

## **Amendment to Purchase Order Number 6047271 for Professional Engineering Design Services for Residuals Management and Ultraviolet Treatment Facilities at the Island Water Treatment Plant**

**Date:** June 17, 2024

**To:** General Government Committee

**From:** Chief Engineer and Executive Director, Engineering and Construction Services, and Chief Procurement Officer

**Wards:** 10 (Spadina-Fort York)

### **SUMMARY**

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The purpose of this report is to request authority to amend Purchase Order Number 6047271 with AECOM Canada Ltd. (AECOM), to provide additional professional engineering design services associated with completing several planned and unanticipated tasks to complete the detailed design and tender documents for the Residuals Management and Ultraviolet Treatment Facilities project at the Island Water Treatment Plant.

The total value of the Purchase Order Amendment being requested is \$436,616 net of all applicable taxes and charges (\$444,301 net of Harmonized Sales Tax recoveries), revising the current Purchase Order value from \$5,853,916 net of all taxes and charges (\$5,956,945 net of Harmonized Sales Tax recoveries) to \$6,290,532 net of all taxes and charges (\$6,401,245 net of Harmonized Sales Tax recoveries). This revises the total value of the assignment awarded to AECOM Canada Ltd., from \$9,854,174 net of all taxes and charges (\$10,027,607 net of Harmonized Sales Tax recoveries) to \$10,290,790 net of all taxes and charges (\$10,471,908 net of Harmonized Sales Tax recoveries).

### **RECOMMENDATIONS**

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

1. The General Government Committee, in accordance with section 71-11.1C of the City of Toronto Municipal Code Chapter 71 (Financial Control Bylaw), grant authority to amend Purchase Order Number 6047271 with AECOM Canada Ltd., to provide professional engineering services for preliminary and detailed design for the Residuals and Ultraviolet Treatment Facilities at the Island Water Treatment Plant by increasing the value by \$436,616 net of all taxes and charges (\$444,301 net of Harmonized Sales Tax recoveries), revising the current Purchase Order value from \$5,853,916 net of all taxes and charges (\$5,956,945 net of Harmonized Sales Tax recoveries) to \$6,290,532 net of all taxes and charges (\$6,401,245 net of Harmonized Sales Tax recoveries).

## **FINANCIAL IMPACT**

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The total value of the Purchase Order Amendment identified in this report is \$436,616 net of all applicable taxes and charges (\$444,301 net of Harmonized Sales Tax recoveries).

Funding for this Purchase Order Amendment is available in the Toronto Water 2024 Capital Budget and 2025-2033 Capital Plan under the accounts CPW043-07 (Chemical and Residuals Management Engineering) and CPW070-07 (UV Disinfection – Island Water Treatment Plant – Engineering). The total cost to the City is \$444,301 net of Harmonized Sales Tax recoveries. Funding details with forecasted expenditures (net of Harmonized Sales Tax recoveries) are summarized in Table 1 below:

**Table 1: Financial Impact Summary of Purchase Order Number 6047271**

<b>WBS Element</b>	<b>2024</b>	<b>2025</b>	<b>Total (net of Harmonized Sales Tax recoveries)</b>
CPW043-07	\$152,640	\$69,510	\$222,150
CPW070-07	\$75,000	\$147,151	\$222,151
<b>Total</b>	<b>\$227,640</b>	<b>\$216,661</b>	<b>\$444,301</b>

The Chief Financial Officer and Treasurer has reviewed this report and agrees with the information as presented in the Financial Impact Section.

## **DECISION HISTORY**

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At its meeting of May 28, 2018, the Bid Award Panel granted authority to enter into an agreement with AECOM Canada Ltd., for the provision of Professional Engineering Services during design, construction and post-construction for the Residuals Management and Ultraviolet Treatment Facilities at the Island Water Treatment Plant, being the highest scoring proponent meeting the requirements of Request for Proposal

9117-17-7233, in the amount of \$7,835,752 net of all applicable taxes and charges (\$7,973,662 net of Harmonized Sales Tax recoveries). Three purchase orders were issued: one for preliminary design and detailed design, in an amount not to exceed \$3,835,494 net of taxes and charges; two for services during construction including general office administration, site supervision, and post-construction warranty inspection, respectively, in an amount not to exceed \$4,000,258 net of all taxes and charges.

A copy of the Bid Award Panel Decision Document can be found at:

<https://www.toronto.ca/legdocs/mmis/2018/ba/bgrd/backgroundfile-115847.pdf>

At its meeting of July 9, 2020, Infrastructure and Environment Committee authorized an amendment to Purchase Order Number 6047271 (Purchase Order Amendment 1) for AECOM Canada Ltd., to provide additional professional engineering design services associated with the installation of a high lake level transfer system to remove excess process and lake water at the Island Water Treatment Plant and leveraging a financial opportunity to advance the installation of photovoltaic solar panels and battery energy storage system, increasing the design budget by \$2,018,422 net of taxes and charges (\$2,053,946 net of Harmonized Sales Tax recoveries), revising the current purchase order value from \$3,835,494 net of all taxes and charges (\$3,902,998 net of Harmonized Sales Tax recoveries) to \$5,853,916 net of all taxes and charges (\$5,956,945 net of Harmonized Sales Tax recoveries).

