
Capital Project #1617 - Primary Water Mains Inspection and Condition Assessment - Award of Contract

Recommendation

That the Standing Policy Committee on Environment, Utilities and Corporate Services recommend to City Council:

1. That the proposal submitted by Pure Technologies Ltd. for construction of access points, installation of permanent monitoring equipment, inspection, and condition assessment of primary water mains at a total estimated cost of \$1,404,194.09 (including GST and PST) be approved; and
2. That the City Solicitor be requested to prepare the appropriate agreement and that His Worship the Mayor and the City Clerk be authorized to execute the agreement under the Corporate Seal.

Topic and Purpose

The purpose of this report is to request City Council approval for the award of a contract to Pure Technologies Ltd.

Report Highlights

1. On March 8, 2018, the City of Saskatoon (City) issued a Request for Proposal from qualified, licensed, professional construction and engineering services to construct access points, install flow and pressure sensors, and conduct detailed engineering inspections for 3.4 km of high-priority primary water mains.
2. These inspections will provide critical information that will be used to minimize the risk of future wide-spread service disruptions and system depressurization.
3. One proposal was received and the Administration recommends awarding the contract for the Primary Water Main Inspection and Condition Assessment to Pure Technologies Ltd.

Strategic Goals

This report supports the Strategic Goals of Continuous Improvement and Asset & Financial Sustainability by assessing the condition of primary water mains, providing a proactive approach to water main maintenance, repair, or replacement. This information may lead to locations being strategically targeted for repair or replacement prior to incurring failure, which leads to wide spread service interruptions, system depressurization, and lengthy and costly emergency repairs.

Background

Primary water mains are large diameter buried pipes that distribute water to large areas of the City. In 2014, the City undertook a study to identify high risk primary water mains in order to prioritize them for condition assessment. Based on the results of that study, the City inspected 8 km of high priority water mains for inspection and assessment in 2017 for a value of \$2,173,572.45 (including GST and PST). In continuation of the

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study, Administration has selected approximately 3.4 km of Pre-stressed Concrete Cylinder Pipe (PCCP) water main to be inspected in 2018.

Condition assessment and preservation of primary water mains is funded annually through Capital Project #1617 - Primary Water Mains.

Report

Request for Proposal

On March 8, 2018, the City issued a Request for Proposal on SaskTenders to invite interested bidders to prepare and submit proposals for the construction of access points, inspection, and condition assessment of approximately 3.4 km of large diameter primary water mains.

The City requires the proposed inspection method be non-destructive, maintain normal operating pressures in water mains during inspections, and identify the quantity and location of pipe defects on an individual pipe segments basis. In addition, the scope of the proposal includes construction costs of infrastructure modifications that would be required to perform the inspections.

On April 11, 2018, one proposal was received from Pure Technologies Ltd. from Calgary, Alberta. Two staff members from Major Projects & Preservation reviewed the proposal. The proposal meets the requirements set out by the City, and the cost is within the allocated budget. The proposal was evaluated based on the following criteria:

Selection Criteria	Score/Points
1. Project Comprehension	5
2. Project Methodology and Technical Approach	30
3. Project Team and Proponent Qualifications	30
4. Project Schedule, Milestones and Controls	10
5. Safety Plan	5
6. Fee Proposal	20
TOTAL	100

The total estimated net cost to the City is \$1,404,194.09 (including GST and PST) consisting of inspection and condition assessment costs of \$463,680.00, and construction costs of \$826,423.50. The costs quoted for insertion and extraction points and flow monitoring points are upset limits assuming that two insertion/extraction points and one monitoring point will be required per pipeline. The first phase of the project will be a desktop study and field inspection to determine the best points to access and monitor the pipelines. Depending on these findings, there may be opportunities to reduce the number of insertion/extraction points or to combine insertion/extraction and monitoring to one chamber.

Pure Technologies Ltd. is a recognized industry leader in the assessment and management of pressurized water and wastewater pipeline. They provide innovative solutions such as the proposed approach for inspection using PipeDiver and Smart Ball technology to estimate remaining pipe life and target discrete segments of pipe for

repair or rehabilitation. Pure Technologies Ltd.'s expertise and technology is used around the world. Major Canadian clients include the Region of Peel, City of Hamilton, City of Montreal, City of Calgary, City of Vancouver, City of Ottawa, and the City of Saskatoon.

