collecting condition data and extrapolating the results to assets with similar physical and operational characteristics is a viable option when funding is limited. For example, in this approach Closed Circuit Television (CCTV) inspection survey might be conducted for a sample of pipes, and results can be extrapolated to pipes with similar physical characteristics. This approach is commonly used for long term financial planning. Another approach is to use the replacement profile developed using the AMP tool to identify pipes that are or could be in needs of rehabilitation now or in the next few years, and generate a CCTV program to only investigate these critical pipes. This approach is very commonly used when funding is limited.

The approach for condition assessment of point assets is different except for bridge and culvert structures which are mandated to be inspected every 2 years. Components of buildings such as roof, HVAC system, and electrical components usually all have different service lives. It is recommended to have one complete inspection of all facilities and to replace or monitor the components that have been identified as requiring attention now or in the future. This overall detailed inspection could be carried out every 7 to 10 years but asset management tools should be used to frequently visit and monitor assets that are approaching the end of their service lives.

### *6.2.3. Maintenance Activities*

It should be understood that most infrastructure assets will usually reach their expected service lives if routine maintenance is carried out on those assets while in service. As specified in the literature, and noted in Section 5.2, 2% to 4% of the value of an asset should be spent on a yearly basis to ensure it reaches the end of its service life. Most municipalities will spent less than 2% a year of the value of the asset in maintenance. Maintenance activities such as crack sealing or slurry sealing a roadway or flushing and cleaning a sewer pipe should be carried out on a regular basis depending on the condition and age of the assets. There are many very good Computerized Maintenance Management System (CMMS) in the market that are very helpful and efficient in ensuring sustainability of infrastructure assets. Some types of CMMS could be very beneficial to the Municipality.

### *6.2.4. Integrated Rehabilitation*

In order to make cost-effective decisions with regard to rehabilitation of infrastructure assets, it is recommended (as suggested in the Asset Management Best Practice published by the Infraguide), that an integrated approach be used to acknowledge the close proximity and high level of interaction between the infrastructure networks. Knowledge of the integrated condition of these networks provides a clear advantage to municipal administrators by giving a global view of the infrastructure networks.

The spatial proximity consideration of that approach allows for a more accurate set of interventions by using the concept of "windows of opportunity". This enables analysis of assets, not only based on actual condition, but also on a predictive condition in time. This is made possible by defining windows of opportunity along the deterioration curves, as shown on ***Figure 13***.

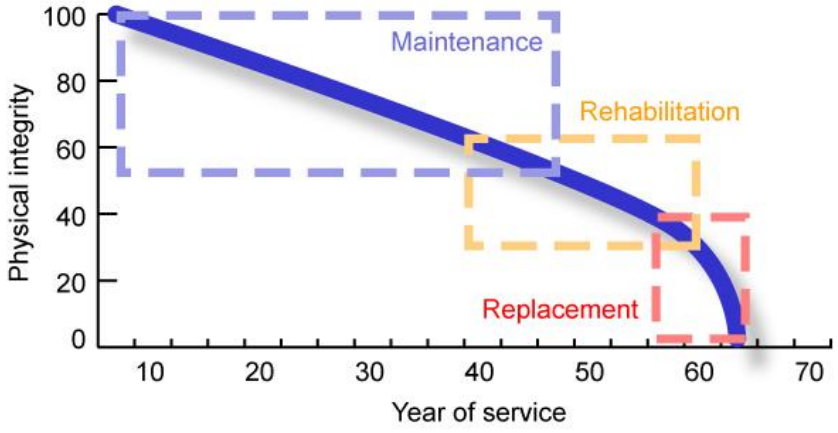


**Figure 13: Windows of Opportunity**

This approach relates to economics and cost-effectiveness. Priority is assigned by reviewing all locations in the network identified for repair and assigning a higher priority to locations where more than one component of the asset network requires rehabilitation. This approach provides for a reduction in replacement costs per meter of a pipe by carrying out the repair of more than one pipe within the same excavation. The "window" concept allows delaying a rehabilitation activity as long as it stays within that window, to combine it with another piece of infrastructure in the vicinity of the pipe.

## 6.3. AMP Update and Evaluation

The present AMP has been designed for a time span of 10 years. However, as previously mentioned it should be treated as a living document, which is regularly updated to reflect changes in infrastructure condition. It is, therefore, recommended that the AMP be updated every year. This will include incorporating rehabilitations and their associated condition changes, adding newly constructed infrastructure, removing decommissioned infrastructure from the analysis, and updating unit prices for rehabilitation or reconstruction.

The AMP should also be continuously evaluated and improved through clearly defined actions. It is recommended that the Municipality generate short-term action plan every 2 to 3 years including a timetable for implementation. These actions should include measures to insure data quality, and improve the AMP process.

