

**TO:** GENERAL COMMITTEE

**SUBJECT:** 2023 MUNICIPAL STORMWATER MANAGEMENT SYSTEM REPORT

**WARD:** ALL

**PREPARED BY AND KEY CONTACT:** C. MORTON, C.E.T., PMP SR. MANAGER OPERATIONS, ROADS AND FLEET, EXTENSION 4910

**SUBMITTED BY:** D. FRIARY, DIRECTOR OF OPERATIONS

**GENERAL MANAGER APPROVAL:** B. ARANIYASUNDARAN, P. ENG., PMP, GENERAL MANAGER OF INFRASTRUCTURE AND GROWTH MANAGEMENT

**CHIEF ADMINISTRATIVE OFFICER APPROVAL:** M. PROWSE, CHIEF ADMINISTRATIVE OFFICER

### **RECOMMENDED MOTION**

1. The Staff Report OPR001-24, regarding the City of Barrie's Municipal Stormwater Management System be received for information purposes, including:
  - a) City of Barrie Municipal Stormwater Management System Annual Operating Report 2023 (Annual Report).

### **PURPOSE & BACKGROUND**

2. The purpose of this Staff Report is to:
  - a) Summarize the Municipal Stormwater Management System (MSWMS) operating year of January 1 through December 31, 2023; to provide information to City Council on the performance of the System; and to satisfy the regulatory requirement of the Environmental Compliance Approval (ECA) No. 014-S701, Schedule E, Section 5 issued for the Corporation of the City of Barrie (the City of Barrie) MSWMS, on January 10, 2023. This report is a compilation of information that demonstrates the City of Barrie's commitment to provide acceptable levels of service, while remaining transparent, financially accountable, and focused on continuous improvement;
  - b) Provide a summary to Council which includes updates, changes, and information related to the requirements of the ECA and the Operations Quality Management System (OpsQMS); and
  - c) Solicit from Council an acknowledgement of their receipt of the Annual Report.
3. The reporting requirements related to the ECA include:
  - a) The Annual Report is prepared no later than April 30<sup>th</sup> of each year. Note that the City of Barrie was granted an extension to June 14<sup>th</sup> for the 2023 reporting year. The report provides a summary of: monitoring data, and calibration and maintenance of monitoring equipment; operating problems encountered, and corrective actions taken; inspection, maintenance, and repairs of major assets; complaints and actions taken to address the complaints; alterations to the MSWMS; spills and abnormal discharge events; actions

taken to improve or correct performance of the MSWMS; status of action items for the previous reporting year; and the Annual Report is published to the Owner's website for public access.

## **ANALYSIS**

4. The City of Barrie developed the OpsQMS, a quality management system (QMS), to meet ECA requirements for the MSWMS, based on the CSA W211 Management Standard for Stormwater Systems. OpsQMS documents policies and procedures for effective MSWMS management, enhances public safety by addressing risks, and aims for environmental improvements. The City of Barrie commits to responsible stormwater management through OpsQMS, including compliance with laws, system maintenance, impact minimization, and public consultation. These commitments align with City Council's priorities, promoting responsible governance and infrastructure investments. OpsQMS ensures legal compliance, enhances infrastructure reliability, minimizes environmental impacts, and fosters public engagement, supporting strategic goals.
5. In 2023, the MSWMS consisted of 442 km of storm sewer mains, 131 km of ditches, and 106 km of watercourses, 82 Stormwater Management Facilities (SWMF), 72 Manufactured Treatment Devices (MTD), and 8 Low Impact Development (LID) sites. Levels of treatments within these facilities range from only quantity control to enhanced 80% Total Suspended Solids (TSS) removal. The MSWMS serves a population of 159,521 across a drainage area of 10,100 hectares, with growth focused on annexation lands in the Lake Simcoe and Nottawasaga Valley watersheds.
6. The 2021 Stormwater Asset Management (AM) Plan highlights that the City of Barrie has over \$1.2 billion dollars in stormwater assets which is projected to grow. Operations and maintenance needs associated with a growing asset portfolio will increase operating expenditures. It was noted that the City of Barrie has fallen behind in its investments in stormwater assets, an unsustainable practice that increases the risk of flooding events, infrastructure failures and loss of service.
7. In 2023, the operating expenses for the MSWMS was budgeted at \$2.61M dollars, of which \$2.47M was spent, representing approximately 95% of the projected operating budget was expended.
8. The City of Barrie emphasizes responsible asset stewardship to ensure assets are well-maintained, meeting or surpassing their intended lifespan while functioning properly. The City of Barrie has implemented data-driven inspection and maintenance programs to preventively maintain assets, improving safety, reliability, and cost-effectiveness. Prioritization considers capital plans and potential flooding risks. Critical issues are escalated to develop safe, reliable, and cost-efficient repair plans. Maintenance activities include annual programming for baseline service levels, major maintenance based on inspections, and emergency response for sudden asset deterioration, such as sinkholes or flooding.
9. In 2023, emergency repairs were undertaken on Cundles Road East due to a sinkhole caused by a collapsed corrugated steel pipe, necessitating replacement with a concrete pipe.
10. The City of Barrie conducts comprehensive inspection and maintenance programs for various assets like LIDs, culverts, and SWMF. Inspections, tracked in their Computerized Maintenance Management System (CMMS), are mainly conducted by City Operations staff, with some specialized inspections outsourced. Utilizing GIS-supported methodologies ensures efficiency and standardized data generation. Deficiencies identified during inspections lead to maintenance work orders, actioned through the CMMS. The CMMS facilitates asset management, budget planning, and service level tracking, promoting consistent processes and continuous improvement. In 2023, 13,995 inspections were completed on stormwater assets, resulting in 711 maintenance activities, examples include:

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- a) 12,936 catchbasins were cleaned and inspected;
  - b) 522 inspections and 25 repairs were carried out on culverts less than 3m span;
  - c) 71 inspections and 69 maintenance activities were carried out on sedimentation MTDs;
  - d) 82 inspections and 292 repairs were carried out on SWMFs;
  - e) 38 valves were exercised;
  - f) 100 inspections and 36 repairs were carried out on LIDs;
  - g) 128 inspections and 220 repairs were carried out on watercourses; and
  - h) Dyments Creek Bank Restoration project was carried out at the City of Barrie Landfill repair watercourse erosion.
11. Concentrations of key discharge parameters, including Ammonia, Chloride, Nitrate, Nitrite, pH, Phosphorous, and Total Suspended Solids are monitored by laboratory analysis. In 2023, 247 water samples collected from various locations through treatment and natural receiver components of the MSWMS.
  12. The City of Barrie actively addresses enquiries and complaints related to stormwater management and promptly responds to spills and abnormal discharge events to safeguard environmental integrity and public health. In 2023, 86 service requests were initiated, primarily for blocked CBs, flooding, damaged sewer grates or MH covers, of which 71 were resolved. This represents a resolution rate of 83%. A total of 64 spills and discharges impacting the MSWMS were documented during the reporting period.
  13. A stormwater management system alteration refers to any change made to existing stormwater management infrastructure or design. This could involve various components of the system, such as drainage channels, pipes, SWMFs, infiltration basins, green infrastructure (e.g., rain gardens, permeable pavement), or other structural elements designed to control and mitigate the impacts of stormwater runoff. In 2023, 17 alterations to the MSWMS were recorded, including:
    - a) 5 submissions for modification to sewage works and ECA applications;
    - b) 7 submissions associated with alterations to sewers, ditches, and culverts (Form SW1);  
and
    - c) 5 submissions associated with alterations to SWMFs (Form SW2).
  14. The City of Barrie prepared the report of Significant Drinking Water Threat (SDWT) Assessment for Proposed Alterations, as required by the ECA. No projects were identified as a SDWT for this reporting period.
  15. In 2023, there were several key improvements to stormwater management, including:

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- a) Establishing a Quality Management System (QMS) to satisfy the Operations and Maintenance Manual requirements of the ECA;
  - b) Preparing a report to document criteria to identify alterations posing a significant drinking water threats;
  - c) Cleaning sediment from collection and conveyance infrastructure as preventative measures;
  - d) Conducting bathymetric surveys;
  - e) SWMF sediment removal;
  - f) Phragmites control; and
  - g) Implementing Culvert inspection and maintenance program (culverts with spans less than 3 metres).
16. City staff identified several key improvements to achieve in 2024, including:
- a) Prepare a monitoring report to document work completed in 2023 associated with the Operations and Maintenance Manual;
  - b) Further develop the QMS to support the MSWMS;
  - c) Repair watercourse erosion where impacted from stormwater discharges;
  - d) Repair or replace malfunctioning valves;
  - e) Participate in updating the asset management plan associated with the MSWMS;
  - f) Clean sediment from collection and conveyance infrastructure as preventative measures;
  - g) Address invasive phragmites control where appropriate;
  - h) In-situ repairs of storm sewers and culverts;
  - i) Conduct bathymetric surveys;
  - j) SWMF sediment removal;
  - k) SWMF safety handrail installations;
  - l) LID bioretention cell retrofits; and
  - m) Culvert repairs and replacements.

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## **ENVIRONMENTAL AND CLIMATE CHANGE IMPACT MATTERS**

17. There are no environmental and/or climate change impact matters related to the recommendation. However, it is noted that sound stormwater management practices protect water resources including Lake Simcoe and mitigate the impacts of climate change.

## **ALTERNATIVES**

18. As this Staff Report is being presented as a legislative requirement, and for information purposes, no alternatives are presented.

## **FINANCIAL**

19. There are no financial implications for the Corporation resulting from the proposed recommendation. However, it is noted that the City's annual operating and capital budgets feature significant investments to facilitate stormwater management and maintain the City's assets.

## **LINKAGE TO COUNCIL STRATEGIC PRIORITIES**

20. The recommendation(s) included in this Staff Report support the following goals identified in the 2022-2026 Strategic Plan:
- Infrastructure Investments
  - Responsible Governance
21. The commitments of the OpsQMS align closely with the strategic priorities of the City of Barrie Council, particularly those related to Infrastructure Investments and Responsible Governance. Here is how each commitment supports these strategic priorities:
- a) **Compliance with Applicable Legislation and Regulations:** By committing to comply with relevant legislation and regulations, the OpsQMS ensures that the MSWMS operates within legal boundaries. This supports Responsible Governance by demonstrating a commitment to upholding laws and regulations, which is essential for maintaining public trust and accountability.
  - b) **Maintenance and Continuous Improvement of the MSWMS:** The commitment to maintaining and continually improving the MSWMS supports Infrastructure Investments by ensuring the reliability, functionality, and longevity of critical infrastructure. Regular maintenance and improvement activities help prevent system failures, reduce overall asset lifecycle costs, and enhance the resilience of the MSWMS, aligning with the City of Barrie's priority of infrastructure investments.
  - c) **Minimization of Environmental and Public Health Impacts:** The commitment to minimizing impacts on the natural environment and public health demonstrates a proactive approach to environmental stewardship and community well-being. By prioritizing environmental and public safety considerations in stormwater management operations, the OpsQMS contributes to Responsible Governance by prioritizing the health and safety of residents and the protection of natural resources.
  - d) **Consultation with or Informing the Public:** Engaging with the public and providing information about the MSWMS aligns with Responsible Governance by promoting transparency, accountability, and public participation in decision-making processes. Consulting with or informing the public about system establishment or expansion projects

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fosters community engagement, builds trust, and ensures that stakeholder perspectives are considered in stormwater management initiatives.

22. Optimizing Operational Performance provides the following benefits directly aligned to priorities within the Strategic Plan:
- a) Compliance with applicable legislation and regulations supports responsible governance by demonstrating a commitment to upholding laws and regulations, which is essential for maintaining public trust and accountability.
  - b) Maintenance and continuous improvement of the MSWMS helps prevent system failures, reduce operational costs, enhance the resilience of the stormwater system, and deferral of capital costs associated with the renewal of assets, aligning with the City of Barrie's priority of infrastructure investments.
  - c) Minimization of environmental and public health impacts contributes to responsible governance by prioritizing the health and safety of residents and the protection of natural resources.
23. The Staff Report is a compilation of information that demonstrates the commitment of the Operations Department in providing high levels of service, while remaining transparent, financially accountable, and demonstrates initiative in driving continual improvement thereby ensuring the health and safety of the residents of the City of Barrie.

#### **APPENDIX "A"**

#### **Attachment Report – 2023 Stormwater Management System Annual Operating Report**