

**Date:** 2019-05-26

**Subject:** **Brampton Stormwater Management Charge**

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**Recommendations:**

1. **THAT** the report from Michael Heralall, Senior Manager, Environment, Public Works and Engineering, dated May 13, 2019, to the Committee of Council Meeting of June 12, 2019, re: **Brampton Stormwater Management Charge**, be received;
2. **THAT** Council authorize implementation of a stormwater charge to provide dedicated, sustainable funding for operation, maintenance, renewal and rehabilitation of the City's \$1.12 billion of stormwater infrastructure;
3. **THAT**, subject to council approval, the Treasurer be authorized to establish a reserve fund for collection of stormwater that will be used towards providing dedicated, sustainable funding for operation, maintenance, renewal and rehabilitation of stormwater infrastructure;
4. **THAT**, subject to council approval, User Fee By-Law 380-2003, as amended, be further amended to include the stormwater charge;
5. **THAT** the proposal to implement a stormwater charge be communicated to the Region of Peel; and
6. **THAT** staff work with the Region of Peel on implementing the stormwater charge commencing in the first quarter of 2020.

## 9.2.2-2

### Overview:

- The City of Brampton has an extensive network of stormwater management infrastructure that protects people and property from flooding and erosion, and treats polluted stormwater to protect the environment.
- The stormwater management infrastructure is the second largest asset class in the City, with a 2018 replacement value of \$1.12 billion.
- Operation, maintenance, renewal and rehabilitation activities to perpetually sustain regulatory and operational levels of service is estimated to cost \$22 million per year.
- Stormwater management infrastructure activities are currently funded through property taxes at \$6 million per year with \$2.2 million as part of the operating budget and \$3.8 million within the capital budget. The current funding gap of \$16 million per year is expected to increase year-over-year as stormwater system funding levels have remained relatively constant.
- Many municipalities in Ontario and across North America have adopted a stormwater user fee/charge as an equitable means to address persistent funding gaps.
- This report recommends that Council authorize the implementation of a Stormwater Charge with billing to commence in the first quarter of 2020.
- The Stormwater Charge will provide a dedicated source of funding for the operation, maintenance, renewal and rehabilitation of the stormwater management system that is currently funded through annual Operating and Capital budgets. The Stormwater Charge will ensure that taxes are not increased to cover required expenditures, and it will also ensure that the fees are attributed fairly to users on a “fee for service” basis.
- The Stormwater Charge will be integrated into the Region of Peel’s water billing operations.
- A comprehensive public communication and outreach program will be undertaken in conjunction with the Region of Peel prior to commencement of billing.

## 9.2.2-3

### **Background:**

Brampton's future of a sustainable, well-run City that attracts investments, jobs and residents relies on infrastructure being in place to provide services to move, connect and protect the community. Stormwater management is a core service underlying the modern municipality, and provides the means to keep people and communities safe from flooding and damage to property, and minimizing the social and environmental disruptions and impacts flooding can have.

Within Brampton, the stormwater management system consists of the municipal collection, conveyance and treatment system, and the receiving watercourses and water bodies. The stormwater management system is mostly hidden from sight, and we only become aware of its existence when it stops working.

The City has \$1.12 billion of stormwater assets under management, including approximately 1800 km of storm sewers, 180 stormwater ponds, 38000 catchbasins, 13000 manholes, and 420 kilometers of streams. The stormwater asset base grows year over year as new infrastructure is created through the development process.

### **Current Situation:**

Asset management activities for the stormwater management system are currently funded from taxes at \$6 million per year, which includes capital and operating costs. Current levels of funding results in a deficit of \$16 million per year. This funding gap is anticipated to increase year-over-year as the annual funding for stormwater management has remained relatively constant at \$6 million.

Current levels of funding are unsustainable to meet basic regulatory requirements in the near future. For instance, the City currently has 180 stormwater management ponds that provide flood control, erosion protection and water quality treatment. Regulatory requirements dictate stormwater ponds be cleared of accumulations of polluted sediments once every 10 to 15 years for a typical pond, in order to maintain the original design storage volume and ensure the pond can achieve its intended function. This means in the future, the City will be required to clean up to 18 stormwater ponds per year, assuming no new ponds are ever built. At current levels of capital funding, the City is only able to clean 5 ponds to meet the regulatory targets for environmental protection. In addition to ponds, the storm sewer system has a finite lifespan, and with varying vintages of pipe within the City, pipe replacement and repair will become a future recurring burden.

### **Stormwater Management Financing Study:**

In 2017, the City initiated the "Stormwater Management Financing Study" (the Study) to examine various approaches to mitigate the stormwater infrastructure fund gap. The Stormwater Management Financing Study tabulated the current costs allocated to stormwater services, and this is presented in Table A1, Appendix A. The Study

## 9.2.2-4

estimated future program costs under several levels-of-service scenarios including maintaining status quo, meeting regulatory minimum standards, meeting accepted asset management and municipal best practices, and projected municipal growth. The Study recommended a future level-of-service that balanced regulatory requirements, accepted best practices and program costs. The future recommended level-of-service requires \$22 million per year, an additional \$16 million per year over customary funding levels. Tables A2 and A3, Appendix A presents the various future levels-of-service, and identifies the recommended future level-of-service.

The required annual funding of \$22 million per year includes contributions to a pipe reserve fund that would provide the source for future repairs to the storm sewer system as components reach the end of service life, or experience structural or operational failure, and incorporates programs to ensure levels of service and resiliency in the face of climate change.

