**CITY OF HAMILTON**

**PUBLIC WORKS DEPARTMENT**

*Environment & Sustainable Infrastructure Division*

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<th>TO: Chair and Members Public Works Committee</th>
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<td>COMMITTEE DATE: September 17, 2012</td>
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<td>SUBJECT/REPORT NO: Rothsay Avenue District Flood Remediation Class Environmental Assessment (PW12066) - (Ward 3)</td>
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**RECOMMENDATION**

(a) That the Rothsay Avenue District Flood Remediation Class Environmental Assessment Study be received;

(b) That the General Manager, Public Works Department be authorized and directed to file the study report with the Municipal Clerk for a minimum thirty (30) day public review;

(c) That upon completion of the minimum thirty (30) day public review period and subject to capital budget approval, the General Manager, Public Works Department be authorized and directed to proceed with detailed design and implementation of the preferred solution of the Class Environmental Assessment study, provided that no Part 2 Order by the Minister of Environment is received.

**EXECUTIVE SUMMARY**

The Rothsay Avenue District Flood Remediation Class Environmental Assessment Study for East of Gage Park and West of Kensington Avenue area as shown in Fig. 1, Appendix “A”, has been conducted. The study area includes the eastern portion of Gage Park, as this area has been identified in the Lower East End Drainage (LEED) Study as the site of a potential stormwater management facility to mitigate the flooding problem. The area is comprised of densely developed single family residential lots for which stormwater runoff is conveyed by a combination of combined sewers and storm relief sewers which outlet to larger systems at the intersection of Kensington Avenue...
and King Street East. Conceptual level strategies and a plan for flood and drainage management have been developed for this area.

The Rothsay Avenue District homeowners have historically reported basement flooding caused by sewer back-ups in the local combined sewers. Hydrologic/hydraulic analyses indicated the homes are currently at risk of basement flooding during storm events. The risk of basement flooding has been determined to be generally influenced by the following factors:

- Undersized local combined sewers
- Restricted/limited capacity causing elevated hydraulic grades lines in receiving sewer systems downstream of Rothsay Avenue District (King Street East combined sewer and Kensington Avenue trunk storm sewer)
- Residential basement floor drains and foundation drains directly connected to the combined sewers

Several alternatives have been developed and assessed to determine their potential to address the flooding problem (i.e., reduce surcharging in the combined sewers on Rothsay Avenue and Kensington Avenue and mitigate basement flooding) as follows:

- **Do Nothing**
  The study area remains unchanged and the Problem Statement is not addressed
- **Connect Kensington Catch Basins to Storm Relief Sewer**
  Reduces the volume/flow of stormwater conveyed by the combined sewers by re-directing it to storm relief sewers
- **Inlet Control Devices**
  Reduces the volume/flow of stormwater conveyed by the combined sewers by restricting catch basins and utilizing additional street conveyance
- **Disconnect Roof Leaders**
  Reduces the volume/flow of stormwater conveyed by the combined sewers by re-directing residential roof run-off currently directly connected to the combined sewers, to the lot surface
- **Diversion & Stormwater Management**
  Reduces the volume/flow of stormwater conveyed by the combined sewers on Rothsay Avenue by diverting all Rothsay Avenue overland flows to Gage Park where it would be managed by a new stormwater management facility before draining at a controlled rate into downstream sewer systems
- **Conveyance Improvements**
  Increases the capacity and service area of the existing storm relief sewers to relieve stormwater volume/flow currently conveyed by the combined sewers
• **Backflow Prevention**
  Installation of devices on combined sewer laterals which prevent combined sewer flow from backing up into private residences

In addition, combinations of the above alternatives have been assessed. All have been assessed on the basis of a selection of criteria representing the Functional, Natural, Social and Economic environments ultimately leading to the selection of the Preferred Alternative.

