

Award of Contract Number 19ECS-MI-01AB for the Waste Activated Sludge Thickening Facility and South Substation Upgrades Project at the Ashbridges Bay Treatment Plant, and Amendment to Purchase Orders for Detailed Design Services and for Contract Administration Services

Date: June 18, 2021

To: Infrastructure and Environment Committee

From: Chief Engineer and Executive Director, Engineering and Construction Services, General Manager, Toronto Water and Chief Procurement Officer, Purchasing and Materials Management

Wards: 14 (Toronto-Danforth)

SUMMARY

The purpose of this report is to advise of the results of Request for Tender Document Number 2736063782, Contract Number 19ECS-MI-01AB, for the Waste Activated Sludge Thickening Facility and South Substation Upgrades Project at the Ashbridges Bay Treatment Plant and request authority to award the contract to Kenaidan Contracting Limited, in the amount of \$139,355,528 net of all applicable taxes and charges (\$141,808,185 net of HST recoveries).

Authority is also being requested to amend Purchase Order Number 6037889 with Black & Veatch Canada Company, for the provision of Detailed Design Services, in the amount of \$752,541 net of all applicable taxes and charges (\$765,786 net of HST recoveries) and to amend Purchase Order Number 6045912 with Black & Veatch Canada Company, for the provision of Contract Administration Services in the amount of \$7,334,324 net of all applicable taxes and charges (\$7,463,408 net of HST recoveries).

Further, authority is being requested to reallocate project costs and cash flows in Toronto Water's Approved 2021 Capital Budget and Approved 2022-2030 Capital Plan in the amount of \$7,463,408 million from a project that will be awarded under budget to support the cost of the recommended amendments to Purchase Order Number 6045912.

RECOMMENDATIONS

The Chief Engineer and Executive Director, Engineering and Construction Services, the General Manager of Toronto Water and the Chief Procurement Officer, Purchasing and Materials Management recommend that:

1. City Council, in accordance with Section 195-8.5 of the Toronto Municipal Code Chapter 195 (Purchasing By-Law), grant authority to award Contract Number 19ECS-MI-01AB, Request for Tender Document Number 2736063782, for the Waste Activated Sludge Thickening Facility and South Substation Upgrades Project at the Ashbridges Bay Treatment Plant, in the amount of \$139,355,528 net of all applicable taxes and charges (\$141,808,186 net of HST recoveries) to Kenaidan Contracting Limited, having submitted the lowest compliant bid and meeting the specifications in conformance with the Tender requirements.

2. City Council grant authority to amend Purchase Order 6037889 with Black & Veatch Canada Company, for Detailed Design Services by increasing the value by \$752,541 net of all applicable taxes charges (\$765,786 net of HST recoveries), from \$7,787,836 net of all applicable taxes and charges (\$7,924,902 net of HST recoveries) to \$8,540,377 net of all applicable taxes and charges (\$8,690,688 net of HST recoveries).

3. City Council grant authority to amend Purchase Order 6045912 with Black and Veatch Ltd., for Contract Administration Services by increasing the value by \$7,334,324 net of all applicable taxes and charges (\$7,463,408 net of HST recoveries), from \$8,645,938 net of all applicable taxes and charges (\$8,798,111 net of HST recoveries) to \$15,980,262 net of all applicable taxes and charges (\$16,261,515 net of HST recoveries), subject to approval of Recommendation 4 below.

4. City Council authorize the reallocation of project costs and cash flows in Toronto Water's Approved 2021 Capital Budget and 2022-2030 Capital Plan in the amount of \$7,463,408 from Contract Number 19ECS-MI-01AB that will be awarded under budget to support the recommended amendments to Purchase Order Number 6045912, as presented in Table 4 of the Financial Impact Statement, with a zero Budget impact to Toronto Water.

FINANCIAL IMPACT

1) Award for Contract Number 19ECS-MI-01AB

The total value of the contract award for Contract Number 19ECS-MI-01AB, for the Waste Activated Sludge Thickening Facility and South Substation Upgrades Project at the Ashbridges Bay Treatment Plant is \$157,471,747 including HST and all applicable charges. The total cost to the City including contingency and provisional sums is \$141,808,186 net of HST recoveries.

HST recoveries). The total cost to the City is \$7,463,408 net of HST recoveries. Funding requirements with forecasted expenditures (net of HST recoveries) are summarized in Table 3 below.

