

**ENGINEERING SERVICES****Town of Newmarket**

395 Mulock Drive

P.O. Box 328, STN Main

Newmarket, ON L3Y 4X7

www.newmarket.ca

engineering@newmarket.ca

T: 905 895.5193

F: 905 953 5138

June 15, 2015**DEVELOPMENT & INFRASTRUCTURE SERVICES
ENGINEERING SERVICES 2015-36**

TO: Committee of the Whole

SUBJECT: Ontario Street Drainage Update

ORIGIN: Director, Engineering Services

RECOMMENDATIONS

THAT Development and Infrastructure Services Report – ES2015-36, dated June 15, 2015 entitled “Ontario Street Drainage – Update” be received and the following recommendations be adopted:

- 1. THAT the Town continue to monitor flood risks as a result of climate change;**
- 2. AND THAT Town staff continue to work in tandem with the Lake Simcoe Region Conservation Authority (LSRCA) to provide technical information to assist the homeowners who are located in the floodplain and are concerned about flooding;**
- 3. AND THAT Town staff continue to work with the LSRCA to encourage owners of residential, commercial, institutional and industrial properties within the Western Creek catchment area to incorporate low impact development (LID) elements to treat rainwater at the source, thereby reducing future surface runoff into Western Creek;**
- 4. AND THAT Town staff prepare options for Council to consider in the 2016 budget exercise to strengthen its commitment to environmental sustainability and to address the effects of climate change, especially as it relates to flooding.**

PURPOSE

The purpose of this report is to provide an update to Committee of the Whole regarding flooding in the backyards of private residences on Ontario Street (see map in Attachment 1), where residential lots are located within the floodplain abutting Western Creek. The report provides an overview of discussions with the residents and the LSRCA, and offers recommendations from staff.

COMMENTS

Properties are Within the Western Creek Floodplain

Western Creek and its floodplain intersect some of the backyards of several private residences along Ontario Street (see map in Attachment 1). The owners of four of these residences have contacted the Town several times over the past year to voice their concerns over the fact that their backyards have been subjected to flooding during intense rain events. Two of the four residences are located entirely within the floodplain, one is almost entirely under the floodplain, and the fourth is partially under the floodplain. The homeowners indicated that along with flooding comes debris, foul odours and extended soggy in their backyards. The homeowners indicated that they were concerned that the water will eventually reach their homes and flood their basements.

Town staff, along with senior staff from the Lake Simcoe Region Conservation Authority (LSRCA), met several times with the homeowners during the past year. Staff listened to the homeowners' concerns and provided technical advice and recommendations to assist them in finding solutions to mitigate the risk of flooding in their backyards. At each of those meetings, the homeowners were reminded by the LSRCA and by the Town that their homes are located within the floodplain, and therefore, their properties are naturally prone to flooding.

Through the various meetings, it was determined that the homeowners' properties may have been subjected to erosion and settling over time. As a result, the backyard surface elevations may be lower than they were in the past. The homeowners were advised that the Town's and the LSRCA's responsibilities do not extend to improving the condition of private properties to reduce the risk of flooding. They were told by both organizations that this remains a responsibility of the property owner. The only time that the Town will repair or restore private property is when a property has been damaged or disturbed as a direct result of the Town's activities, such as during watermain breaks or other potentially damaging events.

If homeowners wish to raise the elevation of their backyards or construct berms to protect against flooding as suggested, they will have to haul in some clean, acceptable fill. The LSRCA indicated that if the homeowners add fill to their back yards, they will have to perform a corresponding, equivalent cut elsewhere within the same floodplain. If the homeowners wish to pursue this option, the Town and LSRCA offered to work with them to help identify areas within the floodplain where the corresponding cuts could be made or where suitable fill could be found.

The homeowners asked about financial assistance to complete the works required for backyard or creek bank improvements. The LSRCA advised that the financial assistance programs that were available in the mid-1990's, where the LSRCA and the Town would both contribute to property improvements, are no longer available. However, there are funding programs to reduce soil erosion along waterways that are presently available through the LSRCA (LEAP funding). The homeowners were invited to explore this with staff at the LSRCA to see if they could qualify.

Stormwater Management Investigations

In an effort to help address concerns, Town staff asked their stormwater management consultant (AECOM), who is currently working on the Town-Wide Stormwater Master Plan, to take a closer look at this and other catchment areas of the Town that are susceptible to flooding. The objective was to determine whether there was anything that could be done on the Town's side to help the homeowners.