The Class EA study recommended the following preferred alternatives:

- Connect Kensington Avenue Catch Basins to Storm Relief Sewer
- Disconnect Roof Leaders and Install Backflow Prevention Measures (recommended but implementation would be at the discretion of the home owners)
- Diversion and Stormwater Management Facility at Gage Park

Implementing the recommendations of this study will improve our local environmental living conditions by reducing flooding issue in the study area. The transparent and consultative nature of the Class Environmental Assessment process builds trust within the community and Review Agencies, demonstrating Hamilton’s and Public Works' Commitment to Service Excellence. The Class EA study demonstrates the ability of our City staff to develop innovative and cost effective strategies for our stormwater management system. The goal of constant improvement of level of service leverages the guiding principle of our strategic plan as defined in “Innovate Now”. Through a consultation process at Public Information Centres and meetings, stakeholders were invited to provide their input and contribute throughout the process of decision making. The proposed budget for the project has been coordinated with Public Works’ Asset Management section through the 2013 Capital Budget approval process, subject to budget approval. The recommendations have been integrated with the Gage Park Master Plan.

**Alternatives for Consideration - See Page 6**

**FINANCIAL / STAFFING / LEGAL IMPLICATIONS**

**Financial:** The estimated cost for conceptual level flood/drainage management of Rothsay Avenue District Flood Remediation Class EA project is based on the assumption that construction works will commence in 2013. The total estimated cost for works is $900,000 (excluding costs for backflow prevention measures and roof leader disconnection). The capital budget for this work is proposed for the 2013 Capital Budget process and subject to budget approval.

**Staffing:** N/A

**Legal:** Municipal undertakings such as; stormwater improvements, water and wastewater projects are subject to Ontario’s Environmental Assessment Act. The Act
The City of Hamilton initiated the Lower East End Drainage Study and Stormwater Management Investigation in late 2007 to assess the sewer system for the Lower East End with a particular focus on areas with a high number of flooding reports for a selection of storm events between 2005, 2006 and 2008. One of the areas was the Gage-Main Trunk Focus Area, which includes the current study area. The LEED Study identified the potential causes of the flooding and proposed various alternatives for mitigating the flooding conditions. For the subject study area, the alternatives involved establishing a new stormwater management facility within Gage Park, along its eastern limit (immediately west of Rothsay Avenue) and the diversion of stormwater surface runoff to this new facility.

The Gage Park Master Plan (du Toit Allsopp Hillier, February 2010) was advanced concurrently with the Rothsay Avenue District Flood Remediation Class Environmental Assessment study. A provision for the stormwater management facility has been included in the preferred alternative for the Gage Park Master Plan. The facility was envisioned to be a landscaping feature as well as offering interpretive opportunities of Gage Park operations, visitors and the Park’s children’s programs.

The specific objective of the Rothsay Avenue District Flood Remediation Municipal Class Environmental Assessment has been to build upon the preliminary findings of the LEED Study. This was accomplished by evaluating, in additional detail, local scale factors contributing to the existing flooding problem along Rothsay Avenue and Kensington Avenue South, and assessing the mitigation alternatives developed in the LEED Study, as well as additional alternatives. This process eventually led to the advancement of a preferred solution that best meets the requirements of all the stakeholders.

**POLICY IMPLICATIONS**

N/A

**RELEVANT CONSULTATION**

The Class EA process required public consultation for each project/study and appropriate consultation plans have been developed and undertaken.
Staff met with the Ward Councillor on March 13, 2012 and the City’s Design, Landscape Architectural Services, and Planning and Economic Development on March 08, 2012. This group discussed the solutions and preferred options without any objection.

Stakeholder consultation was undertaken in the form of a Public Information Centre held at the Gage Park Horticultural Building on May 10, 2012. There were no objections to the solution options presented.

**ANALYSIS / RATIONALE FOR RECOMMENDATION**

The Rothsay Avenue District homeowners have historically reported basement flooding caused by sewer back-ups. Hydrologic/hydraulic analyses indicate the homes are currently at risk of basement flooding during storm events. The risk of basement flooding has been determined to be generally influenced by undersized local combined sewers, restricted/limited capacity causing elevated hydraulic grades lines in receiving sewer systems downstream of Rothsay Avenue District (King Street East combined sewer and Kensington Avenue trunk storm sewer) and residential basement floor drains and foundation drains directly connected to the combined sewers.

Various alternatives to reduce surcharging in the combined sewers on Rothsay Avenue and Kensington Avenue and to mitigate basement flooding have been investigated. Given the flooding issues identified throughout the Lower East End, the preferred alternative must, however, be demonstrated to have no negative impacts on the receiving sewer systems as well.