## 6.4. Criticality of Infrastructure and Risk

The criticality of infrastructure and consequences of failure of that infrastructure were not really addressed in this project. However some general guidelines could be provided to assess criticality and identify high level consequences of failure. The results of this high level assessment should be used to assigned priorities to infrastructure repair and minimize disruption to the general public. Some criteria that should be looked at when assigning priorities could be:

1. Road classification – Rural and urban roadways carry differing traffic loads, and defects on higher load roads should be addressed first.
2. Pipe sizes: Large pipes service more people that local small pipes therefore should be prioritized for repair or replacement when identified as network need.
3. Bridge access to a community: In some cases, a municipality may only have one or two access points that are serviced by a bridge structure. These should be fixed first when defect are identified.

These are examples of common sense factors that should be used to define criticality and assign a risk factor. But if a community decides to conduct a detailed study to identify Critical Assets and Risk associated with them, they should think of using the following framework that was developed by individuals from Australia and New Zealand:

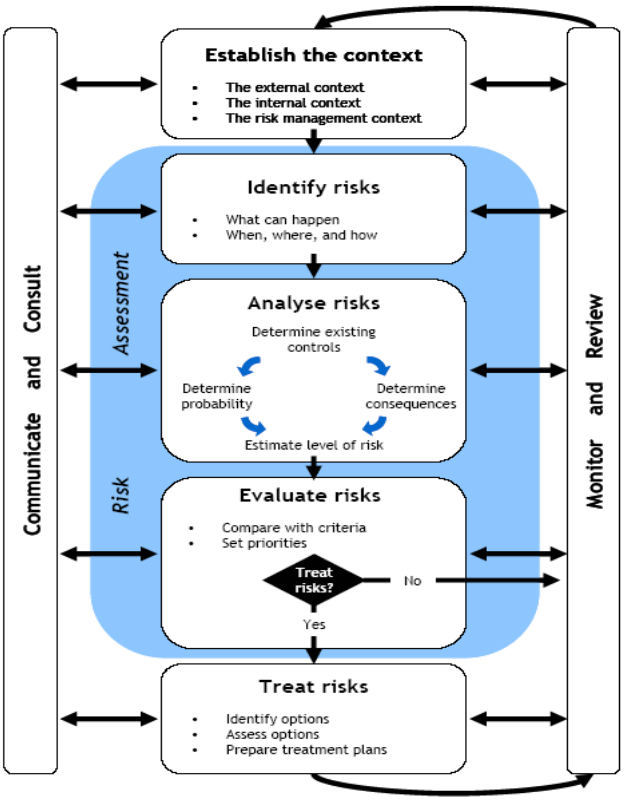


**Figure 14: Framework for Identification of Critical Assets**

**Source:** Australian and New Zealand AS/NZS 4360 (1999) '*Risk Management'* and Emergency Management Ontario (2004) '*Emergency Management Doctrine for Ontario*.'

By following this approach, the municipality would have a much better understanding of its infrastructure assets and be in much better position to prioritize repair or replacement of critical assets.

## 7.0 FINANCING STRATEGY

Financing infrastructure needs has become a very serious issue. We need to identify better practices and innovations in infrastructure financing if municipalities and other levels of government want to continue to provide an adequate level of service to tax payers in an affordable manner. It seems to make sense that municipal infrastructure should be financed, as far as possible, by the residents who benefit from it but, how do you determine who should pay for the rehabilitation of an arterial or collector road going from point A to point B in large cities throughout Canada. In addition, for the past many years, municipal accounting practices have failed to include replacement costs for depreciating assets, thereby assuring a fiscal shock when replacement time arrives. The Public Sector Accounting Board (PSAB) has changed that practice, which has made municipalities realize the extent and magnitude of the infrastructure deficit. Asset managers need to come up with innovative solutions to address that infrastructure deficit. Asset management systems are part of the solutions but innovative financing and finding alternate revenue sources are an even bigger part of the solution.

Most municipalities are familiar with a variety internal and some external revenue sources. The following describes a few of those revenue sources currently used by municipalities:

- **Internal Revenue Sources**
    - ***General Operating Revenues***. Rural municipalities, towns and smaller cities tend to rely more on local taxes, user fees and grants than on borrowing, partly because borrowers view them as higher risk than larger cities, thus raising their borrowing costs.
    - ***Earmarked User Fees***. An earmarked user fee is dedicated to a specific project; for example, water and sewer charges for water infrastructure, disposal fees for solid waste facilities, and admission charges for recreational complexes.
    - ***Reserves***. Financing capital projects through funds set aside for capital spending is the reverse of financing through borrowing. A "capital levy" (usually a few percentage points of the local property tax) is set aside and accumulates in interest earning accounts segregated from general revenues.
    - ***Special Assessments and Local Improvement Charges***. A special assessment is a specific charge added to the existing property tax to pay for improved capital facilities that border them. The charge is based on a specific capital expenditure in a particular year, but may be spread over a number of years.
    - ***Development Charges***. Most large municipalities and many smaller ones impose a specific dollar value per lot on developers to finance the off-site capital costs of new development. Developers are generally responsible for on-site services, such as local roads, sidewalks, and street lighting. Historically, development charges have financed "hard" services, such as water supply, sewage treatment, trunk mains and roads.

