Staff Report

To	**Committee of the Whole**
Service Area	Infrastructure, Development and Enterprise Services
Date	Tuesday, April 4, 2023
Subject	**Stormwater Management Master Plan Recommendations**

Recommendation

1. That the Stormwater Management Master Plan be approved and that staff be directed to file a Municipal Class Environmental Assessment Notice of Completion.
2. That the financial implications from the Stormwater Management Master Plan be referred to the City's multi-year budget process.

Executive Summary

Purpose of Report

This report summarizes the Stormwater Management Master Plan (SWM MP) update that has built off the previously completed SWM MP in 2012. Stormwater management is a key service that the City provides to prevent flooding, improve drinking water quality, protect road and pipe infrastructure, enhance and protect the health of our Natural Heritage System (NHS), and to maintain a thriving community and economy. The SWM MP has studied Guelph's existing stormwater infrastructure, future stormwater needs to accommodate changes to Guelph's population, impervious cover, climate change, and drinking water quality protection needs, and it has incorporated current Provincial policy and industry best practices. The SWM MP has studied needs for a growth period to 2051 (in alignment with Official Plan Amendment 80).

Key Findings

The SWM MP has been undertaken as a Municipal Class Environmental Assessment. The SWM MP's recommended approach includes a portfolio of stormwater management projects and programs that aim to:

- provide the framework, design criteria, and infrastructure requirements to develop a resilient stormwater management network that adapts to climate change; and
- provide guidance on how to treat stormwater and maintain the infrastructure to provide the level of service required by the Province and in line with industry best practice.

The SWM MP has been informed by more than two years of technical work and community engagement.

Strategic Plan Alignment

The SWM MP aligns with the Sustaining our Future pillar by recommending projects and policies that protect our environment, water quality, and our NHS, and by establishing design criteria and frameworks to allow green infrastructure (with co-benefits such as increased tree canopy, greenhouse gas treatment) in our road right of ways and on public and private property.

The SWM MP aligns with the Navigating our Future pillar by recommending projects that will mitigate negative impacts to road infrastructure (washout, flooding) and also enhance road right of ways with green infrastructure.

The SWM MP also prioritizes maintenance and retrofits of existing stormwater management facilities and other assets in alignment the asset management action in the Building our Future pillar.

Finally, the SWM MP is tied to Powering our Future through protection of environment, management of infrastructure, promotion of innovative stormwater management, and sustainability – all working together to support a thriving economy and community.

Financial Implications

The plan provides costs for capital works, programs, operations and maintenance, and new resources to implement the recommended stormwater management approach for the future. The total additional cost above the works already captured in the current 25-year capital budget is $300.1 million. Project alignments within road corridors will be scheduled in alignment with asset management and other utility works in the corridor. The SWM MP capital projects will be incorporated into the 2024-2027 multi-year budget (MYB). If all projects are completed between 2024-2051, as the masterplan suggests, this would be an additional $11.1 million annually; however, projects will be prioritized based on fiscal and human constraints, and in alignment with all organizational priorities, which means the costs are expected to be spread out beyond the 2051 timeframe. Increased resources are required to deliver the SWM MP programs and projects, some of which have been previously identified in the Capital Program Resourcing Strategy and any new resources would be requested through the multi-year budget. Ultimately, an annual operating increase of approximately $293,000 will be required as the Master Plan is delivered.

Stormwater works on growth-driven road corridors are included in the Development Charges Background Study and would be funded primarily through development charges. Any shortfall in DC funding for growth projects and non-growth portion of capital projects as well as operating costs would be rate funded through the Stormwater Service Fee. The Stormwater Service Fee was introduced in 2017 and has since been an effective revenue source towards funding stormwater services with the goal of achieving financial sustainability of the service. The stormwater fee model is currently being reviewed and once complete, will be used to forecast the long-term rate impact of the Stormwater MP and provided to Council ahead of the multi-year budget.

