Exhibit 18 – Percentage of Installed Pipe Material
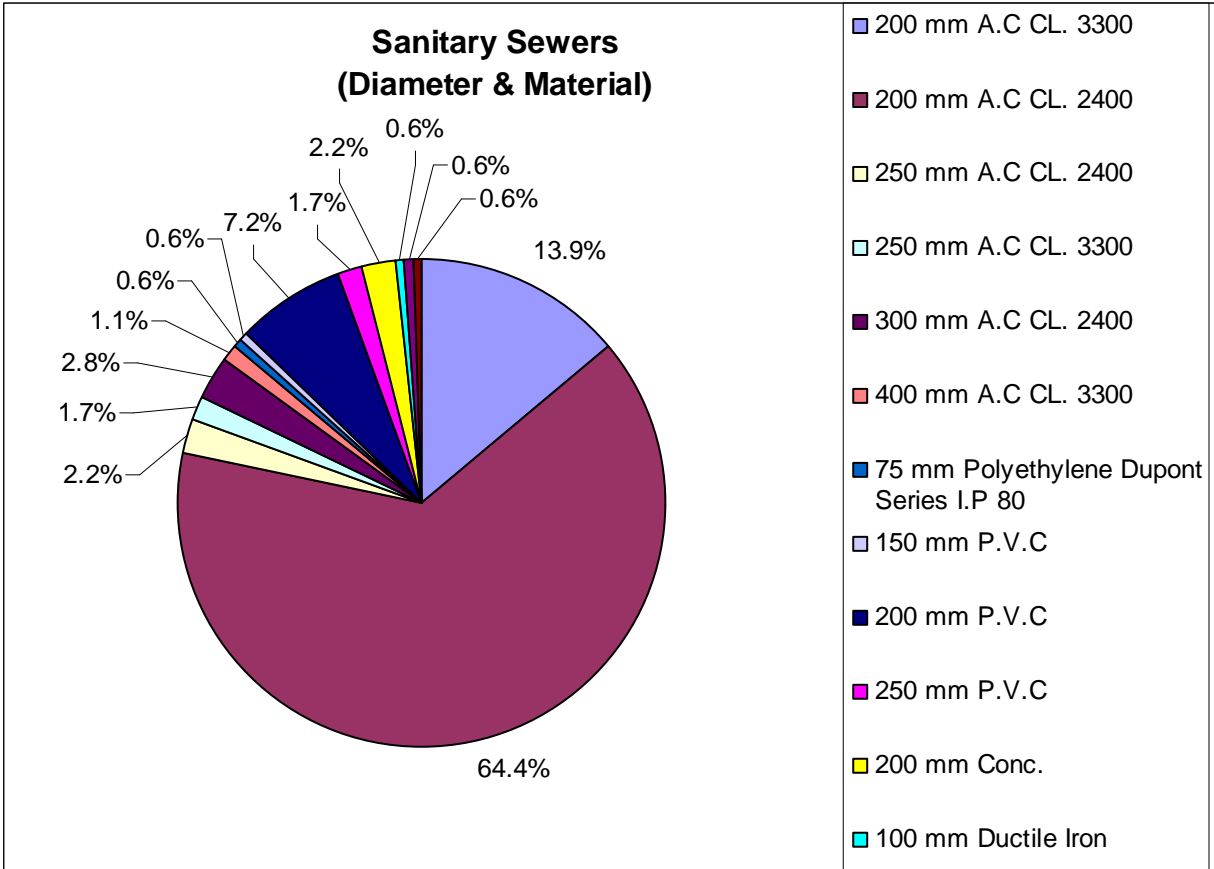

**Sanitary Sewers
(Diameter & Material)**

Legend:
- 200 mm A.C CL. 3300
- 200 mm A.C CL. 2400
- 250 mm A.C CL. 2400
- 250 mm A.C CL. 3300
- 300 mm A.C CL. 2400
- 400 mm A.C CL. 3300
- 75 mm Polyethylene Dupont Series I.P 80
- 150 mm P.V.C
- 200 mm P.V.C
- 250 mm P.V.C
- 200 mm Conc.
- 100 mm Ductile Iron

Exhibit 19 – Current and Replacement Valuation of Sanitary Sewer Collection System

Asset	Current Valuation Total	Replacement Valuation Total
Sanitary Sewers	$547,539.00	$3,256,530.60
Sanitary Maintenance Holes (1200 mm dia.)	$ 64,480.00	$ 729,430.00
Sanitary Services	$182,544.00	$ 654,429.60
TOTAL	**$794,563.00**	**$4,640,390.20**

