



**Utilities Kingston
Report to Council
Report Number 19-045**

To: Mayor and Members of Council
From: Jim Keech, President and CEO, Utilities Kingston
Resource Staff: Jim Miller, Director, Utilities Engineering
Date of Meeting: January 28, 2019
Subject: Long Term Capital Budget Planning – Combined Sewer Separation Program

Executive Summary:

Combined sewers within the City of Kingston have significant implications on our environment (overflows) and on the ability to sustain growth and development (capacity), particularly in the central part of the City where combined sewers are located. Historically the City and Utilities Kingston have worked in a coordinated fashion through the road reconstruction programs to eliminate combined sewers. As a consequence of that effort and a review of the remaining combined sewers, cost estimates and long term budget planning, the elimination of combined sewers is an achievable target within a reasonable time frame.

To enable the success of eliminating combined sewers there is value in identifying this objective as an important long term goal. In doing so there is a clear purpose and intent expressed to the community and appropriate resources can be planned and allocated over a 20 year period to achieve the removal of combined sewers from the sanitary sewer system.

Recommendation:

That Council for the City of Kingston endorses the long term objective of the total elimination of combined sewers within the City of Kingston; and

That in recognition of the current capital budget (2019-2022), which contains combined sewer elimination projects, that beginning with the 2023 capital program it is recommended that resources be allocated as appropriate to target the elimination of combined sewers over a 20 year sustained program.

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Authorizing Signatures:

ORIGINAL SIGNED BY PRESIDENT & CEO, UTILITIES KINGSTON

**J.A. Keech, President and CEO,
Utilities Kingston**

Consultation with the following Members of the Corporate Management Team:

Peter Huigenbos, Acting Commissioner, Community Services	Not required
Lanie Hurdle, Acting Chief Administrative Officer	Not required
Desirée Kennedy, Chief Financial Officer & City Treasurer	Not required
Deanne Roberge, Acting Commissioner, Corporate & Emergency Services	Not required

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Options/Discussion:

In 2006, with the adoption of what at the time was a new Pollution Control Plan, the direction for management of combined sewers shifted from reactive to proactive management. Rather than construct facilities intended to capture the effects of storm water (combined sewer overflow tanks) which was done through the 1990's and early 2000's, a shift to remove the source of storm water from the sanitary sewers completely by eliminating combined sewers was undertaken. It was acknowledged that this approach was a long term solution that would only see small incremental improvements in overflow management over time.

Since the mid 2000's Utilities Kingston, in coordination with City Engineering has worked to target combined sewer separation activity in undertaking its annual capital street and road reconstruction program. Combined sewer separation generally requires full road reconstruction due to impacted area required to separate storm and sanitary systems and the provision individual connections (laterals) to properties. Combined sewer elimination can only occur when full road reconstruction is planned as this work will typically trigger the replacement of water mains, sanitary sewer mains, laterals and new storm sewer construction. With this level of reconstruction activity a complete replacement of the surface infrastructure is required sidewalks, curbs, asphalt, street lights etc. As such funding sources from rates (water and sewer) and taxes (for road infrastructure) is required to manage this work.

Combined Sewer Overflows is a significant issue for the City. It is a legacy matter created in the 1950's and 60's specifically designed to protect properties from sewer backups. While the system as designed and constructed worked well, the discharge of combined sewage (waste matter combined with rainwater) into natural environment (Lake Ontario and Cataraqui River) is no longer viewed as acceptable from a public perception basis, environmental stewardship perspective and from a regulatory perspective. Kingston has seen significant reductions in the volume and duration of overflow events over the years. Kingston has also been a leader in improving the transparency of information to the community regarding overflow events. This information enables the public to make reasoned decisions about their use of the waterfront during and after CSO events.

In addition to the environmental management aspects of CSO's a secondary consideration is the capacity of the existing infrastructure to sustain new development. In the City combined sewers are concentrated in the central part of the city where the form of new development is through intensification. By and large existing infrastructure has to be assessed to determine if sufficient capacity is available to handle the new/proposed sanitary effluent from new development and determine if CSO activity will be adversely affected by the resultant loss in capacity for storm water. Under these conditions the strategic direction taken in 2006 to proactively remove storm water from sanitary sewers through the elimination of combined sewers is critical to maintaining a balance between accommodating growth and environmental management. Without a sustained level of commitment to sewer separation, which creates the capacity in existing infrastructure, growth is potentially at risk of being delayed, deferred or denied due to the adverse impacts of overflows to the environment.