Report

Project Background

The Stormwater Management Master Plan (SWM MP) builds on the first comprehensive City-wide Stormwater Management Master Plan completed in 2012. The previous study identified several infrastructure upgrades, but the key takeaway was to establish a Stormwater Service Fee to build up the financial sustainability of the service. Since then, the Stormwater User Rate has been established, which allows the recommended projects and programs in the current master plan to proceed. The overarching study objective for the SWM MP is to develop a long-term plan for the effective management of stormwater runoff in existing and future conditions to 2051 in alignment with Official Plan Amendment (OPA) 80, including protection of infrastructure, roads, and property from flooding impacts, protection of our NHS, drinking water supply, and ecological sustainability of Guelph's rivers and streams, and while considering the impacts of Climate Change.

Overview of the SWM MP

The study was initiated in 2020 and includes detailed technical study for six categories / types of stormwater management elements within the City's system. The project was undertaken as a Municipal Class Environmental Assessment (Class EA), fulfilling the appropriate regulatory requirements depending on the type of stormwater management elements (some studied to satisfy Schedule A/A+ - preapproved, and some studied to satisfy Schedule B requirements). Preferred alternatives were identified across each category of work to generate the preferred overall stormwater management program of works.

The SWM MP has completed technical studies and made recommendations to support the following study goals and objectives:

1. **Improve water quality** – the SWM MP recommends a retrofit and maintenance program for existing stormwater management facilities to bring them to appropriate service levels that meet current practices. Additionally, new stormwater management facilities have been sited across the city to increase the area of the City's runoff that receives treatment prior to discharging to Guelph's waterways and Natural Heritage System (NHS). Design criteria have been updated to include distributed source control and conveyance control on roads and sites (Low Impact Development Measures (LIDs)) that will contribute to improved water quality. By improving the quality of our stormwater runoff, we are also contributing to improved downstream water quality that benefits the natural environment and protects drinking water supply for Guelph, our neighbouring municipalities, and Indigenous communities.
2. **Integrate management of stormwater and drinking water** – an Infiltration Policy has been created in conjunction with Environmental Services that dictates where infiltration of stormwater into the ground is permitted and what type of runoff is permitted based on source water protection requirements. This is instrumental for developers, consultants, and City staff to be aligned and have a clear framework to implement.
3. **Minimize threat of flooding** – the SWM MP recommends projects to increase capacity in our drainage system. This is important to minimize risks

to public health and safety, to protect our environment, and to protect our roads, infrastructure, and property in support of a thriving community. This includes work to upsize pipes as well as install LIDs that will help manage road runoff right at the source, which protects downstream infrastructure and reduces risk of flooding. Reporting of frequent drainage issues have been documented and used to prioritize pipe upsize locations. Criteria and policies are included to promote infiltration and evapotranspiration to prevent runoff from ever entering downstream systems.

4. **Protect, enhance, and restore natural features** – the SWM MP includes restoration projects for stream erosion sites and includes policy and criteria to protect habitats and property from erosion impacts. By implementing water quality measures natural environment protection will be improved.
5. **Improve infrastructure resiliency and climate change adaption** – by studying infrastructure under future imperviousness assumptions (more paved surfaces) and an adapted set of climate data (climate change adjusted rainfall parameters), the projects recommended in the SWM MP encompass resiliency and adaptability. Furthermore, the introduction of a distributed source control program (LIDs) provides further capacity in the system to manage different storms. Finally, certain LIDs provide drainage benefits that reduce impacts of freeze-thaw and reduce required de-icing (salt) volumes.
6. **Align policy and design criteria with Regulations** – during development of the SWM MP, the Ministry of Environment, Conservation and Parks (MECP) implemented new Regulations and design criteria associated with the Consolidated Linear Infrastructure Environmental Compliance Approval (CLI ECA). The recommended SWM MP Design Criteria and Infiltration Policy provides the Guelph-specific framework for private and public site and right-of-way construction activities to be undertaken in accordance with the new Provincial requirements.
7. **Implement a framework for prioritizing projects** – the Sub-watershed Health Analysis ranked the City's sub-watersheds against a number of environmental and stormwater management factors to identify areas of the City with the poorest overall environmental health. This framework is used to prioritize stormwater management projects in areas with the most needs.