Table 3: Financial Impact Summary of Purchase Order Amendment for Contract Administration Services

WBS Element	2021	2022	2023	2024	2025	Total
CWW043-04 (Waste Activated Sludge Upgrade - Eng)	\$0	\$2,000,000	\$2,000,000	\$2,000,000	\$1,463,408	\$7,463,408

Currently, there is insufficient funding in Toronto Water's Approved 2021 Capital Budget and 2022-2030 Capital Plan to permit the amendment of Purchase Order for Contract Administration Services. Additional funding is required to accommodate costs as shown in Table 3 above.

The approval of this report will authorize the reallocation of funding for additional project costs to support the amendment of Purchase Order 6045912 as outlined in Table 4 below. The additional costs for the amendment will be offset from funds available within the construction budget for this Project, which is being recommended for award under budget. There are no additional costs to the City as a result of the approval of this report.

Table 4: Budget Adjustment Reallocations

Program Area	Account Number	2022 Proposed Reallocation	2023 Proposed Reallocation	2024 Proposed Reallocation	2025 Proposed Reallocation	Total Reallocation
Ashbridges Bay Wastewater Treatment	CWW043-04 (Waste Activated Sludge Upgrade– Eng)	\$2,000,000	\$2,000,000	\$2,000,000	\$1,463,408	\$7,463,408
Ashbridges Bay Wastewater Treatment Plant	CWW043-06 (Waste Activated Sludge Upgrade– Cons)	(\$2,000,000)	(\$2,000,000)	(\$2,000,000)	(\$1,463,408)	(\$7,463,408)
	TOTAL	\$0	\$0	\$0	\$0	\$0

Subject to approval of the reallocation of funding outlined in Table 4, funding for this Purchase Order Amendment will be included in Toronto Water's Approved 2021 Capital Award of Contract No. 19ECS-MI-01AB for the Waste Activated Sludge Thickening Facility And South Substation Upgrades at the Ashbridges Bay Treatment Plant

Budget and 2022-2030 Capital Plan under account CWW043-04 – Waste Activated Sludge Upgrade – Eng, with forecasted expenditures outlined in Table 3 above.

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

DECISION HISTORY

At its meeting held on July 3, 2013, the Bid Committee adopted the recommendations in the staff report from the Director of Purchasing and Materials Management dated June 14, 2013, and authorized the retention of Black & Veatch Canada Company, to provide engineering services during design and construction for the Waste Activated Sludge Thickening Project at the Ashbridges Bay Treatment Plant. The Waste Activated Sludge Thickening scope included the replacement of aging treatment process infrastructure. A copy of the Bid Committee Document can be found at:

[Agenda Item History - 2013.BD131.11 \(toronto.ca\)](#)

COMMENTS

Background

The Ashbridges Bay Treatment Plant receives and treats wastewater from approximately 1.6 million people before discharging treated water back into Lake Ontario. As part of the treatment process, waste activated sludge is thickened prior to processing in the digesters. The objective of the Waste Activated Sludge Thickening Facility and South Substation Upgrades Project is to replace the existing aging dissolved air flotation thickening process with more efficient centrifuge processing, and undertake upgrades to the South Substation electrical facility to support the new process and associated facilities at the treatment plant.

The scope of this capital project includes the following:

- A new thickened waste system using centrifuges, to replace the existing dissolved air flotation system, including feed/distribution systems and the associated piping, equalization/storage, thickened waste hoppers, transfer pumps and the associated piping, and collection and transfer system and the associated piping and pumping;
- Demolition of the existing incinerators and related equipment;
- Demolition of the existing heat recovery and incineration buildings;
- Construction of a new building to accommodate the new waste activated sludge system;
- Installation of electrical equipment and construction of an electrical room;
- Replacement of identified electrical infrastructure within the South Substation, architectural retrofits to the building exterior, and refurbishment of the roof;
- Demolition of the existing dissolved air flotation mechanical system and modifications to the existing structure.

The Engineering Consultant retained for the Design and Contract Administration of this Project was Black & Veatch Canada Company. The design phase was initiated in October 2013 and completed in December 2019.

The Tender Call for the construction work Contract Number 19ECS-MI-01AB was issued in December 2020, and closed in April 2021.

1) Award of Contract Number 19ECS-MI-01AB, Tender Call Doc 2736063782 Prequalification of Contractors

Due to the complex nature of the construction contract, the City pre-qualified the general contractors by requesting that they demonstrate experience in successfully delivering projects of similar scope and complexity.

Request for Supplier Prequalification Number Doc2507651818 (9117-20-7074) for the Pre-qualification of Contracting Services for the Waste Activated Sludge Thickening Facility and South Substation Upgrades was issued by the Purchasing and Materials Management Division, and was advertised on the City's website on July 14, 2020.