This study has followed the Municipal Engineers Association (MEA), Municipal Class Environmental Assessment, October 2000 (as amended in 2007) process. Each Municipal Class Environmental Assessment undertaking, depending on the scope of work and the environmental impact, is classified using Schedules. The appropriate Schedule depends on the scope of the recommended works. Since the process for the current assessment will determine the recommended works, this assessment has been conducted as a Schedule “B” undertaking. As such Phases 1 and 2 of the Class EA process have been conducted as follows:

- Phase 1 - identification of the problem or opportunity
- Phase 2 - identification of alternative solutions to address the problem or opportunity by taking into consideration the existing environment, and establish the preferred solution, taking into account public review and agency input

The City of Hamilton has, for this Study, conducted a public consultation program as required by the Municipal Class EA process.

For this study, baseline inventories were carried out: Site Investigation, Closed Circuit Television Inspection and Dye Testing, Manhole Inspection, Topographic Survey, Hydrological and Hydraulic Modelling: Design Storm Selection - Model Boundary Conditions-Model Verification-Alternatives Evaluation. In evaluating alternatives a range of factors related to the problem were considered:
• Functional Environment: Basement Flooding Risk, Impact to Receiving Sewer System and Road Flooding Risk.

• Natural Environment: Water Quality

• Social Environment: Construction, Park Use

• Economic Environment: Capital Cost, Maintenance Cost

Preferred Option

Based on the Class Environmental Assessment analysis and evaluation, the Preferred Flood Management Option for the area (shown in Appendix “B”) is the combination of alternatives e.g., (i) Construct diversion storm sewers designed to convey the 10-year event flows to Gage Park and construct stormwater management facility in an area of Gage Park that is currently part of the existing drainage system and not utilised for any specific use or activity designed to control the 10-year storm event (or greater) and outlet to the Kensington Avenue trunk storm relief sewer, (ii) Disconnect roof leaders from the combined sewer system (without negatively impacting their property or neighbours’ property(s)) and install backflow prevention measures (recommended but implementation would be at the discretion of the home owners) and (iii) Connect Kensington Avenue catch basins to the storm relief sewer if they are not already connected.

Implementation of the recommended capital works has been discussed with the Public Works Design and Construction Staff. The initial steps in preparing for the Detailed Design process have already been initiated to advance the service level improvements in the area. The Detailed Design, Tendering and Construction steps will begin immediately after completion of the 30 day review period (provided that no Part 2 Order by the Minister of Environment is received). Construction, subject to approvals and due process, is expected in 2013 and may extend into 2014. The timing of these tasks will be communicated to the Ward Councillor as it is subsequently refined.

ALTERNATIVES FOR CONSIDERATION

Alternative 1: Reject the Class EA Study

Should Council choose not to endorse the recommendations set forth in this report, the subsequent alternative to be considered further is:

• Not to file the Class EA project report for a minimum thirty (30) day public review. Consequently the flood management project shall not proceed further for the implementation

This alternative is not recommended, as it will result in delays of implementing the remedial measures outlined in this staff report without resolving the flooding problem.
CORPORATE STRATEGIC PLAN


**Skilled, Innovative & Respectful Organization**
- A skilled, adaptive and diverse workforce, i.e., more flexible staff

**Financial Sustainability**
- Delivery of municipal services and management capital assets/liabilities in a sustainable, innovative and cost effective manner

**Growing Our Economy**
- Competitive business environment
- Reducing basement flooding impacts to private homes, reduce costs to individual home/property owners in damages, timely risk management cost savings to the City of Hamilton
- A skilled and creative labour pool that supports new employers

**Social Development**
- Everyone has a home they can afford that is well maintained and safe
- Reduction of basement flooding and damage to private properties
- People participate in all aspects of community life without barriers or stigma

**Environmental Stewardship**
- Natural resources are protected and enhanced
- Reduced impact of City activities on the environment

**Healthy Community**
- Plan and manage the built environment
- Engaged stakeholders through consultation with the community on infrastructure decision making

APPENDICES / SCHEDULES

- Appendix “A” Study Area for Rothsay Avenue Flood Class Environmental Assessment
- Appendix “B” Preferred Alternative
Study Area for Rothsay Avenue Flood Class Environmental Assessment
Preferred Alternative

APPENDIX “B”
Report PW12066