To meet these goals, the SWM MP recommends a portfolio of projects and programs over 2024-2051 as follows:

- Existing Stormwater Management Ponds (retrofits, cleanouts, maintenance)
- Existing Oil/Grit Separator Units (maintenance and cleanouts)
- Existing Pollution Prevention, O&M Practices (CB cleanouts, street sweeping, leaf pick-up)
- Watercourse Erosion Sites (new restoration projects)
- Stormwater Sewer Network (pipe upsize requirements)
- New Stormwater Management Facilities (Ponds, Subsurface Storage to improve water quality)

- Low Impact Development Implementation (including an assessment of appropriate infiltration locations based on source water protection requirements and an assessment of appropriate LID typologies for Guelph)
- Design Criteria (consolidated and updated design criteria to include a 5mm minimum volume control requirement and support the CLI ECA requirements)
- Innovation and climate change measures are incorporated throughout all aspects of the SWM MP.

A full summary of the process and programs identified as part of the recommended stormwater management strategy, including mapping, is included in the Draft Project File Executive Summary.

Key Considerations

OPA 80 & Growth to 2051

The SWM MP included study and identification of future stormwater managements needs to support the City's growth to 2051, in alignment with OPA 80. This was done by estimating impervious (hard surface) ground cover based on land uses in OPA 80 and looking at how infill development has changed land cover over time. The future imperviousness was used in combination with the future climate change parameters (discussed below) to ensure planned infrastructure is future-ready.

Bill 23 Impacts

Components of Bill 23 that are related to the SWM MP include the accelerated growth rate (and associated imperviousness) and the modification of planning approvals required for applications with 10 units or less (Site Plan Applications have specific stormwater management requirements, whereas Building Permits may not). Additionally, it threatens the extent to which wetlands, one of Guelph's greatest natural stormwater management assets, can be protected.

The SWM MP recommended projects are not expected to change significantly due to Bill 23; however, it may require the City to implement projects at a faster pace (the 2023-2041 horizon is accelerated to 2031). This impact will be addressed through the multi-year budget for 2024-2027 where resource and budgetary requirements from the SWM MP are incorporated. Ultimately, Bill 23 and the associated pace of growth will require monitoring and future update of the master plan, which will occur in the next planned 5-year cycle.

Climate Change

One of the overarching objectives of the SWM MP is to plan resilient infrastructure for the future. The SWM MP incorporates climate change in the following ways:

- Designing infrastructure to handle larger and more frequent storms, including managing runoff at source (through the introduction of a Volume Control Target in Guelph). LIDs will be required to protect against flooding, preserve system capacity, and provide quality treatment. These also offer co-benefits including greenhouse gas reductions, heat mitigation through increased tree canopy, and provide better quality water to support aquatic habitat in receivers.
- Certain LID typologies allow rain to drain away from the road surface more quickly than traditional curb and gutter systems, which reduces risk of

damage to asphalt from freeze-thaw cycles, may reduce salt application, and may reduce winter maintenance.
- Natural assets will also be optimized to restore the full capacity of creeks and rivers, which are the City's largest defense against major flooding during storm events.

The technical elements of the SWM MP have also been inputs to the Climate Change Adaptation Plan (CCAP) that is currently under development and will also align with future updates to the City's Corporate Asset Management Plan with respect to climate change adaptation and resiliency. Through the CCAP, the projects and programs within the SWM MP have been identified as important mitigation tools.

Source Water Protection & Road Salt

The Infiltration Policy has been developed in concert with Source Water Protection and Environmental Services staff that works to balance groundwater and NHS feature recharge needs with prevention of salt-laden stormwater runoff from impacting drinking water supplies. Specific requirements from detailed subwatersheds have been carried forward. The policy has been established in an iterative manner and provides guidance on what type of runoff is appropriate to infiltrate and where in the City infiltration is permitted based on WHPA levels.