- **External Revenue Sources**
    - ***Grants***. Although municipal reliance on provincial and federal government grants for infrastructure has declined over the past 15 years in most provinces, capital assistance is available for water, sewer, and transportation projects with all three levels of government participating (Kitchen and Slack 2003). The most recent and widely discussed grant is from the five-cent-per-litre federal gas tax transfer. Conditional transfers require municipalities to spend according to the guidelines of senior governments and often require matching funds on the part of the recipient municipality.
    - ***Borrowing****:* Municipalities engage in both short-term and long-term borrowing. Short-term borrowing may be used to finance capital expenditures or to finance an unexpected deficit in the operating budget — municipalities in Canada do not have the authority under provincial legislation to budget for an operating deficit. Long-term borrowing is restricted to financing capital expenditures. For infrastructure whose benefits accrue to future residents, fairness, efficiency and accountability is enhanced if these projects are financed by borrowing with repayment coming from property tax revenues and user fees paid by future beneficiaries.
- **New Financing Instruments**
    - ***A Dedicated Municipal Fuel Tax***: Many American cities levy fuel taxes, but municipalities in Canada do not. In a few Canadian cities and city-regions (Victoria, Vancouver, Edmonton, Calgary, and Montreal), provincial fuel tax revenues are shared between the province and the city or city-region. The federal government's recent initiative to provide grants to municipalities from federal gas tax revenue is a form of revenue sharing and not a municipal fuel tax because the municipalities do not set fuel tax rates and have no say over the tax base.
    - ***Public-Private Partnerships (P3)****:* A P3 involves the direct participation of the private sector in a venture controlled by the public sector. The public sector's role is to facilitate, regulate, and guarantee provision of an asset and the private sector's role is to design, finance, build and operate the asset in a formalized partnership agreement.

There are also a few new financing instruments that have been made available to municipalities. The federal government's initiative to provide grants to municipalities from federal gas tax revenue is one example of new financing instrument. The Public-Private Partnership (P3) is also a new financing instrument that may be considered by municipalities. It involves the direct participation of the private sector in a venture controlled by the public sector. The public sector's role is to facilitate, regulate, and guarantee provision of an asset and the private sector's role is to design, finance, build and operate the asset in a formalized partnership agreement.

## 7.1. Dutton-Dunwich Financing Strategy

In **Section 6.0** of this report we have worked with municipal staff to develop an Asset Management (AM) Strategy, including funding requirements that would ensure sustainability of the assets to continue to provide an adequate level of service to the residents of Dutton-Dunwich. The strategy developed is realistic and affordable. The Municipality has identified revenue sources that will support the Asset Management Plan (AMP) developed through this report. The funding sources include:

- Reserves
- Federal Gas Tax
- Assessment Growth
- New Tax Base
- Debt Financing
- Water and Sewer User Fees

***General Expenditure on the Road Network***

The Municipality currently receives approximately $113,000 annually from the gas tax which has been allocated to capital road upgrade projects. The remainder of the projects is funded through debt financing, and grant requests where necessary.

***Sewer and Water Networks***

The Municipality has previously, and continues to fund renewal projects through use of money accumulated in a reserve fund. This money is generated from year end operating surpluses. The current water reserve is $173,000 and sewer reserve is $4,000. To fund the immediate requirements of the Wallacetown facility upgrades, a grant will be sought and additional debt may be incurred.

Prior Municipal budgets indicate that across linear networks, nearly $300,000 was allotted in 2012, and just over $150,000 in 2013. To address these financial requirements, the Municipality sought grants and subsidies in addition to incoming funds.

Needs were identified across municipal infrastructure networks to determine the budgeting allocation required within a 10 year timeframe. The anticipated expenditures required are outlined in in **Table 4**.

**Table 4 – 10-Year Capital Budget Requirements**

| Year | Paved Roads | Bridges and Culverts | Sidewalks | Water | Buildings | Pumping Stations | Total |
|---|---|---|---|---|---|---|---|
| 2014 | $175,205 | $80,000 | $30,000 | $340,155 | $0 | $0 | $625,360 |
| 2015 | $309,330 | $353,252 | $0 | $0 | $240,000 | $0 | $902,582 |
| 2016 | $285,138 | $0 | $0 | $0 | $0 | $0 | $285,138 |
| 2017 | $284,500 | $0 | $0 | $0 | $0 | $0 | $284,500 |
| 2018 | $299,825 | $0 | $0 | $0 | $0 | $0 | $299,825 |
| 2019 | $295,905 | $0 | $0 | $92,771 | $579,637 | $0 | $968,313 |
| 2020 | $299,313 | $61,016 | $0 | $0 | $0 | $0 | $360,329 |
| 2021 | $296,913 | $0 | $0 | $0 | $0 | $0 | $296,913 |
| 2022 | $299,545 | $0 | $148,782 | $0 | $0 | $0 | $448,327 |
| 2023 | $298,818 | $0 | $0 | $0 | $0 | $0 | $298,818 |

To develop a financing strategy to be implemented by the Municipality, the total of the expenditure requirements were summed annually. The Municipality provided details regarding their current and projected financial status, including anticipated reserve fund values, grants, subsidies, and municipal tax values. The available funding was compared with the required expenditures to determine where the municipality incurs a shortfall, and must address it through seeking additional funding (grants, subsidies), utilizing reserves, debt, or other methods to address infrastructure needs. It is noted that within the analyzed timeframe the Municipality is generally, through its funding sources, able to address the expenditures required to maintain their assets. Details regarding the financial strategy can be found in **Appendix B**.

