**CITY OF VAUGHAN**

**EXTRACT FROM COUNCIL MEETING MINUTES OF MAY 19, 2015**

Item 2, Report No. 9, of the Finance, Administration and Audit Committee, which was adopted without amendment by the Council of the City of Vaughan on May 19, 2015.

## 2 STORMWATER INFRASTRUCTURE FUNDING STUDY UPDATE – CITY-WIDE

**The Finance, Administration and Audit Committee recommends:**

**1) That the recommendation contained in the following report of the Commissioner of Public Works and the Director of Environmental Services, dated May 4, 2015, be approved; and**

**2) That the presentation by the Director of Environmental Services and Mr. Andrew Grunda, Principal, Watson & Associates, Mississauga, and C2, presentation material entitled: "*Stormwater Infrastructure Funding Study*" dated May 4, 2015, be received.**

### Recommendation

The Commissioner of Public Works and the Director of Environmental Services, in consultation with the Director of City Financial Services/Deputy Treasurer recommend:

1. That this report be received for information.

### Contribution to Sustainability

This project will directly support Green Directions Vaughan Goal 1: To significantly reduce our use of natural resources and the amount of waste we generate. Furthermore it directly adds resolution to the following objective:

- Objective 1.3: To support enhanced standards of stormwater management at the City and work with others to care for Vaughan's watersheds
- This project will also support action 5.1.4 which notes that a strategy to assess vulnerability to climate change and plans be developed for mitigating impacts and remedial responses

### Economic Impact

There are no immediate impacts resulting from the adoption of this report.

### Communications Plan

It is recognized that development of a community understanding of the funding requirements of a significant city service, such as stormwater, requires a comprehensive program. Therefore, the project team has developed and initiated an Engagement and Communication Plan as an integral part of the Stormwater Infrastructure Funding Study. Citizens and key stakeholders continue to be engaged through all stages of the project including the development and establishment of stormwater program levels of service, and the exploration of funding models.

To date:
The Engagement and Communication Plan developed for the study follows the guidelines established by the International Association for Public Participation (IAP2) with respect to public engagement. A communications plan was developed to engage citizens, businesses and other stakeholders to ask for input and guidance in the development of stormwater levels of service and a funding model. The communications plan focuses on informing the public on defining stormwater, stormwater activities performed by the City and how citizens and businesses can help protect stormwater and the environment. Posters (Attachment 1), newsletter articles, electronic communication and the website were used as means of communication. The posters were put up in all of the City's libraries and community centres.

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The plan also includes involving, consulting and collaborating with key stakeholders through the use of a Stormwater Advisory Committee. The Stormwater Advisory Committee is made up of representatives from the following:

- Springfarm Ratepayer's Association
- Glen Sheilds Ratepayer's Association
- Mackenzie Ridge Ratepayer's Association
- Village of Woodbridge Ratepayer's Association
- Beverly Glen Ratepayer's Association
- Vaughan Mills
- BILD
- Canada's Wonderland
- Region of York
- York Housing Authority
- York Region District School Board
- Sustainable Vaughan
- Earth Rangers
- TRCA

The Stormwater Advisory Committee has met three times over the last couple of months and the work of this committee is reflected in this report.

Next steps:
In the recent *City of Vaughan: 2014 Citizen Satisfaction Survey, Key Findings Report*, citizens indicated that the most popular means of communication from the City was through mail, email, local newspapers and the website. Given this information the communications plan will continue with notifications in local newspapers, on the Vaughan website and newsletter information sent through e-mail. Interested citizens will be asked to participate in the discussion through the use of the survey. The final Stormwater Advisory Committee meeting will also be held in May 2015.

## Purpose

The purpose of this report is to inform Council of staff's work to date to develop a sustainable funding framework for stormwater infrastructure and ask for feedback from FAA Committee to further inform the study.

## Background - Analysis and Options

### Staff received direction from Council on April 8, 2014 to explore funding models for a stormwater program through a Stormwater Infrastructure Funding Study

In a staff report for Finance, Administration and Audit Committee on March 31, 2014, staff informed Committee of the need for a dedicated funding source for a proactive and planned stormwater management program. The current stormwater program is reactive in nature and although there have been many studies following storm events and projects identified in a stormwater retrofit study and stormwater master plan, these projects and programs have not been acted upon due to lack of a planned stormwater program.

Vaughan is not unique in its challenge to fund a stormwater program. Municipalities across Ontario, Canada and the USA have experienced increasingly severe storm events which have put pressure on the stormwater system. Also, government ministries have stricter requirements with respect to water quality and have asked municipalities to look at more options to manage stormwater on properties rather than sending it all to a water course or other water body.

Council recognized this need to explore a funding model which would be a dedicated funding source and directed staff to initiate the Stormwater Infrastructure Funding Study.

**The goals and objectives, identified in the study for the stormwater program, focus on balancing stormwater program needs against sustainable funding**

The goal of the Stormwater Management Program is to protect public health and safety and the City's valuable natural and man-made resources by minimizing the impacts of stormwater runoff through on-going system assessments, proactive maintenance and operation of the City's assets, and well-considered investment in system upgrades and expansion.

The key objectives of the program are:

- Services provided by the City should be *clearly defined*, be *based on an assessment of actual need*, and be provided *as efficiently as possible*
- The City should seek to move from reactive management of stormwater system components to a *proactive, priority-based asset management program*
- The program should be *realistic and achievable* and establish *clear lines of accountability* and decision making.
- 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.
- Program funding *should be a balanced approach* and tied to level of service and sustainable financial program goals.

**The study has documented the City's current reactive stormwater program and has identified future planning, capital projects needs and identified studies**

Through an intensive gap analysis it was determined that four key areas need to be addressed to ensure that the goal for the stormwater program be realized. The four areas are listed below:

Asset Management: Services provided by the City should be based on an assessment of actual need and be provided as efficiently as possible.

Stormwater Planning and Engineering: The stormwater program plan should be coordinated with on-going planning and growth initiatives and should include public participation as a fundamental component.

Stormwater Operation and Maintenance: The City should seek to move from reactive management of stormwater system components to a proactive, priority-based asset management program.

Capital Improvements: Program funding should be tied to level of service and sustainable financial program goals. 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.

**The stormwater program gaps were further broken down into 'basic', 'medium', 'high' and 'maintain' levels of service within the previous four areas**

The 'maintain' level of service refers to continuing with the current program. The 'basic', 'medium'' and 'high' levels of service are defined as follows:

- **Basic:** refocus of existing resources or add funds as a first step in enhancement to respond to service needs

- **Medium:** addition of staff/contractor/materials to increase capability to address service needs in a moderate approach.
- **High:** addition of staff/contractor/materials to address service needs as the highest priority in an aggressive approach.

See Attachment 2 for a detailed listing of Levels of Service and program needs.

**Staff, with input from the Stormwater Advisory Committee, recognized the need to improve levels of service to the 'medium' category for the majority of identified program needs**

The second Stormwater Advisory Committee meeting addressed the stormwater program needs and through discussion and the use of a prioritization tool recommended the 'medium' service level for the stormwater program. This level of service was further refined by staff based on internal resources and some modifications were made. The results of the prioritization tool are in Attachment 3.

**Currently, funding for the program is derived from three different sources: wastewater rate, tax levy and gas tax.**

Wastewater Rate: A small percentage (6.85%) of the wastewater rate has been dedicated since 2009 to fund stormwater operating activities. These activities are currently carried out by the Environmental Services Department

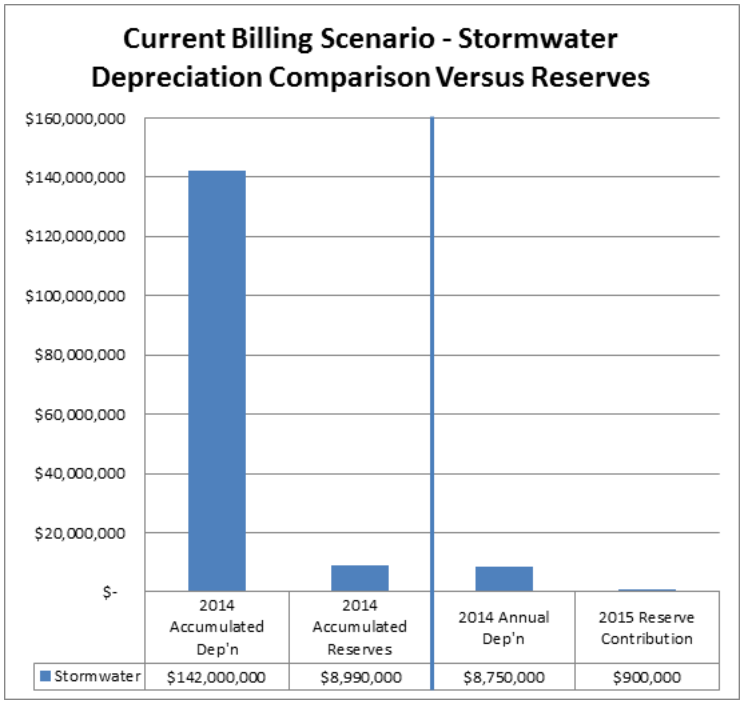
Tax Levy: Stormwater activities, such as street sweeping, ditch maintenance, etc., which are being performed by the Roads Division of the Transportation Services and Parks & Forestry Operation Department are funded by the general tax levy. Through this study, these activities have been identified as primarily stormwater activities and it is proposed that these be funded from the proposed stormwater funding source.