Safety

Safety concerns surrounding proposed surface features were raised during Public Consultation. As with any engineering design, public safety is paramount. Safety features such as fencing, vegetative buffers, appropriate grading and side slopes and signage are determined on a site-specific basis during detailed design. Improved safety through risk management and risk reduction is a key pillar of the SWM MP.

Equity

Stormwater management projects have been identified across the city. The works have been prioritized based on their subwatershed health score, which included an evaluation of environmental health across several areas. Environmental health and stormwater level of service is considered part of the equity lens. Older areas of the city were built out with different levels of stormwater management criteria than today's practices. These older areas generally received poor subwatershed health scores and are therefore the top priority for project implementation. As future design progresses, staff will seek to balance environmental health with other priorities, while also working towards achieving a consistent stormwater level of service across the city.

Where other corridor works overlap with proposed works in the SWM MP, regardless of subwatershed health score, the projects will be aligned to realize efficiencies.

Consolidated Linear Infrastructure Environmental Compliance Approval (CLI ECA)

The Ministry of Environment, Conservation and Parks has recently transitioned from approval of modifications to municipal stormwater system on a project-by-project basis, to pre-approval of the system-wide CLI ECA provided that stipulated requirements are adhered to. This includes requirements for property development and for road projects to a higher magnitude than previously required. Guelph has

received the completed CLI ECA and the SWM MP has created the framework for the requirements to be met through updated Design Criteria, the creation of an Infiltration Policy, and development of a LID Implementation Strategy.

Next Steps

Projects and programs identified in the SWM MP will be captured, scheduled, and resourced through the development of the 2024-2027 multi-year budget (MYB) and capital forecast. Throughout this process, consideration will be given to the balance of staff and financial resourcing available and required to deliver the SWM MP capital and operational programs through an integrated programming and planning approach. The financial information from this project will also be referred to the ongoing Development Charges Background Study and rate study.

A key recommendation in the SWM MP is the development of a Monitoring Program that aligns with the requirements of the CLI ECA. This will be prioritized in 2024 to ensure compliance with the Provincial legislation.

The SWM MP will be updated at 5-year intervals.

Financial Implications

The plan provides costs for capital works, programs, operations and maintenance, and new resources to implement the recommended stormwater management approach. It includes timelines to complete the works between 2024 and 2051 (the vision), however other organizational priorities must be considered in the context of all ongoing and proposed capital works across the city.

The current 25-yr capital budget includes $210.4 million for stormwater management projects relevant to the SWM MP. The total additional cost above the projects already captured in the current 25-year capital budget is $300.1 million. Project alignments within road corridors will be scheduled in alignment with asset management and other utility works in the corridor. The SWM MP projects will be incorporated into the 2024-2027 multi-year budget. If all projects are completed between 2024-2051, as the master plan suggests, this would be an additional $11.1 million annually. However, the number of projects (and associated costs) forecasted for each year will be established through the multi-year budget process with consideration for impact to user rates and affordability, which means the costs are expected to be spread out beyond the 2051 timeframe. The MYB focuses on balancing all priorities throughout the city with a focus affordability, equity, and ability to deliver.

To implement the capital projects across the 2024–2051-time horizon, an annual operating budget impact of $293 thousand will eventually be required beyond resource requirements previously forecast in the Capital Program Resource Strategy. New resource requests will be included at the appropriate time in future multi-year budgets.

With respect to maintenance/operational financial and staff resourcing needs, most of the recommendations in the SWM MP include replacement/upsizing of infrastructure in existing alignments and retrofit works to existing facilities, with similar anticipated operational needs to the current condition, and as captured in the current operating budget.

The structure of dedicated stormwater resourcing requires refinement will be further studied through a SWM Utility Structure Benchmarking study.

Funding Sources

Stormwater works on growth-driven road corridors are included in the Development Charges Background Study and would be funded primarily through development charges.