## 8.0 REFERENCES

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# APPENDIX A

Infrastructure Needs for Linear and Point Assets

| Intervention Year | ID | Street | From Street | To Street | Estimated Cost |
|---|---|---|---|---|---|
| 2014 | TC27 | THOMSON | COYNE | CURRIE | $128,800 |
| 2014 | GR77 | DUNBOROUGH | MARSH | PIONEER | $49,175 |
| 2014 | AR147 | MARSH | CURRIE | WESLEY | $28,055 |
| 2014 | AR31 | JORDAN | CURRIE | NANCY | $19,500 |
| 2014 | AR32 | JORDAN | NANCY | MARGARET | $17,875 |
| 2014 | TC28 | PRINCE | BACK | END | $11,475 |
| 2014 | TC13 | LUNN | POPLAR | END | $6,000 |
| 2014 | TC33 | ROSE | GORDON | END | $5,670 |
| 2014 | TC15 | POPLAR | LUNN | END | $4,200 |
| 2014 | TC14 | POPLAR | TALBOT | LUNN | $4,050 |
| 2014 | TC29 | CRANE | PRINCE | IONA | $3,600 |
| 2014 | TC32 | GUNN | CHURCH | TALBOT | $3,600 |
| 2014 | TC16 | CARLETON | IONA | END | $3,300 |
| 2014 | TC1 | KING | CURRIE | END | $3,255 |
| 2015 | TC25 | COYNE | THOMSON | SILVERCLAY | $49,175 |
| 2015 | GR74 | DUNBOROUGH | TALBOT | SILVERCLAY | $49,175 |
| 2015 | TC26 | COYNE | SILVERCLAY | TALBOT | $49,175 |
| 2015 | TC24 | COYNE | MARSH | THOMSON | $49,175 |
| 2015 | TC23 | COYNE | PIONEER | MARSH | $49,175 |
| 2015 | GR76 | DUNBOROUGH | THOMSON | MARSH | $49,175 |
| 2015 | TC31 | MC BETH | CURRIE | END | $4,950 |
| 2016 | GR75 | DUNBOROUGH | SILVERCLAY | THOMSON | $49,175 |
| 2016 | AR14 | MCINTYRE | MARY | END | $39,000 |
| 2016 | AR160 | LILA | RIDGE | NORTH | $35,000 |
| 2016 | AR7 | NANCY | MARY | RIDGE | $29,413 |
| 2016 | AR2 | RIDGE | MCARTHUR | EAST | $24,500 |
| 2016 | AR19 | CHESTNUT | END | JOHN | $24,375 |
| 2016 | AR8 | NANCY | RIDGE | JORDAN | $22,913 |
| 2016 | AR4 | SHACKLETON | CHARLES | LEITCH | $20,313 |
| 2016 | TC5 | GORDON | ROSE | TALBOT | $18,425 |
| 2016 | AR38 | GORDON | ROSE | TALBOT | $18,425 |
| 2016 | TC3 | CHURCH | CURRIE | END | $3,300 |
| 2016 | TC2 | ST ANDREW | CURRIE | END | $300 |
| 2017 | TC17 | BACK ST | IONA | TALBOT | $112,500 |
| 2017 | AR51 | BACK ST | IONA | TALBOT | $112,500 |
| 2017 | AR163 | NANCY | ANNABELLA | N | $59,500 |
| 2018 | AR23 | MARY | MARGARET | MCARTHUR | $37,975 |
| 2018 | AR20 | QUEEN | END | CURRIE | $35,000 |
| 2018 | AR18 | CENTRE | QUEEN | SHACKLETON | $31,500 |
| 2018 | AR167 | CHARLES | MARY | SHACKLETON | $31,000 |
| 2018 | AR11 | MCARTHUR | SHACKLETON | MARY | $29,738 |
| 2018 | AR6 | NANCY | SHACKLETON | MARY | $29,413 |
| 2018 | AR12 | MARGARET | MARY | RIDGE | $29,413 |
| 2018 | AR9 | MARGARET | MARY | RIDGE | $29,413 |
| 2018 | AR165 | JOHN | CURRIE | MAIN | $27,200 |
| 2018 | AR33 | JORDAN | MARGARET | ALLAN | $19,175 |
| 2019 | TC22 | Marsh | 500m W OF CURRIE | COYNE | $107,625 |
| 2019 | TC4 | ROSE | CURRIE | GORDON | $26,775 |
| 2019 | AR16 | QUEEN | MARY | SHACKLETON | $24,955 |
| 2019 | AR5 | PETER | SHACKLETON | MARY | $24,888 |
| 2019 | AR22 | MARY | NANCY | MARGARET | $24,500 |
| 2019 | AR10 | MARGARET | RIDGE | JORDAN | $22,913 |
| 2019 | AR47 | MARY | MCINTYRE | NANCY | $21,000 |
| 2019 | AR39 | GORDON | TALBOT | ARGYLE | $16,750 |
| 2019 | TC6 | GORDON | TALBOT | ARGYLE | $16,750 |
| 2019 | AR35 | ALLEN | JORDAN | END | $9,750 |
| 2020 | AR153 | MARSH | CURRIE | 500m WEST OF C | $87,500 |
| 2020 | AR3 | SHACKLETON | CHARLES | CURRIE | $56,875 |