The Administration considered the use of internal resources, but was limited for the following reasons:

- The City does not own the specialized equipment or have the specialized expertise to perform the inspection work;
- Internal forces do not have the equipment or resources to tap large water mains under pressure; and
- Potential conflicts with planned and reactive maintenance work to perform the construction components. A prioritized emergency may incur additional cost for standby and mobilization with the proponent. Each mobilization of the proprietary technology would cost approximately \$28,000.

The Administration is recommending that the proposal submitted by Pure Technologies Ltd. for the inspection and condition assessment of water mains at a total estimated cost of \$1,404,194.09 (including GST and PST) be approved.

Benefits

The 3.4 km of water mains proposed for inspection have an estimated replacement value of \$9M. Water mains that were prioritized for inspection were selected based on consequence of failure. These water mains are highly critical to the normal operation of the water distribution network. Due to their location and size, a failure would also mean potential for property damage, large scale and extended water outages, system depressurization, and for many locations, major disruption of the City's traffic networks. A pipe failure along these segments would be considered a high consequence failure.

An example of this occurring in Saskatoon occurred in 2016, when a contractor inadvertently punctured a 1050 mm diameter primary water main on McOrmond Drive near Fedoruk Drive in Evergreen. Although this was not a deterioration failure of the water main, the effects provide an example of what a primary water main failure would look like:

- Boil water advisories were issued to approximately 7800 residents. These advisories were in place for multiple days.
- Two temporary water fill stations were set up for residents to access clean water.
- Approximately 18.75M litres of treated water was lost.
- Estimated cost of repairs to the water main and approximately 350 sq. m of roadway, was \$688,519.

The McOrmond primary water main rupture is considered a low consequence failure relative to other primary water mains. The mains selected for inspection as part of this project are in locations that have higher consequences if a failure were to occur. Failure

at any of these locations would cause property damage, affect more residents, and be more disruptive and costly to the City.

Performing inspection work on these mains while in service is expensive; however, taking the water main out of service to inspect it is not a viable option. Data gathered from the inspection and condition assessment will be used to develop a long-term strategy for preventive repairs and maintenance to reduce the risk of future high consequence pipe failures. The construction of the insertion and extraction points will be permanent and can be utilized for future inspections. The project will also include the installation of flow and pressure monitoring stations to provide the City on-going data collection and calibration for modeling and assessment of the water distribution system.

Options to the Recommendation

There is an option to not award a contract to Pure Technologies Ltd. This is not recommended as the potential benefits outweigh the costs of the project, and the contractor is an industry leader in the assessment and management of pressurized water and wastewater pipeline.

Communication Plan

Residents will be notified of any traffic restrictions or water disruptions in advance of work commencing.

Financial Implications

Having accurate condition data on water mains can lead to cost savings. These inspections will provide information to the City that will be used to reduce the risk of a catastrophic failure of a primary water main, and accurately plan rehabilitation programs.

There is sufficient funding in Capital Project #1617 – Primary Water Mains to fund this project.

The net cost to the City for the services that will be provided by Pure Technologies Ltd. is as follows:

Inspection & Condition Assessment	\$ 463,680.00
Construction	<u>826,423.50</u>
Total Proposal Price	\$1,290,103.50
GST (5%)	64,505.18
PST	<u>49,585.41</u>
Total Upset Fee	\$1,404,194.09
GST Rebate	<u>(64,505.18)</u>
Net Cost to the City	<u>\$1,339,688.91</u>

Environmental Implications

In addition to evaluating the condition of water mains, the testing procedures used will detect leaks. Early detection of leaks will result in timely repairs, reductions in overall

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water loss, and reductions in overall energy use and greenhouse gas emissions associated with the treatment and distribution of potable water.

Other Considerations/Implications

There are no public and/or stakeholder involvement, policy, privacy, or CPTED implications or considerations.

Due Date for Follow-up and/or Project Completion

Project completion is anticipated for the fall of 2018 if the recommendation is adopted by City Council.

Public Notice

Public Notice pursuant to Section 3 of Policy No. C01-021, Public Notice Policy, is not required.

Report Approval

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Approved by: Angela Gardiner, Acting General Manager, Transportation & Utilities Department

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