### Funding Approaches

The Study investigated a number of approaches to address the stormwater infrastructure funding gap. These included:

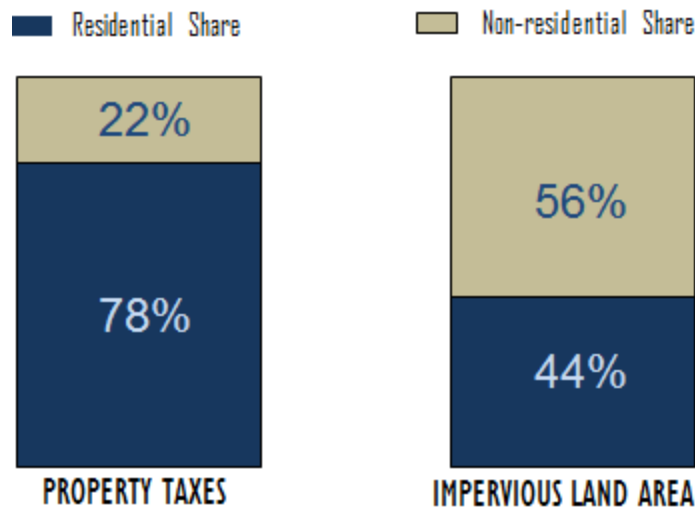
- Property taxes
- Flat rates
- Utility rates
- Rates based on property size
- Rates based on impervious area

Of prime importance in selecting an approach would be fairness in apportioning costs, transparency, and defensibility. The core principles informing evaluation of the various approaches were:

- Linkage between amount paid and benefit derived from services
- Ease of calculation
- Cost of administration
- Users' control over charging mechanism

Property taxes were characterized as being an inequitable approach, as the basis on which property taxes are calculated (market value assessment) bears little connection to the volume of stormwater flowing from the property. Further, 78% of property tax revenue comes from the residential taxpayer, but they are responsible for only 44% of the stormwater that enters the system whereas non-residential properties contribute 22% of tax revenues but are responsible for 56% of the stormwater that enters the system as shown below.

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In looking at the spectrum of available approaches, a user fee based on the volume of stormwater flowing from a property arose as the most equitable approach for charging for stormwater services.

A user fee, tied to the amount of stormwater runoff produced from a property, provides an equitable and transparent means of paying for the stormwater management system. It allows for a shift in cost of stormwater management to those that put the most stress on the system, such as large industrial and commercial properties, and will mean property tax rates will not be negatively impacted by the needs of the stormwater management system.

Stormwater user fees are no longer seen as “unacceptable”, and can be rationalized as necessary for maintaining an acceptable (and legislated) level of service of our infrastructure, to be paid for by those who make the most use of it.

There are over 1,400 municipalities in the United States, and a growing number in Canada, that have implemented a stormwater user fee. Of the ten largest cities in Ontario, eight have a user fee in place resulting in more than 50% of the population in Southern Ontario already being subject to a stormwater user fee in some form.

Table 1 presents the evaluation of the various funding approaches.

**Table 1: Funding Approaches**

Type of Charge	Rate Options/Basis of Calculation	Ease of Calculation	Linkage between Fee Paid and Benefit Derived from Service	Cost of Administration	Users' Control over Charging Mechanism
Property Taxes	tax rate applied to assessed value	easy	low	low	medium
Flat Rate per Property	\$/property	easy	low	low	low
Utility Rate	\$/m <sup>3</sup> of water consumption	easy	low	low	high
Run-off Coefficient by Property Type	\$/unit (varied by type)	medium	medium	medium	low
Impervious Area Sampling by Property Type	\$/unit (varied by type)	medium	medium	medium	low
Run-off Coefficient by Actual Land Area per Property	\$/acre	hard	high	medium/high	medium
Impervious Area Sampling by Actual Land Area per Property	\$/acre	hard	high	medium/high	medium
Actual Impervious Area per Property	\$/impervious acre	hard	high	high	high

### Public Consultation and Engagement

Public consultation was a key component of the Study, and engagement was established with stakeholders from business, industry, regulatory bodies, and the public. The public engagement revealed that:

- Maintenance of infrastructure is a priority
- A Brampton stormwater charge should be in line with the average charged by other municipalities
- Everyone should pay their fair share
- The stormwater charge should be easy to administer for business, commercial and institutional users

### Brampton Stormwater Charge

A Stormwater Charge is proposed for implementation in Brampton that would be based on the amount of impervious area within a property. To establish a balance between the cost of developing the program, and the administrative burden once established, a charging model was proposed whereby residential properties would be divided into several tiers based on size and impervious area, and the commercial/industrial/institutional properties would be assessed based on individual measurements of impervious area for each property. This model is very similar to that used in the City of Mississauga.

The proposed preliminary fee structure is based on the concept of a billing unit, which represents the average single-family detached home with a roof-print area ranging from 141 m<sup>2</sup> to 220 m<sup>2</sup>, with the mean area of 176 m<sup>2</sup> being designated the billing unit. Properties in this category comprise 52% of all residential billing units.

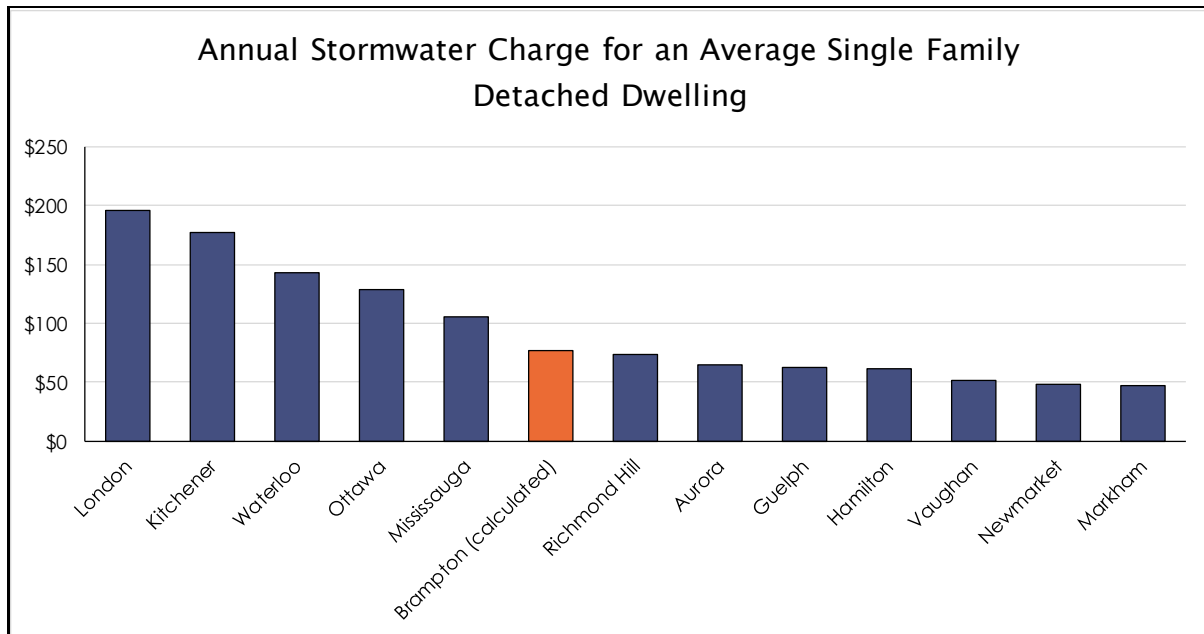
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The proposed preliminary fee structure is shown below:

