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TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON JULY 20, 2015
FROM:	JOHN BRAAM, P. ENG. MANAGING DIRECTOR, ENVIRONMENT AND ENGINEERING SERVICES & CITY ENGINEER
SUBJECT:	GREENWAY WASTEWATER TREATMENT PLANT EXPANSION & UPGRADES- CONSTRUCTION CONTRACT AWARD

RECOMMENDATIONS

That, on the recommendation of the Managing Director, Environment and Engineering Services & City Engineer, the following actions **BE TAKEN** with respect to the award of the construction contract for the Greenway Wastewater Treatment Plant Expansion and Upgrades;

- (a) the tender submitted by North American Construction at its price of \$38,210,000 excluding H.S.T., for the construction of the Greenway Wastewater Treatment Plant Expansion & Upgrades **BE ACCEPTED**, it being noted that NAC submitted the lowest tender price of the five prequalified contractors and their submission meets the City's specifications and requirements in all areas;
- (b) the proposal submitted by Eramosa Engineering at its price of \$359,769.30 to complete Supervisory Control and Data Acquisition (SCADA) Integration for the project **BE APPROVED**; it being noted this work is included in the tender price as a cash allowance under the General Contract and will be assigned as a Single Source Contract under section 14.4 (e) of the City's Procurement of Goods and Services Policy;
- (c) the value of the total contract administration fees for CH2M, **BE INCREASED** by \$630,000 to \$3.7M including contingency, to cover the additional design effort and site supervision associated with a compressed construction schedule;
- (d) The Civic Administration **BE AUTHORIZED** to undertake all administrative acts that are necessary in connection with this project;
- (e) the financing for this project **BE APPROVED** as set out in the Sources of Financing Report attached hereto as Appendix "A";
- (f) the approvals given herein **BE CONDITIONAL** upon receiving Environmental Compliance Approvals from the Ministry of Environment and Climate Change, and the Corporation entering into a formal contract or issuing a purchase order for the work to be done relating to this project;
- (g) the Mayor and the City Clerk **BE AUTHORIZED** to execute any contract or other documents, if required, to give effect to these recommendations.

PREVIOUS REPORTS PERTINENT TO THIS MATTER
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CWC Report of 2015-05-05, Item 4, SCADA Integration Services

CWC Report of 2013-10-28, Item 4, Greenway Wastewater Treatment Plant Expansion & Upgrade Update

CWC Report of 2013-09-09, Item 11, Biosolids Assessment

CWC Report of 2012-05-22, Item 11, Consultant Appointment Greenway Wastewater Treatment Plant

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CWC Report of 2011-12-09, Item 14, Request to Increase Scope of RV Anderson to prepare Roadmap for Greenway Expansion

CWC Report of 2012-04-02, Item 6, Emergency Repair of Greenway 4 Final

ETC Report of 2010-07-19, Item 9, Greenway Pollution Control Center Class Environmental Assessment (EA)

COW Report of 2009-03-27, Item 3, Sanitary Conveyance and Treatment Capacities in the Greenway Sewershed

ETC Report of 2008-09-08, Item 2, Appointment of Consulting Engineer Greenway Pollution Control Plant Optimization Study and Class Environmental Assessment

BOC Report of 2008-05-28, Item 2, Wastewater and Treatment Emergent Projects

ETC Report of 2008-02-09, Item 9, Greenway Pollution Control Centre Workshop

BACKGROUND

Purpose

The purpose of this report is to recommend the award of a construction contract, assign SCADA integration services and authorize an increase in engineering fees related to the expansion of the Greenway Wastewater Treatment Plant.

Context

Greenway is the largest Wastewater Treatment plant in London with a rated capacity of 152 Megalitres per day (MLD). Additional capacity is needed to service growth in the downtown core and in the City's southern regions including part of the Southwest Area Plan (SWAP). The removal of several sewer bottlenecks and recent plant upgrades have made an expansion of Greenway more feasible than the construction of a new plant, estimated in 2013 at \$95M.

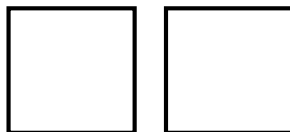
The design of an 18 MLD expansion began in May, 2012 with a focus on optimizing existing assets and improving the wet weather treatment capacity. With a replacement value of \$600-700M and servicing 60% of the City, Greenway will remain a key component of London's Wastewater Treatment Infrastructure. This project considers future capacity and environmental performance upgrades. The plant will remain operational and in compliance with its Environmental Compliance Approval (ECA) during construction.

DISCUSSION

Design Challenges

Wastewater treatment on the Greenway site dates back to the early 1900's, and even as late as 1964 the plant was referred to as the West End Sewage Treatment Plant. With time the City and the park system have filled in around Greenway to the point where this expansion must optimize the existing plant space and assets. The western fence line has been extended due to regulatory air emissions and construction safety requirements.

Three separate construction projects were originally planned for completion over six years due to the complexity and staging required. The work was compressed into a single two and a half year project in 2013 to limit impacts on local residents and park users while offering construction related efficiencies. Work will be restricted to the hours between 7:00 AM and 5:00 PM when possible.



Enhancements

Even with these site restrictions, the 18 MLD expansion will increase the wet weather treatment capacity of the plant with additional inlet capacity, incorporate Chemically Enhanced Primary Treatment (CEPT) to increase the level of treatment for wet weather flows, and create over seven megalitres of wet weather flow storage, enough to capture 60% of the normal bypass events, through repurposing of existing tanks. The new inlet will increase capacity for flows being received at the plant (reduce raw sewage overflows), and the new Chemically Enhanced Primary Treatment process will produce better effluent under high flow conditions. These environmental performance enhancements will further improve the plant's performance under wet weather, which already meets regulatory requirements.