AECOM conducted field work and theoretical modelling and provided some ideas for consideration. One of AECOM's recommendations was for them to conduct additional modelling studies on the size of the Niagara Street culvert. The consultant would like to determine if making the culvert larger might reduce the backyard vulnerability of the four homeowners in the Ontario Street floodplain, but might create a new risk of flooding on properties located downstream. Upsizing the Niagara Street culvert would cost approximately \$450,000.

Recent analysis by AECOM, however, is indicating that increasing the diameter of the Niagara Street culvert would have minimal impact on the flood situation. AECOM reports that, with a regional storm event (i.e., Hurricane Hazel, which is the 250-year storm event), a larger culvert at Niagara Street would result in only a 7.0 centimetre reduction in the flow profile of the creek. Therefore, increasing the diameter of this culvert does not appear to be a viable option, especially when considering the costs that would have to be incurred.

It should be noted that, as part of the VivaNext Rapidway project on Davis Drive, York Region had inspected the Western Creek culvert and decided to include extensions of the culvert, but not to increase its diameter. The existing culvert was extended almost equally on the north and south sides of Davis Drive to accommodate the road widening. York Region decided, however, to completely reconstruct the culvert crossing for the Eastern Creek at Davis Drive, replacing the existing culverts with an enlarged box culvert. The Eastern Creek culvert replacement had to be done because the existing pipes were in very poor condition.

Another outcome of AECOM's work was to identify a property belonging to the Regional Municipality of York that is completely within the floodplain and that could potentially be used by the residents to provide fill to raise their backyards while allowing the "corresponding cut" to be made to meet LSRCA's requirements. The fill would have to be tested to establish whether or not it would be suitable for placement near the creek and York Region would have to be in favour of allowing residents to take this fill before this could go ahead. Furthermore, land surveys and additional modelling would be needed to determine the impact of this work on flooding on Ontario Street and for permitting purposes with the LSRCA. A preliminary estimate of the cost for this work is \$100,000, without considering any accessibility issues that might make the work difficult to accomplish (i.e., access to the backyards by excavating and spreading equipment). If special or smaller equipment is needed to conduct the work, it would add to the cost.

The Town's Stormwater Master Plan and Related Initiatives

AECOM also identified a list of longer-term opportunities that they will incorporate into the Town's Comprehensive Stormwater Management Master Plan currently being drafted. The Town expects the final plan to be submitted before the end of this calendar year. Some of the longer-term opportunities are already being done by the Town. For example, the Town is already evaluating the roads needs forecast for road reconstruction within the drainage area to identify potential opportunities for LID measures where possible. In 2015, a bioswale is being constructed as part of the Woodland Court reconstruction project. Also, the Forest Glen Road reconstruction planned for 2016 will incorporate several LID elements in its design. All road reconstruction designs now consider LID opportunities first before incorporating traditional stormwater management to handle drainage in order to reduce storm sewer and watercourse loadings.

The Town is also evaluating opportunities for improvement of its existing stormwater management ponds to increase water quantity and quality control. We are also working with the LSRCA to

encourage opportunities within the catchment area for partnerships with private landowners to implement LID or other stormwater quantity controls on their properties.

The Town and LSRCA are helping by meeting with upstream private property owners and encouraging them to incorporate low impact development (LID) features such as permeable paving, rain gardens, bio-swales and others on their lands to reduce the quantity of surface run-off going into Western Creek during intense rain events. The LSRCA is looking into programs to assist upstream property owners with implementing LID elements.

To further encourage upstream LID options, in October 2014, the Town and the LSRCA met with representatives of the Upper Canada Mall and Sears to discuss potential improvements to their property that could reduce the total runoff into Western Creek. Items such as maintaining their privately owned stormwater ponds, rainwater harvesting for recreational and marketing purposes, low impact development in the parking lot (such as porous pavements, tree trenches, raingardens and biofiltration) and others were discussed. The Mall and Sears representatives were urged to explore what other similar commercial developments have been able to accomplish, and in particular, to look at the Maplewood Mall in Minnesota. The LSRCA offered to explore any financial incentive programs that could help offset the costs to the Mall and Sears.

The LSRCA also offered to help the Ontario Street homeowners by having some of their staff walk the creek in hip-waders to determine if there was any debris in the water that could be obstructing the flow. However, the LSRCA indicated that, because the creek is neither the Town's property nor theirs, they would have to obtain permission from property owners to walk the creek along the private backyards. Also, if any obstructions were identified, it would be up to the property owners who abut onto that section of the creek to clear those obstructions. The LSRCA later reported that after carrying out this exercise, they did not find any major obstructions. They only found some brush and an old shopping cart in the water and they proceeded to notify the homeowners responsible for those sections of the creek to clear the obstructions.