**Table 2: Proposed Stormwater Charge Structure**

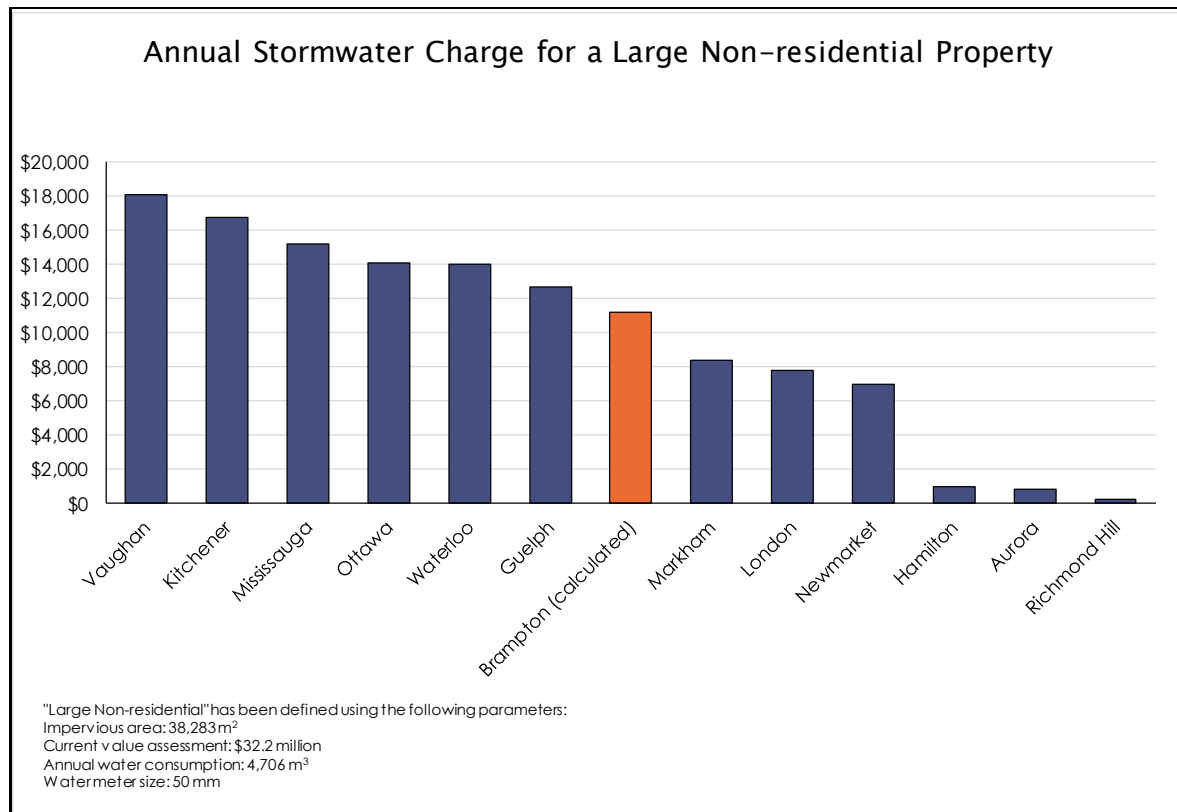
	roof area (m <sup>2</sup> )	# of billing units	Annual Cost
<b>RESIDENTIAL</b>			
Link homes, freehold townhomes, small semi-detached		0.5	\$38
Single-family detached (small)	106 - 140	0.7	\$54
Single-family detached (medium):	141 - 220	1	\$77
Single-family detached (large):	221 - 250	1.3	\$100
Single-family detached (very large):	greater than 250	1.8	\$138
<b>NON-RESIDENTIAL</b>			
per hectare of impervious area		42.7	\$3,290

The proposed Brampton Stormwater Charge is moderate in comparison to the rates charged by other municipalities, as show in Figures 1 and 2. Differences in the rates charged by each municipality depend on the number of billable parcels, the amount of infrastructure, and the user fee model employed (e.g. flat fee, charge based on amount of water consumed, or charge based on measurement of impermeable property area).



**Figure 1: Comparison of municipal residential stormwater charges**

## 9.2.2-8



**Figure 2:** Comparison of municipal non-residential stormwater charges

### Exemptions and Adjustments

The stormwater fee structure as proposed is preliminary, and will ultimately be refined by the results of detailed parcel analysis and measurement of impervious areas, and by removal of billing units through exemptions, credit policies or other reason. The Study looked at effect of removing anticipated exempted categories (schools, government buildings except City of Brampton facilities, rail), and this resulted in a 3.25% reduction in the total amount of billable units. This number will increase if credit programs are established whereby the stormwater charge billed to a property can be reduced through stormwater management measures implemented on the property.

