



**CORPORATION OF THE
TOWNSHIP OF ESQUIMALT**
Agenda - Final
Committee of the Whole

Municipal Hall
1229 Esquimalt Road
Esquimalt, B.C. V9A 3P1

Monday, December 11, 2017

5:45 PM

Esquimalt Council Chambers

1. CALL TO ORDER

2. LATE ITEMS

3. APPROVAL OF THE AGENDA

4. MINUTES

- 1) [17-499](#) Minutes of the Regular Committee of the Whole meeting, November 20, 2017

Attachments: [2017 11 20 Regular COTW Minutes - Draft](#)

5. PUBLIC INPUT (On items listed on the Agenda)

Excluding items which are or have been the subject of a Public Hearing.

6. STAFF REPORTS

Engineering and Public Works

- 1) [17-488](#) Asset Management Strategy, Staff Report EPW-17-062

Recommendation:

That the Committee of the Whole receive Staff Report EPW-17-062 for information, provide any additional direction to staff as the COTW considers advisable, and direct staff to continue to develop condition indexes for the asset categories and in turn determine what funding contribution would be necessary to address asset management.

- 2) [17-497](#) Inflow and Infiltration Strategy, Staff Report EPW-17-064

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.

Attachments: [Attachment A - COTW Report EPW-17-046](#)

7. PUBLIC QUESTION AND COMMENT PERIOD

Excluding items which are or have been the subject of a Public Hearing.

Limit of two minutes per speaker.

8. ADJOURNMENT



CORPORATION OF THE TOWNSHIP OF ESQUIMALT

Minutes - Draft

Committee of the Whole

Municipal Hall
1229 Esquimalt Road
Esquimalt, B.C. V9A 3P1

Monday, November 20, 2017

7:00 PM

Esquimalt Council Chambers

Present 6 - Mayor Barbara Desjardins
Councillor Meagan Brame
Councillor Beth Burton-Krahn
Councillor Lynda Hundleby
Councillor Susan Low
Councillor Tim Morrison

Absent 1 - Councillor Olga Liberchuk

Staff: Laurie Hurst, Chief Administrative Officer
Blair McDonald, Director of Community Safety Services
Anja Nurvo, Director of Corporate Services
Deborah Liske, Recording Secretary

Other: Chief Del Manak, Victoria Police Department
Inspector Jamie Pearce, Victoria Police Department, Esquimalt
Division
Peter Ryan, Victoria Police Board Member

1. CALL TO ORDER

Mayor Desjardins called the Regular Committee of the Whole meeting to order at 7:02 PM.

Mayor Desjardins acknowledged with respect that we are within the Traditional Territories of the Esquimalt and Songhees First Nations.

2. LATE ITEMS

There were no late items.

3. APPROVAL OF THE AGENDA

Moved by Councillor Morrison, seconded by Councillor Low: That the agenda be approved as circulated. Carried Unanimously.

4. MINUTES

1) [17-456](#) Minutes of the Regular Committee of the Whole meeting, October 16, 2017

Moved by Councillor Brame, seconded by Councillor Burton-Krahn: That the Minutes of the Regular Committee of the Whole meeting, October 16, 2017 be approved as amended by changing Mayor's to read as Mayors' in the second paragraph of Item 6. 1) Staff Reports. Carried Unanimously.

**5. PUBLIC INPUT (On items listed on the Agenda)
Excluding items which are or have been the subject of a Public Hearing.**

Mayor Desjardins called three times for public input and there was none.

6. PRESENTATION

- 1) [17-457](#) Victoria Police Department Quarterly Report, Framework Agreement, Chief Manak

Chief Del Manak provided an overview and PowerPoint presentation on the Victoria Police Department Third Quarter Report for 2017. The report covers the time period of July 1 to September 30, 2017. Key points of the overview and presentation included an update on:

- * Community engagement efforts
- * Crime prevention including School Liaison Officers, VicPD Bike Registry, Community Resource Officers, Traffic Division campaigns for speeding in school zones and Integrated Road Safety unit.
- * Operational update included the arrest of a high profile problematic youth in Esquimalt and review of lockdown drills at schools.
- * Summer action plan and back to school.

Chief Manak and Inspector Jamie Pearce responded to questions from Council.