Tender Call Doc2507651818 closed on August 21, 2020. The following four (4) General Contracting firms met the minimum technical threshold outlined in the Request to Prequalify and pre-qualified to bid on the subsequent Tender Call.

1. Alberici Constructors Limited
2. Graham Construction and Engineering Incorporated
3. Maple Reinders Constructors Limited
4. Kenaidan Contracting Limited

Award

Contract Number 19ECS-MI-01AB, for the Waste Activated Sludge Thickening Facility and South Substation Upgrades project at Ashbridges Bay Treatment Plant was issued by Purchasing and Materials Management Division, and was advertised on the City's website on December 11, 2020 and the Tender Call was closed on May 7, 2021.

The submissions received from the two (2) bidders that responded to Tender Call Doc2736063782 Contract Number 19ECS-MI-01AB, were reviewed and evaluated by staff from Purchasing and Materials Management Division, Engineering and Construction Services and the Engineering Consultant and were found to be in conformance with the Tender requirements. The results are shown in the table below:

Bidders	Bid Price excluding HST *
Maple Reinders Constructors Limited	\$131,267,530
Kenaidan Contracting Limited	\$116,129,607

*Pursuant to the Request for Tender document the contract award price includes contingency. Bid prices shown do not include contingency.

The bid price of the recommended bidder in the amount of \$116,129,607 net of all applicable taxes and charges is approximately sixteen (16) percent lower than the pre-tender engineering estimate of \$138,351,442 net of all applicable taxes and charges.

A contingency allowance of \$23,225,922 (net of HST), on the base scope of work is included in the proposed contract award for additional work and/or services which may be required to address any unforeseen conditions which may arise during construction. This level of contingency (20%) is deemed necessary to address the significant risks associated with the retrofit work of an older operating plant such as Ashbridges Bay Treatment Plant. The retrofits will be undertaken while the plant remains fully operational, and must at all times meet regulatory compliance requirements. The construction area is in the centre of the plant and will interact with adjacent construction projects and operating areas. The total contract price is \$141,808,185 (net of HST recoveries).

The Fair Wage Office reported that the recommended Bidder indicated they have reviewed and understands the Fair Wage Policy and Labour Trades requirements and the recommended Bidder has agreed to comply fully.

The Tender submission from Kenaidan Contracting Limited, for Contract Number 19ECS-MI-01AB, includes their agreement to complete the works within 274 weeks from the date of the written order to commence work is issued by the City.

2) Recommended Adjustments to Detailed Design and Contract

Administration Fees

In 2012, the City of Toronto issued Request for Proposal 9117-12-7246 to replace the aging dissolved air flotation thickening process with more efficient centrifuge processing, as well as upgrade the South Substation electrical facility at the Ashbridges Bay Treatment Plant. Black & Veatch Canada Company, was retained to provide Engineering services during design and construction for the Waste Activated Sludge Thickening Project. The scope of the detailed design assignment included the following:

- A new thickened waste system using centrifuges, to replace the existing dissolved air flotation system;
- Review the Waste Activated Sludge Thickening Study (2011) and verification of process recommendations therein, including the proposed system capacity, and the size and number of required centrifuges;
- Detailed hydraulics, for all systems, with sensitivity analysis for flows varying by plus/minus 30%;
- Evaluation and design for relocation and incorporation of two spare centrifuges owned by the City and located at the Humber Treatment Plant;
- Pre-selection of new centrifuges;
- Development and integration of a new waste activated sludge feed pumping control strategy, coordinated with the City for system optimization;

- A control strategy, integrated with upstream pumping and downstream digester processes;
- Designated substances survey and abatement of the decommissioned incinerator building as well as the heat recovery building;
- Upgrade the South Substation electrical facility.

The Request for Proposal directed consultants to assume that the existing Incinerator and Heat Recovery Buildings could be reused and repurposed as the new Thickened Waste Activated Sludge facility, and included for the possibility that a new building may be required.

Ultimately, the final design was different from either of these two scenarios, in addition to being significantly more complex. During design, it was determined that the existing buildings had too many columns that made them impractical for the intended repurposed facility for the new centrifuges. In addition, Toronto Water did not want to build a new facility that would be in an impractical location. The resulting design includes the stabilization of adjacent connected structures, extensive rerouting of utilities that pass through these buildings, selective demolition of both existing buildings, reuse and augmentation of the existing deep foundations and construction of a new structure which is then integrated back into the adjacent structures.

The complexity of the final design was substantially greater than the project description provided in the original Request for Proposal. The City predicted certain timelines for completion of the various project phases. However, the time required to arrive at the eventual project scope ultimately resulted in a significant schedule extension and increased effort by the consultant team to finalize the design and tender documents. The impact to these timelines is summarized in the table below.