Gas Tax: Currently the storm pond maintenance/cleaning is funded by the gas tax. This funding source also funds many other City projects.

The activities listed above which are funded from the tax levy and gas tax have been incorporated into the analysis for the stormwater infrastructure funding study and the costs associated with these activities have been included when determining the overall stormwater program cost.

**The current stormwater program funding model does not meet future infrastructure repair and replacement needs**

Using annual depreciation as a basis for reserve funding is a best practice according to the National Guide to Sustainable Municipal Infrastructure. As discussed above, 6.85% of the wastewater rate which funds stormwater is used for operating activities with only a small portion of that contributing to future repair and replacement needs. This amount is insufficient to meet the amortization requirements for ageing stormwater infrastructure. As illustrated in the graph below the annual reserve contribution falls far short of the annual depreciation expense and therefore does not allow for any catch up funding against the accumulated depreciation. In the final study to be presented to Council later this year, the reserve calculation will be further described.




**The traditional funding model for stormwater has been examined by many municipalities across North America**

Climate change, more sophisticated environmental regulations, development and new stormwater retention technologies have put a more direct focus on stormwater activates. Many municipalities are now pursuing the benefits of implementing a direct and dedicated funding source to meet these new challenges. Continued reliance on traditional non-dedicated funding models can impact a municipality's ability to plan for and implement proactive operations and maintenance, thus ensuring a sustainable stormwater and infrastructure program.

**The 2014 to 2017 Budget Instructions encouraged departments to explore new user fee opportunities for existing non-revenue generating services**

Environmental Services has explored a new user fee for the stormwater service through the Stormwater Infrastructure Funding Study. As explained below, staff are now refining potential dedicated funding framework reliant upon new stormwater rates for residential, industrial, commercial, institutional and vacant/agricultural lands.

**Having evaluated stormwater rates of varying degrees and complexity, staff are realizing the benefits of a modified flat/utility rate based on run-off coefficient funding model**

There are several different funding models which were considered to fund a municipal stormwater program. These range from the simplistic with one flat rate for all residential and one flat rate for all industrial/commercial/institutional (I/C/I) to a very complex rate which measures impermeable area for each property and determines individual rates for each property.

A modified flat/utility rate considers a tiered approach where there are different rates for different types of property for residential, and for I/C/I. The run-off coefficient, is an element of the City's design standards, and is used during the development approval process to determine the stormwater infrastructure for each development application. The use of the run-off coefficient in the development of a stormwater rate will provide consistency with existing City processes.

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Based on the experiences observed from other jurisdictions, staff is realizing that a modified flat/utility rate based on run-off coefficient funding model, which was also favoured by the Stormwater Advisory Committee (Attachment 4), may be the optimal choice for consideration by the City. This funding model is one which is also used by other Region of York municipalities (Attachment 5). This funding model uses the run-off coefficient as defined in the City's design standards to determine the run off for types of residential and I/C/I, which in turn is used to determine the stormwater contribution to the stormwater system. The resulting funding model has multiple rates for residential and rate for I/C/I. This funding model also has the advantage of being easiest to understand and quickest and least costly to implement.

**The residential and industrial/commercial/institutional yearly costs in 2016 have been estimated**

Applying the 'medium' levels of service for the stormwater program has resulted in an operating and capital budget increase from $5,695,822 for 2015 to $18,522,855 for 2025. Using the funding model described above, this results in a yearly rate for residential, ICI and vacant lands as shown in the table below:

| Property Type | Yearly Potential 2016 Rate | Yearly Potential 2025 Rate |
|---|---|---|
| Residential (Low Density) – per unit | $ 34.07 | $64.06 |
| Residential (Medium Density) – per unit | $21.11 | $38.28 |
| Residential (High Density) | $86.22 | $164.99 |
| Commercial | $690.29 | $1,321.59 |
| Industrial | $572.76 | $1,096.97 |
| Institutional | $2,160.56 | $4,122.16 |
| Agricultural/Vacant | $396.27 | $758.99 |

The draft numbers represented above will be further refined as the study explores possible exempt properties and low income relief.

**The stormwater infrastructure funding study will be completed next month with the final recommendations and a potential implementation strategy is proposed to be presented to Finance, Administration and Audit Committee later this year**

The next steps for the stormwater infrastructure funding study are to engage the general public through a variety of communication tools regarding the proposed levels of service and the proposed funding model. The Stormwater Advisory Committee will meet one more time to provide comments on the financial plan and proposed funding model.

Comments from the public and the Stormwater Advisory Committee will be incorporated into a report for consideration by FAA Committee late this year.

**Relationship to Vaughan Vision 2020/Strategic Plan**

As we examine the current and future stormwater management services provided by the City, the program objectives and priorities will align with the Strategic Plan by supporting the following key themes:

- Pursuing *Service Excellence* by establishing and achieving service levels based on best practices and standards; by promoting actions that protect community safety and well-being; and by committing to protect and enhance the natural and built environments through the efficient use of resources.

- Pursuing *Organizational Excellence* by assessing and managing infrastructure to maximize useful life and ensure a sustainable future and by using financial resources wisely by making informed decisions that take into effect the impact on City residents and operations.
- Pursuing *Staff Excellence* by demonstrating effective leadership through engagement and collaboration of staff resources across business areas and by investing in development and retainage of skilled staff dedicated to service excellence.

**Regional Implications**

York Region has been identified as a stakeholder and is a member of the Stormwater Advisory Committee.

**Conclusion**

The Stormwater Infrastructure Funding Study will provide the City of Vaughan with a comprehensive stormwater program and a sustainable funding source to support it. The Stormwater Advisory Committee has been instrumental in defining the levels of service and providing input into the choice of funding model. The next steps will be to provide FAA with a finalized draft rate later this year.

**Attachments**

Attachment 1 – Stormwater posters
Attachment 2 – Levels of Service and Program Needs
Attachment 3 – Level of Service – Prioritization Table
Attachment 4 – Funding Model – Prioritization Table
Attachment 5 – Stormwater Rates in Other Municipalities

**Report prepared by:**

Jennifer Rose, Director of Environmental Services, ext. 6116

(A copy of the attachments referred to in the foregoing have been forwarded to each Member of Council and a copy thereof is also on file in the office of the City Clerk.)

VAUGHAN

PROTECT OUR WATER
PROTECT OUR FUTURE

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COMMUNICATION
FAA - MAY 4/15
ITEM - 2

# Stormwater Infrastructure Funding Study

Finance, Administration and Audit Committee

May 4, 2015

# Presentation Objectives

- Present to Committee a status update of the Stormwater Infrastructure Funding Study
- Receive feedback from Committee on the suggested stormwater program and funding model

# Background

- Staff received direction from Council on April 8, 2014 to explore funding models for a stormwater program through a Stormwater Infrastructure Funding Study

# Why do we need to find a funding source for stormwater?

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PROTECT OUR FUTURE

# Funding Model Preliminary Rate Impacts

| Property Type | 2015 Modified Flat Rate Model | |
|---|---|---|
| | 2015 | 2025 |
| Residential (low density) | $30.87 | $63.71 |
| Commercial | $623.24 | $1,313.02 |
| Institutional | $1,949.12 | $4,100.43 |
| Industrial | $522.21 | $1,100.13 |

# Vaughan's Current Stormwater Management Assets

- The public portions of the City's stormwater system include:
  - Over 1,000 km of pipes
  - Approx. 12,000 manholes
  - Over 18,000 catch basins
  - 555 storm sewer outfalls
  - Over 2,500 culverts
  - 143 stormwater ponds
  - 28 km of drainage ditches

- Value of existing stormwater system is approximately $1.3B

# Stormwater Infrastructure Funding Study Components

- Engagement and Communication Plan
  - Stormwater Advisory Committee
    - Springfarm Ratepayer's Association,Glen Sheilds Ratepayer's Association, Mackenzie Ridge Ratepayer's Association, Village of Woodbridge Ratepayer's Association, Beverly Glen Ratepayer's Association
    - Vaughan Mills, BILD, Canada's Wonderland
    - Region of York, York Housing Authority, York Region District School Board
    - Sustainable Vaughan, Earth Rangers, TRCA
  - Public Information Centre
- Development of a Stormwater Program
- Funding Model Analysis

# Program Goal

The goal of the Stormwater Management Program is to:

- protect public health and safety
- protect the City's valuable natural and man-made resources by minimizing the impacts of stormwater runoff through on-going system assessments
- proactive maintenance and operation of the City's assets
- well-considered investment in system upgrades and expansion

# Development of Stormwater Program

- Assess gaps in current program
- Risks to maintaining current program
- Stormwater level of service program analysis

# Current Program Areas

Four key areas work together in the stormwater program:

i. **Stormwater Operation and Maintenance:** Move from reactive to a proactive, priority-based asset management program.

ii. **Capital Improvements:** Program funding should be tied to level of service and sustainable financial program goals, be coordinated with on-going planning and growth initiatives and include public participation as a fundamental component.

iii. **Asset Management:** Services based on an assessment of actual need and provided as efficiently as possible.

iv. **Stormwater Planning and Engineering:** Program plan should be coordinated with on-going planning and growth initiatives and should include public participation as a fundamental component.

