



**District of
North Saanich**

STAFF REPORT

To: Tim Tanton
Chief Administrative Officer

Date: January 29, 2020

From: Eymond Toupin
Director of Infrastructure Services

Re: **Water Main Renewal Program Funding**

RECOMMENDATION:

That Council direct staff to increase annual funding to the Water System Reserve for Council's consideration during budget deliberations.

STRATEGIC PLAN IMPLICATIONS:

This matter relates to the following Council strategic priorities:

Maintain a Safe and Healthy Community

Ensure Strong Leadership, Fiscal Responsibility and Transparent Government

INTRODUCTION/BACKGROUND:

In the 2016 Water Master Plan, which forms part of the District's asset management plan, water main replacement and upgrade priorities were identified for the District. The initial priorities consisted of replacing undersized asbestos cement (AC) mains, most of which were installed in the 1960s. At a funding rate of just under \$500,000 annually, these replacements and upgrades would be completed over a period of 30 years. The remaining AC water mains, i.e. those which do not require upgrades to improve fire flow capacity, would require approximately another 70 years to replace at this level of funding. The replacement costs (in 2016 \$) represented approximately \$700 per meter of water main piping.

When the Water Master Plan was completed, the annual funding level of \$500,000, indexed at the rate of inflation, was deemed reasonable and sustainable based on the information available at that time.

This report provides additional information gathered as a result of the on-going implementation of the District's water main renewal program.

DISCUSSION:

Since the Water Master Plan was completed in 2016, the District has completed the construction of water main renewal projects in 2017 and 2018. A project was also designed and tendered in 2019 for construction in 2020.

Construction Costs

The as-tendered costs of construction for these projects are summarized in the table below. The cost of the renewals for the first two contracts were consistent with the estimate of \$650 per

meter of water main. The costs for the first contract tendered in 2019 represented a significant increase, more than double this value. These works were then repackaged with an additional length of main to be renewed and retendered. This resulted in a more attractive bid price of \$850 per meter. However, this still represented a significant year-over-year increase of nearly 30%, well in excess of the annual rate of inflation since the first year of the program.

Table 1 – Summary of Tender Costs for Water Main

Tender	Low Bid	Renewed Length (m)	Cost per Meter	Year-Over-Year Increase
2017 Watermain Renewal (Contract 17-03)	\$395,663.90	700	\$ 565	
2018 Watermain Renewal (Contract 18-01)	\$464,338.00	700	\$ 663	17%
2019 Watermain Renewal (2019-03-TDR)*	\$671,863.21	475	\$1,414	113%
2019 Watermain Renewal (2019-08-Eng-TDR)	\$892,475.00	1,050	\$ 850	28%

* Contract was not awarded.

The trend in costs observed in the first three years of this program suggests the annual increase in construction costs is significantly greater than the rate of inflation.

Condition Assessment of AC Pipe

As part of the watermain renewal completed in 2017 on Lands End Road, a sample of AC pipe was obtained and tested to determine its structural condition and estimated remaining life. This would also provide an indication of the condition of the inventory of AC water mains in the District which are of similar vintage.

The section of pipe from which the sample was collected is believed to have been installed in 1966. The pipe was subjected to a crush strength and hydrostatic pressure test. The pipe passed both of these tests which it would have been required to meet at the time of manufacture.

The pipe was also tested to determine the amount of cement mortar which would have leached (i.e. been lost) from the pipe walls. This test provides an indication of the amount of structural deterioration of the piping and its remaining life. This testing revealed that only an estimated 7 years of life remained in the piping, for a total estimated lifespan of about 60 years.

The large majority (approximately 85%) of the AC water main inventory in the District was installed in the 1960s and 1970s. Assuming the estimated lifespan of 60 years is representative of the entire AC water main inventory in the District, the majority of the AC mains could be approaching end of life by 2030. In order to replace most of the AC inventory within that time span, the rate of water main renewals (and funding) would have to increase by roughly a factor of 10.

However, to date, the District has experienced few AC water main breaks. This would be consistent with the destructive tests (crush and hydrostatic) which indicated the pipe would still meet the requirements for new pipe. This suggests the remaining service life of this inventory is

likely sometime beyond 2030. The single pipe sample collected may also not be representative of the entire inventory which represents approximately 50 km of AC water piping in the District.

Due to increasing costs and the potential for a large portion of the AC water main inventory potentially reaching end of life within the next 10 to 20 years, staff recommend increasing the annual contribution to the watermain renewal budget from approximately \$500,000 to \$1 million. This represents an annual increase of \$100 per parcel for the water parcel tax. This would also accelerate the upgrade of undersized mains and thereby improve fire flow capacity in the areas served by these mains.

OPTIONS:

Council can:

1. Direct staff to increase annual funding to the Water System Reserve for Council's consideration during budget deliberations; or
2. Receive this report for information; or
3. Other.

FINANCIAL IMPLICATIONS:

In 1997, a debt parcel tax was levied on each property to repay the funds borrowed to construct a portion of the District's water system. This debt parcel tax was gradually reduced over the 15 year term. In 2010, with only three years remaining on the debt issue, Council began to consider how best to begin funding the eventual replacement of the water system. To minimize the impact on the parcel tax payers still paying the debt, the infrastructure replacement parcel tax began at \$36.75 in 2010 and was only increased to the \$100 parcel tax in 2013 when the debt was fully retired, as shown in the table below:

Table 1 – Historical Water Infrastructure Replacement Parcel Tax

Year	Water Debt Parcel Tax	Water Infrastructure Replacement Parcel Tax
2009	\$115.00	-
2010	\$63.25	\$36.75
2011	\$43.06	\$56.94
2012	\$25.57	\$74.43
2013 - 2019	-	\$100.00

The water infrastructure replacement parcel tax has remained at \$100 for the past seven years. It is likely that if more fulsome replacement information was available in years past, the parcel tax would have likely been increased gradually over the last seven years, reflecting both the increased costs of construction and updated condition assessments. Doubling of the parcel tax to \$200 would result in a \$100 increase for each parcel in the District serviced by the water system and would be collected with property taxes each year.

SUMMARY:

The Water Infrastructure Replacement Reserve is used to fund the watermain renewal program for the District. The funding to the reserve comes from a water parcel tax of \$100 which provides approximately \$500,000 in annual funding for watermain renewal projects. The current rate of funding will result in replacement of the asbestos cement mains well beyond their anticipated useful life span. Staff respectfully submit the following recommendation:

RECOMMENDATION:

That Council direct staff to increase annual funding to the Water System Reserve for Council's consideration during budget deliberations.

Respectfully submitted,

Concurrence:



Eymond Toupin
Director of Infrastructure Services



Tim Tanton
Chief Administrative Officer



Stephanie Munro
Director of Financial Services