Council comments included (Staff response in italics):

- * What are the priority areas for speed limit enforcement, traffic safety and areas utilized as cut-throughs? *Utilize technology - speed reader boards and other devices to collect data to identify times and locations for enforcement and education. New radar gun has been purchased for Esquimalt Division.*
- * When will VicPD radios be switched over to new HRO system? *Testing of new system will start next month for a six month period to allow for any required changes prior to system switchover.*
- * Recent communication issues during Esquimalt High School lockdown. *Esquimalt High School has areas that radio and cell phone reception is poor or non-existent. Undetermined at this time whether the new radio system will work inside the school.*
- * What was communicated to students for the lockdown drills to reduce anxiety and stress? *Review of lockdown protocols was completed with all front line officers trained on the up-to-date protocols prior to start of school in September.*
- * How should people report speeding, distracted driving or any other dangerous behaviors? *Three options for reporting: Non-emergency phone line 250-995-7654; On-line via the website at www.vicpd.ca/reportcrimeonline ; and at the front desk of the Esquimalt*

Division Headquarters 8:30 a.m. to 5:00 p.m., Monday - Friday. Comments received during Facebook sessions on speeding will be tabulated and reviewed to identify affected areas. Follow-up action by volunteers, speed reader boards, education and enforcement will take place.

** What information should people provide when making a report? Who, what, where, when, location, time, licence plate, any identifiable information about the driver. Officers can issue a ticket if a citizen observes an infraction that warrants a ticket and the complainant is willing to participate in the process, possibly involving court.*

** How can response times be improved for Esquimalt? Location and availability of resources in relation to location of incident and number of incidents can affect response time. Additional information on response times will be provided in the Fourth quarter update.*

7. PUBLIC QUESTION AND COMMENT PERIOD

Excluding items which are or have been the subject of a Public Hearing. Limit of two minutes per speaker.

Lynda O'Keefe, *resident*, advised the Esquimalt Photography Club will be hosting a photo exhibition - A Touch of Red - starting December 1st in the Esquimalt Library.

Muriel Dunn, *resident*, happy with the police relationship and speeding is a complex intermittent problem.

8. ADJOURNMENT

Moved by Councillor Brame, seconded by Councillor Hundleby: That the Committee of the Whole meeting be adjourned at 7:49 PM. Carried Unanimously.

MAYOR BARBARA DESJARDINS
THIS date DAY OF month, 2017

ANJA NURVO, CORPORATE OFFICER
CERTIFIED CORRECT



CORPORATION OF THE TOWNSHIP OF ESQUIMALT

Municipal Hall
1229 Esquimalt Road
Esquimalt, B.C. V9A 3P1

Staff Report

File #: 17-488

REQUEST FOR DIRECTION

DATE: December 11, 2017

Report No. EPW-17-062

TO: Laurie Hurst, Chief Administrative Officer

FROM: Jeff Miller, Director of Engineering and Public Works

SUBJECT:

Asset Management Strategy

ESSENTIAL QUESTION:

How will asset management strategies be funded for various infrastructure types?

RECOMMENDATION:

That the Committee of the Whole receive Staff Report EPW-17-062 for information, provide any additional direction to staff as the COTW considers advisable, and direct staff to continue to develop condition indexes for the asset categories and in turn determine what funding contribution would be necessary to address asset management.

BACKGROUND:

The Township is a mixture of infrastructure types that provide the foundation for services to its residents. There are four main types of infrastructure:

❖ Linear

- This infrastructure is commonly composed of pieces of infrastructure that form networks to provide a service and run the length and depth of the Township.
- Typical examples are: road network, sidewalk network, storm network, sanitary network.

❖ Vertical

- This infrastructure is located in specific locations and provides a service for that location or is a central location for staff to work from.
- Typical examples are: buildings (i.e. Municipal Hall), intersection lights, street furniture, bus shelters, street lighting, pump stations.

❖ Mobile

- This infrastructure consists of vehicles and equipment that allow staff to carry out maintenance, repairs, replacement or new construction of infrastructure.
- Typical examples are: construction vehicles, fire vehicles, backup generators.

❖ **Natural**

- This is existing natural assets that provide a service that otherwise would have to be provided through engineered solutions.
- Typical examples are: maintenance of the foreshore so that a dike is not required.

