

Town of Georgina

Sanitary Sewer Master Plan

Transcript of Public Information Centre

Monday, February 1st, 2021

Slide 1 - Welcome!

Hello everyone, and welcome to the Sanitary Sewer Master Plan Public Information Centre, hosted by the Town of Georgina. My name is Julien Bell and I will be presenting on behalf of GM BluePlan Engineering, the consulting firm selected by the Town to assist with this project.

Slide 2 - What is Driving the Town of Georgina Sanitary Sewer Master Plan?

The Sanitary Sewer Master Plan is being undertaken by the Town to help identify the Town's long-term growth needs with respect to the local sanitary system. Through the master planning process, the Town is able to do the following:

- Assess the Town's existing sanitary system capacities, performance, and needs;
- Plan for buildout of the Town's urban settlement boundary;
- Support operations and maintenance activities through improved prioritization of projects; and,
- Facilitate long-term financial planning

Slide 3 - Sanitary Sewer Master Plan Vision

The Master Plan evaluates the ability of the existing and planned wastewater infrastructure within the Town of Georgina to efficiently and effectively service the Town's existing population, support forecasted growth, maintain or improve service levels, improve system resiliency and operational flexibility, and consider the long-term financial viability of the system. These objectives have served to guide the master planning process, from the initial assessment of the existing system to the development and evaluation of alternatives.

Slide 4 - Municipal Class EA Process

The Sanitary Sewer Master Plan sets out to meet the requirements of the Municipal Engineers Association, or MEA, Class Environmental Assessment process, which involves the completion of Phase 1 and Phase 2 of the Class EA process for Master Plans.

Phase 1 of the process focuses on identifying the problem and opportunities, and Phase 2 of the process involves the identification and evaluation of “Alternative Solutions”.

We are currently in the second phase.

Slide 5 - Growth

This sanitary master plan focuses on buildout potential within the Town’s Urban Settlement Boundary in order to provide clarity in the long-term infrastructure needs and to provide more flexibility to respond to changes due to growth uncertainty. The location and rate of growth are two factors which impact the Town’s infrastructure needs and when it should be implemented.

The general methodology for growth allocation is as follows:

- The Town tracks all submitted Development Applications and ensures that there is sufficient wastewater treatment capacity to support future developments. Draft Plans or Draft Plan Concepts are available for many of the larger development applications. This development data was used as a baseline for growth allocation.
- The infill/intensification targets from the Town’s Official Plan were allocated to the Urban Centres and Corridors located in Keswick and Sutton.
- Finally, growth was allocated to the remaining developable land within the Town’s Urban Settlement Boundary, at a density of 60 people per hectare. This accounts for the long-term growth that is projected to occur but has not yet been captured within the Development Application tracking process.

A summary of the projected equivalent population to buildout is provided in the table on the right and is broken down by community.

The following three slides present the general servicing concepts with arrows representing the general direction of sanitary drainage for large developments within Keswick and Sutton.

Slide 6 - Growth – Keswick Part I

This figure focuses on the growth lands bounded by Ravenshoe Road, The Queensway South, Biscayne Boulevard, and Woodbine Avenue.

Slide 7 - Growth – Keswick Part II

This figure focuses on the growth lands bounded by Church Street, Metro Road North, Old Homestead Road, and Woodbine Avenue.

Slide 8 - Growth – Sutton

This figure focuses on the growth lands within the community of Sutton.

Slide 9 - Evaluation Methodology

This slide outlines the evaluation framework used through the Master Plan to identify and evaluate sanitary servicing strategies.

Servicing concepts were developed to address the Town's existing and future system opportunities and constraints. Each concept was evaluated on the basis of advantages, disadvantages, and the overall favourability against other servicing concepts. These concepts were then evaluated using four major evaluation factors including Technical, Environmental, Social/Cultural, and Financial factors.

Under each major evaluation factor, multiple criteria were reviewed and scored either as high (shown as green), representing the most favorable conditions, medium (shown as orange), or low (shown as red), representing the least favorable conditions.

