



CORPORATION OF THE TOWNSHIP OF ESQUIMALT

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Legislation Details (With Text)

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Title: Inflow and Infiltration Strategy, Staff Report EPW-17-064

Sponsors:

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Attachments: 1. Attachment A - COTW Report EPW-17-046

Date	Ver.	Action By	Action	Result
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REQUEST FOR DIRECTION

DATE: December 11, 2017 Report No. EPW-17-064

TO: Laurie Hurst, Chief Administrative Officer

FROM: Jeff Miller, Director of Engineering and Public Works

SUBJECT:
Inflow and Infiltration Strategy

ESSENTIAL QUESTION:
How will inflow and infiltration activities that occur in the public and private realms be funded?

RECOMMENDATION:
That the Committee of the Whole receive Staff Report EPW-17-064 for information, provide any additional direction to staff as the COTW considers advisable, and direct staff to develop a policy for 50/50 split of costs for dealing with inflow and infiltration activities that occur in the public and private realms.

BACKGROUND:
On September 18, 2017, Council received a Committee of the Whole report EPW-17-046 with respect to inflow and infiltration (II); see Attachment A. Council requested that additional information such as the order of magnitude costs be prepared in order to better understand the scope of the issue.

The following assumptions were utilized to determine costs for the various works. These costs are on

an order of magnitude scale and would be further refined as condition information is gathered and detailed design occurs.

Assumptions:

- All 399 suspected cross connections will need to be separated.
- All cross connected service lines will require separation and with at least one new service line to be added.
- There is no cost allowance for excavation through rock.
- The cost to install a new storm service line or sanitary service line on the private portion of the service is approximately \$20,000 (if both lines require replacement, the cost would be \$40,000).
- The cost to install a new storm service line or sanitary service line on the public portion of the service will be \$5,000 (if both lines require replacement and are within the same trench, the cost would be \$6,000).
- The collection mains do not need to be regraded in order to achieve minimum grade.
- Approximately 3 km of storm main would have to be added to the collection system.
- If Public Works undertakes the work, approximately 20 services could occur in a year.
- If the work is contracted out, approximately 50 services per year could be undertaken.

When a typical neighbourhood is reviewed, there are generally three scenarios that will appear. These are:

Scenario 1 - The existing storm drain does not extend the entire length of the road. In this situation, roof drains and weeping tile have been tied into the sanitary service line.

Scenario 2 - Storm and sanitary service laterals have been cross connected to each other.

Scenario 3 -The sanitary lateral is connected to the sanitary collection system but is failing.

Scenario 1 will also trigger Scenario 2. Scenario's 2 or 3 can occur individually.

ISSUES:

Based on the assumptions above, the following costs were determined for the 399 homes that are cross connected only:

- For Scenario 1, the cost would be \$3,000,000
 - Under this scenario the storm collection main would be extended into cul-de-sacs and homes where no storm collection main previously existed.
 - This cost does not include any other work.
- For Scenario 2, the cost would be \$2,000,000
 - Under this scenario, the 399 homes that have a potential cross connection are attached to the incorrect collection main.
 - This cost only includes work within the public realm and does not include new or replacement service lines within the private realm.

- For Scenario 3, the cost would be \$8,000,000
 - Under this scenario, the 399 homes that have a potential cross connection only have one service line and would required a second service line.
 - This cost includes only the work within the private realm for the installation of a new or replacement service line.
 - This does not include the cost for failing or blocked private realm service lines on the homes that are properly connected to the collection mains.

Unfortunately the scenarios described do not happen in isolation. If the costs for all three scenarios are totaled, the cost would be in the magnitude of \$13,000,000. If the cost for the remaining homes within the Township is also added, the cost rises to \$77,000,000. This cost is based on the assumption that all sanitary service lines (both public and private) will need to be replaced.

In the 2017 budget, a pilot program for the installation of inspection chambers on both the sanitary and storm services lines was approved. This work will assist in determining the condition of the service lines and the actual number of cross connections. The information will allow a refinement of the costs facing the Township.

