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

April 13, 2015

DEVELOPMENT & INFRASTRUCTURE SERVICES REPORT ENGINEERING SERVICES 2015-24

TO: Committee of the Whole

SUBJECT: Inflow and Infiltration Reduction Pilot Project

ORIGIN: Director, Engineering Services

RECOMMENDATIONS

THAT Development and Infrastructure Services Report – ES 2015-24 dated April 13, 2015 regarding "Inflow and Infiltration Reduction Pilot Project" be received and the following recommendations be adopted:

1. **THAT the Mayor and Clerk be authorized to execute a Tri-Party Agreement to the satisfaction of the Chief Administrative Officer, the Commissioner of Development and Infrastructure Services, the Director of Engineering and the Town Solicitor, with York Region and with Marianneville Developments Limited / Kerbel Group Inc. for an Inflow and Infiltration Reduction Pilot Project based on the principles identified in this report;**

2. **AND THAT staff report back as to the outcome of the Inflow and Infiltration Reduction Pilot Project;**

3. **AND THAT a copy of this report and Council extract be forwarded to representatives of Marianneville Developments Limited / Kerbel Group Inc. and York Region.**

BACKGROUND

In anticipation of the forecasted growth within York Region, an Individual Environmental Assessment (IEA) for the Southeast Collector (SEC) sanitary trunk sewer to expand the regional sewer system was initiated in 2005. The SEC trunk sewer is an important and necessary component of infrastructure to serve the future growth in the Region and the IEA was approved by the Ministry of the Environment (MOE) on March 31, 2010.

A series of conditions were imposed by the MOE as part of the IEA approval, which include the requirements for the Region and local municipalities to develop solutions to actively reduce inflow and infiltration (I/I) in both the regional and municipal sanitary systems by 10 percent by 2031. As a result, York Region has requested that local municipalities, as part of the assignment of the annual servicing allocation, partner with the Region to: 1) continue to seek out the sources of I/I; 2) adopt standards and guidelines to reduce I/I in new developments and within existing systems; and 3) develop funding and cost sharing principles to address future remediation projects.

WHAT IS INFLOW AND INFILTRATION?

Inflow and infiltration is "clean" water (i.e., not sanitary sewage) that enters the sanitary sewer or "wastewater" system during rain and snowmelt events, as well as seepage into the system from the surrounding groundwater. Such water adds to the burden of sewage treatment plants, because it adds into the plant a significant volume of water that does not need to be treated. The additional water also taxes the local sanitary sewer mains by increasing the volume of flow through the pipes, often to the point of surcharge. This increases the risk of sewage back-ups and also reduces the capacity of the pipes to accept flow from new developments being proposed upstream.

FIGURE 1: I/I Sources
(Source: York Region Website)