Once all alternatives were evaluated, the preliminary preferred alternative was identified using the reasoned argument approach. The reasoned argument approach does not use an overall numeric scoring system but focuses on identifying clear and thorough rationale of trade-offs among alternatives based on each alternative's anticipated impacts and benefits. The basis of this approach is to qualitatively evaluate the relative advantages, disadvantages, impacts, and benefits of each alternative.

Slide 10 - Wastewater Terminology – Inflow and Infiltration

Inflow and infiltration is a common term that will be used throughout this presentation. Inflow and infiltration refers to extraneous groundwater and stormwater that enters the sanitary sewer system through cross connections with the stormwater system or through cracks and other imperfections within the sanitary system. Some potential sources are presented in the figure on the left and can include:

- Roof drain connections
- Uncapped sewer cleanouts
- Storm sewer cross connections
- Faulty sanitary sewer lateral connections
- Faulty manhole cover or frame

Inflow and infiltration is typical and expected within all municipal sanitary sewer systems and municipalities allow for a certain rate of inflow and infiltration in the design of sanitary infrastructure. However, the goal is to minimize inflow and infiltration in order to minimize the additional cost of pumping and treating the extraneous flows, and to maximize the existing capacity of sanitary infrastructure.

Slide 11 - Opportunities and Constraints – Keswick

This slide highlights some of the opportunities and constraints within the community of Keswick. The area serviced by the Keswick Water Resource Recovery Facility (WRRF) is shown on the map in green. Willow Beach is shown on the next slide and is also serviced by the Keswick WRRF.

In general, the impacts of growth on the existing sanitary system are minimal. Overall, the Town's existing sewer network is well-equipped to support future needs. Problem areas and recommended infrastructure upgrades will be discussed later on in this presentation.

The main constraints within Keswick are as follows:

- There are areas of high inflow/infiltration which are shown on the map in red
 - Inflow and infiltration refers to groundwater and stormwater that enters the sanitary system through cross connections with the stormwater system or through cracks and other imperfections within the sanitary system
- There are long-term treatment capacity constraints at the Keswick WRRF, which is a York Region facility
 - Treatment capacity upgrades are identified and planned through the York Region's master plan
- There are existing design capacity constraints at four (4) local pumping stations and two (2) regional pumping stations within the Keswick WRRF service area

With these constraints in mind, the following opportunities were considered in the development of alternatives:

- Manage inflow and infiltration to help address areas experiencing sewer capacity restraints
- Strategic sanitary sewer sizing to support all future development in growth areas
- Consider ongoing renewal and replacement of existing sewers
- Opportunity to prioritize and coordinate sewer upgrades with planned sewer replacements due to age or condition, or other infrastructure projects such as road reconstructions
- Evaluate life cycle costs of alternative solutions to better understand the financial implications of the preferred alternatives

Slide 12 - Opportunities and Constraints – Sutton

This slide highlights the opportunities and constraints within the communities of Willow Beach and Sutton. The area serviced by the Sutton WRRF is shown on the map in pink.

As mentioned on the previous slide, the overall growth impacts on the existing system are minimal, considering the amount of projected growth to buildout.

The main constraints are similar to those in Keswick and are as follows:

- There are areas of high inflow and infiltration which are shown on the map in red
- There is a long-term treatment capacity constraint at the Sutton WRRF, which is a York Region Facility
 - Treatment capacity upgrades are identified and planned through the York Region master plan
- There are existing capacity constraints at one (1) regional pumping station within the area serviced by the Sutton WRRF.

The opportunities within the sanitary system in Sutton are shown on the right-hand side of this slide. They are similar to the opportunities in Keswick and were discussed on the previous slide.

Slide 13 - Servicing Concepts

Areas with sewer capacity constraints were identified through the assessment of existing and future sanitary system performance. These areas were categorized into the following groups:

- Growth related capacity upgrades, where the capacity issue is triggered by future growth;
- Existing broader system issues, where there is a cluster area of constrained sewers that is not triggered by future growth; and,
- Existing localized issues, where there is a relatively short segment of constrained sewers and there is little risk of basement flooding

These categories were identified in order to streamline the process of identifying servicing concepts and evaluating potential alternatives.