| Intervention Year | ID | Street | From Street | To Street | Estimated Cost |
|---|---|---|---|---|---|
| 2020 | AR149 | WESLEY | ANNIE | LUTTON | $28,438 |
| 2020 | AR148 | WESLEY | CURRIE | WESLEY | $28,438 |
| 2020 | AR1 | ANNIE | CURRIE | WESLEY | $26,813 |
| 2020 | AR43 | ARGYLE | CURRIE | GORDON | $24,750 |
| 2020 | TC10 | ARGYLE | CURRIE | GORDON | $24,750 |
| 2020 | TC8 | SIFTON | GORDON | END | $21,750 |
| 2021 | AR17 | CENTRE | MARY | QUEEN | $24,675 |
| 2021 | TC11 | ARGYLE | GORDON | PIERCE | $24,000 |
| 2021 | AR44 | ARGYLE | GORDON | PIERCE | $24,000 |
| 2021 | TC9 | SIFTON | GORDON | CURRIE | $24,000 |
| 2021 | AR42 | SIFTON | GORDON | CURRIE | $24,000 |
| 2021 | AR15 | QUEEN | KING | MARY | $22,913 |
| 2021 | AR41 | SIFTON | GORDON | END | $21,750 |
| 2021 | AR40 | GORDON | ARGYLE | SIFTON | $20,100 |
| 2021 | TC7 | GORDON | ARGYLE | SIFTON | $20,100 |
| 2021 | AR28 | RIDGE | MCINTYRE | NANCY | $19,500 |
| 2021 | AR29 | RIDGE | NANCY | MARGARET | $17,875 |
| 2021 | AR45 | PIERCE | ARGYLE | TALBOT | $16,500 |
| 2021 | TC12 | PIERCE | ARGYLE | TALBOT | $16,500 |
| 2021 | AR55 | MARY | CURRIE | MCINTYRE | $15,000 |
| 2021 | TC13 | LUNN | POPLAR | END | $6,000 |
| 2022 | TC36 | PIONEER | WILLEY | CURRIE | $128,450 |
| 2022 | AR162 | NANCY | JORDAN | ANNABELLA | $53,550 |
| 2022 | AR53 | STRATHCONA | MILLER | END | $41,125 |
| 2022 | AR150 | SCHOOL LANE | JOHN | END | $25,500 |
| 2022 | TC19 | WALLACE | CURRIE | END | $13,250 |
| 2022 | AR36 | WALLACE | CURRIE | END | $13,250 |
| 2022 | TC33 | ROSE | GORDON | END | $5,670 |
| 2022 | TC15 | POPLAR | LUNN | END | $4,200 |
| 2022 | TC14 | POPLAR | TALBOT | LUNN | $4,050 |
| 2022 | TC32 | GUNN | CHURCH | TALBOT | $3,600 |
| 2022 | TC29 | CRANE | PRINCE | IONA | $3,600 |
| 2022 | TC16 | CARLETON | IONA | END | $3,300 |
| 2023 | TC35 | PIONEER | STRIDE | WILLEY | $105,700 |
| 2023 | TC34 | PIONEER | IONA | STRIDE | $86,450 |
| 2023 | AR52 | THISTLE | STRATHCONA | BOBIER HOME | $35,000 |
| 2023 | AR161 | ANNABELLA | CURRIE | NANCY | $30,388 |
| 2023 | AR54 | LIONS | THISTLE | MILLER | $26,250 |
| 2023 | TC28 | PRINCE | BACK | END | $11,475 |
| 2023 | TC1 | KING | CURRIE | END | $3,255 |
| 2023 | TC2 | ST ANDREW | CURRIE | END | $300 |

| Intervention Year | ID | Street | Location | Type | Estimated Cost |
|---|---|---|---|---|---|
| 2019 | W1 | Currie Street | Pioneer Line - Annabella St. | Rural | $38,807 |
| 2019 | W2 | Annabella St. - Jordan St. | | Urban | $53,964 |