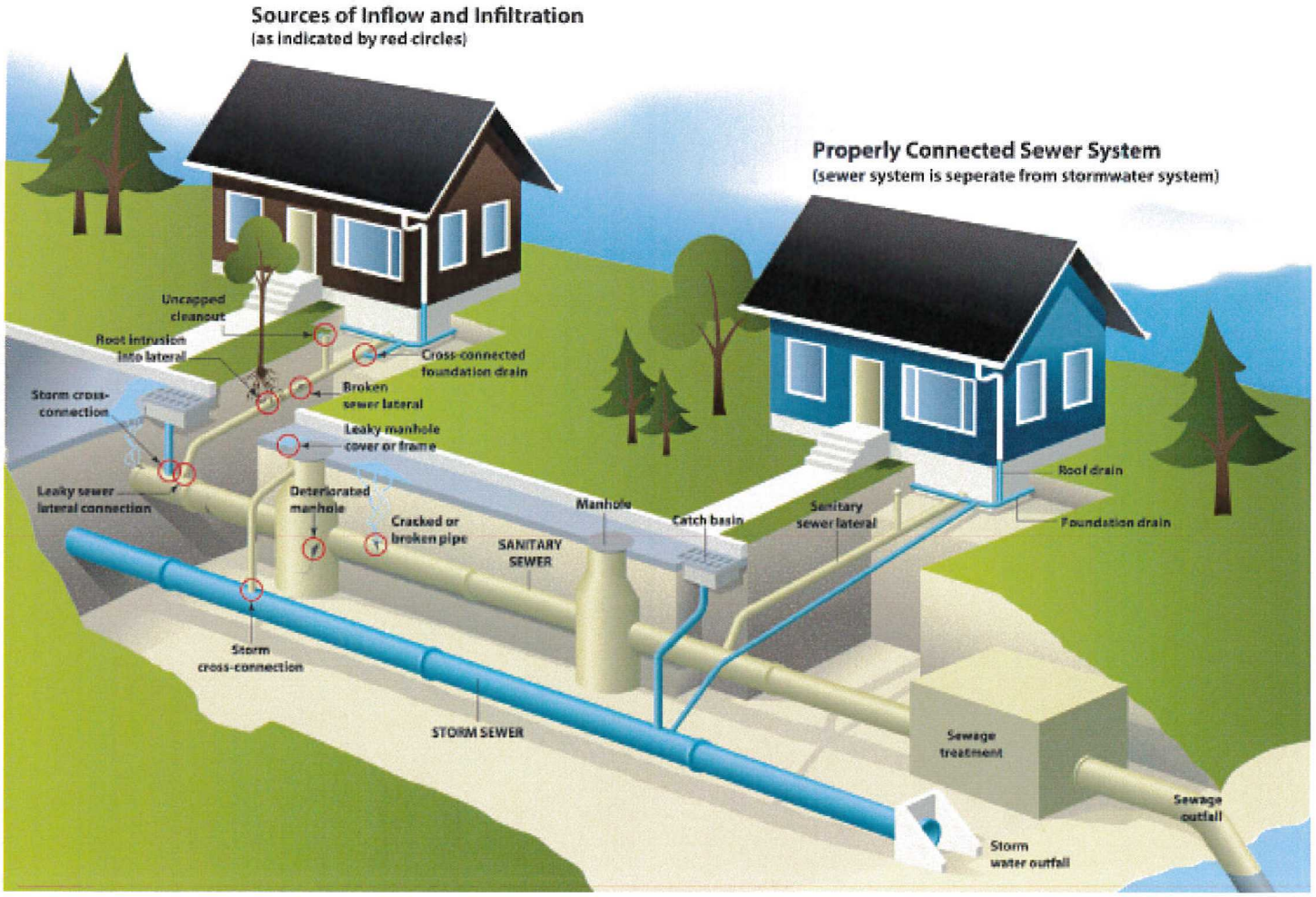


Figure 1 (above) shows a schematic of inflow and infiltration sources. "Inflow" can result from unsealed manhole covers, roof drain downspouts or sump pumps that are connected directly into the sanitary sewer instead of the storm sewer, or catchbasins and storm sewers that are connected directly into the sanitary sewer. "Infiltration" occurs through cracks and faulty joints in the pipes and manholes, resulting in groundwater seepage. In general, inflow and infiltration into the sanitary system is lower when the mains are newer; however, as the sewage infrastructure ages and the system deteriorates, the rate of inflow and infiltration into the system increases.

I/I REDUCTION PILOT PROJECT:

Although Newmarket has not had an opportunity to participate in an Inflow and Infiltration Reduction Pilot Project yet, four other local municipalities in York Region have. The City of Markham, the City of Vaughan, the Town of Aurora and the Town of Richmond Hill have already executed Tri-Party Agreements with York Region and a private sector partner or Landowners Group (LG). All four have successfully embarked upon or completed work programs and remediation works for Inflow and Infiltration Reduction Pilot Projects identical to the one being proposed in Newmarket. In all four cases, the same "Tri-Party Agreement" legal document was used to forge a partnership between the local municipality, York Region and a private sector / LG partner. Table 1 below shows a summary of the pilot projects in other local municipalities, including the potential allocation assignment and the name of the LG who participated in the project.

