Stormwater Asset Management Plan

Background

The City of Greater Sudbury (City) is committed to providing quality stormwater services to our community by improving water quality and reducing the risk of flooding while addressing the challenges of climate change, available budgets and resources. The City's diverse and large portfolio of stormwater assets provide the service within this category of infrastructure, and are summarized as follows;

- Open Ditches;
- Municipal Drains;
- Stormwater Pipes and Culverts;
- Maintenance Holes;
- Catch Basins;
- Inlet / Outlet Structures; and
- Stormwater Treatment Facilities (Ponds and Oil / Grit Separators).

When originally constructed these assets have an estimated useful lifecycle which is dependent on performing regular maintenance and working within expected service parameters. Meeting an established service level requires the facility to be operated in accordance with a plan, and to ensure that sufficient resources are available for that plan. There is always a risk that service levels will not be met, or that resources required for sustaining service levels are different than what was planned.

Asset Management Planning is the process used to manage the risk that service levels and resource requirements fall outside expected levels. There is a balance that needs to be established between the community's desired level of service and its funding commitments for stormwater management, and this balance reflects Council's choice about how it wants to manage the risk that service levels or costs do not reflect expected levels. Asset Management Plans help define acceptable conditions for that asset to meet the performance targets and, when followed, reduce risk.

The City initiated a Stormwater Asset Management Plan (SAMP) through the Clean Water and Wastewater Fund with Federal, Provincial and Municipal assistance. A primary objective of asset management is to deliver the agreed upon level of service for the lowest total lifecycle cost, with risk exposure being reduced in the most cost effective manner possible.

The SAMP process involved detailed analysis and complex tasks to create a plan for the City of Greater Sudbury to provide effective stormwater management. This involved;

- Review and update of the City's stormwater asset inventory;
- Lifecycle analysis and replacement cost assessment;
- Evaluation of criticality of system assets;
- Defining existing levels of service, and comparison against industry best practice;
- Preparing a Capital Improvement Plan;
- Reviewing existing Operations and Maintenance Plans; and,
- Determining funding requirements and strategies for required funding.

Additional information and considerations are necessary to finalize the SAMP. Generally, it will be necessary to establish the communities desired level of service by resolution of Council. Staff will assist in this process by presenting a recommended service level, accompanied with the financial implications. To assist with the deliberations, staff will provide information on best practices from across Canada. Asset management is an iterative process where desired service levels are weighed against cost. As the process progresses Council will be presented options for approval of the preferred level of service for the City.

Interim Findings

Considerable time has been spent at the onset of this study to update the City's Asset inventory, and to ensure that it is captured within the GIS data base system. Using the updated asset inventory a replacement cost was determined to be $530 million. It must be noted that the City's network of roadside ditches are not included in the above total value as it was determined that a ditch would not require replacement, only maintenance. The roadside ditch assets were valued at $95 million.

The lifecycle analysis was used to determine when reinvestment should occur for our stormwater assets. Based on the age of the asset, industry expected service life, City's experiences and benchmarked best practice, reinvestment profiles were derived. These profiles demonstrated that the City's stormwater assets are approaching midlife as much urbanization, including the installation of stormsewers, took place in the 1960's and 1970's.

A risk assessment of stormwater assets was completed to assist in making evaluations of the highest priority assets by estimating the likelihood of failure (age, material, etc.) and the consequence of failure (environmental, size, location, etc.). The results indicate that certain materials used in our systems offer the most risk and an enhanced condition assessment program should be undertaken of those assets.

The analysis to date provides the City with a broad understanding of risks. These risks may include the potential for a rain event to exceed the capacity of a given storm system. Additionally, the analysis provides a better understanding of circumstances that may result in the quality of storm water passing through a treatment system and potentially exceeding the quality parameters expected of that system. As such the interim SAMP defines Target Levels of Service for the City's assets based on benchmarked best practices from across Canada. The Target Levels of Service are divided into five goals;

- Protect the Environment;
- Ensure Adequate and Sustainable Funding;
- Adequate Capacity to Protect Life and Property;
- Provide a Safe and Productive Workplace; and,
- Have Satisfied and Informed Customers.

Each of these goals is further divided into sub-goals and performance measures. The Target Level of Service framework serves as the basis for all subsequent tasks in the SAMP by providing a defensible basis for capital planning, optimized operations and maintenance, risk management, and total funding requirements.

A Capital Improvement Plan was developed based on the life cycle analysis, risk assessment and target levels of service for the stormwater assets. Benchmarked best practices recommend the investment of approximately $5.8 million/year. The City currently invests approximately $3 million/year into stormwater assets, mainly through the large culvert replacement program and stormsewer replacement on road reconstruction projects.

Proper maintenance of the stormwater system is necessary to ensure the full life cycle of the assets is achieved and ultimately provide cost effective services. To that end an Operations and Maintenance Plan was developed to meet the Target Levels of Service. This plan would provide the investment of approximately $7.9 million/year into maintenance activities such as street sweeping, catch basin cleaning, inspections, sampling and reporting. The City currently spends approximately $5 million/year on these activities. The Operations and Maintenance Plan incorporates the addition of activities the City has not budgeted for in the past and many of these activates are directly related to maintaining compliance with our regulators.

The City currently budgets $8 million/year toward stormwater asset management and following benchmarked best practices from across Canada the Stormwater Asset Management Plan recommends continued annual investment of $13.7 million. It is important to note that these investments are for our existing assets only; the subwatershed studies currently in progress, to protect people, property and the environment, will also require substantial funding.

Next Steps

A draft Stormwater Asset Management Plan will be completed detailing target levels of service based on benchmarked best practice from across Canada and specific City requirements. A sustainable stormwater funding study will be undertaken that will consider the draft plan and the needs of the Subwatershed Studies to determine a sustainable funding strategy. This will be brought to Council for decision to confirm levels of service that best serve the City, with risk exposure being reduced in the most cost effective manner possible.