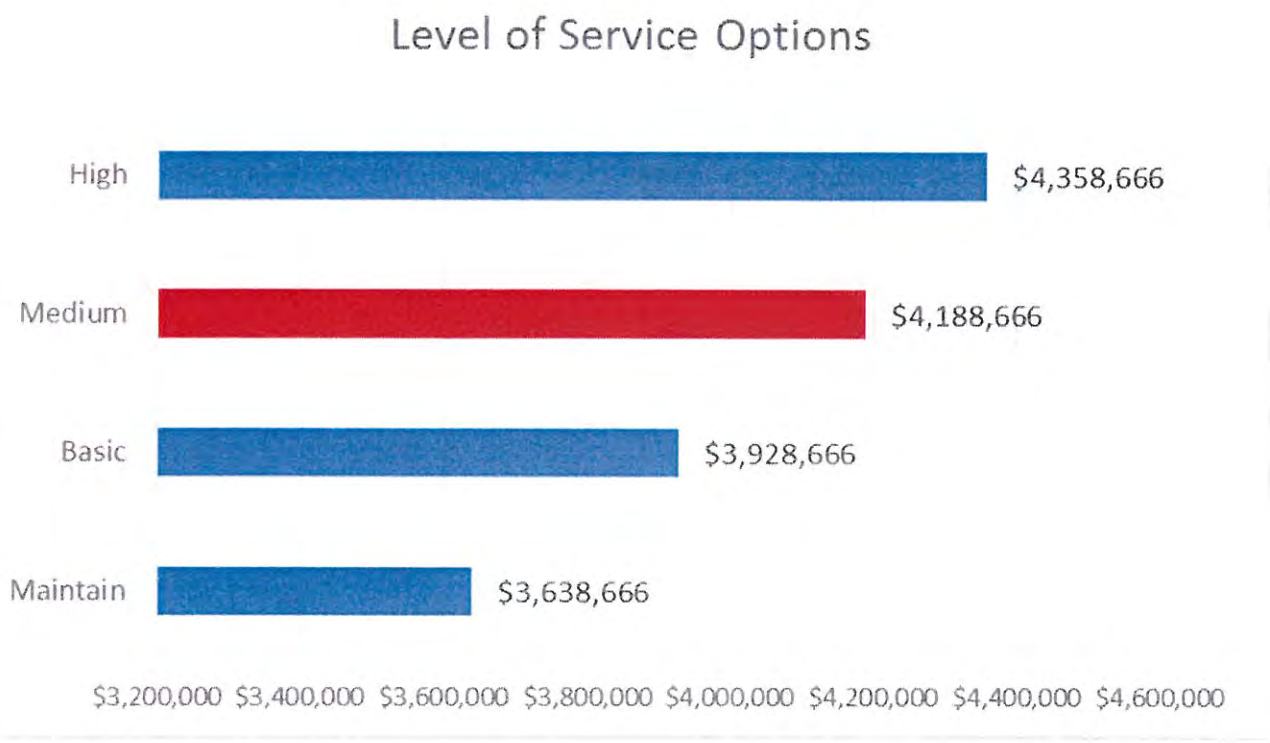
# Current Program Gap Assessment

| Program Area | Current Program | Potential Risks |
|---|---|---|
| Stormwater Operations and Maintenance | Routine maintenance plus a reactive plan (complaint driven). Not always able to stay ahead of the storms, keep all systems clear of debris. | Without increasing capabilities the priority work will not get done in time – continued risk of flooding, erosion, water quality impairment |
| Capital Improvements | Limited staff to manage the numerous (> 50) projects identified, or manage external assistance; only able to initiate 2 or 3 per year | Potentially significant property damage, increase in risk to public health, safety, and loss of system performance |
| Asset Management | Limited information on pond and sewer conditions. CCTV underway for underground system; limited pond monitoring | Aging infrastructure left unrepaired may deteriorate to point that costly replacement required; inefficient use of resources, inability to focus resources on areas where maintenance needed the most |
| Stormwater Planning and Engineering | Primarily subdivision review, limited site plan review; beginning to embrace new technology e.g. green infrastructure | Increased growth will further exacerbate the standard review; assumption of deficient infrastructure |

# Address Gaps in Current Program

- A strategy for change was evaluated for each gap:
  - **Maintain:** continue with the current program
  - **Basic:** refocus of existing resources or add funds as a first step in enhancement to respond to service needs
  - **Medium:** addition of staff/contractor/materials to increase capability to address service needs in a moderate approach
  - **High:** addition of staff/contractor/materials to address service needs as the highest priority in an aggressive approach

# Level of Service - Operations and Maintenance

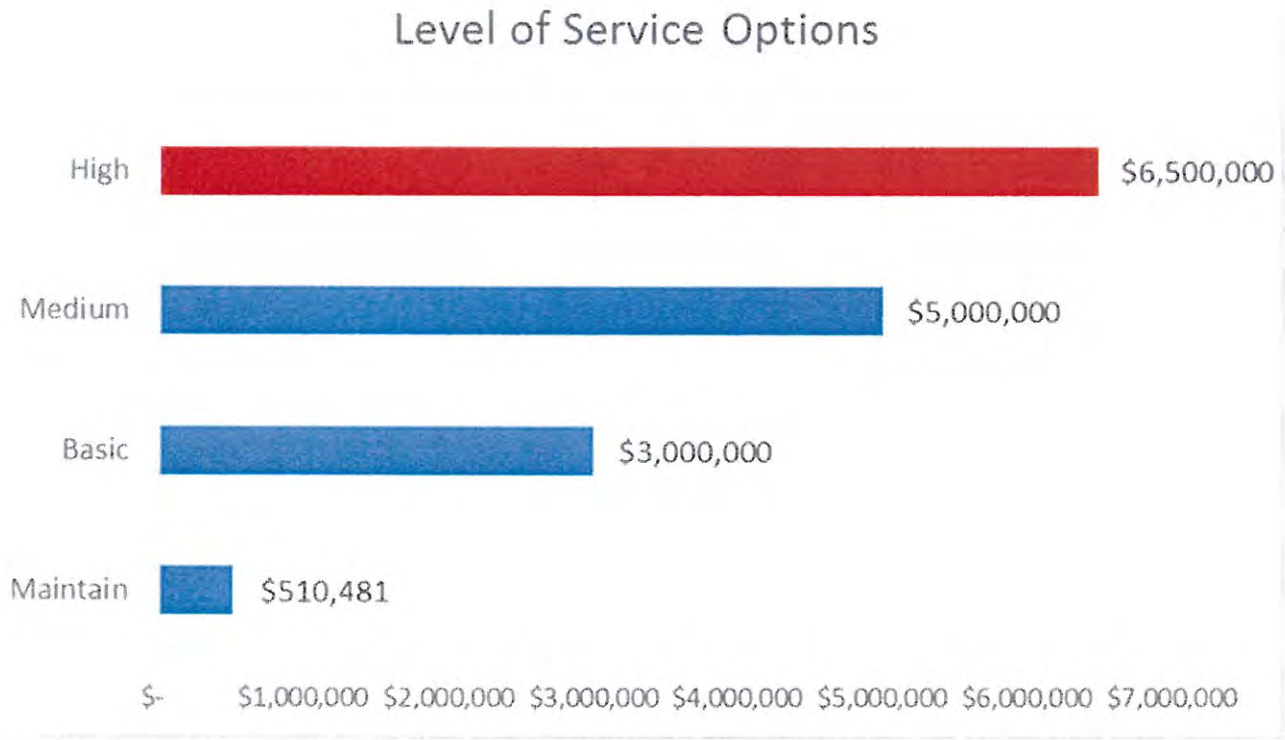



Outcomes

- High
  - Add 1 field crew, plus equipment and larger increase maintenance budget
  - 0.34% of asset value
- Medium
  - Add 1 field crew, plus equipment and larger increase maintenance budget
  - 0.32% of asset value
- Basic
  - Add 1 field crew and increase maintenance budget
  - 0.30% of asset value
- Maintain
  - Reactive/routine maintenance
  - 0.28% of asset value

Risk: Deterioration of infrastructure increases performance failures resulting in flooding, poor water quality, and increased costs over time

