
For Information

REPORT TITLE: Stormwater Infrastructure Management Update

FROM: Andrew Farr, Acting Commissioner of Public Works

OBJECTIVE

To update Council on the Region's Stormwater Management Program, including the results of Clean Water Wastewater Fund projects, and to provide an overview of state of good repair funding requirements.

REPORT HIGHLIGHTS

- In 2016, Infrastructure Canada announced the Clean Water and Wastewater Fund, a one-time \$2B fund made available to all municipalities for qualifying projects.
 - Through a successful application, the Region was granted funds to complete an inventory and condition assessment for all stormwater assets associated with Regional roadways, and to rehabilitate three Regional stormwater ponds.
 - The stormwater network has been inventoried and inspected and has been valued at approximately \$400M. Seventy-seven per cent of the Regional stormwater network was found to be in good to fair condition, with 15 per cent in poor condition and 8 per cent in bad to failing condition.
 - To maintain the existing stormwater network in a state of good repair over the next ten years, \$45.05M in additional capital funds will be required. These needs will be reflected in the 2021 Capital Budget submission.
 - Stormwater assets have traditionally been managed through passive or reactive means; the inventory and inspection data provide the foundation for a Stormwater Asset Management Plan and will help the Region transition to a more proactive approach to lifecycle management of these assets.
 - In addition, a Stormwater Servicing Master Plan is underway to address the requirements of future growth; this plan will also acknowledge the need for a resilient stormwater network capable of adapting to the impacts of climate change.
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BACKGROUND

1) The Region of Peel's Stormwater Network

The Region of Peel owns and operates three stormwater ponds, 334 km of storm sewer pipes and laterals, 5250 maintenance holes, 6000 catch basins, 257 outfalls, and 15 low impact development facilities. This network of infrastructure stores and directs stormwater runoff away from Regional roadways. The Region's network is separate from, but works alongside, the local stormwater networks which direct water away from developed communities and local roads.

As discussed in the recently approved Climate Change Master Plan, the Region's stormwater infrastructure will be greatly impacted by climate change. The effects of global warming are

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expected to increase the frequency of moderate to severe weather events. For that reason, stormwater management is of growing importance to help communities adapt to climate change and will need to be resilient to keep pace with new and growing pressures.

Although municipalities have a long history of managing stormwater assets, programs have traditionally relied on passive or reactive approaches. These approaches can result in certain risks, for example, service interruptions, unexpected flooding, or downstream erosion and water quality issues. In recent years, these risks have been amplified with the impacts of climate change and specifically the frequency of severe weather events. By taking a more proactive approach, the Region will be able to make the right asset investments at the right time, avoid costly/unplanned repairs, and make best use of planned capital works to simultaneously address stormwater deficiencies.

Information recently collected through a recent stormwater infrastructure inventory and condition assessment provides the foundation for a proactive approach to lifecycle management of stormwater assets. This transition will require dedicated resources, consistent with how other core infrastructure assets are managed. However, by taking a proactive approach and by considering the full lifecycle of the assets, staff can ensure that stormwater services (flood, erosion, and water quality protection) are provided effectively and for the lowest overall lifecycle cost.

2) Clean Water and Wastewater Fund Stormwater Infrastructure Projects

In 2016, Infrastructure Canada announced the Clean Water and Wastewater Fund, a one-time \$2B fund made available to all municipalities for qualifying projects. Through a successful application, the Region was granted funds to complete a stormwater infrastructure inventory and condition assessment, and to rehabilitate three stormwater management ponds. These projects had been included in the Region's 10-year Capital Plan but were subsequently advanced as a result of the Grant, avoiding an expenditure of roughly \$6.0M in tax dollars.

