

Amendment to Purchase Order Number 6054015 with Clearway Construction Incorporated for Emergency Non-Competitive Contract to Retrieve a Micro-Tunneling Boring Machine on Old Mill Drive for Assignment 5-01 Under the Basement Flooding Protection Program Phase 4 for Engineering and Construction Services

Date: June 23, 2023

To: General Government Committee

From: Interim Chief Engineer and Executive Director, Engineering and Construction Services and Chief Procurement Officer, Purchasing and Materials Management

Wards: 4 (Parkdale-High Park)

SUMMARY

The purpose of this report is to request authority from the General Government Committee to amend Purchase Order Number 6054015 with Clearway Construction Incorporated for the Non-Competitive Contract NCP- 20ECS-LU-01FP for the provision of construction services to remove a micro-tunnelling boring machine on Old Mill Drive.

The purchase order amendment is required as several challenges were encountered during the ground stabilization works causing the emergency retrieval of the micro-tunnelling boring machine to become more complicated and take longer than originally anticipated. Some of the challenges included additional groundwater infiltration and the need for additional ground stabilization work, resulting in the retrieval taking approximately six (6) months longer than initially anticipated, which consequently increased the cost of the project.

The total value of the Purchase Order Amendment being requested is \$16,000,000 net of all taxes and charges (\$16,281,600 net of Harmonized Sales Tax recoveries), revising the current Purchase Order value from \$8,997,161 net of all taxes and charges (\$9,155,511 net of Harmonized Sales Tax recoveries) to \$24,997,161 net of all taxes and charges (\$25,437,111 net of Harmonized Sales Tax recoveries).

The Purchase Order Amendment is based on cost estimates provided by both the contractor and consultant and represents the probable costs required to complete the emergency work. The final costs and actual payments will be based on substantiated and certified invoices.

The General Management Committee approval is required in accordance with Municipal Code Chapter 195, Purchasing, where the current request exceeds the Chief Procurement Officer's authority of the cumulative five year commitment limit for each vendor under Article 7, Section 195-7.3(D) of the Purchasing By-law or exceeds the threshold of \$500,000 net of Harmonized Sales Tax allowed under staff authority as per the Toronto Municipal Code Chapter 71, Financial Control, Section 71-11.1.

RECOMMENDATIONS

The Interim Chief Engineer and Executive Director, Engineering and Construction Services, and the Chief Procurement Officer, Purchasing and Materials Management, recommend that:

1. General Government Committee, in accordance with Section 195-8.4A of the Toronto Municipal Code Chapter 195 (Purchasing By-Law), grant authority to amend Purchase Order Number 6054015 with Clearway Construction Incorporated, for the provision of additional construction services to retrieve a micro-tunnelling boring machine on Old Mill Drive, by increasing the value of the Purchase Order in the amount of \$16,000,000 net of all taxes and charges (\$16,281,600 net of Harmonized Sales Tax recoveries), revising the current Purchase Order value from \$8,997,161 net of all taxes and charges (\$9,155,511 net of Harmonized Sales Tax recoveries) to \$24,997,161 net of all taxes and charges (\$25,437,111 net of Harmonized Sales Tax recoveries).

FINANCIAL IMPACT

The total emergency non-competitive contract, Purchase Order Number 6054015, was issued for a total value of \$8,997,161 net of all taxes and charges (\$9,155,511 net of Harmonized Sales Tax recoveries) under the emergency provision of the Purchasing By-law.

The Purchase Order Amendment request, included in this report, will increase the total value of the construction services by \$16,000,000 net of all taxes and charges (\$16,281,600 net of Harmonized Sales Tax recoveries), revising the current Purchase Order value from \$8,997,161 net of all taxes and charges (\$9,155,511 net of Harmonized Sales Tax recoveries) to \$24,997,161 net of all taxes and charges (\$25,437,111 net of Harmonized Sales Tax recoveries).