The first servicing concept is the Do-Nothing option. This option is generally recommended in cases where:

- There is little to no risk of basement flooding;
- Future operational adjustments may address these issues; or,
- The cost of other alternatives is high and do not provide sufficient benefit.

The next servicing concept is the Capacity Upgrade option. This is generally recommended in cases where:

- An increase in sewer size or pumping station capacity would address the system constraint; and,
- Inflow and infiltration reduction is not feasible.

The third servicing concept is inflow and infiltration reduction. This option allows the capacity of existing infrastructure to be maximized and is generally recommended in cases where:

- Reduction of extraneous flows entering the sanitary sewer system is likely to address the system constraint; and
- The constraint is located within a priority inflow and infiltration area, which were highlighted in the opportunities and constraints map

Slide 14 - Existing Broader System Issues – Alternatives

This slide presents the two areas where there are existing broader system issues and the servicing alternatives that were considered for each area.

The figure on the left presents the Eastbourne area where there are existing sewer capacity constraints along Lake Drive North.

- Alternative 1 would consist of upgrading the capacity of Pumping Station #20, however this would not address all of the sewer capacity issues
- Alternative 2 would consist of upsizing the sewer along Lake Drive North. A significant length of sewer upgrades would be required, and it should be noted that the existing sewer was installed in 2003 so the sewer still has a significant portion of its expected life cycle remaining.
- Alternative 3 would consist of implementing an inflow and infiltration reduction program within the area, which has been flagged as an area of high inflow and infiltration. This option has the potential to maximize the existing capacity of the sewers and reduce ongoing pumping and treatment costs.

The evaluation of these alternatives is presented on the next slide.

The figure on the right presents the Jackson's Point area where there are existing sewer capacity constraints within the sanitary sewer within the easement from Wheeler Avenue to Pumping Station #12 on Lorne Street.

- Alternative 1 would consist of upsizing the sewers along the existing alignment in order to address the capacity constraints. There is opportunity to address the capacity constraints with the planned replacement of the existing sewers as they are aging and approaching the end of their life cycle. However, the existing easements are encroached which brings added complexity to the construction approach needed to replace the sewers.
- Alternative 2 would consist of diverting flows from the existing sewer in order to avoid upgrades to the sewer along the existing easement. This alternative involves several pieces of infrastructure upgrades, including the realignment of the local forcemain from Pump Station #13, pump replacements at the Pump Station #13, and sewer upsizing on Lorne Street from Lake Drive East to Pump Station #12. The overall project complexity is lower than Alternative 1, however, there are several additional construction components in addition to sewer upsizing.

The evaluation of these alternatives is presented on the next slide.

Slide 15 - Existing Broader System Issues – Evaluation

This slide presents the evaluation of the alternatives for each of the problem areas discussed on the previous slide.

The figure and table on the left shows the preferred alternative of inflow and infiltration reduction for the Eastbourne area. Alternative 1 (Pump Station #20 upgrades) was not selected due to the low technical feasibility score, as pumping capacity upgrades alone would not address all of the sewer capacity constraints. Alternative 2 (Sewer upgrades) has a high technical feasibility score, however, financial viability is low due to the high capital cost of the sewer upgrades that would be required and the high net life cycle cost for the remaining life of the existing sewers that would be replaced. Further, the environmental impacts are moderate as the sewer alignment is very close to Lake Simcoe and social/cultural impacts are moderate as the construction impacts on residents would be more significant compared to Alternative 1 (Pump Station #20 upgrades). Alternative 3 (inflow and infiltration reduction) has the advantage of maximizing the life and capacity of the existing sewers and reducing ongoing pumping and treatment costs. The expected capital cost and net life cycle cost for Alternative 3 (inflow and infiltration reduction) is lower than Alternative 2 (sewer upgrades) and thus scored moderately.

The figure and table on the right shows the preferred alternative of sewer upsizing along the existing alignment for the Jackson's Point area (Alternative 1). In general, the technical feasibility score was moderate compared to Alternative 2 (diversion) due to the complexity of sewer construction through the encroached easement. However, based on the expected capital cost and net life cycle cost for the two alternatives, Alternative 1 (sewer upgrades) is preferred.