| Intervention Year | ID | Street | From Street | To Street | Estimated Cost |
|---|---|---|---|---|---|
| 2022 | SW1 | GORDON | TALBOT | ARGYLE | $11,401 |
| 2022 | SW10 | CURRIE | MCINTYRE | JORDAN | $11,401 |
| 2022 | SW2 | GORDON | ARGYLE | SIFTON | $13,681 |
| 2022 | SW3 | THISTLE | STRATHCONA | BOBIER HOME | $22,802 |
| 2022 | SW4 | STRATHCONA | MILLER | END | $26,792 |
| 2022 | SW5 | LIONS | THISTLE | MILLER | $17,101 |
| 2022 | SW6 | MARY | CURRIE | MCINTYRE | $5,700 |
| 2022 | SW7 | MARY | MCINTYRE | NANCY | $13,681 |
| 2022 | SW8 | MARY | CURRIE | CENTRE | $11,971 |
| 2022 | SW9 | MARY | CHARLES AND LEITCH | | $14,251 |

**Last Update to Report** **24-Dec-13**

**Table 1 - Component Inventory and Condition Report - Maintenance and Replacement Data**

| Draft Facilities Management Plan - Buildings | | | | Replacement Profile | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ID | Building Name | Location | Year of Construction or Last Replacement | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
| **B10** | Storage Buildings - Landfill Waste | Landfill Site | 1985 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B11** | Fire Hall | Fire Department | 1985 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B12** | Water Tower | McBeth St. | 1985 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B13** | Municipal Office | 199 Currie (Main) | 1988 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B14** | Water Dispenser | 29234 Pioneer. | 1990 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B15** | Sewage Treatment Plant | 301 Shackleton | 1992 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B16** | Works Garage | 136 Currie (Main) | 1994 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B17** | Con Booth Picnic Shelter Meeting Room | Centenial Park | 1994 | $125,000 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B18** | Library | 236 Shackleton St. | 1994 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B19** | Theatre | 199 Currie Rd upstairs | 2000 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B2** | South Dunwich Community Center | 29593 Talbot Line | 2009 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B2** | South Dunwich Community Center | 29593 Talbot Line | 1949 | $100,000 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B20** | Doctors Office | 156 Currie (Main) | 2000 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B21** | Works Garage Addition | 136 Currie (Main) | 2000 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B22** | Recreation Fencing | | 2004 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B23** | Flood Lighting Ball Diamonds | Centenial Park | 2004 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B24** | Play Ground Equipment | Centenial Park | 2004 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B25** | Gazebo | Centenial Park | 2004 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B26** | Playground Equipment | Centenial Park | 2005 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B27** | Pool Chemical Building | | 2005 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B28** | Gazebo | Centenial Park | 2006 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B29** | Water Pond | Centenial Park | 2006 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B3** | Change Room and Pool | | 1969 | --- | --- | --- | --- | --- | $579,637 | --- | --- | --- | --- |
| **B30** | Pool Renovations | | 2012 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B30** | Pool Renovations | | 2012 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B30** | Pool Renovations | | 2011 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B30** | Pool Renovations | | 2010 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B30** | Pool Renovations | | 2009 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B31** | Sewer Treatment Plant Upgrade | | 2012 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B31** | Sewer Treatment Plant Upgrade | | 2012 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B31** | Sewer Treatment Plant Upgrade | | 2012 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B31** | Sewer Treatment Plant Upgrade | | 2011 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B31** | Sewer Treatment Plant Upgrade | | 2010 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B31** | Sewer Treatment Plant Upgrade | | 2010 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B32** | Community Centre Addition And Renovation 2011 | | 2012 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B32** | Community Centre Addition And Renovation 2011 | | 2011 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B33** | Senior Centre 185 Currie | | 2011 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B4** | Community Center | 1 Scotland (Erie) St. | 1975 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B5** | Dentist Building | 231 Miller (Main) | 1980 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B6** | Picnic Shelter | Centenial Park | 1980 | $15,000 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B7** | Utility Shop | Shackleton | 1980 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B8** | Fairview Cemetery Building | Fairview Cemetery | 1983 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B9** | Salt Storage Building | | 1985 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B9a** | Salt Storage Building - Roof | | 2008 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B9b** | Salt Storage Building - Exterior Walls | | 2008 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **B12A** | Water Tower - Rechlorination Facility | McBeth St. | --- | $340,155 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | | **TOTAL REPLACEMENT COSTS** | **$580,155** | **$0** | **$0** | **$0** | **$0** | **$579,637** | **$0** | **$0** | **$0** | **$0** |