# Level of Service – Capital Improvements

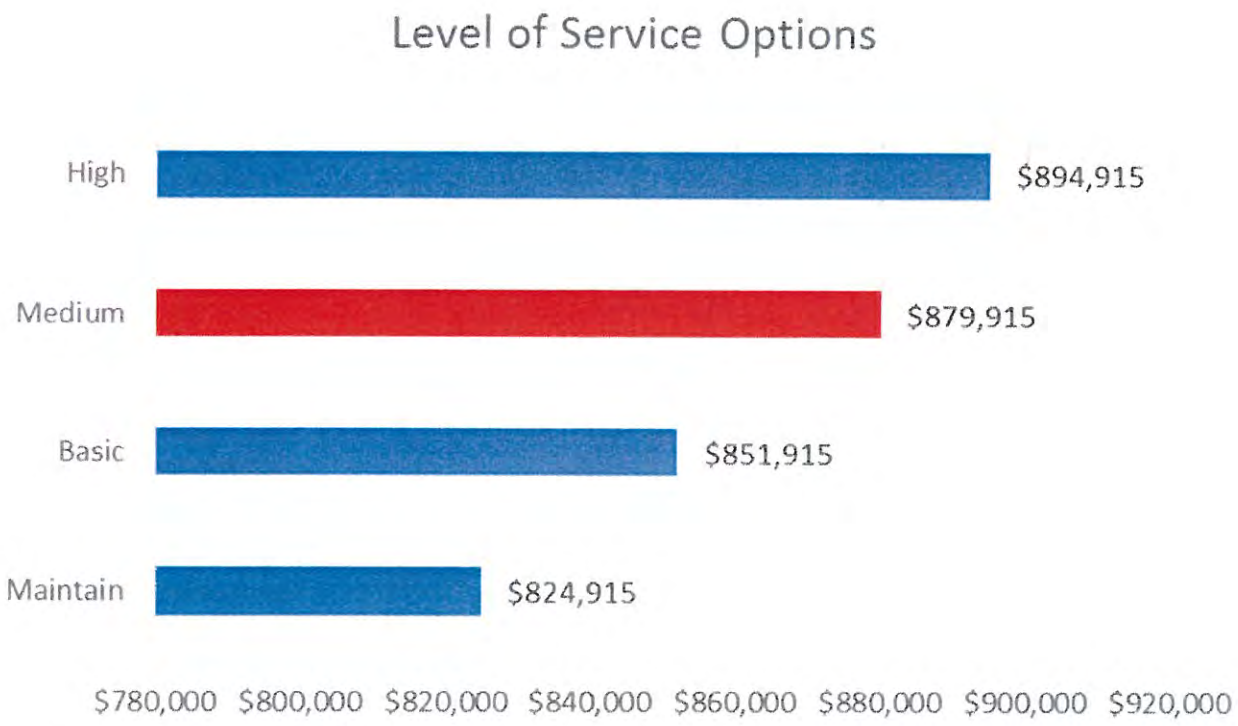



Outcomes

- High
  - Increase spending to reduce backlog in 10 years
  - Additional staff resources
  - 0.50% of asset value
- Medium
  - Increase spending to reduce backlog in 13 years
  - Additional staff resources
  - 0.38% of asset value
- Basic
  - Increase spending to reduce backlog in 22 years
  - 0.23% of asset value
- Maintain
  - 1-2 projects annually
  - 0.04% of asset value

Risk: Not able to address high priority flooding, erosion, and water quality retrofits in a timely manner and capital backlog grows. Cause potential property damage, increase in risk to public health and loss of system performance

# Level of Service – Asset Management

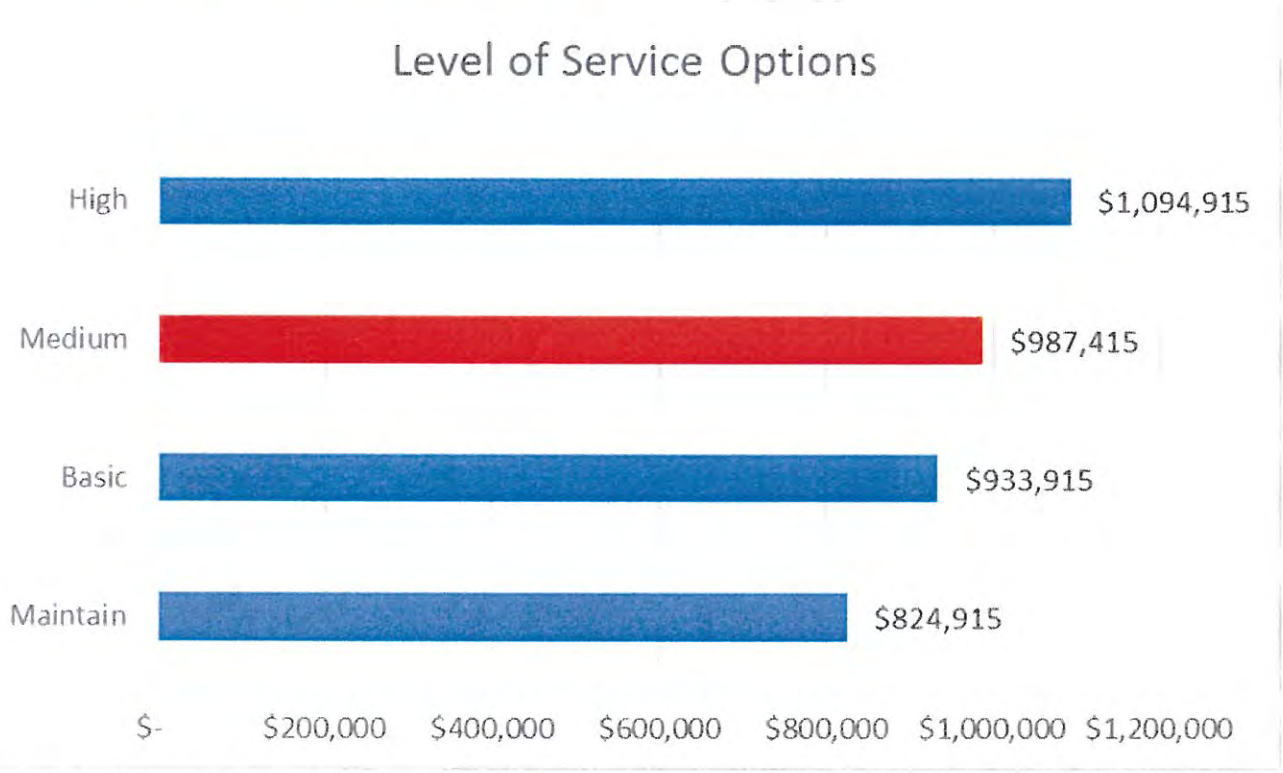



Risk: Backlog grows without capabilities to address in a timely fashion, continuing localized flooding and reduced water quality

Outcomes

- High
  - Builds on Medium LOS, adding 1km of storm sewer replacement annually
- Medium
  - Increase annual spending to address up to 1% of inspected pipes
  - Significant repairs addressed
- Basic
  - Continue CCTV inspections
  - Modest increase in annual spending
- Maintain
  - Continue CCTV inspections
  - Emergency based response

# Level of Service – Planning and Engineering




Outcomes

- High
  - Add 1 part-time and 1 full time engineer and inspector to review and approve installed infrastructure
- Medium
  - Add 1 full-time engineer and inspector to review and approve installed infrastructure
- Basic
  - Add 1 part-time engineer and inspector to review and approve installed infrastructure
- Maintain
  - Reactive increased pressure for inspections due to growth

Risk: Potential exists for new infrastructure and new technologies not meeting City standards and to reallocate staff efforts will reduce tie on other duties

EXAMPLE OF FUTURE BENEFIT OF INCREASED FUNDING AND MAINTENANCE

Increased funding and maintenance will mean that blocked inlets (e.g. top left) will no longer cause temporary flooding (centre) and frequent storms will be managed without flooding (right)


EXAMPLE OF FUTURE BENEFIT OF INCREASED FUNDING AND MAINTENANCE

Increased funding and maintenance will mean that sediment-clogged stormwater management ponds (e.g. top left) will be cleaned and returned to their full function for flood, erosion and water quality control (right)

# Summary of Program Resource Demand

- 2015-2025 Operating and Capital Forecast based on level of service investments

| | 2015 Budget | 2016 Estimate | Annual Increase 2017-2025 |
|---|---|---|---|
| **Operating** | $ 5,288,500 | $ 6,031,100 | 2.8% |
| **Capital** | $ 510,500 | $ 6,810,500 | constant |
| **Total** | $ 5,799,000 | $ 12,841,600 | 1.1% |

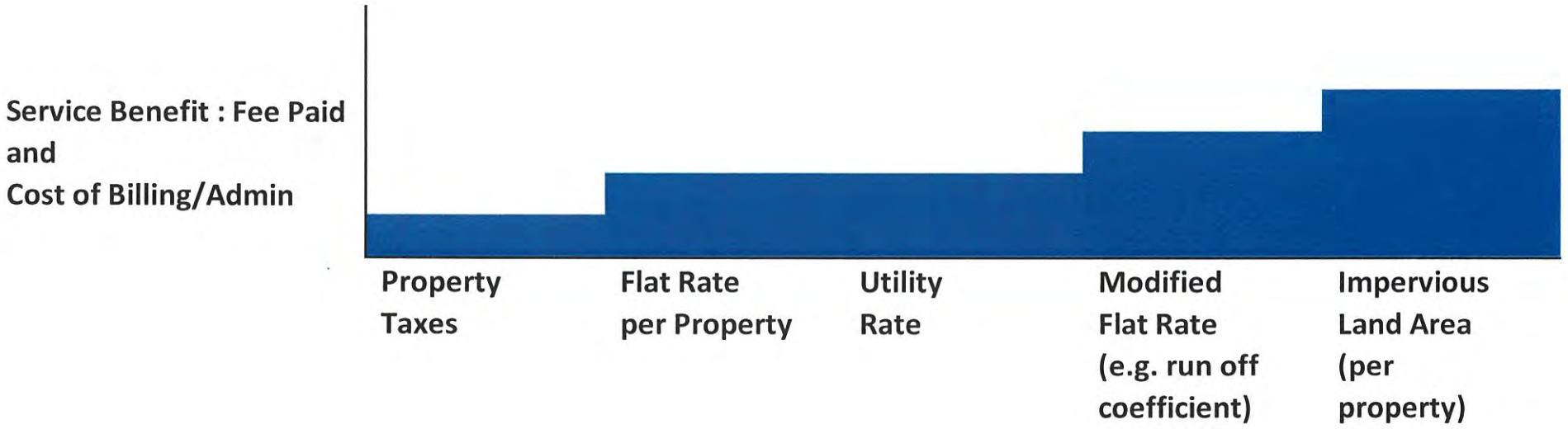
# Funding Model Analysis

- Current program funding
- Funding Options
- Proposed funding model

# Current Program Funding

- Stormwater program currently funded from multiple sources:
  - Wastewater Rate – portion of the wastewater rate has been dedicated to fund stormwater operating activities
  - Tax Levy - street sweeping, ditch maintenance, etc., which are being performed by the Roads Division of the Transportation Services and Parks & Forestry Operation Department are funded by the general tax levy
  - Gas Tax - storm pond maintenance/ cleaning is funded by a portion of gas tax revenues

