HALIFAX
REGIONAL MUNICIPALITY

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Item No. 5
Halifax Regional Council
March 20, 2012

TO: Mayor Kelly and Members of Halifax Regional Council

Original Signed by Director

SUBMITTED BY:

Ken Reashor, P.Eng., Director, Transportation and Public Works

DATE: February 9, 2012

SUBJECT: District 20 Flooding Issues Due to August 2, 2011 Storm Event

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INFORMATION REPORT

ORIGIN

Item 13.7 of the August 9, 2011 Regional Council session requesting a report from HRM and Halifax Water staff regarding Flooding Issues in District 20 due to August 2, 2011 storm. Specifically, the request asks for:

- the number of calls and emails that were logged into Hansen and how many of these calls were from District 20;
- the method Halifax Water receives the information once it is put through Hansen; and
- an investigation of the cause of flooding during rain storms and a determination of a remedy to the flooding situation for the list of streets in District 20.

BACKGROUND

Handling of drainage complaints is an area requiring coordination between Halifax Water and Halifax Regional Municipality (HRM). Calls have typically been received through the HRM Call Centre, by area Councillors, and at times directly by Halifax Water or HRM staff.

Drainage and flooding events can have a number of causes and are impacted by a range of local conditions. Common causes of flooding can include excessive rainfall/precipitation, properties constructed within the floodplain, inadequate lot grading, poorly sited building elevations, damaged or blocked infrastructure, poorly designed or constructed infrastructure, lack of storm drainage infrastructure, infilling of drainage swales or drainage courses by property owners, grade alterations of adjacent properties without consideration for drainage impacts, undersized infrastructure, high groundwater table, runoff from the street onto private property, and no provision for overland flow routes. On top of these possible causes of flooding, there are local factors that will influence the impact of precipitation on the system including but not limited to: the number of days of previous precipitation, the normal level of groundwater in the area, whether the ground is frozen or over-saturated, what level the system was designed for (typically, the municipal system, pipes and ditched systems are designed to convey the minor storm – normally considered the 1:5 year rainfall event), the type of surface being drained (e.g. pavement or grass), and whether there have been changes to the original flow regime. Good stormwater management and design requires consideration of impacts to environment and property related to storm events that exceed what is normally conveyed in the municipal system and provides for appropriate management of these excessive flows through a series of pipes, channels, and storage. These are considered major overland flow requirements and are often designed to convey flows derived from the 1:100 year rainfall event or the Regional storm depending on jurisdiction and historical data.

DISCUSSION

Call Centre Activity

HRM's Call Centre Manager provided the following information regarding Call Centre activity related to the August 2, 2011 storm.

"Between August 2 and August 3, there were a total of seventy-seven (77) service requests logged through the HRM Call Centre (490-4000) for private property flooding related issues. Thirty-three (33) of these calls were from residents in District 20.

There were an additional fifteen (15) calls for street flooding logged through 490-4000. Six (6) of these calls were from District 20."

In addition to the Call Centre activity, calls and emails were sent directly to Halifax Water staff or through the District 20 Councillor. As well, Halifax Water staff responding to issues in the field received additional incidents directly from property owners. These – representing an additional seven (7) flooding complaints – have also been incorporated into the activity analysis. Note that one call was redirected to HRM Municipal Operations to address as it related to street flooding only.

Routing of Call Centre Issues

HRM's Call Centre Manager reports that "flooding calls are logged into Hansen and immediately dispatched to the appropriate person, as per the following procedures" outlined in Table 1.

Table 1: Call Centre Flooding Call Routing Procedure

Street Flooding (water coming from streets) Code: STRFL	During regular business hours	Call Centre Agent will log the call in Hansen and immediately contact the HRM Streets & Roads Area Supervisor to report the issue.
	During after hours	Call Centre Agent will log the call in Hansen and contact the HRM Streets & Roads Duty Supervisor to report the issue.
Private Property Flooding and/or Sewer Back-ups Codes: FLD01 SEW01	During regular business hours	Call Centre Agent will log call in Hansen and immediately contact the Halifax Water Wastewater Services Service Truck to report the issue.
	During after hours	Call Centre Agent will log the call in Hansen and immediately contact the Halifax Water Wastewater Services On-Duty Supervisor to report the issue.

Halifax Water staff will respond to calls coded as Street Flooding (STRFL) that are redirected from HRM Municipal Operations. In the case of the August 2, 2011 storm event, none of the STRFL codes were redirected.

The process currently followed by HRM/Halifax Water Operations staff for managing flooding calls is:

- HRM Call Centre agent logs call into the Hansen system.
- HRM Call Centre agent contacts Halifax Water Service Truck Operator or On-Duty Supervisor.
- Halifax Water Service Truck Operator or On-Duty Supervisor documents the service request.
- Halifax Water Service Truck Operator or On-Duty Supervisor conducts a site visit and communicates with the property owner.
- If the issue is related to street flooding, Halifax Water staff will redirect service request to HRM Municipal Operations who will dispatch crews as needed.
- If the issue is not related to Halifax Water infrastructure, the property owner is informed directly if on-site or directly through the Hansen system and the service request is closed.
- If the issue is an emergency, Halifax Water staff will bring the necessary equipment and staff to the site to rectify the situation.
- If there is work required but it is not an emergency, a work order will be created for proper equipment and staff scheduling.