### Implementation and Billing

The stormwater charge is proposed for introduction in the first quarter of 2020. A Stormwater Charge Implementation team will be assembled using City resources, and work in conjunction with the City's consulting team of Wood PLC/Watson & Associates to refine parcel analysis, develop billing and administrative databases, develop administration and exemption policies, prepare or update bylaw(s) to include a stormwater charge and create pre-implementation communications for City-wide distribution.



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The stormwater charge will be integrated into, and collected through, the Region of Peel's water billing system and the City will work throughout the process with staff from the Region.

### **Financial Implications:**

Subject to Council' approval, the implementation of the Stormwater Charge is projected to collect \$22 million per year, which will be used to fund operating and capital expenditures associated with stormwater infrastructure. A reserve fund will need to be established for collection of stormwater charge. The City's capital budget forecast also assumes the existence of a stormwater charge from 2020 onwards, and would require funding adjustments, should council decide not to approve the stormwater charge.

### **Other Implications:**

Stormwater is identified as a core service under Ontario Regulation 588/17 (Asset Management Planning for Municipal Infrastructure) and development of an asset management plan for this service area is now a Provincial requirement for all municipalities. The Stormwater Management Financing Study and the recommended proposal for implementation of a Stormwater Charge will address the financing component of a stormwater asset management plan.

### **Strategic Plan:**

The proposed stormwater charge is in alignment with the *2018-2022 Term of Council Direction: A Compass for our Community*, Strategic Direction #5 – a Well-Run City, specifically Priority 5.4 – Stewardship of Assets and Services. The proposed stormwater charge will provide the means to ensure that the City's stormwater management infrastructure is maintained to deliver required levels-of-service in an effective and fiscally responsible manner as Brampton continues to grow.

### **Conclusion:**

The City has \$1.12 billion of stormwater management assets that provide a core service for the modern municipality. Prudent stewardship of these assets will ensure regulatory and customer levels-of-service are maintained in the face of growth, climate change and evolving regulatory requirements. Continuing to fund stormwater asset management activities from property taxes is an unsustainable and inequitable approach, and a dedicated stormwater charge that fairly apportions the costs of maintaining the system according to the use made of it is a recommended approach for the City to implement, beginning in 2020.

## 9.2.2-10

Approved by:

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Michael Heralall, Senior  
Manager  
Environment  
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Approved by:

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David Sutton, Treasurer

Approved by:

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Michael Won, Director  
Environment and  
Development Engineering  
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Approved by:

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James Macintyre,  
Commissioner  
Corporate Services

### **Attachments:**

Appendix A - Table A1  
Appendix A – Table A2  
Appendix A – Table A3

Report authored by: Michael Heralall

# 9.2.2-11

**Table A1: Current Stormwater Program Costs**

Operations & Maintenance Contracted Services	
Street Sweeping	\$ 642,000
Sweeping Waste Recycling	\$ 100,000
Catch Basin Cleaning	\$ 588,000
Storm Sewer Flushing	\$ 150,000
Pond Maintenance	\$ 116,000
Underground Locates	\$ 200,000
CCTV Inspections	\$ 138,000
<b>SUBTOTAL</b>	<b>\$ 1,934,000</b>
Operations & Maintenance Labour Costs	
Road Operations	\$ 108,884
Parks	\$ 157,903
<b>SUBTOTAL</b>	<b>\$ 266,787</b>
<b>Total Annual O&amp;M Costs</b>	<b>\$ 2,200,787</b>
Planning, Engineering & Design Labour Costs	
Development Engineering/Construction	\$ 724,258
Planning/Growth Management	\$ 79,221
Roads Design	\$ 288,062
IT/GIS Mapping Support	\$ 22,500
<b>SUBTOTAL</b>	<b>\$ 1,114,041</b>
Capital Improvements Budget	
Stormwater Management Pond Restoration	\$ 2,500,000
Stormwater Management Study	<b>\$ 200,000</b>
<b>SUBTOTAL</b>	<b>\$ 2,700,000</b>
<b>Total Annual Engineering &amp; Capital Works Costs</b>	<b>\$ 3,814,041</b>
<b>Total Stormwater Program Costs</b>	
	<b>\$ 6,014,828</b>



City of Brampton, ON: Potential Level of Stormwater Service Options Matrix - FOR DISCUSSION

The City of Brampton currently provides general stormwater management services across the city. Services include operating and maintaining the existing infrastructure (such as catch basin cleaning, ponds maintenance, street sweeping, facility inspections) and managing stormwater planning and engineering projects (master planning, capital contracts, stormwater regulations). Review of the current services has shown gaps between existing levels of service (LOS) and the desired service level needed to support a sustainable program that effectively protects public health and safety and existing public and private investment. The following matrix provides options for enhancing the stormwater program of services by addressing current program gaps or needs, including information on current and minimum LOS and risks associated with maintaining current service levels.