# Funding Model Options



# Recommended Funding Model

- Modified flat/utility rate based on run-off coefficient funding model is recommended:
  - distinct funding source for stormwater program
  - better alignment of costs and benefits (i.e. applies run-off coefficient as defined in the City's design standards)
  - funding model is easy to understand and with low cost of implemention
  - favoured by the Stormwater Advisory Committee
  - used by other Region of York municipalities

# Funding Model Preliminary Rate Impacts

| Property Type | 2015 Currrent Funding Model (i.e. taxes and wastewater rates) | | 2015 Modified Flat Rate Model | |
|---|---|---|---|---|
| | 2015 | 2025 | 2015 | 2025 |
| Residential (low density) | $69.95 | $144.58 | $30.87 | $63.71 |
| Commercial | $868.07 | $1,929.08 | $623.24 | $1,313.02 |
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| Industrial | $983.32 | 2,151.15 | $522.21 | $1,100.13 |

- Increase customer base (i.e. 20,000 benefitting landowners currently not included within wastewater rate base)

# Next Steps

- The stormwater infrastructure funding study will be completed next month
  - Exemption/relief program
  - Stormwater Advisory Committee
  - Public Information Centre
- Final recommendations and a potential implementation strategy is proposed to be presented to Finance, Administration and Audit Committee later this year

**FINANCE, ADMINISTRATION AND AUDIT COMMITTEE – MAY 4, 2015**

## STORMWATER INFRASTRUCTURE FUNDING STUDY UPDATE – CITY-WIDE

### Recommendation

The Commissioner of Public Works and the Director of Environmental Services, in consultation with the Director of City Financial Services/Deputy Treasurer recommend:

1. That this report be received for information.

### Contribution to Sustainability

This project will directly support Green Directions Vaughan Goal 1: To significantly reduce our use of natural resources and the amount of waste we generate. Furthermore it directly adds resolution to the following objective:

- Objective 1.3: To support enhanced standards of stormwater management at the City and work with others to care for Vaughan's watersheds
- This project will also support action 5.1.4 which notes that a strategy to assess vulnerability to climate change and plans be developed for mitigating impacts and remedial responses

### Economic Impact

There are no immediate impacts resulting from the adoption of this report.

### Communications Plan

It is recognized that development of a community understanding of the funding requirements of a significant city service, such as stormwater, requires a comprehensive program. Therefore, the project team has developed and initiated an Engagement and Communication Plan as an integral part of the Stormwater Infrastructure Funding Study. Citizens and key stakeholders continue to be engaged through all stages of the project including the development and establishment of stormwater program levels of service, and the exploration of funding models.

To date:
The Engagement and Communication Plan developed for the study follows the guidelines established by the International Association for Public Participation (IAP2) with respect to public engagement. A communications plan was developed to engage citizens, businesses and other stakeholders to ask for input and guidance in the development of stormwater levels of service and a funding model. The communications plan focuses on informing the public on defining stormwater, stormwater activities performed by the City and how citizens and businesses can help protect stormwater and the environment. Posters (Attachment 1), newsletter articles, electronic communication and the website were used as means of communication. The posters were put up in all of the City's libraries and community centres.

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The Stormwater Advisory Committee has met three times over the last couple of months and the work of this committee is reflected in this report.

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Vaughan is not unique in its challenge to fund a stormwater program. Municipalities across Ontario, Canada and the USA have experienced increasingly severe storm events which have put pressure on the stormwater system. Also, government ministries have stricter requirements with respect to water quality and have asked municipalities to look at more options to manage stormwater on properties rather than sending it all to a water course or other water body.

Council recognized this need to explore a funding model which would be a dedicated funding source and directed staff to initiate the Stormwater Infrastructure Funding Study.

**The goals and objectives, identified in the study for the stormwater program, focus on balancing stormwater program needs against sustainable funding**

The goal of the Stormwater Management Program is to protect public health and safety and the City's valuable natural and man-made resources by minimizing the impacts of stormwater runoff through on-going system assessments, proactive maintenance and operation of the City's assets, and well-considered investment in system upgrades and expansion.

The key objectives of the program are:

- Services provided by the City should be *clearly defined*, be *based on an assessment of actual need*, and be provided *as efficiently as possible*

- The City should seek to move from reactive management of stormwater system components to a *proactive, priority-based asset management program*
- The program should be *realistic and achievable* and establish *clear lines of accountability* and decision making.
- 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.
- Program funding *should be a balanced approach* and tied to level of service and sustainable financial program goals.

**The study has documented the City's current reactive stormwater program and has identified future planning, capital projects needs and identified studies**

Through an intensive gap analysis it was determined that four key areas need to be addressed to ensure that the goal for the stormwater program be realized. The four areas are listed below:

Asset Management: Services provided by the City should be based on an assessment of actual need and be provided as efficiently as possible.

Stormwater Planning and Engineering: The stormwater program plan should be coordinated with on-going planning and growth initiatives and should include public participation as a fundamental component.

Stormwater Operation and Maintenance: The City should seek to move from reactive management of stormwater system components to a proactive, priority-based asset management program.

Capital Improvements: Program funding should be tied to level of service and sustainable financial program goals. 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.

**The stormwater program gaps were further broken down into 'basic', 'medium', 'high' and 'maintain' levels of service within the previous four areas**

The 'maintain' level of service refers to continuing with the current program. The 'basic', 'medium'' and 'high' levels of service are defined as follows:

- **Basic:** refocus of existing resources or add funds as a first step in enhancement to respond to service needs
- **Medium:** addition of staff/contractor/materials to increase capability to address service needs in a moderate approach.
- **High:** addition of staff/contractor/materials to address service needs as the highest priority in an aggressive approach.

See Attachment 2 for a detailed listing of Levels of Service and program needs.

**Staff, with input from the Stormwater Advisory Committee, recognized the need to improve levels of service to the 'medium' category for the majority of identified program needs**

The second Stormwater Advisory Committee meeting addressed the stormwater program needs and through discussion and the use of a prioritization tool recommended the 'medium' service level for the stormwater program. This level of service was further refined by staff based on internal resources and some modifications were made. The results of the prioritization tool are in Attachment 3.

**Currently, funding for the program is derived from three different sources: wastewater rate, tax levy and gas tax.**

Wastewater Rate: A small percentage (6.85%) of the wastewater rate has been dedicated since 2009 to fund stormwater operating activities. These activities are currently carried out by the Environmental Services Department

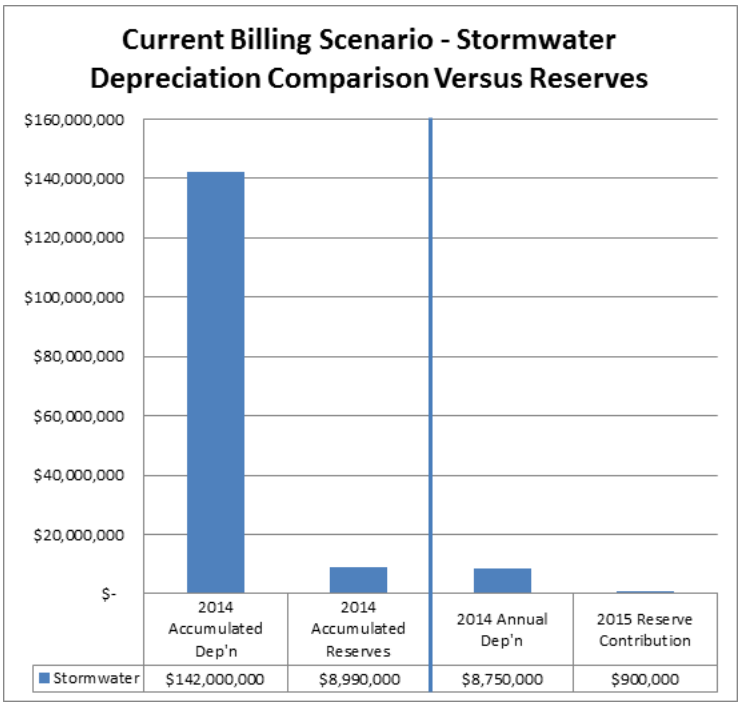
Tax Levy: Stormwater activities, such as street sweeping, ditch maintenance, etc., which are being performed by the Roads Division of the Transportation Services and Parks & Forestry Operation Department are funded by the general tax levy. Through this study, these activities have been identified as primarily stormwater activities and it is proposed that these be funded from the proposed stormwater funding source.

Gas Tax: Currently the storm pond maintenance/cleaning is funded by the gas tax. This funding source also funds many other City projects.

The activities listed above which are funded from the tax levy and gas tax have been incorporated into the analysis for the stormwater infrastructure funding study and the costs associated with these activities have been included when determining the overall stormwater program cost.

**The current stormwater program funding model does not meet future infrastructure repair and replacement needs**

Using annual depreciation as a basis for reserve funding is a best practice according to the National Guide to Sustainable Municipal Infrastructure. As discussed above, 6.85% of the wastewater rate which funds stormwater is used for operating activities with only a small portion of that contributing to future repair and replacement needs. This amount is insufficient to meet the amortization requirements for ageing stormwater infrastructure. As illustrated in the graph below the annual reserve contribution falls far short of the annual depreciation expense and therefore does not allow for any catch up funding against the accumulated depreciation. In the final study to be presented to Council later this year, the reserve calculation will be further described.