Table 1

York Region Inflow and Infiltration Reduction Pilot Projects Summary

MUNICIPALITY	LANDOWNERS GROUP	STATUS OF AGREEMENT	POTENTIAL CAPACITY ASSIGNMENT (person-units)
Markham	Upper Unionville Inc.	Executed (June 2011)	2500
Vaughan	Huntington Landowners Trustee Inc.	Executed (Sept. 2012)	4600
Aurora	Aurora 2C Landowners Group Inc.	Executed (Sept. 2012)	3300
Richmond Hill	North-East Leslie Landowners Group Inc.	Executed (May 2013)	2232
TOTAL CAPACITY RECOVERED AS OF MARCH 2015			**7400+**

An I/I Reduction Pilot Project requires the execution of a "Tri-Party Agreement" between the Town, York Region and a LG. The LG must be willing to fund 100 percent of the project costs. There is no cost to either York Region or to the Town. The LG hires, at its own expense, a qualified consulting engineer and also pays the costs of an additional engineering consultant who will act as a peer reviewer on behalf of the municipality and York Region to verify the works done by the LG and its consultant. The works involve monitoring the municipal sanitary sewer (wastewater) system throughout the Town (i.e., not necessarily in the areas that the LG is developing) and conducting standardized tests to determine areas within the Town's sanitary sewer network where there is high inflow and infiltration occurring.

Once the sources of I/I have been identified, a "work program" is prepared by the LG and its consultant to conduct the works required to remove/remediate the I/I sources. The work program is presented to the Town and to York Region for approval. The remediation being proposed can be as extensive as re-lining sections of sewer mains or lining manholes that show excessive infiltration. It can also involve disconnecting sources of inflow such as roof drains / downspouts or private catchbasins from the sanitary main and re-connecting them properly into the storm sewer instead, if desired. Any work being proposed by the LG and their engineering consultant is subject to review and approval by York Region and the Town, in concert with the peer reviewer. There is no cost to the Town or Region for any of the construction works or for any engineering services by the LG's consultant or the peer reviewer. Prior to conducting any works, the LG must submit a letter of credit for a sufficient amount to serve as remediation guarantees for all of the works that the LG is obligated to undertake in the work plan and for rectification of any deficiencies. This way, the Town is protected against the possibility of deficiencies or unsatisfactory/incomplete work. The LG must also provide adequate liability insurance, to the satisfaction of the Town. Once the work program has been concluded, subsequent flow monitoring will reveal how much I/I has been removed from the sanitary sewer system as a result of the project.

In exchange for assuming all of the costs to complete an approved monitoring and work program under the I/I Reduction Pilot Project, the Town, and ultimately the LG, earns additional units of capacity allocation for the LG's development. The additional allocation is calculated at a 2:1 ratio (i.e. for every 2 person-capacity units that are eliminated from the system as a result of the work program, the Town earns 1 person-capacity unit to allocate back to the LG for the development project). This helps the Town as much as the LG, as it frees up some additional capacity units for the Town to allocate to other developments to meet its growth needs as required. In essence, the work done by the LG at the LG's cost, adds to the capacity allocation bank of the Town. The number of units allocated to any project is usually equivalent to the balance between the number of units that have already been allocated by the Town and the number of units that will be required to bring the project to full build-out.

The Marianneville Developments Limited / Kerbel Group Inc. (the "LG") has approached the Town of Newmarket and expressed its interest to undertake and fund an I/I Reduction Pilot Project in a letter of intent dated June 12, 2014 (see attachment). The LG is proposing to use the services of two qualified engineering consultants (Cole Engineering and Civica Infrastructure Inc.), who are experienced in inflow and infiltration works and have provided the engineering services for similar pilot projects with other local municipalities in York Region. Town Staff has held preliminary discussions with York Region regarding the possibility of the project going ahead, if endorsed by Council. York Region is very interested in moving this project forward, as it will improve the sanitary sewer system and will help them meet the stringent requirements of MOE's IEA for the South-East Collector Trunk Sewer.

The overall benefits of entering into an I/I Reduction Pilot Project have been proven by other local municipalities in York Region who have participated in similar pilot projects. More specifically, the program will:

- Improve the level of service and capacity in the local sanitary sewer system by reducing I/I;
- Improve the level of service and capacity in the local systems by reducing I/I;
- Help improve the overall capacity of the YDSS (York District Sanitary Sewer);
- Reduce environmental impact associated with cross connections between sanitary and storm sewer systems;
- Create additional allocation for new development, in particular, if allocation becomes scarce in future years;
- Allow the potential to focus the pilot project to high priority areas;
- Allow the Town to concentrate its I/I CCTV Camera Inspections on other areas of the Town;
- Expedite the I/I reduction in the Town system at the Landowner Group's costs;
- Create a more efficient overall sanitary sewer system;
- Help satisfy MOE approval condition for the Southeast Collector IEA;
- Reduce total volume of sewage being treated at the treatment plant.