PROGRAM GAP OR NEED	ASSOCIATED OBJECTIVE	CURRENT SERVICE LEVELS AND NOTES	LEVEL OF SERVICE OPTIONS			MINIMUM LOS	Risk associated with maintaining current LOS
			LOW	MEDIUM	HIGH		
A. Stormwater Operations and Maintenance (O&M)							
A.1. Regular inspections of stormwater infrastructure	The City should seek to move from reactive management of stormwater system components to a proactive, priority-based asset management program.	Currently there is no dedicated inspection staff for existing stormwater infrastructure. Inspections are typically performed in response to complaints or done by existing staff as time allows. A dedicated inspector/coordinator should be the minimum level of resource available to enable timely, regular inspection of stormwater infrastructure. Temporary staff (students) are retained for 6 months at a time. <b>Note This does not include an upcoming watercourse inspection being undertaken with CWA funding</b> LESS THAN MINIMUM LOS	Add one inspector dedicated to regularly scheduled inspections of stormwater management ponds, outfalls, watercourses, culverts, roadside ditches and oil/grit separators. Estimated annual cost: \$100,000.	Add one inspector and one temporary staff (student) dedicated to regularly scheduled inspections of stormwater management ponds, outfalls, watercourses, culverts, roadside ditches and oil/grit separators. Estimated annual cost: \$120,000.	Add one inspector and two temporary staff (students) dedicated to regularly scheduled inspections of stormwater management ponds, outfalls, watercourses, culverts, roadside ditches and oil/grit separators. Estimated annual cost: \$140,000.	There is currently no Regulatory minimum LOS. Industry practice is to inspect all facilities annually at a minimum for attributes affecting hydraulic performance, inlets and outlets, debris, and sediment build-up.	The risk of not performing regular field inspections is that obvious problems go unreported and can result in infrastructure failures or system underperformance impacting the effectiveness of flood control and water quality protection, resulting in costly emergency actions (emergency repairs typically cost 30-40% more than planned repairs and replacement).
A.2 Regular Pond Maintenance: Stormwater management ponds require regular monitoring and cleaning (not including dredging) to insure they are functioning properly. Currently the maintenance program for stormwater management facilities (ponds) is limited by resources. Dedicating additional resources for regularly scheduled inspections, monitoring, bathymetry measurements and maintenance could improve their function and longevity.	The City directs available resources to priority-based storm pond maintenance, but resources are insufficient to keep up with growing list of priority pond cleanings identified. Backlog will continue to build with each year.	Currently the City does general pond maintenance service that allows the cleaning, minor repairs and maintenance (does not include dredging) on approximately 10 ponds per year (\$75,000). Assuming the current routine maintenance of 10 ponds per year (on average) is the baseline level of service to be provided, routine maintenance of the 180 existing ponds will be done on a eighteen (18) year cycle. Add to this the projection that an additional 170 ponds could come on-line over the next 20 years (from the SW Master Plan), the level of service will need to increase to keep the ponds operating effectively and prevent flooding. Assumes the average cost for monitoring and maintenance is \$7,500 per pond.  LESS THAN MINIMUM LOS	Increase baseline level of service to establish a pond monitoring and inspection program with the goal of evaluating each pond on a 10-year cycle (approximately 18 per year). Use inspection information to assign a priority and perform maintenance (not including dredging) on an additional 8 ponds per year (for a total of 18 per year). Estimated increased cost: \$60,000	Increase baseline level of service to establish a pond monitoring and inspection program with the goal of evaluating each pond on a 7-year cycle (approximately 25 per year). Assign a priority based on monitoring and inspection and maintain (not including dredging) an additional 15 ponds per year (for a total of 25 per year). Estimated additional cost: \$112,500	Increase baseline level of service to establish a pond monitoring and inspection program with the goal of evaluating each pond on a 5-year cycle (approximately 36 per year). Assign a priority based on monitoring and inspection and maintain (not including dredging) an additional 26 ponds per year (for a total of 36 per year). Estimated additional cost: \$195,000	There is currently no Regulatory minimum LOS, however the Ministry of the Environment and Climate Change (MOECC) guidelines suggest that SWM facility forebays need to be cleaned every 10-15 years.	Industry best practices recommend inspection of ponds every 5 years to check structural integrity and operating capacity. Allowing ponds to fill with sediment or not addressing pipe or other structural problems diminishes pond capacity resulting in the potential for major system failures and increased local flooding risk. It also hinders the pond from being able to meet water quality requirements, and may in some instances violate the MOECC conditions of approval.

