Stormwater Asset Management Plan Update

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Report Summary

This report and presentation provides information regarding the findings of the Stormwater Asset Management Plan.

Relationship to the Strategic Plan, Health Impact Assessment and Community Energy & Emissions Plan (CEEP)

Relationship to the Strategic Plan

The Stormwater Asset Management Plan directly supports all Sections of Asset Management and Service Excellence of the City of Greater Sudbury Strategic Plan.

Relationship to the CEEP

Management of Stormwater relies on gravity systems, no energy is used to convey or manage stormwater.

Financial Implications

There are no direct financial implications from this report. The Stormwater Asset Management Plan provides information that may influence the scope and extent of future infrastructure investments and annual operating costs, and will be subject to Council's review and approval via annual budgets.

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 in Table 1.

Table 1: City of Greater Sudbury Asset Inventory Summary

Stormwater Assets	Quantity	Unit
Stormwater Pipes	537	km
Ditches	1536	km
Municipal Drains	188	km
Maintenance Holes	8,600	EA
Catch Basins	8,744	EA
Discharges / Outlets	2,751	EA
Inlets	3,372	EA
Stormwater Management Ponds	15	EA
Oil Grit Separators (OGS)	24	EA

It is currently estimated that the replacement value of these assets is approximately $520M with over 80% of that value being the pipe, maintenance holes and catch basins. Through community development there are many privately owned and operated stormwater management systems to protect the City stormwater system and the environment from increased flows and water quality. Through work to improve stormwater conveyance and improve the management of stormwater effects on flooding and the environment, new assets are added to this system annually through the capital program and development.

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 from 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. The 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.

Findings

Considerable effort was expended updating the City's Asset inventory to ensure that it is captured within the GIS data base system. Using the updated asset inventory a replacement cost was determined to be $520 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 the systems offer the most risk and an enhanced condition assessment program should be undertaken of those assets.

The analysis 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 SAMP defines Target Levels of Service for the City's assets based on benchmarked best practices from across Canada and local experiences. 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 $4 million/year. The City currently invests approximately $2.5 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 $8.85 million/year into maintenance activities such as street sweeping, catch basin cleaning, inspections, sampling and reporting. The City currently spends approximately $6.8 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 regulators.

In addition to the proposed financial requirements of the Stormwater Asset Management Plan the various Subwatershed Studies and Stormwater Master Plans, recommend several major improvement projects to improve flood resiliency, improve the quality of water reaching the environment or both. They also recommend further studies, communication and potential subsidy programs for private side improvements.

These projects can come with significant costs to construct and some recent grants have been secured to assist with them (Disaster Mitigation and Adaptation Fund). The recommended projects from these Studies are in excess of $100M but are only to be constructed as funding and opportunities exist, none of them are mandatory.

These projects are primarily intended to improve existing conditions with City infrastructure not future development. Future develop is intended to manage their stormwater impacts within their development through the best guidance of the respective Subwatershed Study the development is within. However, opportunities to best serve stormwater management needs through partnership with the development community are encouraged. The City has been investing in stormwater system improvements for a number of years to address flooding issues and improving the quality of stormwater reaching the environment. This has historically been approximately $5 million/year and is proposed to increase to $6.5 million/year.

Additionally the funding the City provides to Conservation Sudbury to deliver operations and management of their stormwater assets that benefit the community and projected increase have been considered in the overall stormwater funding gap.

The City currently budgets $14.7 million/year toward stormwater asset management, and stormwater system improvements. Following benchmarked best practices from across Canada and recommendations of the Subwatershed Studies and Stormwater Master Plans an annual investment of $19.9 million is recommended. This is depicted below in Table 2.

Table 2: City of Greater Sudbury Funding Levels of Service

Level of Service	O&M	Asset Renewal	System Improvements	Conservation Sudbury	Total
Current Program	$6.8M	$2.5M	$5M	$355K	$14.7M
Proposed Program	$8.85M	$4M	$6.5M	$509K	$19.9M

Next Steps

The Stormwater Asset Management Plan details target levels of service based on benchmarked best practice from across Canada and specific City requirements. A sustainable stormwater funding study is underway that will consider the Stormwater Asset Management 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.