**The traditional funding model for stormwater has been examined by many municipalities across North America**

Climate change, more sophisticated environmental regulations, development and new stormwater retention technologies have put a more direct focus on stormwater activates. Many municipalities are now pursuing the benefits of implementing a direct and dedicated funding source to meet these new challenges. Continued reliance on traditional non-dedicated funding models can impact a municipality's ability to plan for and implement proactive operations and maintenance, thus ensuring a sustainable stormwater and infrastructure program.

**The 2014 to 2017 Budget Instructions encouraged departments to explore new user fee opportunities for existing non-revenue generating services**

Environmental Services has explored a new user fee for the stormwater service through the Stormwater Infrastructure Funding Study. As explained below, staff are now refining potential dedicated funding framework reliant upon new stormwater rates for residential, industrial, commercial, institutional and vacant/agricultural lands.

**Having evaluated stormwater rates of varying degrees and complexity, staff are realizing the benefits of a modified flat/utility rate based on run-off coefficient funding model**

There are several different funding models which were considered to fund a municipal stormwater program. These range from the simplistic with one flat rate for all residential and one flat rate for all industrial/commercial/institutional (I/C/I) to a very complex rate which measures impermeable area for each property and determines individual rates for each property.

A modified flat/utility rate considers a tiered approach where there are different rates for different types of property for residential, and for I/C/I. The run-off coefficient, is an element of the City's design standards, and is used during the development approval process to determine the stormwater infrastructure for each development application. The use of the run-off coefficient in the development of a stormwater rate will provide consistency with existing City processes.

Based on the experiences observed from other jurisdictions, staff is realizing that a modified flat/utility rate based on run-off coefficient funding model, which was also favoured by the Stormwater Advisory Committee (Attachment 4), may be the optimal choice for consideration by the City. This funding model is one which is also used by other Region of York municipalities (Attachment 5). This funding model uses the run-off coefficient as defined in the City's design standards to determine the run off for types of residential and I/C/I, which in turn is used to determine the stormwater contribution to the stormwater system. The resulting funding model has multiple rates for residential and rate for I/C/I. This funding model also has the advantage of being easiest to understand and quickest and least costly to implement.

**The residential and industrial/commercial/institutional yearly costs in 2016 have been estimated**

Applying the 'medium' levels of service for the stormwater program has resulted in an operating and capital budget increase from $5,695,822 for 2015 to $18,522,855 for 2025. Using the funding model described above, this results in a yearly rate for residential, ICI and vacant lands as shown in the table below:

| Property Type | Yearly Potential 2016 Rate | Yearly Potential 2025 Rate |
|---|---|---|
| Residential (Low Density) – per unit | $ 34.07 | $64.06 |
| Residential (Medium Density) – per unit | $21.11 | $38.28 |
| Residential (High Density) | $86.22 | $164.99 |
| Commercial | $690.29 | $1,321.59 |
| Industrial | $572.76 | $1,096.97 |
| Institutional | $2,160.56 | $4,122.16 |
| Agricultural/Vacant | $396.27 | $758.99 |

The draft numbers represented above will be further refined as the study explores possible exempt properties and low income relief.

**The stormwater infrastructure funding study will be completed next month with the final recommendations and a potential implementation strategy is proposed to be presented to Finance, Administration and Audit Committee later this year**

The next steps for the stormwater infrastructure funding study are to engage the general public through a variety of communication tools regarding the proposed levels of service and the proposed funding model. The Stormwater Advisory Committee will meet one more time to provide comments on the financial plan and proposed funding model.

Comments from the public and the Stormwater Advisory Committee will be incorporated into a report for consideration by FAA Committee late this year.

## Relationship to Vaughan Vision 2020/Strategic Plan

As we examine the current and future stormwater management services provided by the City, the program objectives and priorities will align with the Strategic Plan by supporting the following key themes:

- Pursuing *Service Excellence* by establishing and achieving service levels based on best practices and standards; by promoting actions that protect community safety and well-being; and by committing to protect and enhance the natural and built environments through the efficient use of resources.
- Pursuing *Organizational Excellence* by assessing and managing infrastructure to maximize useful life and ensure a sustainable future and by using financial resources wisely by making informed decisions that take into effect the impact on City residents and operations.
- Pursuing *Staff Excellence* by demonstrating effective leadership through engagement and collaboration of staff resources across business areas and by investing in development and retainage of skilled staff dedicated to service excellence.

## Regional Implications

York Region has been identified as a stakeholder and is a member of the Stormwater Advisory Committee.

## Conclusion

The Stormwater Infrastructure Funding Study will provide the City of Vaughan with a comprehensive stormwater program and a sustainable funding source to support it. The

Stormwater Advisory Committee has been instrumental in defining the levels of service and providing input into the choice of funding model. The next steps will be to provide FAA with a finalized draft rate later this year.

**Attachments**

Attachment 1 – Stormwater posters
Attachment 2 – Levels of Service and Program Needs
Attachment 3 – Level of Service – Prioritization Table
Attachment 4 – Funding Model – Prioritization Table
Attachment 5 – Stormwater Rates in Other Municipalities

**Report prepared by:**

Jennifer Rose, Director of Environmental Services, ext. 6116

Respectfully submitted,

Paul Jankowski
Commissioner of Public Works

Jennifer Rose
Director of Environmental Services

# PROTECT OUR WATER
# PROTECT OUR FUTURE

## WHAT IS STORMWATER?

Stormwater is rainwater and melted snow that runs off lawns, streets and other land surface.

The continuous movement of water recharges creeks and streams and gets filtered naturally, providing a cleaner, healthier water source.

Hard surfaces such as pavement and roofs prevent precipitation from naturally soaking in the ground. The stormwater that flows across these hard surfaces becomes runoff that can disrupt the normal water cycle and can cause serious problems.

Water can't soak into the ground, and, as a result, moves too quickly into creeks and streams and hits them in a rush. This increases potential erosion and flooding.

Learn more about the City of Vaughan's Stormwater Management Program:
**vaughan.ca/stormwater**

# PROTECT OUR WATER
# PROTECT OUR FUTURE

## WHY SHOULD I CARE?

Stormwater runoff can pick up transport pollutants such as oil, pesticides and trash before flowing into storm drains, drainage ditches and creeks.

This runoff is not cleaned at a treatment plant first - it doesn't even get naturally filtered by the soil before it flows into rivers and lakes that supply our drinking water.

Stormwater runoff can contribute to:

- water resource decay
- stream instability
- spoiled water quality
- habitat loss
- stormwater system damage
- property damage and increased flooding

Learn more about the City of Vaughan's Stormwater Management Program:
**vaughan.ca/stormwater**

VAUGHAN

# PROTECT OUR WATER
# PROTECT OUR FUTURE

# WORKING TO MANAGE STORMWATER

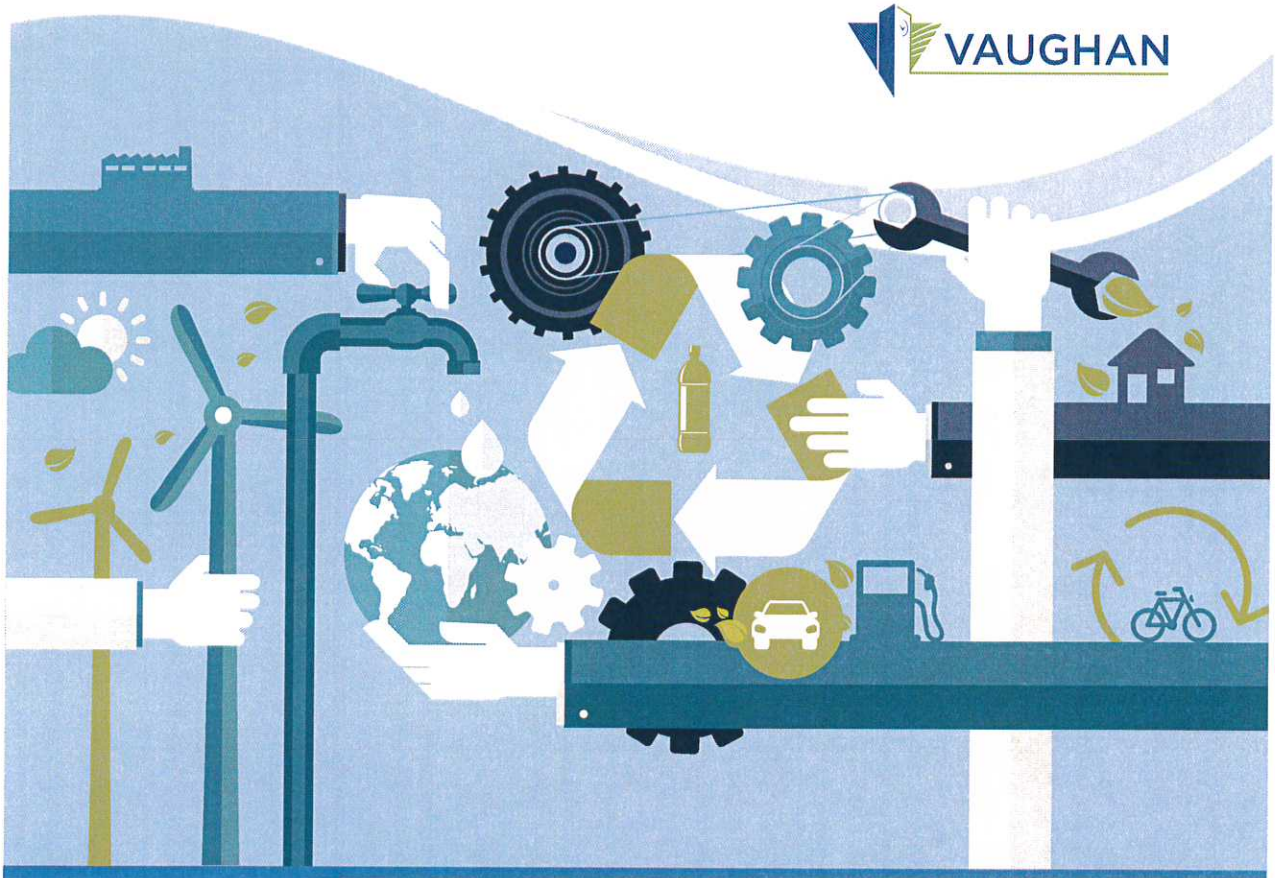
City of Vaughan services help reduce the risk of flooding and erosion, protect the environment and keep our water clean.