	Planned			Actual		
	Start	Finish	Duration	Start	Finish	Duration
Predesign	Oct 2013	June 2014	265 days	Sept 2013	June 2016	1018 days
Detailed Design	June 2014	Nov 2015	514 days	June 2016	Dec 2019	1275 days

The detailed design phase originally planned to be completed in approximately two years was actually substantially completed in four years. When Request for Proposal 9117-12-7246 was initially written in 2011-2012, City staff estimated that the capital cost of the Project was approximately \$85 million. As the design of the Waste Activated Sludge Building and ancillary facilities was fully developed to meet the needs of Toronto Water, the estimated capital cost increased to approximately \$138 million.

a) Amendment to Purchase Order Number 6037889 for Detailed Design Services

During the extended design period, the consultant worked continuously with City staff and was paid for much of the design effort during this period with contingency and provisional allowances. During the design process, as new information became available, changes and additions requiring further engineering effort in the design and redesign, contributed to the delay in the completion of the final design package.

In addition to the use of contingency funds, in February 2019, an amendment to Purchase Order 6037889 increased the design fee by \$500,000 from \$7,287,836 to \$7,787,836. The purpose of this amendment was to provide additional funds for changes to scope associated with the assessment of options requested by City staff, and additional design effort, as the design work was underway.

At the completion of the detailed design phase Black & Veatch Canada Company, submitted a request for additional fees to cover the extended design services during the extended design phase, which included additional project management services as well as support for an extended prequalification process and an extended tender period. City staff have reviewed the request and completed an evaluation of the original Request for Proposal timelines. Staff have concluded that the additional fees are reasonable given the significant additional change of scope and review requested by Engineering and Construction Services and Toronto Water Plant staff, to the original design parameters and original anticipated timelines.

It is requested that Purchase Order Number 6037889 for Detailed Design Services be increased by a value of \$752,541 net of all applicable taxes and charges (\$765,786 net of HST recoveries), revising the current Purchase Order value from \$7,787,836 net of all applicable taxes and charges (\$7,924,901 net of HST recoveries) to \$8,540,377 net of all applicable taxes and charges (\$8,690,688 net of HST recoveries).

b) Amendment to Purchase Order Number 6045912 for Contract Administration Services

The scope of this Project is significantly different from that originally foreseen by the City, and the Contract Administration Services that were stipulated in the Request for Proposal are insufficient for the magnitude and complexity of the project being delivered.

The existing Contract Administration Services Purchase Order with Black & Veatch Canada Company, needs to be amended in order to adequately respond to the requirements of the Waste Activated Sludge Thickening and South Substation Upgrades construction contract.

The following factors contributing to the amendment are:

1. Extended Construction Schedule - The additional complexity of the project resulted in a construction schedule that was longer than originally estimated at 156 weeks. The successful bidder has confirmed a project duration of 274 weeks.

2. Complex multi-disciplinary retrofit projects require a much more intense level of effort from field staff in order to adequately address the complexities and time sensitive nature of this type of construction. Experience on recent and current large complex projects has resulted in utilization of larger site engineering teams to monitor the extensive contractor activities and co-ordinate with other projects and Plant Operations. Engineering and Construction Services staff have reviewed Black & Veatch Canada Company's revised proposal for a larger site Contract Administration team.

3. Inflationary Impacts - Due to the extension of time related to project design delivery, the fee schedule submitted during the Request for Proposal process, requires adjustment to reflect current charge out rates for Engineering Consultant staff employed on this assignment. The original Request for Proposal was issued in 2012 and awarded in 2013. According to the terms of the agreement, those proposal rates are no longer applicable. The proposal from the Engineering Consultant for the construction period of the contract has revised rates that will now be applicable from 2021 through 2026. The Agreement for the engineering services will be amended to reflect the revised schedule and rates. All other terms will remain the same.

An amendment to the Contract Administration Services Purchase Order with Black & Veatch Canada Company, is required to provide an additional 118 weeks of Contract Administration Services to align with the contract schedule of 274 weeks. It is also recommended that a contingency in the amount of \$1,420,531 be included for any unforeseen issues that may arise during construction. The total value of the Purchase Order Amendment for Purchase Order Number 6045912 is in the amount of \$7,334,324 net of all applicable taxes and charges (\$7,463,408 net of HST recoveries), revising the current Purchase Order value from \$8,645,938 net of all applicable taxes and charges (\$8,798,107 net of HST recoveries) to \$15,980,262 net of all applicable taxes and charges (\$16,261,515 net of HST recoveries).

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