Flood Investigation Findings Summary

The early August 2011 storm delivered approximately 70 mm of rainfall over August 2 and 3, 2011 according to Environment Canada data (using the Halifax Stanfield International Airport site). Depending on the rainfall duration profile, it appears this amount of rainfall overwhelmed the municipal systems in some areas. In those cases, the municipal system was not able to convey the excess runoff generated by the rainfall.

The municipal system – being the pipe and ditch network within the street right-of-way and Halifax Water easements – is intended to convey flows to reduce inconvenience to the public related to runoff events. This is commonly referred to as the minor system. Flows that exceed the minor system are typically managed in the overland flow system which may consist of the street itself from curb to curb and planned overland flow routes designed to take the larger rainfall events. The overland flow system (commonly referred to as the major system) is typically the responsibility of HRM.

Halifax Water staff reviewed the list of flood-related calls received from the Call Centre and other sources. Some of these required immediate action by Halifax Water Operations including the following:

- Replacing a pump station controller.
- Cleaning and reinstatement of ditches (including removal of eroded shoulder gravels from the ditch) and adding surge rock to ditch invert, where appropriate.
- Cleaning of catchbasins.
- Replacing displaced manhole covers.
- Reinstating washed out driveways and driveway culverts.
- Cleaning culvert headwalls and grates.

As well, Halifax Water staff analyzed the range of calls. The calls related to "Private Property Flooding" (FLD01) and/or "Sewer Back-ups" (SEW01) were reviewed for possible patterns. It was determined that some clusters existed with common root causes. These calls were categorized using the following sub-classifications:

- Erosion
- Illegal connection
- Private property
- PS (pumping station) issue
- Surface/groundwater/major storm

This exercise indicates a few pockets of possible illegal connections, one significant cluster and several localized points of surface/groundwater/major storm impacts.

From this analysis, discussions between HRM and Halifax Water staff, and review of available background documents, several actions are required and identified below.

Action Items and Recommendations

1. Investigation and Resolution of Surface Water Flood Calls (HRM and Halifax Water)

Several of the calls were the result of properties subject to flood influences because of proximity to the floodplain, influence from groundwater levels, poorly sited properties, inadequate lot grading, water draining from adjacent properties, or ill-defined overland flow routes. The area near Sackville Cross Road and Seawood Avenue is situated in proximity to the Little Sackville River with some of the properties located within the flood fringe of the river. This area is serviced with local street drainage systems and the area itself is flat and low. Given the river elevations and low area of these streets, there may be very limited opportunities to consider a deep storm system without the introduction of pumping. Given the cost implications to residents a request would be needed to initiate an LIC investigation (through HRM) on options to resolve the surface water issues.

2. Communication with Property Owners (Halifax Water)

There are three primary issues that require communications with the property owners including:

i) illegal connections to the street catchbasins;
ii) illegal connections to the foundation drains; and,
iii) the need for installing backflow preventers

3. Detailed Storm Sewer Analysis (Halifax Water)

Several locations were identified that would benefit from conducting detailed storm sewer capacity analysis to confirm the adequacy of the municipal system. These areas include: First Lake Drive, Riverside Drive/Nordic Crescent, and Cobequid Road (between Maple Grove Drive and Birchgrove Drive). This storm sewer capacity analysis will require the creation of a capital project and will need to be prioritized and resourced along with other projects. Staff will consider this project as part of the 2012/13 Capital Budget process.

4. Ongoing Halifax Water Operations Activities (Halifax Water)

Halifax Water will continue to carry out routine maintenance including inspection, cleaning, and removal of accumulated debris in the storm water systems. This will include a feedback mechanism to Halifax Water where there are chronic areas requiring excessive Operational staff time to manage.

5. Policy and Practice Enhancements (HRM and Halifax Water)

In addition to the above specific activities relating to the current flooding situations within District 20, HRM and Halifax Water will continue to collaborate through the

Special Technical Committee on policy and practice initiatives in order to provide enhancements to the stormwater system and to mitigate future problems.

BUDGET IMPLICATIONS

There are no budget implications at this time.

FINANCIAL MANAGEMENT POLICIES/BUSINESS PLAN

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Project and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Project and Operating reserves, as well as any relevant legislation.

COMMUNITY ENGAGEMENT

There is no requirement for community engagement at this point in time, as staff is only providing information to Council.

A copy of this report can be obtained online at http://www.halifax.ca/council/agendasc/cagenda.html then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

Original Signed

Report Prepared/Approved by:_____
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