Services include:

- Testing the quality of stream water and creeks
- Inspecting stormwater outlets to check for pollution sources
- Maintaining and repairing the hundreds of miles of pipes that make up the public draining system to prevent spills and backups
- Finding solutions for cleaning stormwater in built up city areas:
  - Street sweeping removes litter before it reaches streams
  - Installation of rain gardens captures and filters stormwater
  - Stream restoration repairs damaged banks

Learn more about the City of Vaughan's Stormwater Management Program:
**vaughan.ca/stormwater**

VAUGHAN



**DID YOU KNOW?** Vaughan's stormwater system includes approximately:
• 900 km. of pipes • 15,000 catch basins • 73,000 storm connections • 2,400 culverts • 100 ponds

# PROTECT OUR WATER
# PROTECT OUR FUTURE

## SMALL CHANGES MAKE A BIG DIFFERENCE

- Clean up litter
- Use less fertilizers
- Allow native plants and trees to grow near creeks and streams
- Dispose of toxic products at local household hazardous waste centres

Learn more about the City of Vaughan's Stormwater Management Program:
**vaughan.ca/stormwater**

VAUGHAN

**Let's manage stormwater together!**

| A.3. Enhance Asset Information for Ponds | | Attachment 2 |
|---|---|---|
| **BASIC** | **MEDIUM** | **HIGH** |
| (1) Assign existing staff to obtain the breakdown of costs for new stormwater ponds in and around the Vaughan area.<br>(2) Review for applicability in terms of size and technology and use actual costs to update and/or refine current data on pond replacement values.<br>**CDAM already has a license and can move forward to implement using existing staff.** | (1) Assign existing staff to obtain the breakdown of costs for new stormwater ponds in and around the Vaughan area.<br>(2) Review for applicability in terms of size and technology and use actual costs to update and/or refine current data on pond replacement values.<br>**(3)** Expand **access to Environmental Services** with the addition of **one license as well as a full-time technician** for the Ponds**. $15,000 for license and $40,000 for technician.** | (1) Assign existing staff to obtain the breakdown of costs for new stormwater ponds in and around the Vaughan area.<br>(2) Review for applicability in terms of size and technology and use actual costs to update and/or refine current data on pond replacement values.<br>(3) Expand **access to Environmental Services** with the addition of **one license as well as a full-time technician for the Ponds. $15,000 for license and $40,000 for technician.**<br>**(4) Add additional license for DEIPS or Parks. $15,000** |

| B.1. Implement Master Plans – Next Steps | | |
|---|---|---|
| **BASIC** | **MEDIUM** | **HIGH** |
| (1) Fund **$450,000 per year** to **complete studies in four years.**<br>(2) No additional staff time needs to be allocated for this level of service. | **(1) Fund $600,000 per year** to be complete studies in **three years**. To complete in three years, additional staff time needs to be allocated to support planning studies and initiate recommendations.<br>(2) Assume a **half-time stormwater engineer** to manage the faster implementation of the program. Estimate cost **$42,000 per year**. | **(1) Fund $900,000** to complete studies in **two years** and additional staff time needs to be allocated to support planning studies and initiate recommendations.<br>(2) Assume **a full-time stormwater engineer** to manage the faster implementation of the program**. Estimate cost $85,000 per year** |

| B.2. Expertise in Intensification Areas | | |
|---|---|---|
| **BASIC** | **MEDIUM** | **HIGH** |
| (1) Assign **a part-time (24 hours/week) stormwater engineer** to review and approve new and redesigned stormwater management plans and facilities.<br>(2) Estimated **cost $58,000 per year** | (1) Assign a **full-time stormwater engineer** to review and approve new and redesigned stormwater management plans and facilities.<br>(2) Estimated cost **$85,000 per year** | (1) Assign a **full-time stormwater engineer** to review and approve new and redesigned stormwater management plans and facilities.<br>(2) Estimated **cost $85,000 per year** |

| B.3. Enhanced Inspection of New SW Infrastructure | | |
|---|---|---|
| **BASIC** | **MEDIUM** | **HIGH** |
| (1) Add **a part-time (24 hours/week) stormwater inspector** to review and approve properly installed and maintained stormwater infrastructure.<br>(2) **Estimated cost $51,000 per year** | (1) Add a **full-time stormwater inspector** to review and approve properly installed and maintained stormwater infrastructure.<br>**(2) Estimated cost $75,000 per year** | (1) Add **a full-time and a part-time stormwater inspector** to review and approve properly installed and maintained stormwater infrastructure.<br>(2) **Estimated cost $125,000 per year** |

| B.4. Promote Green Infrastructure | | |
|---|---|---|
| **BASIC** | **MEDIUM** | **HIGH** |
| (1) **Continue to liaise** with external agencies (e.g. MOECC and TRCA) and formalize standards through next update of the design criteria.<br>(2) **Adopt these policies** as part of the required stormwater/drainage design standards.<br>(3) Continue to **monitor ongoing pilot projects**. | (1) Continue to liaise with external agencies (e.g. MOECC and TRCA) and formalize standards through next update of the design criteria.<br>(2) Adopt these policies as part of the required stormwater/drainage design standards.<br>(3) Continue to monitor ongoing pilot projects.<br>**(4) Using reassigned existing in-house staff** time, **maintain green infrastructure policies** that support using GI as a preferred method of stormwater management. | (1) Continue to liaise with external agencies (e.g. MOECC and TRCA) and formalize standards through next update of the design criteria.<br>(2) Adopt these policies as part of the required stormwater/drainage design standards.<br>(3) Continue to monitor ongoing pilot projects.<br>**(4) Add one staff to manage and lead GI development** practices within overall program. **Estimated cost: $60,000** |

## C.1. More Proactive SW Maintenance

| BASIC | MEDIUM | HIGH |
|---|---|---|
| (1) Add **one field crew** to be dedicated to regularly scheduled stormwater maintenance activities such as inlet grate cleaning and repairs, culvert maintenance, channel and roadside ditch maintenance, slope stabilization and vegetation management.<br>(2) **Estimated annual cost: $140,000** | (1) Add **one field crew** and appropriate **equipment to allow more in-house culvert and waterway maintenance.** Estimated cost of crew and annualized cost for backhoe, vacuum truck , and crane: **$190,000** | (1) Add **two field crews** and appropriate equipment to allow more in-house culvert and waterway maintenance.<br>(2) Estimated cost of crews and annualized cost for backhoe, vacuum truck , and crane: **$420,000** |

## C.2. Increased Investment in O&M

| BASIC | MEDIUM | HIGH |
|---|---|---|
| (1) Increase the annual budget for system replacements, upgrades, cleaning, etc. to keep up with the rate of growth in the community.<br>(2) Presuming a 5% growth rate over the next several years, budget an **additional $150,000** per year to keep up with new/replacement system components. | (1) To start to close the gap in maintenance needs, **increase costs 10% each year** for the next 10 years and then review updated gap/replacement value information and adjust accordingly.<br>(2) This approach would have the city **increase the budget by $300,000 in year 1, $330,000 in year 2, $363,000 in year 3... $707,384 in year 10**. | (1) To more quickly close the gap in maintenance needs, **increase support by 10% in year 1 and then $100,000 each year for the next 10 years** and then review updated gap/replacement value information and adjust accordingly. This approach would have the city increase the budget by **$300,000 in year 1, $400,000 in year 2, $500,000 in year 3... $1.2M in year 10.** |

| C.3. Pond Maintenance | | |
|---|---|---|
| **BASIC** | **MEDIUM** | **HIGH** |
| (1) Establish **a pond monitoring and inspection program** with the goal of evaluating each pond on a three year cycle (approximately **50 per year**).<br>(2) Assign a priority based on monitoring and inspection; maintain (including dredging) of an **additional 2 ponds per year (for a total of 5 per year).**<br>**(3) Estimated additional cost: $650,000** ($400,000 for monitoring and $250,000 for cleaning). Baseline was $375,000 per year, so total cost: **$1,025,000** | (1) Establish a pond monitoring and inspection program with the goal of evaluating each pond on a three year cycle (approximately **50 per year**).<br>(2) Assign a priority based on monitoring and inspection and maintain (including dredging) of an **additional 4 ponds** per year (for a **total of 7** per year).<br>(3) Estimated additional cost: (Baseline was $375,000 per year) **$900,000 for a total cost: $1,275,000** | (1) Establish a pond monitoring and inspection program with the goal of evaluating each pond on a two year cycle (approximately **75 per year**).<br>(2) Assign a priority based on monitoring and inspection and maintain (including dredging) of an additional **7 ponds per year (for a total of 10 per year**).<br>(3) Estimated additional cost: (Baseline was $375,000 per year) **$1,475,000 for a total cost: $1,850,000** |