**Last Update to Report** **12-Dec-13**

**Table 1 - Component Inventory and Condition Report - Maintenance and Replacement Data**

| *Draft Facilities Management Plan - Pumping Stations* | | | | *Replacement Profile* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ID | Description | Year of Construction or Last Replacement | Notes | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
| **P1** | Pumping Station No. 1 - From Shackleton To Leitch | 1972 | 2.133 m Diameter x 7.16 m deep - 2 Flight pumps | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **P2** | Pumping Station No. 2 - From Mary To Currie STS | 1972 | 2.133 m Diameter x 5.79 m Deep - 2 Flight Pumps | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **P3** | Pumping Station No. 3 - From Currie To John | 1975 | 2.133 m Diameter x 5.79 m Deep - 2 FLYGHT Submersible Pumps | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **P4** | Pumping Station No. 4 - From Main To Strathcona | 2012 | PVC DR 18 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **P4** | Pumping Station No. 4 - From Main To Strathcona | 1996 | PVC DR 18 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **P5** | Pumping Station No. 5 - From Lila To Brown Drain | 2007 | 2.133 m Diameter x 7.16 m Deep - 2 Flight Pumps | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **P6** | Pumping Station No. 6 - Currie Rd North | 2008 | 2 flight pumps<br>2.133 m Diameter x 18 feet Deep | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **P6-1** | Pumping Station Currie Rd North Renovation - John Street Forcemain | 2011 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **P6-1** | Pumping Station Currie Rd North Renovation - John Street Forcemain | 2010 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **P7** | Pumping Station - Service Centre | 2010 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | | **TOTAL REPLACEMENT COSTS** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** |

**Last Update to Report** **12-Dec-13**

**Table 1 - Component Inventory and Condition Report - Maintenance and Replacement Data**

| *Draft Facilities Management Plan - Bridges and Culverts* | | | | *Replacement Profile* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ID | Structure Description | Location | Year of Construction or Last Replacement | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
| **BR1** | Celtic Line - Lot 20 | Celtic Line - Lot 20 | 1930 | $1,000 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **BR2** | Homestead Bridge | Homestead Bridge | 1980 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **BR3** | Celtic Bridge | Celtic | 2009 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C1** | Celtic Line - Lot 10 | Celtic Line - Lot 10 | 1930 | $21,000 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C10** | Aberdeen Line - Lot 20 | Aberdeen Line - Lot 20 | 1950 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C11** | Thomson Line - Conc, 5 SofA Lot 9 | Thomson Line - Conc, 5 SofA Lot 9 | 1950 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C12** | Silver Clay Line - Lot 9 | Silver Clay Line - Lot 9 | 1950 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C13** | Lakeview Line - Lot 9 | Lakeview Line - Lot 9 | 1950 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C14** | Lakeview Line - Lot 12 | Lakeview Line - Lot 12 | 1950 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C15** | Celtic Line - Lot 8 | Celtic Line - Lot 8 | 1960 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C16** | Largie Road - Lot 11 | Largie Road - Lot 11 | 1960 | $63,900 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C17** | Erin Line | Erin Line | 1960 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C18** | Chalmers Line - Lot 24 | Chalmers Line - Lot 24 | 1965 | $34,650 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C19** | Thamesview Line - Conc. A BF Lot 10 | Thamesview Line - Conc. A BF Lot 10 | 1970 | $79,050 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C2** | Chalmers Line - Lot 22 | Chalmers Line - Lot 22 | 1930 | $14,700 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C20** | Cowal Road - Lot 23 & 24 | Cowal Road - Lot 23 & 24 | 1970 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C21** | Chalmers Line - Lot 17 | Chalmers Line - Lot 17 | 1970 | $41,850 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C22** | Ash Line - Lot 10 | Ash Line - Lot 10 | 1975 | $66,500 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C23** | Dunborough Road - Lot 1 | Dunborough Road - Lot 1 | 1995 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C24** | Celtic Line - Lot 1 | Celtic Line - Lot 1 | 2000 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C25** | Coyne Road - Lot 6 & 7 | Coyne Road - Lot 6 & 7 | 2000 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C26** | Marsh Line - Lot 9 & 10 | Marsh Line - Lot 9 & 10 | 2004 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C27** | Chalmers Line Culvert | Chalmers Line | 2010 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C28** | Celtic Culvert Lot 20 | Celtic | 2012 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C3** | Largie Road - Lot 10 | Largie Road - Lot 10 | 1930 | $16,800 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C4** | Silver Clay Line - Lot 1 | Silver Clay Line - Lot 1 | 1935 | --- | $13,802 | --- | --- | --- | --- | --- | --- | --- | --- |
| **C5** | Edinborough Line - Lot 16 | Edinborough Line - Lot 16 | 1940 | --- | --- | --- | --- | --- | --- | $15,254 | --- | --- | --- |
| **C6** | Thomson Line - Lot 2 | Thomson Line - Lot 2 | 1940 | --- | --- | --- | --- | --- | --- | $15,254 | --- | --- | --- |
| **C7** | Ash Line - Lot 4 | Ash Line - Lot 4 | 1940 | --- | --- | --- | --- | --- | --- | $13,075 | --- | --- | --- |
| **C8** | Ash Line - Lot 5 | Ash Line - Lot 5 | 1940 | --- | --- | --- | --- | --- | --- | $17,433 | --- | --- | --- |
| **C9** | Aberdeen Line - Lot 21 | Aberdeen Line - Lot 21 | 1950 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **D1** | A.A. PATTON MUNICIPAL DRAIN | | 2006 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | **TOTAL REPLACEMENT COSTS** | | **$339,450** | **$13,802** | **$0** | **$0** | **$0** | **$0** | **$61,016** | **$0** | **$0** | **$0** |