## 9.2.2-13



<p><i>A.3. Provide proactive maintenance to support maximum system capacity and longevity. The City currently has about 38,000 catch basins and current cleaning contracts provide cleaning of approximately 6,000 per year (or a cleaning cycle of once every 6.3 years.). Though city staff do provide some additional cleaning in problem areas, increasing the level of service provide by the contactors would allow a more proactive approach to long term catch basin maintenance.</i></p>	<p>The City should seek to move from reactive management of stormwater system components to a proactive, priority-based asset management program.</p>	<p>The current budget for contracted catch basin cleaning is \$588,000 and this supports cleaning approximately 6,000 catch basins per year. This results in a level of service of cleaning approximately 15% per year or a cleaning all basins on a 6.3 year cycle. For estimating purposes, each increase of 1,000 basins cleaned per year would cost about \$100,000. The current estimated replacement value for the City's catch basins is \$111M, so following the industry target of dedicating 1% of value to annual maintenance would suggest a annual goal of \$1.1M.</p>	<p>Increase the annual budget to fund catch basin cleaning system of 30% of the system per year (11,400 catch basins). Increasing the level of service to cleaning the basins on a 3.3 year cycle would cost an additional \$540,000 per year.</p>	<p>Increase the annual budget to fund catch basin cleaning system of 40% of the system per year (15,200 catch basins). Increasing the level of service to cleaning the basins on a 2.5 year cycle would cost an additional \$920,000 per year.</p>	<p>Increase the annual budget for funding catch basin cleaning system of 50% of the system per year (19,000 catch basins). Increasing the level of service to cleaning the basins on a 2 year cycle would cost an additional \$1,300,000 per year.</p>	<p>There is currently no Regulatory minimum LOS, however there is legislation coming (Infrastructure and Asset Management Act by 2021) that will set a minimum threshold. Industry practice is to maintain assets in a state of good repair, and a benchmark is spending 1% of the total asset value on annual O&amp;M.</p>	<p>Industry standards recommend establishing a maintenance schedule with a goal that the frequency of routine cleaning will ensure that no catch basin at anytime will be more than 50 percent full. At 50% full, capacity is significantly diminished, affecting ability of stormflows to enter the system. As catch basins fill with sediment at different rates in different locations, a more realistic goal for Brampton would be to inspect and clean on a three year cycle, taking note of those basins that are found to be more than 50% full and scheduling inspection/cleaning of those basins more often. This would also reduce the sediment loading to the ponds.</p>
<p><i>A.4. Implement a City-wide CCTV inspection program - inspections</i></p>	<p>Physical condition assessment and identification of priority areas.</p>	<p>The closed circuit TV (CCTV) inspection of the sewer system is in its first year and includes is a contract for \$138,000 to begin the inspection program. The cost per metre of pipe inspected is approximately \$1.65/m. The base level of service assumes the entire system will be inspected every 25 years. <b>This does not include the baseline inspection of entire system that needs to be completed within the next 5 - 7 years as part of asset management requirements.</b> Thereafter, approx. 4% of the system will be assumed to need inspection each year. Total cost of baseline inspection will be spread out over 25 years, but will be front-loaded in reality.</p>	<p>4% of system to be inspected per year (approximately 75 km out of 1.830 km of pipe) - budget \$120,000</p>	<p>6% of system to be inspected per year - budget \$180,000</p>	<p>8% of system to be inspected per year - budget \$240,000</p>	<p>There is currently no Regulatory minimum LOS, however the industry standard suggests up to a 25 year cycle on pipes that have a projected 100 year lifespan.</p>	<p>The goal is to develop a complete inventory and condition assessment of the system to allow identification and prioritization of problem areas and to meet asset management requirements. This will be done over the next 5-7 years and the cost will be covered as part of the City Asset Management program. Once the baseline information is established, the goal is to update the stormwater system conditions information on a 25 year basis. The risk of not performing scheduled inspections is that unknown problems may develop that result in system blockages or failures that could have been dealt with by cleaning and repairing the pipes (which would only be evident through CCTV inspection). Instead, if the problems go undetected, they could result in potential increased flooding and possible need for costly emergency pipe repairs and replacement to protect public health and safety at 30-40% increased cost.</p>
<p><i>A.5. Implement a City-wide storm sewer pipe repair program</i></p>	<p>The City should seek to move from reactive management of stormwater system components to a proactive, priority-based asset management program.</p>	<p>Currently there are no dedicated resources for planned pipe replacements. This fund would cover minor repairs ( pointing, lining, etc.) as well as replacement of some pipe sections. Project management and field inspection time will also be needed to be budgeted to oversee these services if contracted. The estimated replacement cost of the City's storm sewer system is \$775M.</p>	<p>Budget \$3,875,000 (representing 0.5% of estimated storm sewer system replacement cost) to contribute to a pipe repair fund. This fund will be tapped for major and minor pipe repairs, as well as pipe replacement when needed.</p>	<p>Budget \$7,750,000 (representing 1.0% of estimated storm sewer system replacement cost) to contribute to a pipe repair fund. This fund will be tapped for major and minor pipe repairs, as well as pipe replacement when needed.</p>	<p>Budget \$11,625,000 (representing 1.5% of estimated storm sewer system replacement cost) to contribute to a pipe repair fund. This fund will be tapped for major and minor pipe repairs, as well as pipe replacement when needed.</p>	<p>There is currently no Regulatory minimum LOS, however there is legislation coming (Infrastructure and Asset Management Act by 2021) that will set a minimum threshold. Industry practice is to maintain assets in a state of good repair, and a benchmark is spending 1% of the total asset value on annual O&amp;M.</p>	<p>Industry standard guidelines recommend to set aside 1% of asset value per year to cover maintenance and repair over the expected life of the asset (100 years for pipe). With a estimated replacement value of \$775M, an investment of 1% per year is \$7,750,000. The risk of not establishing a dedicated fund to support storm sewer repairs and replacements is that identified problems will get put on hold awaiting annual budgeting allocations, potentially resulting in further deterioration of problems and increased risk of failure and associated flooding and public safety concerns. Emergency repairs typically cost 30-40% more than planned repairs.</p>

		LESS THAN MINIMUM LOS					
A.6. <i>Ensure increase in O&amp;M is commensurate with estimates of growth</i> : The current replacement value of the City's stormwater infrastructure has been estimated at over \$1B (collection, conveyance, and treatment components). Having made this significant investment, the City now needs to support a program that will extend the life and effectively manage the operation of these assets. With a population approaching 627,500 in 2016, Brampton's population is expected to reach 842,300 people by 2031 (an average increase of 2.2% per year) and with that growth will come additional stormwater infrastructure needs.	Ensure growth in O&M investments keeps pace with growth in system needs.	Currently there is no target or LOS associated with yearly growth for stormwater services. It is assumed that the \$6M currently budgeted for stormwater-related services (2017) is the minimum level of service (LOS) to be provided and the options provided would be enhancements to that LOS.	Increase identified basic funding level by 2.2% per year (\$132,000) to help alleviate costs related to growth - to be adjusted annually	Not recommending exceeding the industry minimum LOS.	Not recommending exceeding the industry minimum LOS.	There is currently no Regulatory minimum LOS, however the industry standard is to match infrastructure spending to your growth.	As population increases, development of roads, schools, commercial and residential property also increases, requiring additional stormwater infrastructure. Including a 2.2% growth factor for maintenance funding allow maintenance levels of services to stay constant with growth. By not building in growth as part of funding considerations, the levels of service will not be able to keep up with the additional infrastructure the City gains with new development, resulting in decreasing service levels over time.
		MEETS MINIMUM LOS					
<b>B. STORMWATER PLANNING AND ENGINEERING</b>							
B.1. <i>Add GIS Analyst for Stormwater Tracking and Mapping</i> . In support of asset management, CCTV findings, planning, and field operations, dedicate GIS resources to updating and maintaining mapping and related geo-databases.	The stormwater program plan should be coordinated with on-going planning and growth initiatives to identify efficiencies.	The current LOS for stormwater GIS services includes the use of 25% of a GIS analyst from the IT Division to support stormwater related GIS needs (\$27,500/yr.). A GIS analyst dedicated to the stormwater program should be the minimum level of service to support mapping and stormwater database management. Assumes the cost of one full time, mid-level GIS analyst will be \$68,000 per year with benefits.	Assign a part-time (24 hours/week) stormwater GIS analyst to manage and update stormwater GIS data on existing and new assets. Estimated cost \$41,000 per year.	Assign a full-time stormwater GIS analyst to manage and update stormwater GIS data on existing and new assets. Estimated cost \$68,000 per year.	Not recommending exceeding the industry minimum LOS.	There is currently no Regulatory minimum LOS. Proposed minimum LOS is a full-time analyst dedicated to SWM.	As asset management information, including CCTV inspection, results and infrastructure inventories are developed, there will be an increased need to populate databases and apply GIS mapping tools. Up-to-date maps and databases increase efficiencies in planning, scheduling maintenance and in responding to field calls. Having a dedicated stormwater GIS analyst available, for mapping, inspection, and new infrastructure updates, will ensure timely data input and asset management.
		MEETS 50% PROPOSED MINIMUM LOS					
<b>C. CAPITAL IMPROVEMENTS</b>							
C.1. <i>Stormwater Pond Cleaning</i> : The City currently undertakes major maintenance of stormwater ponds (dredging and disposal of accumulated sediments) based on priorities derived from estimates of sediment removal efficiency. This initiative has received funding of \$2 - \$2.5M per year, and this level of investment will represent the minimum LOS for pond cleaning.	Program funding should be tied to level of service and sustainable financial program goals.	Assumes that the \$2.5M (average per year) currently budgeted for pond cleaning is the minimum level of service (LOS) to be provided and provides for funding an average of 5 ponds per year. The options presented would be enhancements to that LOS with the goal of achieving a cleaning frequency of 15 years/pond on average. The average cost of cleaning a pond, based on past contract prices, is \$500,000.	Dedicate an additional \$2,000,000 annually to allow cleaning of 9 SWM ponds/year. This would allow for the current inventory of 180 ponds to be each cleaned once approximately every 20 years.	Dedicate an additional \$3,500,000 annually for pond cleaning. This would allow for the current inventory of ponds to be cleaned once every 15 years.	Dedicate an additional \$5,000,000 annually for pond cleaning. This would allow for the current inventory of ponds to be cleaned once every 12 years.	There is currently no Regulatory minimum LOS, however MOECC guidelines suggest that SWM facility forebays need to be cleaned every 10-15 years, and main cells cleaned once they reach 50 % filled with sediment, which may be less frequent.	An analysis of the City's stormwater ponds, prepared as part of the City's State of the Local Infrastructure report in 2016, identified the condition of 15% of the ponds as very poor and 18% poor. When a system is new, major maintenance is typically set for every 20 years, but due to the age and condition of the existing inventory, the desired level of service needs to be accelerated to address identified needs and prevent pond failures. It is recommended that an LOS of cleaning every 15 years be the target for Brampton.
		MEETS MINIMUM LOS					