Any shortfall in DC funding for growth projects and non-growth portion of capital projects as well as operating costs would be rate funded through the Stormwater Service Fee. The Stormwater Service Fee was introduced in 2017 and has since been an effective revenue source towards funding stormwater services with the goal of achieving financial sustainability of the service. The stormwater fee model is currently being reviewed and once complete, will be used to forecast the long-term rate impact of the Stormwater MP and provided to Council ahead of the multi-year budget. All projected financial impacts would be prioritized and reviewed in the multi-year budget with the lens of affordability and equity while balancing the need to complete regulated works.

There are potential federal and provincial funding opportunities that could be leveraged to fund stormwater related projects. Staff are committed to exploring these opportunities including the federal Disaster Mitigation Adaptation Funding (currently open) and others that become available.

Consultations

Internal Consultation

Operations, Environmental Services, Parks, Planning and Building Services, Finance, Legal, Realty and Court Services, and Engineering and Transportation Services have been engaged on technical deliverables and policies throughout the process.

Community Stormwater Working Group

A community stormwater working group was formed at the onset of the project. Members included representatives from the Grand River Conservation Authority, University of Guelph, Wellington Water Watchers, and other industry experts. The group met three times to discuss technical deliverables and provide feedback which has been incorporated into the study.

Accessibility Advisory Committee

LIDs in the public realm (whether at public facilities or in roads) that have surface features (permeable pavement) were discussed with Guelph's Accessibility Advisory Committee (AAC) on October 18, 2022 to collect preliminary feedback on concerns associated with the different typologies. The City's Complete Streets Design Guideline project currently underway will use the AAC's feedback and return to the AAC with more detail as part of their review of right-of-way cross sections.

Guelph-Wellington Developers Association / Guelph Home Builders Association

The emerging design criteria and policies from the SWM MP were presented to GWDA/GBHA on November 16, 2022. No feedback was received.

Indigenous Consultation

Project notification has been provided to Mississaugas of the Credit First Nation (MCFN), Six Nations of the Grand River (SN), Metis, and the Haudenosaunee Confederacy Chiefs Council (through Haudenosaunee Development Institute) at the

project onset and in November 2022 in advance of the Public Open House. Notification will be provided for the study completion following direction from Council to finish the study.

Further, the City has met with MCFN and SN on water-related master plans (Water and Wastewater Servicing MP, SWM MP) in the fall of 2021. The overarching goal of the SWM MP includes improving water quality to waterways, which was appreciated during discussion. Commitments to engage during future preliminary and detailed project designs, particularly during archaeological investigations, were made.

Public Consultation

Public Open House #1 was held virtually from October 28, 2020 to November 30, 2020. Participants were invited to complete a survey and mapping exercise that provided early inputs about stormwater management across the City. Feedback indicated that stormwater runoff is a serious concern and that residents were in general support of LIDs.

In the summer of 2022, the project team "popped up" at the Civic Museum during Fringe Fest, at Riverside Park during Rib Fest, and outside City Hall on a sunny Saturday to bring information about the SWM MP to where people were gathering. 142 participants were engaged and provided feedback about which stormwater management practices they would like to see addressed. The pop-ups were an exciting engagement opportunity to speak to Guelph's youth – there was overwhelming support for increased environmental health and climate change mitigation measures, which are embodied in the SWM MP's recommendations.

Public Open House #2 was held virtually and in person on November 28, 2022 with the commenting period extending to December 20, 2022 on 'Have Your Say'. Feedback collected included support for the proposed end-of-pipe facilities in general, to support increased water quality treatment, and support for improved stormwater management in general. The team heard feedback related to detail around end-of-pipe facility projects and the level of engagement. All future projects will have additional engagement during preliminary and detailed design. For example, the City heard concern about Margaret Greene Park and the potential facility sited in the un-programmed south-east corner. The team prepared an FAQ that provided information on the design, safety, and future engagement opportunities.

Attachments

None

Departmental Approval

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