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This report is intended to document the current status and thinking regarding the development and approval of a formal Sewer Separation Program. The intent is to create a formal endorsement/commitment to sewer separation as a fundamental part of future capital planning as both the City (roads) and Utilities Kingston (sewers) need to jointly plan for this work. There is significant value to meeting development capacity needs in the long term by formalizing and publicizing such an endorsement. Sewer separation is the key source control measure with which to reduce sewage overflows, and the quicker it can be completed, the quicker the regional problems associated with overflows can be eliminated.

With this in mind Utilities Kingston has evaluated the remaining segments of sanitary sewer in the collection system that is classified as combined. Approximately 18.5 km of combined sewer or about 144 average sized city blocks remain in a system that has approximately 487km or less than 4%. Figure 1 attached illustrates areas where combined sewers previously existed and have been eliminated and the areas in green being the remaining combined areas still to be eliminated.

In analyzing this data further many of the actual streets are considered to be local neighbourhood streets and do not involve major collector or arterial type streets. As a consequence these streets are easier to manage from a constructability perspective and the unit cost to replace the infrastructure (\$/m) is significantly less than say work on Princess St in the downtown. While work remains to be done on major streets like Johnson they are a small percentage of total remaining. The significance of that relationship means that a goal of eliminating combined sewers over a set period of time at a reasonable financial cost is achievable.

To undertake combined sewer elimination Utilities Kingston staff evaluated the length of individual segments of sewer, their specific locations, considered asset management principles, considered their condition and that of adjacent watermains and utilizing 2018 construction costs for sewer and watermain developed a number of estimated budget scenarios necessary to achieve total elimination. These were created for 16yr - aggressive, 20yr - moderate and 24yr passive scenarios for water and sewer mains. Those yearly projection costs were then compared to current budget allocations for this type of work to determine impact. In each scenario existing budget allocations would cover the financial commitment required, but with the aggressive scenario limited budget was left to accommodate non combined sewer asset management projects. In summary the moderate scenario represents the best compromise between estimated budget allocations and a reasonable time period to achieve a meaningful reduction in combined sewers. From a budgetary perspective we have considered the impact to both Utilities Kingston and City Engineering:

Utilities Kingston, Engineering

An annual allocation of \$900,000 for sewer and \$1.5 million for watermain work targeted at combined sewers over the next 20 years would be required. Based on current (years) and 15 year projected expenditures (beyond 2022) for linear asset reconstruction work these allocations would range between 30-38% of total available.

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While watermain work exceeds the sewer this is typical and consistent with our past tendering and construction experience. Generally speaking a lot of local sized sewers remain as combined and thus the size replacements are at the lower end of the size spectrum, most often, 200mm pipe. Water, on the other hand, varies considerably across the area, with bigger mains located on local streets. As well, there are a considerable number of larger services in the downtown that also raise costs.

City of Kingston, Engineering

As mentioned above sewer and water costs are funded through rate payers, while the City's asset costs are funded by tax payers.

Generally speaking project work would include construction of assets including new storm sewer infrastructure, road and sidewalk reconstruction and in some cases traffic signals and street light reconstruction. Based on 2018 dollars, costs are projected to be between \$6 million and \$7 million per year over the 20 year horizon.

Costs for full road reconstruction are significant when compared against road rehabilitation projects after including the assets mentioned above. However, these investments are part of on-going infrastructure asset management

When compared to the current budget projections (i.e. 2019 to 2022), this represents approximately 50% of Engineering's capital budget. This is reduced to approximately 30% beyond 2022 when compared to the 15 year budget projections.

Existing Policy/By-Law:

Not applicable.

Notice Provisions:

Not applicable.

Accessibility Considerations:

Not applicable.

Financial Considerations:

There are no immediate financial considerations. In future capital budgeting processes allocations will be made that are subject to Council's approval.

Contacts:

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Other City of Kingston Staff Consulted:

Not applicable.

Exhibits Attached:

Exhibit A – Combined Sewer Service Area

Combined Sewer Service Area
Projected for End of 2018.

FIGURE 1