C.2. Stormwater Retrofit <i>Capital Investments</i> : The findings from several recent studies demonstrate the need for significant investment in erosion control and water quality protection. This will be achieved through implementation of stormwater pond retrofits in uncontrolled areas, or areas not meeting current regulatory targets. The current identified backlog is over \$64 M (\$47M for WQ retrofits, \$17M for temperature retrofits).	Program funding should be tied to level of service and sustainable financial program goals.	Currently there is no consistent budget for funding stormwaterretrofit projects. Using the information from the SW Master Plan (2008) and Stormwater Retrofit Study (2015), it is assumed that there is an existing backlog of at least \$64M worth of retrofit projects and that as part of the existing annual budget process, the highest priority projects will be scheduled first. By setting an annual level of investment, the City still has the flexibility to adjust the priority list annually to ensure the most efficient and effective spending of funds. The funding levels suggested include costs for project management staff and activities.  LESS THAN MINIMUM LOS	Dedicate \$2,560,000 annually to reduce the retrofit Capital Improvement Program (CIP) backlog. At this rate, existing known CIP needs would be addressed in 25 years.	Dedicate an additional \$3,200,000 annually to reduce the retrofit CIP backlog. At this rate, existing known CIP needs would be addressed in 20 years.	Dedicate an additional \$4,250,000 annually to reduce the retrofit CIP backlog. At this rate (\$6.4M per year), existing known CIP needs would be addressed in 15 years.	There is currently no Regulatory minimum LOS. Proposed minimum LOS is 25 years to clear the current backlog.	The \$64M backlog was identified in 2015 and little progress has been made in addressing these projects due to current funding limitations. Further delay in addressing these projects could result in deteriorating water quality and erosion problems and significant challenges to meeting water quality regulatory targets. Planning to fund these projects over a 25 year period would allow meaningful progress to be made and minimize further problems.
C.3. <i>Watercourse Capital Improvements</i> : The City has over 400 km of streams and watercourses under its ownership. These consist of natural and engineered channels, and maintaining the system in a state of good repair requires investment in erosion protection and restoration.	Invest in ongoing preventative maintenance of the river and stream system that is the ultimate receiver of stormwater discharge to minimize flooding and erosion.	Currently there is no dedicated funding for watercourse maintenance and improvements. The 2008 Master Plan recommended \$40M in non-site-specific erosion control works on City watercourses, to be done over 50 years, hence \$800k per year. The City is currently developing a prioritization scheme for the watercourse needs. The 50-year LOS would support approximately 400m of creek work (repair/stabilization) per year (SWM Master Plan).  LESS THAN MINIMUM LOS	Budget \$800,000 per year for watercourse maintenance. This will address the current estimated backlog over 50 years	Budget \$1,600,000 per year for watercourse maintenance. This will address the current estimated backlog over 25 years	Budget \$2,000,000 per year for watercourse maintenance. This will address the current estimated backlog over 20 years	There is currently no Regulatory minimum LOS. Proposed minimum LOS is a 50 year program.	As identified in the SW Master Plan in 2008, the City's watercourses (natural infrastructure)need maintenance to protect against erosion and instability. By not investing in the on-going need for erosion protection and restoration, bank failures will impact stormwater quality, channel capacity, and potentially private property , resulting in potentially larger investments to deal with emergency repairs.
C.4. <i>Stormwater capital program coordinator</i> : To address capital improvements at an increased pace, the City will need a balance of dedicated staff, supportive stakeholders, and available capital funding. The stormwater program plan will need to be integrated with other infrastructure projects to ensure efficiency and to maximize sharing of resources. To lead this integrated effort, a stormwater coordinator needs to be identified and given the responsibility to manage the capital backlog in an efficient, fiscally responsible way.	The stormwater program plan should be coordinated with on-going planning and growth initiatives to identify efficiencies and should include public participation as a fundamental component.	There is currently no funding for a dedicated stormwater program coordinator. The current level of service relies on existing staff to support project management of current limited stormwater services. A new or revised position should be considered to serve as a full time coordinator as this program grows. Estimated cost for a program manager position, including all benefits, is \$90,000 per year.  LESS THAN PROPOSED MINIMUM LOS	Assign a full time stormwater coordinator to manage an integrated stormwater capital program. The coordinator would also be responsible supporting/presenting at public participation opportunities. Estimated cost \$90,000	Assign a full time stormwater coordinator and a stormwater technician to manage an integrated stormwater capital program. The new staff would also be responsible supporting/presenting at public participation opportunities. Estimated cost \$158,000	Assign a full time stormwater coordinator and two stormwater technicians to manage an integrated stormwater capital program. The new staff would also be responsible supporting/presenting at public participation opportunities. Estimated cost \$226,000	There is currently no Regulatory minimum LOS. Proposed minimum LOS is a full-time SWM coordinator.	As the City focuses more on stormwater management works arising from the implementation of respective plans, the workload will increase significantly and it will be important to have leadership to ensure the program plan is implemented efficiently and that the public is kept informed on progress and how their money is being invested. Not adding a stormwater leadership position will likely mean that duties are split across departments, as is currently done, and will lack a dedicated point person and may result in difficulties in executing and coordinating an integrated plan and public message.
<b>D. STORMWATER PROGRAM FINANCIAL ADMINISTRATION</b>							