A copy of the adopted Infrastructure and Environment Committee report can be found at: <https://www.toronto.ca/legdocs/mmis/2020/ie/bgrd/backgroundfile-148287.pdf>

## COMMENTS

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### Background

The Island Water Treatment Plant, with a rated capacity of 440 Million litres per Day (MLD), is one of the four water treatment plants operated by the City of Toronto. The Plant is located at 446 Lakeshore Avenue on the Toronto Island, between Centre Island and Hanlan's Point. Segments of the plant were constructed in 1874 but the current day direct filtration plant commenced operation in 1977.

In 2015, Toronto Water completed a Water Quality Master Plan which provided direction for treatment upgrades over the next 20 years based on anticipated source water quality and regulatory changes. The Water Quality Master Plan recommended the implementation of an additional pathogen reduction barrier, and ultraviolet (UV) disinfection was identified as the preferred technology to provide this additional barrier.

Additionally, in the past, backwash water from the Plant's slow sand filter beds was discharged untreated through a shore-based outfall. However, the suspended solids concentration in the discharge was often out of compliance with the City's Municipal Drinking Water license, regulated under the Province's Safe Drinking Water Act, 2002. To address this issue, a Residuals Management Plan was developed by Toronto Water.

Given the complexity and challenges associated with rehabilitating 100-year-old infrastructure, the Plan implementation consisted of two phases.

Phase 1 of the plan involved rehabilitating and converting the existing slow sand filters into settling basins. This work was substantially completed in March 2018.

In June 2018, the City retained AECOM Canada Ltd., to provide professional engineering services for the design, construction administration, and post-construction services for the UV Disinfection Facility and Phase 2 of the Residuals Management Plan. The scope of work for this assignment included the design for:

- A new Ultraviolet Disinfection Facility
- A new Residuals Management Facility with thickening and dewatering equipment
- Replacement and upgrade of the Plant's electrical substation and electrical systems, required to meet the additional power requirements for the new Ultraviolet Disinfection and Residuals Management Facilities.

As the preliminary design advanced, the plant staff discovered unanticipated process issues associated with the operation of the Phase 1 components of the Residuals Management Facility. Specific issues included the inability to pump out excess lake water entering each basin due to unprecedented high lake levels in Lake Ontario, and a grid of internal tank support columns and shallow benching, which resulted in inconsistent solids concentrations. These issues would impact the operation of the future Phase 2 Residuals Management Facility.

As a result, in June 2020, Purchase Order Number 6047271 was amended (Purchase Order Amendment 1) to address the process limitations associated with the Phase 1 components of the Residuals Management Facility. Additionally, with the planned electrical upgrades, the opportunity was taken to integrate the complex installation of photovoltaic solar panels and a battery energy storage system into the Plant's overall electrical system.

### **Amendment for Purchase Order Number 6047271 for Detailed Design Services**

Currently, the design is 90 per cent complete and the contingency remaining is \$8,856 (net of all applicable taxes and charges). To complete the design and prepare the tender documents, several provisional tasks need to be completed; however, the provisional funds allocated for these tasks were used for unanticipated additional geotechnical and hydrogeological investigations. Additionally, there are several other new and unforeseen items that were not anticipated at the time of the Request for Proposal, which necessitate additional funding approval. A summary of these tasks is shown in Table 2 below:

**Table 2: Summary of Additional Design Services required under Purchase Order Amendment 2**

1	Planned - Vibration Analysis
2	Planned - Project Specific Designed Substances Survey
3	Planned - Constructability Value Engineering workshops
4	Additional - Design for a new standby diesel generator for the new UV/RMF building critical loads
5	Additional - Toronto Green Standard V4 requirements
6	Additional - Electrical HAZOP Workshops to support Solar and BESS design integration into the plant's electrical system
7	Unforeseen – Subsurface utility survey due to duct bank routing change
8	Unforeseen - Additional Geotechnical investigation for new forcemain from the new SPS
9	Unforeseen - Additional archaeological investigation

Engineering and Construction Services and Toronto Water have reviewed AECOM Canada Ltd.'s estimates for the additional professional services required for completion of the design and found them to be fair and reasonable for the effort required.

The total amount for additional professional services fees is \$436,616 net of all applicable taxes and charges (\$444,301 net of Harmonized Sales Tax recoveries), which includes an allowance to address unforeseen amendments or additions to complete the design and issue the construction tender.

The Purchase Order Amendment revises the current Purchase Order value from \$5,853,916 net of all applicable taxes and charges (\$5,956,945 net of Harmonized Sales Tax recoveries) to \$6,290,532 net of all applicable taxes and charges (\$6,401,245 net of Harmonized Sales Tax recoveries) and revises the total value of the assignment awarded to AECOM from \$9,854,174 net of all taxes and charges (\$10,027,607 net of Harmonized Sales Tax recoveries) to \$10,290,790 net of all taxes and charges (\$10,471,908 net of Harmonized Sales Tax recoveries).

## **CONTACT**

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## **SIGNATURE**

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