The infrastructure components within each general category have different and varying lifespans. Useful life is typically defined as the time the asset can be utilized for the intended service for which it was designed. At the end of the component's useful life it will need to be replaced with a component of a similar nature or one that has an upgraded capacity. These useful life spans vary in time from three years (i.e. computers) to 60 years (i.e. storm mains). This is the breakdown of useful life for various major assets:

- ❖ Roads - 35 years
- ❖ Sewers - 54 years
- ❖ Drains - 60 years
- ❖ Sidewalk - 45 years
- ❖ Signals/Lighting - 25 years
- ❖ Parks Infrastructure - 25 years
- ❖ Buildings - 28 years

By utilizing an asset management system, the Township will be prepared to determine financial resources to manage operation, maintenance, renewal and new construction of the various pieces of infrastructure in the asset management registry.

Through an infrastructure component's lifespan, a number of types of activities will be carried out on it. Some allow the component to continue to function while others increase its capacity. These activities are defined as follows:

❖ **Operations (OPS)**

- Regular activities to provide a service such as public health, safety and amenity.
- Examples: street sweeping, grass mowing, street lighting, staffing, heating.

❖ **Maintenance (MTN)**

- Actions necessary for retaining an asset as near as practicable to an appropriate service condition.
- Includes regular on going, day to day work necessary to keep assets operating.
- Examples: road patching, trip hazards, pump maintenance, plant maintenance.

❖ **Renewal/Replacement (RR)**

- Replacing the existing service capacity with the same service condition.
- Examples: collection main line replacement, service replacement, pump replacement, sidewalk replacement.

- ❖ Upgrade/New (UN)
 - Adding new or upgrading existing assets.
 - Examples: Increasing the size of collection mains, adding oil/water/grit separators, adding low impact developments (i.e. rain gardens), and new sidewalk.

Funding for these activities comes from a number of sources. These sources are:

- ❖ Capital Project Reserve Fund
 - Provides funding for RR and UN type of projects
 - Contribution to Reserve each year = \$1,285,000
- ❖ Infrastructure and Revitalization Reserve Fund
 - Provides funding for RR and UN type of projects
 - Contribution to Reserve each year = \$273,000
- ❖ Community Works
 - Provides funding for MTN, RR and UN type of projects
 - Contribution to Fund each year = \$736,000
- ❖ Machinery and Equipment Reserve Fund
 - Provides funding for RR and UN type projects
 - Contribution to Fund each year = \$491,000
- ❖ Taxation
 - Provides funding to OPS and MTN type activities
- ❖ Grants
 - Provides funding to RR and UN type of projects
 - External sources generally require some level of matching contribution from the Township
 - Funding is generally from Capital Project Reserve Fund or Infrastructure and Revitalization Reserve Fund
- ❖ Debt
 - Provides funding to RR and UN type of projects
 - External source provides funds that will be paid back over a set period of time
 - Paid back funds are generally funded from the Capital Project Reserve Fund

ISSUES:

The Township has initiated the process of creating and maintaining asset management plans. Through this work various indicators will be reviewed and utilized to evaluate the asset. These indicators include: level of service, criticality, condition and risk. This evaluation will be utilized to assist in determining scheduling and to determine funding requirements for OPS, MTN, RR and UN

activities.

Based on the work to date the asset registry value has been broken down into the following values:

❖ Linear	
○ Roads	\$121,000,000
○ Sanitary	\$56,000,000
○ Storm	\$67,000,000
○ <u>Sidewalk</u>	<u>\$20,000,000</u>
Total	\$264,000,000

❖ Vertical	
○ Signals/Lighting	\$5,000,000
○ Parks	\$35,000,000
○ <u>Buildings</u>	<u>\$145,000,000</u>
Total	\$185,000,000

❖ Total value of linear and vertical: \$449,000,000

With respect to the mobile category, these assets are replaced under the Machinery and Equipment Reserve Fund. This reserve receives contribution levels that allow for the replacement of the various components in a timely manner and does not require further discussion at this time.

The Township does not currently possess any infrastructure that would fall under the natural category. As assets are added to the inventory, asset management plans will be developed for up keep and replacement. This category does not require further discussion at this time.