The pilot program will first focus on the Gosper Crescent catchment. This catchment was chosen as the pilot area due to the Gorge Creek contamination that happened in the summer of 2017. During the course of investigation, it was determined that there are cross connections within this catchment. Within this catchment areat

- There are 77 properties
- The average age of the homes is approximately 30 years
- Based on smoke testing results there are a possible four cross connections or failing service lines.

By utilizing the earlier cost estimates, the following costs were determined:

- Scenario 1 does not occur
- Scenario 2 does occur
 - If the four smoke tested houses are cross connected, the order of magnitude cost to rectify the situation would be \$24,000 for the public side.
- Scenario 2a does occur
 - If all the homes are cross connected, the order of magnitude cost to rectify the situation would be \$462,000 for the public side.
- Scenario 3 does occur
 - If the four smoke tested houses require a service line on the private side, the order of magnitude cost would be \$80,000.
- Scenario 3a does occur
 - If all the homes have failing private service lines, the order of magnitude cost would be

\$1,540,000.

- Summary of costs for the neighbourhood:
 - Scenario 2 and 3 = \$104,000
 - Scenario 2a and 3a = \$2,002,000

The corrective work(s) carried out will benefit both the home owner and the Township by reducing the flow of sanitary waste water to the waste water treatment plant. In the long term by reducing the flow amount, home owners would see a lowering of property taxes/CRD allotment. However in the short term, there will be a cost that will need to be paid for from a funding source. This source will either be from the Township or private owners. Who will pay this cost needs to be clarified before corrective works can be initiated.

In the previous report four options were discussed. They are:

1. Status quo
2. Homeowner pays for all corrective works
3. Township pays for all corrective works
4. Percent split between homeowner and Township for corrective works

Council felt that the Option 4 should be further explored with additional information on costs associated with this Option. Attached is a breakdown of the costs the Township and the home owner would incur for the correction of works within the Gosper Crescent catchment.

Gosper Crescent Catchment Costs - Scenario 2 and 3 Costs

- Township costs
 - Installation of new public service lines - \$24,000
- Resident costs
 - Installation of new private service lines for 4 homes - \$80,000

Potential cost sharing proportions for installation of new service lines are:

- Township 90% and resident 10%
 - Township = \$24,000 + \$72,000 = \$96,000
 - Resident = \$8,000 (\$2,000 per house)
- Township 75% and resident 25%
 - Township = \$24,000 + \$60,000 = \$64,000
 - Resident = \$20,000 (\$5,000 per house)
- Township 60% and resident 40%
 - Township = \$24,000 + \$48,000 = \$72,000
 - Resident = \$32,000 (\$8,000 per house)
- Township 50% and resident 50%

- Township = $\$24,000 + \$40,000 = \$64,000$
- Resident = $\$40,000$ ($\$10,000$ per house)

Gosper Crescent Catchment Costs - Scenario 2a and 3a Costs

- Township cost
 - Repair/replacement of existing service lines - $\$462,000$
- Resident cost
 - Repair/replacement of existing service lines - $\$1,540,000$

Potential cost sharing proportions for repair/replacement of existing service lines are:

- Township 90% and resident 10%
 - Township = $\$462,000 + \$1,386,000 = \$1,848,000$
 - Resident = $\$154,000$ ($\$2,000$ per house)
- Township 75% and resident 25%
 - Township = $\$462,000 + \$1,155,000 = \$1,617,000$
 - Resident = $\$385,000$ ($\$5,000$ per house)
- Township 60% and resident 40%
 - Township = $\$462,000 + \$924,000 = \$1,376,000$
 - Resident = $\$616,000$ ($\$8,000$ per house)
- Township 50% and resident 50%
 - Township = $\$462,000 + \$770,000 = \$1,232,000$
 - Resident = $\$770,000$ ($\$10,000$ per house)

ALTERNATIVES:

1. That the COTW receive Staff Report No. EPW-17-064 for information, provide any additional direction to staff as the COTW considers advisable, and direct staff to develop a policy for a 50/50 split of costs for dealing with inflow and infiltration activities that occur in the public and private realms.
2. That the COTW provide alternative direction to staff.
3. That the COTW request further information from staff.