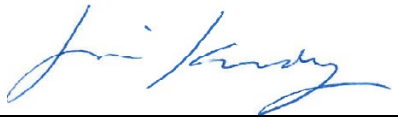
CITY OF HAMILTON
PUBLIC WORKS DEPARTMENT
Hamilton Water Division
and
Engineering Services Division

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	September 30, 2024
SUBJECT/REPORT NO:	Nash Road Transmission Main Leak Rehabilitation (PW24065) (City Wide)
WARD(S) AFFECTED:	Ward 5
PREPARED BY:	Shane McCauley (905) 546-2424 Ext. 1020 Dipankar Sharma (905) 546-2424 Ext. 3016
SUBMITTED BY: **SIGNATURE:**	Nick Winters Director – Hamilton Water Public Works Department 
SUBMITTED BY: **SIGNATURE:**	Jackie Kennedy Director – Engineering Services Public Works Department 

RECOMMENDATIONS

(a) That Council approve the single source procurement, pursuant to Procurement Policy #11 – Non-competitive Procurements, for the provision of consultancy services for the Nash Road Transmission Main Leak Rehabilitation project, and that the General Manager, Public Works Department be authorized to negotiate, enter into and execute the extension to Contract C12-31-21 and any ancillary documents required to give effect thereto with Robinson Consultants Inc. in a form satisfactory to the City Solicitor; and,

(b) That Council approve the single source procurement, pursuant to Procurement Policy #11 – Non-competitive Procurements, for the

completion of the work or supply of goods and services for the Nash Road Transmission Main Leak Rehabilitation project to the aggregate upset limit of $6,5M, and that the General Manager, Public Works Department be authorized to negotiate, enter into and execute any Contract and any ancillary documents required to give effect thereto with required contractors and suppliers, in a form satisfactory to the City Solicitor.

(c) That up to $6,5M from the Waterworks Capital Reserve (#108015) be allocated to fund the works required for the Nash Road Transmission Main Leak Rehabilitation project; and

(d) That the General Manager, Public Works, or their designate be directed to provide an Information Report to the Public Works Committee detailing the final costs for the for the Nash Road Transmission Main Leak Rehabilitation project.

EXECUTIVE SUMMARY

Through its proactive watermain inspection program, Public Works identified and verified a large leak on a 90-inch critical watermain at Nash Road. Public Works subsequently engaged Robinson Consultants Inc. (the Consultant) via Contract C12-31-21 to complete necessary due diligence analysis including verification of the leak and an evaluation of repair options. Public Works supports the Consultant recommendation to complete an internal pipe repair using a carbon fibre-reinforced polymer liner. It is necessary to repair the leak as soon as possible, and to minimize the risk of service disruptions or community water use restrictions, it is further necessary that repairs be completed between October and the end of April when community water demands are typically lower.

The recommendations in report PW24065 will provide Public Works with the authority and necessary funding to repair the leak and reinstate the watermain as soon as possible. Public Works will negotiate with the required contractors and suppliers (of which there are more than one), which will allow the City to achieve the best value for the Nash Road Transmission Main Leak Rehabilitation project while minimizing risk to the community.

Should the recommendations in report PW24065 be approved and ratified at the October 9th, 2024, City Council meeting, Public Works will immediately proceed with negotiations with suppliers to order the necessary materials and equipment, and with contractors to complete the repairs. It is anticipated that contractors will mobilize to the leak site in December 2024 or early January 2025, and that the repairs will be completed and the watermain re-instated by early April 2025.

Alternatives for Consideration – See Page 6

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: The Nash Road Transmission Main Leak Rehabilitation project is unbudgeted. It is recommended that the work be funded to a limit of $6,500,000 from the Waterworks Capital Reserve (#108015), which has an estimated uncommitted balance of $40.5 Million. Should Council approve the staff recommendations the updated reserve balance of $34 Million will be reflected in the 2025 Water, Wastewater and Stormwater Rate Budget financing plan.

Staffing: N/A

Legal: N/A

HISTORICAL BACKGROUND

In November 2023, a large leak (greater than 37.5 litres per minute) was detected on the 90-inch watermain located on Nash Road. The leak was detected while Public Works performed a proactive watermain inspection utilizing SmartBall technology, a device that is continuously propelled by the flow in the watermain and employs acoustic leak detection.

Public Works staff immediately completed a thorough inspection in and around the area where the leak was detected. This inspection included visually assessing the area for visible flow of water, sinkholes, or other evidence of sub-surface flow of water, and the use of closed-circuit television (CCTV) cameras to inspect the local storm and sanitary sewers for evidence of unusual flows. Public Works did not find any visible evidence of a leak. Since the initial leak identification, Public Works has continued to conduct bi-weekly visual inspections of the area, looking for any evidence of a worsening leak.

In the following months, Public Works worked with Pure Technologies, the consulting company that conducted the SmartBall inspection, to further evaluate the data and perform additional physical inspections. The SmartBall technology is known in the industry to be highly accurate in detecting leaks, and the inspection data indicated that there was a large leak at one of the three 30-degree bends after the watermain crosses under the Red Hill Creek and Red Hill Valley Parkway and proceeds South on Nash Road as shown in Appendix “A” to report PW24065.