Utilizing information from Tangible Capital Assets, the useful life was calculated as follows:

❖ Linear	
○ Roads - 38% utilized (22 of 35 years remaining)	
○ Sewers - 54% utilized (25 of 54 years remaining)	
○ Drains - 49% utilized (31 of 60 years remaining)	
○ Sidewalk - 53% utilized (21 of 45 years remaining)	
❖ Vertical	
○ Signals/Lighting - 77% utilized (5 of 25 years remaining)	
○ Parks Infrastructure - 32% utilized (17 of 25 years remaining)	
○ Buildings - 55% utilized (13 of 28 years remaining)	

❖ Aggregate total of useful life for all assets: 46% utilized

As the assets near the end of their useful life, they will have to be replaced. Funding for this work will come from one of the various sources discussed earlier. In order to have sufficient funding to replace the entire asset over its life, the following annual contributions would be required:

❖ Linear

○ Roads	\$3,500,000
○ Sewers	\$1,100,000
○ Drains	\$1,100,000
○ <u>Sidewalk</u>	<u>\$500,000</u>
Total	\$6,200,000

❖ Vertical

○ Signal/Lighting	\$70,000
○ Parks Infrastructure	\$1,400,000
○ <u>Buildings</u>	<u>\$5,200,000</u>
Total	\$6,670,000

❖ Total:

○ Total annual contribution required	\$12,870,000
○ 2017 actual contribution	\$2,258,000
○ Difference	\$10,612,000

In order to keep the assets operational, a philosophy will need to be developed on how to approach the various activities that will need to be funded to carry out operations, maintenance, renewal/replacement, new/upgrade. Possible philosophies are:

❖ Status quo

- Under this philosophy, contributions to the various reserves and operational line items will be maintained at current levels.
- This will not result in increased taxation from current levels.
- The Township will remain largely in a reactive position when it comes to renewal/replacement, new/upgrade projects with funding being achieved by reserves, grant or debt funding.
- When renewal/replacement or new/upgrade projects are undertaken it will most likely be at the end of the operation life span.
- Operations and maintenance activities will also remain at current levels which for a number of line items will remain in a reactive position.
- An example of operations/maintenance activities would be asphalt road surfaces.
 - Current operations/maintenance/capital budget = \$710,000 (includes labour, vehicles, materials)
 - Operations and maintenance activities focused on:
 - Line painting - all painted line markings
 - Crack sealing - seal from 1 to 1.5 km of road network
 - Approximately 1 % of the network
 - Surface repair - fill potholes, mill and overlay, rebuild of 1,500 square metres or 375 metres
 - Approximately 0.7% of the network

- Current major maintenance/minor capital budget
 - Utilized for major maintenance such as mill and overlay or rebuild.
 - Approximately 900 square meters or 225 metres
 - Approximately 0.4% of the network

❖ Increase Operations and Maintenance Activities Funding

- Under this philosophy, contributions to the operational/maintenance line items would increase from current levels.
- This will result in an increase in taxation in order to cover the cost of either internal or external forces carrying out the work.
- By following this course of action, the life of the asset may be extended beyond its projected life.
- At the end of the new life span, the asset will still need to be replaced.
- The Township would be moving away from being in a reactive position to a more proactive one.
- Renewal/replacement, new/upgrade activities would still require funding from either reserves, grant or debt funding, and would still be at the end of the life span of the asset.
- An example of this philosophy would be to increase the operations/ maintenance activities for asphalt road surfaces. For this report, a value of 3 times the current level was utilized for comparison purposes.
 - Upgraded operations/maintenance budget = \$2,130,000
 - Operations and maintenance activities focused on
 - Line painting - all painted line markings
 - Crack sealing - seal from 3 km of road network
 - Approximately 5 % of the network
 - Surface repair - fill potholes, mill and overlay, rebuild of 7,500 square metres or 2,000 metres
 - Approximately 3.6% of the network
 - Increase the major maintenance/minor capital budget
 - Utilized for major maintenance such as mill and overlay or rebuild.
 - Approximately 2,700 square meters or 675 metres
 - Approximately 1% of the network

❖ Increase yearly contributions to Reserves

- Under this philosophy, contributions to the various reserves will be increased.
- This will result in an increase in taxation from current levels.
- By following this philosophy, the Township will start to develop reserve levels that are able to support a number of renewal/replacement, new/upgrade activities.
- The undertaking of these activities would be based on the condition of the asset.
- By undertaking the correct activity at the proper time, the lifespan of the asset will be greatly enhanced.
- This philosophy would also see an increase in operational funding (see previous

example) that would increase the number of operational and maintenance activities that would extend the useful life of the various assets.