Slide 16 - Sewer Capacity Upgrades

This slide presents the four (4) sections of sewer capacity upgrades which are recommended for the Town's capital program. The evaluation process for these areas was more straightforward. As such, detailed evaluation tables are not shown.

The figure on the left shows the extent of the sewer capacity upgrades recommended on The Queensway South from Henry Street to Morton Avenue in order to address the existing network capacity issues. The capacity upgrades would support the existing users as well as the planned growth in the area due to infill and intensification along the urban corridor. Inflow and infiltration reduction was not a viable option as this is not an area of particularly high inflow and infiltration.

The second figure from the left shows the extent of the sewer capacity upgrades recommended on Cottage Grove to Metro Road North in order to address existing network capacity issues. The sewer receives flow from the Pump Station #20's forcemain and is undersized for the capacity of the station. There is no growth planned in this area.

The second figure from the right shows the extent of the sewer capacity upgrades from Market Street to High Street which are needed to support future growth in southeast Sutton. The Town has been planning upgrades along this alignment with the developer, however, additional upgrade needs have been identified as the master plan considers full buildout of the remaining lands.

The figure on the right shows the extent of the sewer capacity upgrades recommended on Dalton Road south of High Street and on High Street from Dalton Road to the York Region High Street Pumping Station which are needed to support future growth in southwest Sutton.

Slide 17 - Inflow and Infiltration

This slide presents all the areas that have been flagged as having high inflow and infiltration into the sanitary sewer system. Priority areas are shown on the map in red and lower priority areas are shown in grey.

As touched on in the alternatives evaluations, reduction of inflow and infiltration can be used to address network capacity issues and avoid upsizing infrastructure to accommodate extraneous flows. Inflow and infiltration reduction also serves to reduce overall pumping and treatment volume, which reduces costs and maximizes the usage of the existing pumping and treatment capacity.

Inflow and infiltration reduction studies in the flagged areas will be recommended as part of the Town's capital program.

Slide 18 - Pumping Station Capacity

This slide highlights the four (4) Town owned pumping stations that are in need of capacity upgrades. However, prior to the implementation of station upgrades, the Town will consider the following projects and factors to ensure that pumping station upgrades are required.

First, the Town should complete a pump station condition assessment and pumping capacity assessment. The pump station condition assessment may influence the timing of pump station upgrades. For example, if a pump station is in poor condition and will likely need rehabilitation in the near future, pump station upgrades can be timed to coincide with the upcoming rehabilitation works. A pumping capacity assessment may influence the need for pumping station upgrades. For example, if the pumping capacity assessment indicates that the actual station capacity is higher than the capacity that was assumed in the master plan, pumping upgrades may be delayed or may not be required.

Further, the four (4) pumping stations which have been flagged as needing upgrades are located within priority inflow and infiltration areas. There is opportunity to reduce wet weather flow to the pumping stations in order to maximize the use of existing pumping capacity. This may delay or avoid the need for pumping capacity upgrades.

Finally, pumping station upgrades may be more favourable in areas where growth is projected to occur in order to ensure that additional flows can be supported as growth occurs.

Slide 19 - Capital Program

This slide presents a summary of the infrastructure upgrades and inflow and infiltration reduction projects that will be recommended as part of the Town's capital program, along with their estimated capital costs.

Note that this capital program includes the upgrades anticipated between 2021 and 2041. This is a preliminary recommended capital program and the Town will take these into consideration when developing its annual capital projects which would integrate sanitary sewer system projects with other infrastructure projects such as road reconstructions, watermain replacements, and sewer replacements, among others.

Slide 20 - Thank you for your participation!

This concludes the virtual Public Information Centre. If you have any questions, comments, or want to stay up to date please contact either:

- Carol Liu, Project Manager at the Town of Georgina, or
- Julien Bell, Project Manager for GM BluePlan Engineering.

The contact information is available on this slide and on the Town's project website. More information, including copies of the project notices and Public Information Centre materials, like the transcript of this virtual presentation, can be found on the Town's project website. Thank you very much for your participation in the virtual Public Information Centre.