Completion of the inventory and condition assessment represents the first steps towards establishing a formal asset management program for the Region's stormwater network. These activities assist the Region in complying with *Ontario Regulation 588/17 Asset Management Planning for Municipal Infrastructure (O.Reg. 588/17)*, which requires municipalities to create a formal asset management plan for all core municipal infrastructure by July 1, 2021, and to consider actions that may be required to address vulnerabilities caused by climate change.

a) Stormwater Inventory and Condition Assessment Completed

The Region's entire stormwater management network has now been inventoried and inspected using Closed Circuit Television. The infrastructure has been valued at approximately \$400M. Storm sewer mains were assigned a condition rating between one and five based on the National Association of Sewer Service Companies' standards. Assets with a condition rating of one to two indicates they are in good to fair condition and represent a low risk. A rating of three indicates poor condition and medium risk. Assets with a condition rating four or five indicates bad to failure condition and high risk that need to be addressed. The results of the inventory and condition assessment indicated that:

- 77 per cent of Peel's stormwater network was found to be in good to fair condition, requiring routine monitoring and maintenance

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- 15 per cent was found to be in poor condition, requiring more frequent monitoring as well as plans for future action
- 8 per cent was found to be in bad to failing condition, which should be addressed in an immediate to 5-year timeframe.

A full breakdown of condition results by local municipality is provided in Appendix I.

b) Stormwater Pond Rehabilitations Completed

Peel has three stormwater ponds in its stormwater network. Results from monitoring indicated that none of the ponds were providing the flood control or water quality benefits they were designed to deliver. Using Clean Water and Wastewater Funds, all three ponds have been rehabilitated to meet modern requirements set by the Ministry of Environment, Climate and Parks, Credit Valley Conservation, and Toronto Regional Conservation Authority.

At one of the ponds, an innovative solution was put in place to protect Redside Dace habitat, an endangered fish that thrives in cooler temperatures. This design has been nominated for a *Friends of the Credit – Green Cities Award*. This award recognizes organizations who implement leading edge green infrastructure in new developments and existing urban areas.

PROPOSED DIRECTION

The information gathered through the stormwater network inventory and condition assessment has provided a foundation to estimate funding needs, specifically, capital investments necessary to sustain the Region's current stormwater network assets in a state of good repair. At the same time, a Stormwater Servicing Master Plan is underway to address stormwater servicing needs related to future growth and to adapt to the impacts of climate change. Together, this work will ensure the Region's network can provide effective stormwater services to a growing community and adapt to climate change. An overview of the proposed direction for the stormwater program is provided below.

State of Good Repair – Current Network

To address the immediate and long-term funding required to maintain the stormwater network in a state of good repair, an additional investment of \$45.05M is required in the 10-year capital plan beginning in 2024. The current 10-year capital plan is based on funding of \$1M/year to address needs on an ad-hoc basis.

The proposed budget supports a proactive management plan that will reduce risk and help maintain adequate stormwater service levels for flooding, erosion, and water quality control. This budget projection is based on the results of the stormwater network inspection and aligns with the Corporate Asset Management modelling and recommendations that will be provided to Council in the Infrastructure Status & Outlook Report later this year.

Without this investment, as the stormwater network ages, there is increased risk of localized flooding, property damage, erosion damage, and service interruptions (road closures). In particular storm sewers with a condition grade of five and four having a high risk of failure would not be addressed within the immediate to five-year window, representing a near-term risk to

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approximately 8 per cent of the network. Addressing these deficiencies will reduce situations such as damaged pipes with diminished storage capacity, or areas where other infrastructure has unintentionally compromised existing stormwater infrastructure.

Stormwater network rehabilitations and replacements will be coordinated with other planned capital projects. As stormwater infrastructure often shares right-of-way space with other Regional assets, including sustainable transportation infrastructure, this provides an opportunity to pair stormwater works with projects identified in the Sustainable Transportation Strategy. Bundling projects in this way will minimize disruption, provide economies of scale, and expedite the making of “green and complete” corridors which would include:

- Making connections (filling gaps) within the sidewalk and path network
- Furthering objectives of the *Accessibility for Ontarians with Disabilities Act*
- Advancing streetscaping to include more trees and rest areas
- Replacing end-of-life infrastructure such as noise walls (Regional and private)
- Improving climate change resiliency

Stormwater Servicing Master Plan – Future Network

As owners and operators of stormwater infrastructure, The Region of Peel is subject to the requirements of *O. Reg. 588/17* as well as Places to Grow legislation that directs municipalities to complete a Stormwater Servicing Master Plan similar to the requirement for Water and Wastewater Master Plans. The Region’s first Stormwater Servicing Master Plan was initiated in September 2019 and will be completed in 2022. The purpose of the study is to identify the stormwater capacity needs for current and future growth of the Regional road network. The study is being carried out in accordance with the Municipal Class Environmental Assessment process and in coordination with local municipalities and key agencies.