ALTERNATIVES:

1. That the COTW receive Staff Report EPW-17-062 for information, provide any additional direction to staff as the COTW considers advisable, and direct staff to continue to develop condition indexes for the asset categories and in turn determine what funding contribution would be necessary to address asset management.
2. That the COTW provide alternative direction to staff.
3. That the COTW request further information from staff.



CORPORATION OF THE TOWNSHIP OF ESQUIMALT

Municipal Hall
1229 Esquimalt Road
Esquimalt, B.C. V9A 3P1

Staff Report

File #:17-497

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 area:

- 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 = \$84,000
 - 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.

REQUEST FOR DIRECTION

DATE: September 18, 2017

Report No. EPW-17-046

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-17-046 for information, provide any additional direction to staff as the COTW considers advisable, and directs staff to prepare a report for Council's consideration.

BACKGROUND:

Inflow and infiltration (I&I) is the flow of storm water or ground water that enters the sanitary collection system. See Attachment 1 for definitions. From 2005 to 2015, the Township has carried out a number of activities to reduce the flows created by I&I within the public realm. See attachment 2. These activities were undertaken to meet requirements under the Liquid Waste Management Plan. These are:

1. Reduce the maximum daily wet weather flows to less than 4 times the average dry weather flow (4xADWF) by 2030.
2. Eliminate overflows less than a 5 year return period.

The activities that have been carried out have impacted the volume of I&I that enters the sanitary collection system. See Attachment 3. However to continue this trend, activities would need to shift from the public realm to the private realm due to the length of pipe and contribution of the private realm. See Attachment 4.

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

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

2. Storm and sanitary service laterals have been cross connected to each other.
3. The sanitary lateral is connected to the sanitary collection system but is failing.

ISSUES:

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 plant for treatment. 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.

These costs will range in magnitude from \$5,000 to \$100,000 depending on the situation and corrective work(s) carried out. The cost of this work will need to come 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.

There are four options for discussion. They are:

1. Status Quo
2. Home owner pays for all corrective works
3. Township pays for all corrective works
4. Percent Spilt between Home Owner and Township for corrective works.

Status Quo

Under this option, no programs will be created to deal with the I&I concern. Corrective works will be carried out when either the public or private portion of the lateral fails with each owner being responsible for paying for the repair works. This option would only see minor improvement in the I&I contribution and takes a fairly long view of correcting the problem.

Home Owner Pays

This option would see the home owner be fully responsible for corrective works. This option follows a user pay philosophy that only homes that have an I&I issue are charged the cost of the corrective works. The Township would then benefit from these repairs by a lowering of I&I contribution to sanitary flows which would be reflective in the costs for treatment. This lowering of costs would then have a positive benefit to all users of the sanitary system.

If this option was undertaken, the Township would have to develop a methodology so that works could be carried out in a timely fashion and that the home owner could pay for them. The works would be either carried out by Township forces or Township contract forces or charged back to the lot owners.

Township Pays

Under this option, the Township would carry the burden to addressing I&I concerns in both the public and private realm. This option would see positive benefit to all home owners for lowering the I&I contribution to sanitary flows and their treatment but all owners would pay for the works that only a small number of owners need. The Township would develop a program for corrective works and fund them through taxation. The works would be either carried out by Township forces or Township contract forces.

Percent Split

The last option would see the cost for works split by percentage. This split in costs could take a number of forms from a pre-determined split (i.e. 75% Township/25% Owner) to costs split based on lengths of main/laterals/weeping tile that need to be replaced/installed. The Township would develop a program for the corrective works and fund it through taxation. For the owner portion, a mechanism would have to be developed to allow for either direct payment or repayment over time through taxation.

ALTERNATIVES:

1. That the COTW receive Staff Report EPW-17-046 for information, provide any additional direction to staff as the COTW considers advisable, and direct staff to prepare a report for Council's consideration.
2. That the COTW provide alternative direction to staff.
3. That the COTW request further information from staff.