Planning for the Future

Flexibility has been included in the design to allow for easier construction of future expansions at the plant including the ability to free up additional space within the existing fence line if needed. Planned disinfection, flood proofing and effluent pumping upgrades have been considered in this design and will make these future projects easier to construct and at a lower cost.

Public Consultation

Greenway is surrounded by residential areas and Greenway Park, which also includes an off leash dog area. Two Public Information Centres (PICs) were held as part of the Municipal Class Environmental Assessment (Class EA) process to review expansion alternatives and process selection. 19 residents attended the first PIC while 10 attended the second. Two additional meetings were held to address misplaced concerns related to expansion into Kensal Park and possible closure of the dog park. The meetings were attended by 75 and 22 residents respectively and confirmed the expansion will not affect Kensal Park and the dog park will remain in operation.

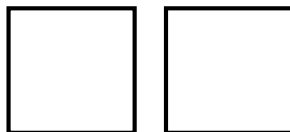
To facilitate ongoing updates information boards containing contact information and a link to a webpage dedicated to the Greenway expansion will be posted in Kensal Park and the off leash dog park area. Most recently, on May 21, the local neighbourhood was hosted at a final design review meeting at which construction impacts were also discussed.

Tendering Process

The expansion will be a complex construction project involving most of the plant's main treatment processes; a contractor experienced with similar type work will be essential to a successful project. With the help of the Purchasing Department and in conformance with the City's Procurement of Goods and Services Policy an open Request for Qualifications (RFQ) was issued to general contractors. The top five submissions were invited to tender the project. Four of the prequalified contractors submitted tenders ranging from \$38.2 to \$55.4M; the most recent Engineers estimate for the work was \$42.8M.

SCADA Integration

The need to assign SCADA integration separately from the general construction award has been discussed in a previous report to the Municipal Council. The main factor is the desire to maintain integrity and control of the system through limited access from outside parties. Eramosa has been chosen to provide the SCADA integration services for this project due to their familiarity with London's SCADA system and their involvement in the project as the main electrical and instrumentation design engineers. A SCADA integration fee of \$359,769.30 including contingency has been included as part of the cash allowance in the \$38.2M tender price submitted by North American Construction.



Financial Implications

In late 2013, the project budget was revised to \$46.1M. The engineering budget, part of this total, remained unchanged. Since then the project technically evolved, and pushed the potential construction costs over the budget. A reworking of parts of the project to achieve the intended purpose within the available budget has been successful, as evident from the tender amount; however, additional design fees were required to do this. The extra fees have been reviewed by staff and found to be warranted based on the discussion further below. The contract price is less than the budget set for it. The total project costs are now estimated to be about \$2.8M less than the total project budget.

Engineering Services.

The Engineering firms of CH2M, AECOM, and Eramosa teamed up to provide design services for this project. The design scope changed as the project progressed related to cost mitigation, hydraulic constraints due in part to the piecemeal growth of the plant and the future interconnectedness of the three treatment sections. This could only be determined after preliminary design and modelling for the proposed works. The project had previously been compressed from three separate projects to one larger project with savings realized in construction costs and a reduction of the overall project length from five - six to two and one half years. While reducing the work into one project offered significant savings and reduced impacts from construction related activities, it did require additional effort on the part of the design team and will also require more site supervision and contract administration. An increase in the number of drawings from 183 estimated at the proposal stage to 393 at time of tender illustrates the increased level of effort and complexity.

The consultants based their original fee proposal on a total tender price of \$30M. In consideration of the extra design effort and an actual tender price of \$38.2M, they have requested additional fees in line with their original percentage rates of 5.79% for design and 3.54% for engineering supervision. The recommendation is to increase the design fees to \$2.212M with no contingency, and engineering supervision fees to \$1.488M including a 20% contingency. This increases the total engineering fees to \$3.7M or 9.69% of the total contract value. The original engineering proposal was \$3.08 M including contingency, or 10.2% of \$30M. Engineering fees for projects of this size normally range from 10-15% of the total project value; the new engineering budget is in line with project benchmarks.

Summary

At a cost of \$2.1 M per MLD this expansion represents good value for the City and, in combination with the recently completed biosolids upgrades, will help ensure the long term sustainability of the City's wastewater treatment system. Greenfield construction of an equivalent treatment capacity is in the range of \$3.3M per MLD while the new Southside plant would cost an estimated \$5M per MLD including the necessary conveyance and discharge sewers.

The project will not only increase the treatment capacity of Greenway, but will also increase and improve the wet weather treatment capabilities of the plant while ensuring it continues to produce high quality effluent.

The project schedule has been compressed by combining three contracts into one. This benefits the surrounding neighbourhood and park users by significantly reducing the construction schedule, and benefits the project cost as well; however, it complicated the design and requires more investment in engineering than originally anticipated. The net effect is a lower total project budget.

The neighbourhood has been consulted and is well aware of the project, its timelines and efforts to mitigate impacts. To facilitate ongoing updates information boards containing contact information and a link to a webpage dedicated to the Greenway expansion will be posted in Kensal Park and the off leash dog park area.

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ACKNOWLEDGEMENTS

This report was prepared with the assistance of Kirby Oudekerk, P.Eng., Environmental Services Engineer.

PREPARED BY:	
GEORDIE GAULD DIVISION MANAGER WASTEWATER TREATMENT OPERATIONS	
REVIEWED BY:	RECOMMENDED BY:
JOHN LUCAS, P. ENG. DIRECTOR, WATER and WASTEWATER	JOHN BRAAM, P.ENG.MANAGING DIRECTOR, ENVIRONMENTAL & ENGINEERING SERVICES & CITY ENGINEER

Attachments:
 Appendix "A" -- Sources of Financing Report

cc
 CH2M, AECOM, Eramosa
 North American Construction