D.1 Stormwater Education and Outreach : It is a priority in the City to support public engagement and education and it is a key component for setting priorities and building community understanding and support. As the stormwater program takes on new challenges, a coordinated, consistent, and accessible outreach and education program will be critical to gaining and maintaining community support	The stormwater program should include public participation and education as a fundamental component.	Currently there are no communication staff that are dedicated to stormwater management; support for the limited stormwater public outreach activities is provided by Strategic Communications staff. As the stormwater program levels of service expand, regularly scheduled news items, website and media updates, and public meetings should be planned to educate stakeholders about the stormwater program general activities and on specific projects that impact localized areas of the City. The messaging and outreach should be consistent and coordinated with other activities impacting the City. Assumes a full-time stormwater outreach coordinator position at \$80,000 per year with full benefits (however is expected to reduce effort and be reallocated over time).  LESS THAN MINIMUM LOS	Use existing staff from communication and stormwater operations to track and report on stormwater issues and projects. Target several environmental activities and community meetings annually to educate stakeholders on the importance of effective stormwater management services and what they can do to support the program. Cost for materials and meetings - \$6,000/year	Assign a part-time (24 hours/week) stormwater outreach coordinator to plan and implement outreach and education plans. Estimated cost \$54,000 per year plus materials (\$6,000)	Assign a full-time stormwater outreach coordinator to plan and implement outreach and education plans. Estimated cost \$80,000 per year plus expenses (\$6,000)	There is currently no Regulatory minimum LOS. Proposed minimum LOS is a full-time SWM outreach coordinator.	Growing the stormwater program from a basic service level to a more enhanced level will allow improvements in service across the city including the undertaking of significant capital projects. Outreach to the community on what projects are prioritized, how their funding is being managed and the impacts that projects will have on the community may become a full time job. Having communication staff with knowledge and understanding on the stormwater services and challenges, actively promoting education and outreach will help gain and maintain critical community support. Once the public becomes more informed about the stormwater program and impacts of new projects, it may be possible to cut this position back to part-time (in 2-3 years).
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Total additional expenditures by LOS

Brampton draft LOS Cost Matrix	estimated annual cost		
	Low	Medium	High
Program Need			
A.1. Regular Inspections of SWM infrastructure	\$100,000	\$120,000	\$140,000
A.2. Pond Maintenance (non-dredging)	\$60,000	\$112,500	\$195,000
A.3. Maintenance - Catch basins	\$540,000	\$920,000	\$1,300,000
A.4 City-wide CCTV inspections	\$120,000	\$180,000	\$240,000
A.5 Storm sewer repair/replacement	\$3,875,000	\$7,750,000	\$11,625,000
A.6 O&M Growth fund	\$132,000	\$132,000	\$132,000
B.1 GIS Analyst	\$41,000	\$68,000	\$68,000
C.1. Storm Pond Cleaning	\$2,000,000	\$3,500,000	\$5,000,000
C.2 Retrofit Capital investment	\$2,560,000	\$3,200,000	\$4,250,000
C3. Watercourse Capital Improvements	\$800,000	\$1,600,000	\$2,000,000
C4. Stormwater Capital Coordinator	\$90,000	\$158,000	\$226,000
D.1. Stormwater education and outreach	\$6,000	\$60,000	\$86,000
	\$10,324,000	\$17,800,500	\$25,262,000

Recommended enhancement to current storr \$15,961,000



## 9.2.2-17

**Table A3: Level of Service Scenarios and Recommended Future Level-of-Service**

Program Element	Level of Service		
	Low	Medium	High
Increase resources for stormwater pond cleaning (new crews and equipment)			
Implement a City-wide storm sewer repair program			
Regular Inspection of Stormwater Infrastructure			
Implement City-wide CCTV program			
Regular stormwater pond maintenance (monitoring, minor maintenance)			
Public education and outreach			
Proactive Maintenance to support maximum system capacity and longevity			
Ensure increase in O&M is commensurate with estimates of growth			
Increase annual capital investment for stormwater facility retrofits (reduce backlog)			
Increase annual investment in maintenance of watercourses (reduce backlog)			

<b>Current (2017) Cost:</b>	<b>Additional Cost of Recommended LOS:</b>
<b>\$6,014,828</b>	<b>\$15,920,500</b>