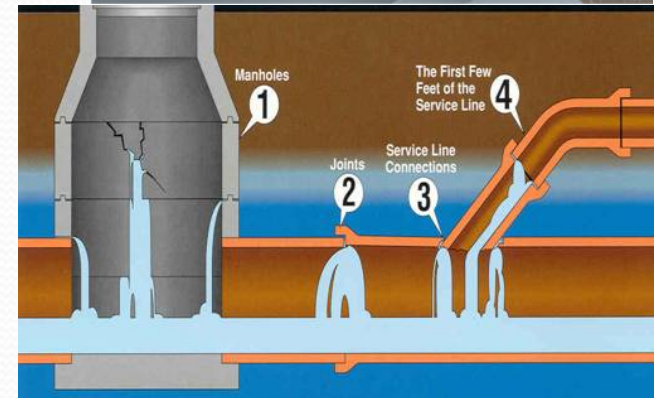
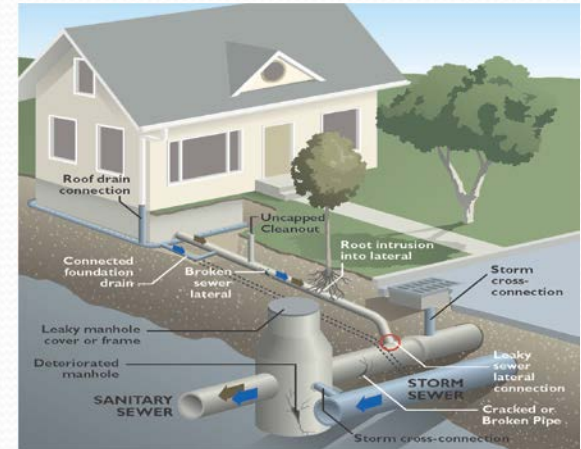
What is Inflow & Infiltration?

- **Inflow**

Rainwater that enters the sewer through cross connections (i.e. catch basin, roof drain)

- **Infiltration**

Trench water and groundwater that enters the sewer through cracks, leaky joints, etc.



Management of Inflow and Infiltration Progress

The Township has been very active in the management of inflow and infiltration. From 2005 to 2009 the following activities have been undertaken and completed successfully.

- Relining of municipal mains (approximately 50% of 59 km)
- 11 pump stations upgraded and SCADA installed
- Portable generator for pump station operation during power outages
- Separation of 42 combined manholes
- Smoke testing of the entire collection system

Based on the smoke testing, the following results were determined:

- 63 storm services possibly connected to sanitary mains
- 407 sanitary services possibly connect to storm drains
- 47 catch basins possibly connected to sanitary mains
- 111 combined manholes
- Basic modeling of the sanitary collection system

From 2010 to 2015 the following work has been completed:

- 47 catch basins were either disconnected from the sanitary main or confirmed that they were connected to the storm drain system
- 84 combined manholes have been separated
- 5 homes have been dye tested (voluntary program) with all services showing negative to cross connection

Inflow and Infiltration Reduction Progress

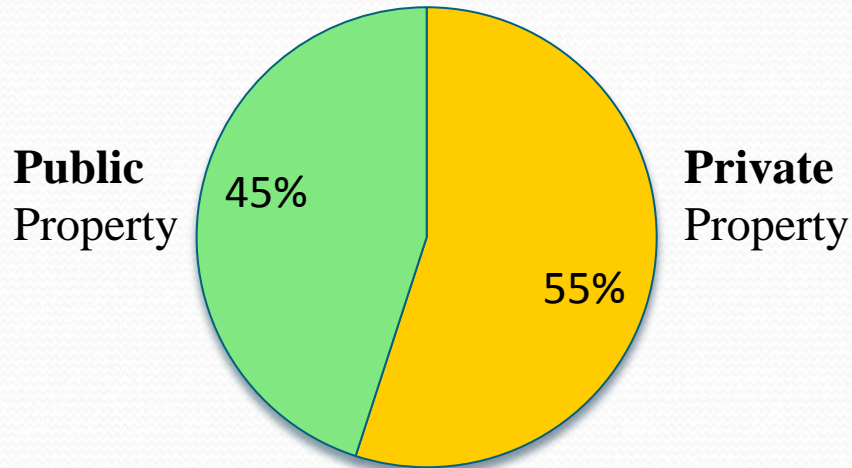
	2005	2012	Trend
Colwood	20,000	20,000	→
Esquimalt	103,000	87,500	↓
Langford	20,000	16,000	↓
Oak Bay	115,000	115,000	→
Saanich	20,000	20,000	→
Victoria	155,000	144,000	↓
View Royal	23,000	23,000	→

Based on 5-year, 24-hour L/ha/day I&I response



Magnitude of Private Property I&I Issue

Length of Sewers



Contribution to I&I