The additional work to be performed in 2023 will be funded from the 2023 Approved Capital Budget and 2024-2032 Approved Capital Plan for Toronto Water. The approved cashflow for 2023 is shown in Table 1 below:

Table 1: Financial Impact Summary

WBS Element/ Description	2023	Total (Net of Harmonized Sales Tax recoveries)
CWW421 Basement Flooding Relief - Group 4 (Construction)	\$16,281,600	\$16,281,600

The Chief Financial Officer and Treasurer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

At its meetings of September 24, 2008 and September 21, 2011, Council adopted criteria to prioritize, and sequence recommended Basement Flooding Protection Program projects that are identified through completed studies to protect the greatest number of properties as soon as possible, within approved budgets, as appropriate funding opportunities are available and in coordination with other capital project and population growth needs in the area. The Council adopted criteria and the corresponding staff reports can be found at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2008.EX23.16>

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2011.PW7.6>

At its meeting of July 19, 2017, Bid Award Panel adopted the award of Request for Proposal No. 9117-17-7067 in accordance with the Contract Details set out in the report (July 11, 2017) from the Director, Purchasing and Materials Management for the provision of detailed design and construction administration engineering services for assignments under the Basement Flooding Protection Program Phase 4, for the years 2017 to 2024, to WSP Canada Group Limited for a Contract Award Value of \$8,045,004 net of Harmonized Sales Tax recoveries. The Council adopted item and the corresponding staff reports can be found at: <https://secure.toronto.ca/council/agenda-item.do?item=2017.BA32.8>.

At its meeting of June 18, 2019, Council granted the authority to apply for federal funding under the Disaster Mitigation and Adaptation Fund and to enter into and execute agreements, including any amendments, with the Government of Canada under the Disaster Mitigation and Adaptation Fund on terms and conditions satisfactory to the City Manager and the Chief Financial Officer and Treasurer and in a form satisfactory to the City Solicitor. The Council adopted item and the corresponding staff

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reports can be found at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2019.EX6.4>

At its meeting of November 25 and 26, 2020, Council adopted the amended threshold for the cost per benefitting property at the preliminary design phase, and direct that projects identified through completed Basement Flooding studies proceed to detailed design and construction, if the cost per benefitting property, as determined during the preliminary design phase, is less than the amended threshold. The Council adopted item and the corresponding staff reports can be found at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2020.IE17.5>

At its meeting of July 21, 2021, Bid Award Panel adopted the award of Contract Number 20ECS-LU-01FP, Request for Tender Ariba Document Number 2834835422, in accordance with the contract details set out in the report (July 15, 2021) from the Chief Procurement Officer for the construction of sewer upgrades and related improvements for Basement Flooding Protection Program Phase 4, Assignment 5-01 on Catherine Street and Old Mill Drive to Clearway Construction Incorporated, for a Contract Award Value of \$7,197,303 net of Harmonized Sales Tax recoveries. The Council adopted item and the corresponding staff reports can be found at:

<https://secure.toronto.ca/council/agenda-item.do?item=2021.BA145.2>.

At its meeting of December 15, 16 and 17, 2021, Council adopted the 2022 Rate Supported Budgets - 2022 Water and Wastewater Consumption Rates and Service Fees. In support, a briefing note titled "2022 Capital Budget Briefing Note - Basement Flooding Protection Program - Program Status Update and Project List: 2022 to 2026", contains the updated planned schedule for engineering design and construction of infrastructure upgrades supporting Toronto Water's Basement Flooding Protection Program. The Council adopted item and supporting Briefing Note can be found at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2021.EX28.6>

<https://www.toronto.ca/legdocs/mmis/2021/ex/bgrd/backgroundfile-173775.pdf>

At its meeting of March 29, 2023, City Council adopted a report on the Emergency Non-Competitive Contract with Clearway Construction Incorporated, to Rescue a micro-tunnelling boring machine on Old Mill Drive for Assignment 5-01 Under the Basement Flooding Protection Program Phase 4, and requested the City Solicitor, in consultation with the Interim Chief Engineer and Executive Director, Engineering and Construction Services, to review the circumstances arising from the micro-tunneling boring machine on Old Mill Drive and to report back to the April 20, 2023 meeting of the General Government Committee on options available to recover the costs incurred by the City. The Council adopted item and supporting Action Report can be found at:

<https://www.toronto.ca/legdocs/mmis/2023/gg/bgrd/backgroundfile-234581.pdf>

At its meeting of April 20, 2023, the General Government Committee adopted a report from the City Solicitor entitled Update on Additional Costs Associated with Extraction of the micro-tunneling boring machine on Contract 20ECS-LU-01FP. The Committee adopted item and supporting Action Report can be found at:

<https://secure.toronto.ca/council/agenda-item.do?item=2023.GG2.14>

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COMMENTS

Background

As a part of the City of Toronto's Basement Flooding Protection Program Phase 4 Contract 20ECS-LU-01FP, Clearway Construction Incorporated (the Contractor), was required to install a 900-millimetre diameter storm sewer on Old Mill Drive to help alleviate basement flooding in the area. The 282 metre-long section along Old Mill Drive between Riverside Drive (OD5) and just north of Bloor Street West (OD8) was to be constructed by micro-tunnelling, a trenchless construction methodology. The proposed



scope of work included crossing Toronto Transit Commission's Line 2 subway tunnel just north of maintenance hole OD8. The Contractor retained a micro-tunnelling subcontractor, Earth Boring CO Limited, to complete the micro-tunnelling work.

Figure 1: Location of proposed 900mm diameter storm sewer on Old Mill Drive between maintenance holes OD5 and OD8.

On March 9, 2022, the Contractor commenced the micro-tunnelling from maintenance hole OD5 utilizing a specialized micro-tunnel boring machine, consisting of a cutting wheel head and a tail can section. In April 2022, the micro-tunnelling boring machine

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encountered a vertical alignment issue, which caused it to deviate from its alignment of about 7.5 metres from the OD8 retrieval shaft. This caused the machine to become stuck, requiring it to be retrieved. It was later established that the micro-tunneling boring machine had become ensnared in a tieback. In May 2022, Earth Boring CO Limited commenced the retrieval of the micro-tunnelling boring machine using maintenance hole OD8 as a retrieval shaft.

On June 9, 2022, the Contractor encountered an existing steel tieback within the alignment of the retrieval tunnel operations. Upon further investigation, it was determined that the steel tieback was part of a temporary deep foundation shoring system used during the construction of mid-rise buildings at 1 and 2 Old Mill Drive, which is no longer required. At no time during the tunneling operations, was the safety of either building in jeopardy.

The Contractor prepared a plan to safely de-stress, cut and remove the steel tieback, while ensuring the safety of both the adjacent permanent building structures and their foundations. The Contractor retained a specialist tieback subcontractor, HC Matcon Incorporated, who assessed the conditions on site and prepared a site-specific plan for safely de-stressing and removing any steel tiebacks encountered along the alignment of the micro-tunnelling boring machine. The structural engineer of record for the development works and building shoring systems of 1 and 2 Old Mill Drive, Isherwood Geotechnical Engineers, was also consulted to provide background information on the developer's shoring system.

The Contractor proceeded with the hand mining operation, including de-stressing and removal of steel tiebacks, and has mined and hydraulically jacked the tunnel from the receiving shaft, back to the face of the micro-tunnelling boring machine. A total of 7.5 metres has been hand mined to date. When the contractor reached the face of the micro-tunnelling boring machine, it was found that the machine was entangled in a steel tieback. The micro-tunneling boring machine is currently being retrieved and the remaining tunnel connection will be installed in the location where the machine is currently stuck, thereafter.

When the work reached the face of the micro-tunnelling boring machine, the Contractor encountered a significant increase in groundwater infiltration into the recovery tunnel, which required an expert in ground improvements and stabilization to implement an approach to stabilize the soil around the micro-tunnelling boring machine and allow for its safe recovery. The contractor retained a subcontractor (Keller Group) to review the site conditions and implement a two-phased approach utilizing compaction grouting to stabilize the surrounding area and the upper soil strata followed by jet grouting to fully encapsulate the tunnel alignment.

As a result of the vastly increased and urgent nature of the scope of work, a non-competitive contract was issued to the contractor on November 28, 2022 in the amount of \$8,997,161, excluding Harmonized Sales Tax, as a matter of extreme urgency, to avoid a significant health and safety hazard to the public and to avoid undermining of the integrity of the roadway and surrounding infrastructure.

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The Non-Competitive Procurement was required to allow the contractor to review the impacted area and safely proceed with the micro-tunnelling boring machine retrieval operations, including de-stressing and removing steel tiebacks within the limits of the micro-tunnelling boring machine alignment and ground stabilization by compaction and jet grouting operations.

WSP Canada Group Limited has reviewed the current status of the work and notes that the estimate for works to be completed to retrieve the micro-tunneling boring machine is higher than anticipated for this stage of the work due to increased complexity of the required ground stabilization works and extended duration of the work, which consequently increased the cost of the project. The expected retrieval completion date was originally March 2023 and has now been extended to the end of August 2023, due to increased complexity of the retrieval work.