The Master Plan will review existing stormwater servicing as well as future requirements based on anticipated growth and future impacts of climate change. It will also provide a holistic servicing strategy for the regional road network on a watershed basis and help optimize future rehabilitation and retrofit investments by identifying priority locations with capacity constraints.

As Peel infill and intensification development increases, managing additional stormwater flows will become more challenging, for example, in areas where the Regional system has reached capacity or where no stormwater infrastructure exists. The Master Plan provides a hydraulic model that can be used to understand the impacts of allowing site drainage into the Regional system at various locations, and then evaluate options and scenarios.

It is anticipated that the Master Plan will provide vital information about where additional stormwater capacity is needed to meet current and future demands. In many cases, it will be possible to address these deficiencies by increasing the scope of planned State of Good Repair works, thereby minimizing disruption to the community and making best use of project funding. Once complete, staff will report to Council on findings of the Master Plan.

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RISK CONSIDERATIONS

The most pressing risk for the Region's stormwater network relates to State of Good Repair capital works for stormwater sewers in bad to failure condition. These could pose near-term service risks such as increased frequency of flooding, erosion damage, service disruption (road closures), and environmental risk to downstream receiving waters. Staff have reduced this risk by re-allocating funds in the 2021, 2022, and 2023 capital plans to advance stormwater State of Good Repair work.

Furthermore, falling behind in infrastructure investment can result in a backlog of urgent capital works and funding requirements. To avoid this situation, spreading investment over time allows the organization to keep ahead of infrastructure needs and to moderate the scale of financial and human resources needed to deliver the program.

The results of the Master Plan together with data collected throughout the Clean Water and Wastewater Fund project will help identify areas where the impacts of climate change are greatest now and in the future. This represents both a risk and an opportunity. As capital works are planned, the stormwater program will continue to include strategies to adapt to climate change, such as the use of low impact development infrastructure.

FINANCIAL IMPLICATIONS

Based on results of the recently completed inspections, an estimated \$45.05M in additional funds will be required to maintain the stormwater network in a State of Good Repair over the next ten years. A full breakdown of anticipated costs is provided in Appendix I.

In 2021-2023, repairs and replacements will be re-allocated from approved State of Good Repair budgets for lower risk assets to the higher risk stormwater assets to address immediate needs, thus prioritizing spending. After the initial funds have been exhausted, staff anticipate additional funding will be required in years 2024-2030.

The 10-year forecast within the F2021 capital budget submission will reflect the anticipated State of Good Repair funding needs for the stormwater network. This funding amount is consistent with the Corporate Asset Management modelling and recommendations to sustain the infrastructure to meet the Council-approved service levels and will be refined annually.

Currently this State of Good Repair work will be funded 100 per cent by tax reserves. However, Peel is well positioned to qualify for future stimulus funding made available for infrastructure projects based on the evidence (data) provided through the Clean Water and Wastewater Fund project, and because many of these projects will support climate change adaptation and improved environmental outcomes. All capital works that are identified under the new Stormwater Master Plan related to growth will be reviewed for future development charge funding.

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CONCLUSION

The Region owns and operates a stormwater system valued at approximately \$400M. The recently completed inventory and condition assessment indicates that additional funds are required to maintain these assets in a state of good repair. Ensuring this infrastructure can provide stormwater services to protect the community from flooding, erosion and water quality impacts is a priority for the Region. In recent years, it has become increasingly clear that stormwater infrastructure is being impacted by the effects of climate change, and at the same time, has been recognized as critical infrastructure to help municipalities adapt to these changes. Through the stormwater inventory and condition assessment and Stormwater Servicing Master Plan, the Region is transitioning from a passive/reactive approach to proactive stormwater infrastructure management. This approach advances the development of “green and complete” corridors building resilience and helping achieve the vision of “Community for Life”.

APPENDICES

Appendix I – Stormwater Financial Outlook

For further information regarding this report, please contact Sally Rook, Manager Infrastructure Programming & Studies, 905-791-7800 extension 7842, sally.rook@peelregion.ca.

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Reviewed and/or approved in workflow by:

Department Commissioner, Division Director and Financial Support Unit.

Final approval is by the Chief Administrative Officer.



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