The LSRCA has been monitoring the flow of Western Creek since November 2014. Recently, they received an approval to install a permanent gauge to measure flow rates in Western Creek on a continuous basis. This gauge will be installed in late spring or early summer of 2015. This additional data will be useful in understanding the effects of heavy rainfalls on the creek levels and it will also provide a baseline from which to measure the success of any LID applications upstream.

The Town's Public Works Services is also doing its part in keeping areas free of obstructions. There is regular inspection of the culverts at the intersections of the creek with the Town's municipal roads to ensure that they are free of debris and sediment and that they are flowing properly.

ADDITIONAL CONSIDERATION

As municipalities face new challenges caused by more frequent and more intense storm events due to climate change, it is incumbent upon them to transform the way stormwater is being managed. The traditional method of channeling all stormwater runoff from impervious surfaces (rooftops, driveways, roads, parking lots) into catchbasins and pipes that lead to natural watercourses is no longer an acceptable option. Not only does this traditional practice cause deterioration in the quality of water in our lakes and streams, but it also increases the quantity of

water flowing through these water bodies, leading to flood conditions where they did not previously exist or the exacerbation of existing flood conditions on flood prone lands.

The Town of Newmarket has been very proactive in embracing low impact development as a way of mitigating excessive stormwater runoff by treating rain water at its source. Putting rain water back into the ground where it falls, rather than directing it through storm sewers into lakes and streams, serves the dual purpose of reducing flow into natural water courses and removing pollutants that would otherwise be carried to lakes and rivers.

In order to truly have an overall impact on reducing flooding and helping the residents of Newmarket, the Town could consider strengthening its commitment to addressing the effects of climate change. Increased requests from the community for the Town to provide support and demonstrate leadership in climate change and environmentally sustainable initiatives and in reducing flooding on private and public lands is making it increasingly necessary for the Town to:

1. Put in place and enforce policies and by-laws to ensure responsible and sustainable development that manages stormwater and reduces erosion and sedimentation on site;
2. Explore LID opportunities at all of the Town's facilities and in all of our own capital works;
3. Develop LID construction engineering standards and specifications;
4. Provide leadership on identifying LID opportunities in all developments and spearheading initiatives on Town properties;
5. Implement strategies to prevent pollutants such as phosphorus from entering water courses;
6. Monitor construction sites (the Town's and development sites) to ensure effective sediment control and proper construction techniques;
7. Lead educational initiatives to ensure that Town staff, local businesses, developers, builders, residents, homeowners and schools understand the issues related to climate change and know how to address them by managing stormwater at the source;
8. Review and monitor the Town's stormwater management ponds (SWM ponds) to eliminate or reduce reliance on them as a stormwater management option;
9. Continue to work closely with the LSRCA on climate change and sustainability initiatives aimed at reducing the risk of floods.

In order to achieve these objectives, additional resources would be needed. Knowing that climate change is threatening our Town's and residents' properties and assets, and not preparing appropriately to mitigate those damages ahead of time, increases the Town's risk exposure and can make the Town liable for environmental damages. It is therefore recommended that staff bring forward some options for Council to consider in order to show its commitment to addressing climate change and environmental sustainability in construction and development works and in the protection of property as part of the 2016 budget submission.

CONSULTATION

As described above, there was a great deal of consultation with the four homeowners who contacted the Town, as well as with the Ward Councillor, the LSRCA, the Town's stormwater specialists and upstream private property owners who may be able to implement LID elements on their lands.

BUSINESS PLAN AND STRATEGIC PLAN LINKAGES

Living Well

- Environmental Protection and Natural Heritage Preservation
- Safety and Security

Well Respected

- Being a champion for cooperation and collaboration

HUMAN RESOURCE CONSIDERATIONS

No impact to current staffing levels at this time.

IMPACT ON BUDGET

Operating

No impact at this time.

Capital Budget

No impact at this time.

CONTACT

For more information on this report, please contact Rachel Prudhomme at 905-953-5300 extension 2501; rprudhomme@newmarket.ca.

Prepared by:


R. Prudhomme, M.Sc., P.Eng.
Director, Engineering Services
P. Noehammer, MBA, P.Eng.
Commissioner, Development & Infrastructure Services

Attachment 1