At the time the Non-Competitive Procurement was issued, it could only be based on a best estimate of the cost, and due to the nature of the work, the actual costs and full complexity of the retrieval became more evident as the work progressed. At this stage of the retrieval work, the overall costs are more defined, requiring a revision to the projected cost and a request to approve a Purchase Order Amendment.

The Purchase Order Amendment value for costs incurred and expected future costs includes:

- Additional labour, equipment and resource costs due to the increased scope of work and time needed to complete the ground stabilization.
- Costs related to additional unforeseen reinstatement requirements for impacted utilities.
- The ongoing rental cost for a similar micro-tunnelling boring machine and associated equipment being utilized by the contractor on another project site in lieu of the stuck machine.
- Costs for any claims received from the contractor that are currently being assessed.
- Increased permanent restoration scope of roadways and sidewalk impacted by the recovery operations.
- Unforeseen costs that may still arise during the performance of the remaining work, where additional work is recommended by the Consultant, WSP Canada Group Limited (WSP), and authorized by the City.

Continuation of the retrieval work is critically important to allow the Contractor to complete the tunnel scope and remaining scope of work under the Contract. Due to the sequential nature of the works, the large shaft excavations on Old Mill Drive cannot be completed and restored until the micro-tunnelling boring machine is retrieved and the remaining 5.0 metres of tunnel is installed. Furthermore, the storm sewer siphon located under the TTC infrastructure is currently not functioning optimally and causes overflows and flooding of the Traymore Park area during heavy rain events. This siphon sewer is scheduled to be abandoned as part of this Contract, however the work associated with abandoning the siphon cannot occur until the tunnel construction is completed.

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Currently, to avoid surface flooding to the homes backing on Traymore Park, a storm sewer bypass is installed and cannot be taken out of operation until the sewer construction is complete, allowing the flows to be re-directed to the new tunnel. Bypass of the storm sewer was not an anticipated cost and is included in the value of the Purchase Order Amendment. Once the micro-tunneling boring machine is retrieved, it will be inspected for repairs as the extent of required repairs is unknown.

Project costs will continue to be accrued for the contractor during the time of inspection and repair to the micro-tunneling boring machine, which could take several weeks.

Based on the added complexity and the newly estimated completion timeline of the retrieval operation, WSP Canada Group Limited recommends an amendment to the Purchase Order for inclusion of additional funds to this Non-Competitive Procurement in the amount \$16,000,000 excluding Harmonized Sales Tax (\$16,281,600 net of Harmonized Sales Tax recoveries), to address incurred and further anticipated costs associated with the work. The additional costs required under this Purchase Order Amendment are justifiable costs resulting from technical challenges encountered during the ground stabilization works, which resulted in additional costs for the work itself and increased project costs due to extended duration of operations to retrieve the micro-tunnelling boring machine.

These costs are estimated based on information provided by both the contractor and consultant and serve as an envelope for the possible costs required to complete the emergency retrieval operation, including any claims that have been submitted by the contractor that are currently being assessed. Actual payments shall be based on the reconciled invoicing submitted by the contractor that is substantiated and certified by the consultant for payment.

Legal Services, in consultation with ECS is reviewing the circumstances of the project to determine whether any additional costs sustained by the City can be recovered. Once the project is complete and staff have the opportunity to review all the background, Legal Services will be reporting to the Committee on this matter as directed by the Committee at its meeting on April 20, 2023.

Emergency Work Completed

- Completion of the hand-mined segment of the recovery tunnel, advanced 7.5 metres to the face of the stuck micro-tunnelling boring machine.
- Completion of de-stressing and removal of tie-backs encountered in conflict with the hand mined portion of the tunnel.
- Completion of compaction grouting to stabilize the upper soil strata above the stuck micro-tunnelling boring machine.
- Completion of jet grouting phases to stabilize the ground directly around the stuck micro-tunnelling boring machine.
- Completion of probes to inspect and confirm the quality the ground stabilization works.

Remaining Retrieval Work

- Retrieval of the micro-tunnelling boring machine.
- Completion of the remaining 5.0 metres of the hand-mined segment of the recovery tunnel.
- Installation of the remaining 12.5 metres of 900 mm sewer pipe.
- Repair to the micro-tunnelling boring machine, as necessary.

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SIGNATURE

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