Exhibit 20 – Asset Unit Rates Use for Calculation of Replacement Valuation

Asset	Unit Rate
Sanitary Sewers	(see below)
Sanitary Maintenance Holes (1200 mm dia.)	$4030.00/ea
Sanitary Services (125 mm dia.)	$ 120.00/m

SANITARY SEWER	
Diameter / Material	Unit Rate
200 mm A.C CL. 3300	$275.00/m *
200 mm A.C CL. 2400	$275.00/m *
250 mm A.C CL. 2400	$220.00/m *
250 mm A.C CL. 3300	$220.00/m *
300 mm A.C CL. 2400	$350.00/m *
400 mm A.C CL. 3300	$390.00/m *
75 mm Polyethylene Dupont Series I.P 80	$275.00/m
150 mm PVC	$275.00/m **
200 mm PVC	$275.00/m
250 mm PVC	$220.00/m
200 mm Conc.	$275.00/m
100 mm Ductile Iron	$275.00/m **
150 mm Ductile Iron	$275.00/m **
200 mm Ductile Iron	$275.00/m *

*It is assumed that A.C. and ductile iron pipe is to be replaced with PVC pipe, therefore, unit rates are for PVC pipe.
**The MOE Design Guidelines for sewers indicate a minimum diameter of sewer of 200 mm, therefore, any existing sewer less than 200 mm in diameter is assumed to be replaced with a 200 mm diameter sewer.

Recommendations

The Township should implement a Closed Circuit Television (CCTV) condition assessment program for its entire sanitary sewer collection system to validate pipe condition. This work program should be completed over a 5-year period beginning in 2014. Maintenance holes should be included in this assignment as it proceeds. Collection of this data will allow staff to make informed decisions with respect to priority replacement or rehabilitation of sanitary sewers. History of breaks and interviews with Public Works staff to determine operational issues should also be a component of this exercise. History of breaks and operational issues should be entered into the Municipal GIS so that it can be used as a decision support tool for capital planning. Break records should include the location, time of year, pipe size, pipe material, observed soil conditions and cause of failure. Trenchless technologies for sanitary sewer rehabilitation may also be investigated as opposed to more expensive open cut sewer

replacement. Opportunities to coordinate sanitary sewer rehabilitation with road reconstruction and other related capital projects should be examined.

A summary of recommended sanitary sewer Capital Projects (repairs, rehabilitation or replacement) for the next 10 years is provided in Exhibit 21 below.

Exhibit 21 – Summary of Sewer System Capital Projects over a 10-Year Horizon

Description of Activity	Annual Expenditure	Priority Repairs in 2013/2014	Cumulative Expenditures Over Next 5 Years	Cumulative Expenditures Over Next 10 Years
GIS Inventory & Maintenance	$5,000	$10,000	$ 25,000	$ 50,000
Condition Assessment	N/A	$12,250	$ 97,250	$ 302,250
Capacity Assessment	N/A	N/A	$ 10,000	$ 20,000
Operations & Maintenance	TBD	TBD	TBD	TBD
Repairs Based on Condition Assessment CCTV	TBD	TBD	TBD	TBD
Special Projects & Other	TBD	TBD	TBD	TBD
Total Cost	**$5,000**	**$22,250**	**$132,250**	**$372,250**

4.3   Storm Sewer System Report

The Storm sewers are in Poor to Fair condition overall with the majority of these pipes approaching the mid-point of their Ideal Service Life. The oldest of these sewer pipes date to the mid-1950s. Pipe materials as illustrated below are a combination of concrete, metal and smooth wall plastic. Storm maintenance holes and catch basins are also in Fair condition overall. Replacement of these appurtenances should coincide, where possible, with storm sewer rehabilitation.

Drawing No. 6 (Eganville) and 6A (Foymount area) show the location of all storm sewers with a condition rating of Poor (1-2), Fair (3-5), Average (6-7) and Good (8-10). Planning for the rehabilitation or replacement of this infrastructure should be a consideration; however, the collecting of condition assessment information should be a priority in order to confirm their physical and structural condition so that the timing for its renewal can be more accurately determined.

Urban, rural and driveway culverts are generally in Poor condition overall; however, this is mainly due to the fact that a condition score has been generated based solely on estimated age and material. In this instance, the Township did not have significant installation date information for its culverts. As such, it was determined through consultation with Public Works that an Ideal Service Life of 25 years would be used for corrugated metal culverts. Subsequently, this generated an "Originally Installed" date of 1988 which is at best an estimate. As a result, most