| C.4. Enhanced Contractor Oversight | | |
|---|---|---|
| **BASIC** | **MEDIUM** | **HIGH** |
| (1) Provide **biannual training** in contractor field inspection and oversight to applicable current staff.<br>(2) Estimated **cost $10,000** per year. | (1) Provide biannual training in contractor field inspection and oversight to applicable current staff. Estimated cost $10,000 per year.<br>**(2) Assign one full-time resident inspector** to monitor and report on stormwater contracted services (can cover up to 4 projects per day). **Estimated cost $90,000** | (1) Provide biannual training in contractor field inspection and oversight to applicable current staff. Estimated cost $10,000 per year.<br>**(2) Assign two full-time resident inspectors** to monitor and report on stormwater contracted services (can cover up to 8 projects per day). **Estimated cost $180,000** |

| D.1. Annual Capital Investment | | |
|---|---|---|
| **BASIC** | **MEDIUM** | **HIGH** |
| (1) Dedicate an **additional $1,200,000 annually** to reduce the CIP backlog. At this rate ($3M per year), existing known CIP needs would be addressed by 2033.<br>(2) Basic level of service can be delivered without additional staff resources. | (1) Dedicate **additional $3,200,000 annually** to reduce the CIP backlog. At this rate ($5M per year), existing known CIP needs would be addressed by 2026.<br>(2) Additional staff resources required - **estimated full time position: $90,000.** | (1) Dedicate **$5,200,000 annually** to reduce the CIP backlog. At this rate ($7M per year), existing known CIP needs would be addressed by 2023.<br>(2) Additional staff resources required - **estimated full-time position: $90,000**. |

| D.2 SW Capital Program Coordinator | | |
|---|---|---|
| **BASIC** | **MEDIUM** | **HIGH** |
| (1) Continue to use an internal group of existing staff to coordinate and manage the growth and integration of the stormwater program.<br>(2) No change in resources. | (1) Assign a **full time stormwater coordinator** to manage an integrated stormwater capital program. The coordinator will also be responsible for ensuring there are meaningful public participation opportunities. **Estimated cost $90,000** | (1) Assign a **full time stormwater coordinator** to manage an integrated stormwater capital program. The coordinator will also be responsible for ensuring there are meaningful public participation opportunities. **Estimated cost $90,000** |

# Level of Service - Prioritization Table

**Attachment 3**

| Targeted Program Elements | Basic | Medium | High | Maintain |
|---|---|---|---|---|
| A.1. Addressing Finding from CCTV Inspection (repair/replace pipe system) | | 10 | 1 | |
| A.2. Supplying Digital Asset Management Data to Field (provide equipment to field staff) | 1 | 2 | | 8 |
| A.3. Enhance Asset Information for Ponds (update asset information on ponds) | 2 | 6 | 3 | |
| | | | | |
| B.1. Implement Master Plan – Next Steps (complete recommended studies) | 10 | 1 | | |
| B.2 Expertise in Intensification Areas (Plan Reviews) | | 9 | | 2 |
| B.3 Enhance Inspection of New Stormwater Infrastructure | 3 | 7 | | 1 |
| B.4. Promote Green Infrastructure On-Site Controls | 3 | 6 | 1 | 1 |
| | | | | |
| C.1. Increase Resources for Proactive System Maintenance (new crews and equipment) | 2 | 6 | 3 | |
| C.2. Increase Annual System Maintenance Investment (upgrades, cleaning, repair) | 1 | 4 | 6 | |
| C.3. Increase Pond Maintenance (monitoring, dredging, cleaning, repair) | 3 | 3 | 5 | |
| C.4. Enhance Contractor Oversight (staff training and additional staff) | 2 | 7 | 1 | 1 |
| | | | | |
| D.1. Annual Capital Investment for Stormwater Infrastructure (reduce backlog, increase CIP) | 2 | 6 | 3 | |
| D.2 Stormwater Capital Program Coordination (maintain current or add staff) | 1 | 7 | 3 | |

City of Vaughan

Stormwater Infrastructure Funding Study
Stormwater Advisory Committee Meeting No. 3
Handout #2 - Stormwater Funding Approaches

# Attachment 4

| Type of Charge | Rate Options/Basis of Calculation | SAC Ranking | | | | | | | | | Residential | | Non-Residential | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | R1 | R2 | R3 | R4 | R5 | R6 | R7 (RES) | R7 (ICI) | R8 | Average Ranking | Relative Ranking | Average Ranking | Relative Ranking |
| Property Taxes | tax rate applied to assesssed value | 9 | 9 | | 10 | 10 | 6 | 1 | 5 | 2 | 6.71 | 9 | 7.29 | 10 |
| Flat Rate per Property | $/property | 1* | 5 | | 1* | 3 | 4 | 2 | 1 | | 2.33 | 2 | 2.17 | 2 |
| Utility Rate | $/$m^3$ of water consumption | 10 | 10 | | 2 | 6 | 5 | 3 | 6 | | 6.00 | 6 | 6.50 | 8 |
| Run-off Coefficient by Property Type | $/unit (varied by type) | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 7 | 1 | 1.38 | 1 | 1.75 | 1 |
| | $/$m^3$ of water consumption | 4 | 7 | | 6 | 4 | 2 | 5 | 9 | | 4.67 | 4 | 5.33 | 6 |
| Impervious Area Sampling by Property Type | $/unit (varied by type) | 3 | 2 | 2 | 9 | 2 | 1 | 6 | 8 | | 3.57 | 3 | 3.86 | 3 |
| | $/$m^3$ of water consumption | 5 | 8 | | 8 | 5 | 3 | 7 | 10 | | 6.00 | 6 | 6.50 | 8 |
| Run-off Coefficient by Actual Land Area per Property | $/impervious acre | 6 | 3 | | 3 | 7 | | 8 | 2 | | 5.40 | 5 | 4.20 | 4 |
| Impervious Area Sampling by Actual Land Area per Property | $/impervious acre | 7 | 4 | | 4 | 8 | | 9 | 3 | | 6.40 | 8 | 5.20 | 5 |
| Actual Impervious Area per Property | $/impervious acre | 8 | 6 | | 5 | 9 | | 10 | 4 | | 7.60 | 10 | 6.40 | 7 |

Note: Responses marked with an asterisk indicated that the charge should vary by type. Therefore, these responses were moved to the appropriate category - Run-off Coefficient by Property Type ($/unit (varied by type))

Comments:

R1.1 Consideration of a flat rate / property type could increase linkage between service derived, coupled with incentive process this could also increase the user's control over the charge

R3.1 Residential Categories - Pervious based on run-off coefficient by propert type. How many?
R3.2 Industrial --> site area / roof area (sub-categories?)
R3.3 Commercial --> surface parking impact (sub categories?)

R4.1 With several (or a few) levels within Res/Comm.

R6.1 Should be easy to administer and be fair and understandable
R6.2 Water consumption methods for Commercial/Industrial could be influenced by periodic economy swings.

R7.1 Incentives for large properties is essential
R7.2 City water use has no correlation to storm water runoff
R7.3 Simple calculations preferred

R8.1 Limited stratification of residential properties - minimum of 2 - "regular" housing to "mansion" tax for larger custom homes which tend to have large non-pervious areas, home surface area, driveways, pools, etc.
R8.2 More stratification of commercial - low fee for small business, larger fee for malls, hospitals, etc.
R8.3 Mall cares, opportunity for incentives, "grren rebates"

# Municipal Comparison of Rate Structures

**Attachment 5**

| Municipality | Stormwater Rate Based Recovery | Stormwater Rate Based Recovery Review Complete but not Implemented at Present | Type of Rate Based Structure | Rate Categories |
|---|---|---|---|---|
| Aurora | ✓ | | Flat Rate Charge per Unit | Residential and condominium properties |
| | | | | Non-residential and multi-residential properties |
| Kitchener | ✓ | | Tiered Flat Fee (based on property type and size of impervious area) | 10 residential categories |
| | | | | 6 non-residential categories |
| Waterloo | ✓ | | Flat Rate per Property (by property type & size) | 3 residenital categories & 3 multi-residential categories |
| | | | | 3 institutional categories & 4 industrial/commercial categories |
| Hamilton | ✓ | | Utility Rate (based on water consumption) | Residential - 2 tiers (based on monthly consumption) |
| | | | | Non-residential |
| London | ✓ | | Flat Rate Charge per Property | Land area 0.4 hectares or less |
| | | | | Residential land area 0.4 hectares or less without a stormdrain within 90m |
| | | | Rate per hectare | Land area above 0.4 hectares |
| St. Thomas | ✓ | | Flat Rate per Property | Residential & commercial/institutional under 1,800 $m^2$ land area |
| | | | Rate per Hectare | Commercial/institutional over 1,800 $m^2$ land area & all industrial |
| Markham[1] | ✓ | | Flat Rate Charge per Property | Residential |
| | | ✓ | | Non-residential |
| Richmond Hill | ✓ | | Flat Rate Charge per Property | Residential and farm properties |
| | | | | Industrial, commercial, multi-unit, and condominium properties |
| Mississauga[2] | | ✓ | Flat Rate per Property (by property type) | Varied by property type and tiered for Single-Family Homes |

[1] Non-residential rates in Markham are anticipated to be implemented in 2016, upon completion of the additional consultation with business, and the Powerstream system upgrade schedule.

[2] All stormwater rates in Mississauga are anticipated to be implemented in 2016