PUBLIC CONSULTATION

No public consultation was undertaken in the preparation of this report. If the recommendations are approved, then the process would incorporate a public consultation plan.

BUSINESS PLAN AND STRATEGIC PLAN LINKAGES

- Well-equipped and managed: Efficient management of capital assets and municipal services to meet existing and future operational demands.

HUMAN RESOURCE CONSIDERATIONS

There is no impact on current staffing levels.

IMPACT ON BUDGET

There is no impact on budget to the Town of Newmarket, as all costs will be funded by the Landowner Group.

CONTACT

For more information on this report, please contact Rachel Prudhomme at 905-895-5193 extension 2501; rprudhomme@newmarket.ca.

Prepared by:

R. Prudhomme, M.Sc., P.Eng.
Director, Engineering Services

P. Noehammer, P.Eng., Commissioner
Development & Infrastructure Services

KERBEL GROUP INC.

MARIANNEVILLE DEVELOPMENTS LIMITED

June 12, 2014

Town of Newmarket
PO Box 328, Station Main
395 Mulock Drive
Newmarket, ON L3Y 4X7

Attention: **Mr. Bob Shelton**
Chief Administrative Officer

Dear Mr. Shelton:

Re: **Infiltration (I-I) Reduction Study Pilot Project**
Marianneville Developments Limited
Town of Newmarket

The Marianneville Developers Group is pleased to be part of the growing community of Newmarket and is eager to build a new community that both the Town and Newmarket residents will be proud of. As a part of the development process we will require sanitary allocation from the Town prior to each phase of the development. However, we understand that there is insufficient near-term allocation available to match up with our proposed schedule. This affords both the Town and the Developer's Group an excellent opportunity to work together and achieve mutually beneficial goals.

The Region of York over the past four (4) years have been working on pilot projects with many local municipalities and developer groups to provide allocation ahead of the proposed schedule using a simple process of trading Inflow and Infiltration (I-I) Reduction for sanitary allocation. As we understand, this has not yet been completed with the Town of Newmarket and we therefore wish to submit ourselves as a partner with the Town to work with the Region on this project in the same manner. With a 2:1 ratio of I-I peak flow removed from the system to allocation given by the municipality we believe this will not only help us achieve our schedule, but also improve the Town's infrastructure, all at no cost to the Town.

We understand the risks involved in this endeavour both financially and otherwise, as well as the fact that outcome is not guaranteed. To minimize both the Town's and our risk, and to ensure a successful project outcome, we are partnering with Cole Engineering, the same firm that had been working on the other four (4) successful I/I projects completed within the Region. In light of the above, we formally request the Town's approval to initiate an Inflow and Infiltration (I-I) Reduction Study with the Town of Newmarket and the Region of York. In consideration of the Region's requirements, the Marianneville Developers Group would further request that this I-I Reduction Study be considered the Town of

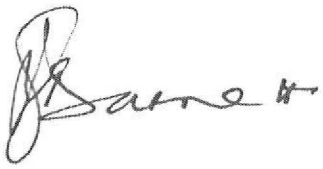
KERBEL GROUP INC.
26 Lesmill Road, Unit 3, Toronto, Ontario M3B 2T5
Telephone: 416-733-2202 Fax: 416-733-3129

Newmarket's official Pilot project and that the same be secured by way of a confirmation letter or short form agreement with both the Town and Region, if required.

Thank you for considering this proposal and we await your timely response.

Yours truly,

MARIANNEVILLE DEVELOPMENTS LIMITED



Joanne Barnett MCIP RPP
Vice President, Planning Operations

c.: Rachel Prudhomme, Town of Newmarket
Rick Bingham, Town of Newmarket
Scott Cole, Cole Engineering Group Ltd.