# APPENDIX B

Financing Strategy

# Municipality of Dutton Dunwich
# 2014 Asset Management Plan
## Financing Strategy

| Description | Actual 2012 | Actual 2013 | Budget 2014 | Forecast 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Draft Facilities Management Plan - Replacement Profile - Public Works Expenditures*** | | | | | | | | | | | | | |
| PRIOR CAPITAL EXPENSES | | | | | | | | | | | | | |
| Roads | $ 221,478 | $ 126,959 | $ 360,000 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Bridges and culverts | $ 67,800 | $ 27,539 | $ 80,000 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sidewalks | $ - | | $ 30,000 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Water Network - Water Tower | | | $ 340,155 | | | | | | | | | | |
| Subtotal | $ 289,278 | $ 154,498 | $ 810,155 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| CAPITAL REPLACEMENT FORECAST | | | | | | | | | | | | | |
| **Roads - Paved** | | | | | | | | | | | | | |
| **Subtotal - Paved Roads** | $0 | $0 | $0 | **$175,205** | **$309,330** | **$285,138** | **$284,500** | **$299,825** | **$295,905** | **$299,313** | **$296,913** | **$299,545** | **$298,818** |
| **Bridges and Culverts** | | | | | | | | | | | | | |
| **Subtotal - Bridges and Culverts** | $0 | $0 | $0 | **$80,000** | **$353,252** | **$0** | **$0** | **$0** | **$0** | **$61,016** | **$0** | **$0** | **$0** |
| **Sidewalks** | | | | | | | | | | | | | |
| **Subtotal - Sidewalks** | $0 | $0 | $0 | **$30,000** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$148,782** | **$0** |
| **Section Total - Capital Replacement Forecast** | **$0** | **$0** | **$0** | **$285,205** | **$662,582** | **$285,138** | **$284,500** | **$299,825** | **$295,905** | **$360,329** | **$296,913** | **$448,327** | **$298,818** |
| CAPITAL EXPANSION FORECAST | | | | | | | | | | | | | |
| Nature's Landing Subdivision | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Section Total - Capital Expansion Forecast** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** |
| ADDITIONAL INFRASTRUCTURE | | | | | | | | | | | | | |
| **Subtotal - Water Network** | **---** | **---** | **---** | **$340,155** | **$0** | **$0** | **$0** | **$0** | **$92,771** | **$0** | **$0** | **$0** | **$0** |
| **Subtotal - Buildings** | **---** | **---** | **---** | **$0** | **$240,000** | **$0** | **$0** | **$0** | **$579,637** | **$0** | **$0** | **$0** | **$0** |
| **Subtotal - Pumping Stations** | **---** | **---** | **---** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** |
| **Section Total - Additional Infrastructure** | **$0** | **$0** | **$0** | **$340,155** | **$240,000** | **$0** | **$0** | **$0** | **$672,408** | **$0** | **$0** | **$0** | **$0** |
| **TOTAL REPLACEMENT COST** | **$289,278** | **$154,498** | **$810,155** | **$625,360** | **$902,582** | **$285,138** | **$284,500** | **$299,825** | **$968,313** | **$360,329** | **$296,913** | **$448,327** | **$298,818** |
| CAPITAL FINANCING | | | | | | | | | | | | | |
| Provincial MIII Grant | | | $306,140 | $306,140 | | | | | | | | | |
| Grants and Subsidies - Gas Tax | $221,479 | $83,778 | $192,231 | $192,231 | $113,000 | $113,000 | $113,000 | $113,000 | $113,000 | $113,000 | $113,000 | $113,000 | $113,000 |
| Grants and Subsidies - Rural and Northern Fund | | | $21,600 | $21,600 | | | | | | | | | |
| Capital Paid from Property Taxes | | | | | | | | | | | | | |
| Reserve Fund - Roads | | | | | | | | | | | | | |
| Debentures | $67,799 | $70,720 | $256,169 | $71,374 | $412,722 | $143,075 | $141,420 | $155,692 | $730,320 | $213,978 | $149,395 | $299,602 | $148,842 |
| User Fees - Water | | | $34,015 | $34,015 | | | | | $92,771 | | | | |
| Other - Developer Contribution | | | | | | | | | | | | | |
| Other - Transfer from Operating | | | | | | | | | | | | | |
| Annual Budget 1% from Property Taxes | | | | | $28,080 | $29,063 | $30,080 | $31,133 | $32,222 | $33,350 | $34,517 | $35,726 | $36,976 |
| Total Capital Financing | $289,278 | $154,498 | $810,155 | $625,360 | $553,802 | $285,138 | $284,500 | $299,825 | $968,313 | $360,328 | $296,912 | $448,328 | $298,818 |
| **Total Capital Expenses less Capital Financing** | **$0** | **$0** | **$0** | **$0** | **$348,780** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** |