In parallel, Public Works retained Robinson Consultants Inc. via Contract C12-31-21 to complete an evaluation of repair options. Because of the location of the leak, the Robinson Consultants Inc. recommended that the best option is to structurally line a portion of the watermain with a carbon fibre-reinforced polymer liner. This work requires

draining a significant portion of the 90-inch watermain, sending work crews into the watermain to install the liner, followed by disinfection and recommissioning of the watermain. Robinson Consultants Inc. estimated that the repair would cost several million dollars and require 8 to 10 weeks plus additional lead time for the order and manufacture of the liner. However, with no physical evidence of a leak, Public Works determined that additional due diligence, including a secondary leak inspection utilizing a different technology, should be completed before initiating such a costly repair.

Over the summer of 2024, Public Works conducted a more detailed watermain inspection using Sahara In-line Tethered inspection technology. This technology allows for a visual (closed circuit television) and acoustic inspection. Using a tethered device, the inspection team could stop the sensor at any location in the watermain and collect data over a longer period. The Sahara In-line Tethered technology detected a leak in the same location that the SmartBall technology did. The sensor was allowed to hover in this area for more than 8 hours while Public Works staff changed operating conditions in the water distribution system. The acoustic leak signature did not change, despite the changing operating conditions, which verified the existence of the leak.

Public Works received the final inspection report from Pure Technologies in September 2024, confirming a large leak in the area initially identified. Additionally, Public Works received a final report from the Robinson Consultants Inc. on September 27th, 2024, with recommendations regarding the rehabilitation of the watermain.

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

This Report is in accordance with By-law 20-205 as amended, Procurement Policy, Procurement Policy #11 Non-Competitive Procurements.

RELEVANT CONSULTATION

The Financial Planning Administration and Policy Division has been consulted and has confirmed that sufficient funds are available in the Waterworks Capital Reserve (#108015) to support the recommendations in report PW24065.

The Procurement Division has been consulted on report PW24065 to ensure compliance with the Procurement Policy.

ANALYSIS AND RATIONALE FOR RECOMMENDATION

The 90-inch watermain on Nash Road is known as the Woodward-Greenhill Feeder main and is a critical component of the City's potable water infrastructure. To ensure adequate potable water supply to Upper and Lower Stoney Creek during periods of

higher water demand (typically May to October each year), it is necessary for this watermain to be in-service. As a result, any maintenance or repairs that require this watermain to be taken out-of-service must be completed between October and the end of April when community water demands are typically lower.

The Woodward-Greenhill Feeder main was constructed of Prestressed Concrete Cylinder Pressure (PCCP) pipe between 1970 and 1972. This is the same material and vintage of watermain pipe that experienced catastrophic failures in the city of Calgary in June of 2024, and in the city of Montreal in August of 2024.

Having confirmed that there is a large leak on a critical water main of a material type that is now known to fail prematurely based on the experiences in Calgary and Montreal, it is necessary that repairs be made as soon as possible. Completing the repairs before May 1, 2025, requires the support of a qualified engineering consultant, a qualified general contractor, and other specialized contractors and material/equipment suppliers. However, following an open procurement process including issuing Requests for Tenders for both consulting and contracting support for the Nash Road Transmission Main Leak Rehabilitation project, it is unlikely that the project could begin earlier than October 2025.

Robinson Consultants Inc. was initially retained by Public Works via Contract C12-31-21 to complete necessary due diligence analysis including verification of the leak and an evaluation of repair options. Given Robinson Consultants Inc. familiarity with this project and the existing rates for their engagement as stipulated in Contract C12-31-21, the best value for the City will be achieved by extending the assignment with Robinson Consultants Inc. pursuant to Procurement Policy #11 – Non-competitive Procurements, for the provision of consultancy services for the Nash Road Transmission Main Leak Rehabilitation project.

Regarding material suppliers and contractors, there are very few suppliers in the marketplace for carbon fibre-reinforced polymer liners that can be used in potable watermains, and there are also very few contractors with experience effecting these types of repairs. To achieve the best possible value for the Nash Road Transmission Main Leak Rehabilitation project, Public Works is recommending that Council delegate authority to negotiate with these suppliers and contractors to identify who is capable of completing the work on the required timeline and for the best price.

Finally, the Nash Road Transmission Main Leak Rehabilitation project is unbudgeted. It is recommended that the project be funded from the Waterworks Capital Reserve (#108015), which currently has an estimated uncommitted balance of $40.5 Million.

ALTERNATIVES FOR CONSIDERATION

Council could elect not approve the recommendations in Report PW24065. If this occurred, then Public Works would follow normal processes to complete the Nash Road Transmission Main Leak Rehabilitation project which would include seeking budget approval for the project through the 2025 Water, Wastewater and Stormwater Rate Budget process, followed by an open procurement process for both consulting and contractor support. In this scenario it is unlikely that the project could begin until October 2025 at the earliest.

Considering that a large leak has been verified on this critical watermain made of a material type that is now known to fail prematurely, as seen recently in Calgary and Montreal, Public Works does not recommend this alternative.

Financial: The City may achieve some financial savings going through an open procurement process for the Nash Road Transmission Main Leak Rehabilitation project.

However, given the real risk of a catastrophic failure on a critical watermain of this size, the City would experience far more significant costs if a failure were to occur in advance of the recommended proactive repair.

Staffing: N/A

Legal: N/A

APPENDICES AND SCHEDULES ATTACHED

Appendix “A” to Report PW24065 – Leak Location