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TO:	**CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON MAY 14, 2012**
FROM:	**JOHN BRAAM, P. ENG. ACTING EXECUTIVE DIRECTOR, PLANNING, ENVIRONMENTAL AND ENGINEERING SERVICES & CITY ENGINEER**
SUBJECT:	**CONSULTANT APPOINTMENT GREENWAY WASTEWATER TREATMENT PLANT EXPANSION PROJECT ES2685**

RECOMMENDATION

That, on the recommendation of the Acting Executive Director Planning, Environmental and Engineering Services and City Engineer, the following actions **BE TAKEN** with respect to the award of pre-design, detailed design, and contract administration for the Greenway Wastewater Treatment Plant Expansion.

a) CH2MHill (project lead) along with partners, Aecom and Eramosa **BE APPOINTED** Consulting Engineers for the design and contract administration of the Greenway Wastewater Treatment Plant expansion and upgrade for the amount of $ 3,079,994.50, including contingency and excluding HST, in accordance with Section 15, Clause 15.2 (e) of the Procurement of Goods and Services Policy;

b) the financing for the project **BE APPROVED** in accordance with the "Sources of Financing Report" attached hereto as Appendix "A";

c) the consulting fees for the project identified in (a), above, **BE IN ACCORDANCE** with the estimate, on file, which are based upon the Fee Guideline for Professional Engineering Services, 2006, recommended by the Ontario Society of Professional Engineers;

d) the approvals given herein **BE CONDITIONAL** upon the Corporation entering into a formal contract with the consultant for the work; and

e) the Mayor and 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

Civic Works Committee Report. Request to Increase the Scope of RV Anderson and Associates related to Preliminary Work on the Expansion of the Greenway Wastewater Treatment Plant ES2685. Meeting on December 19, 2011. Agenda Item #14, Page 76.

Built and Natural Environment Committee Report. Tender 11-90 Greenway Wastewater Treatment Plant Ash Handling Project 5165-11, Meeting on November 14, 2011, Agenda Item # 11, Page 80.

Environment and Transportation Committee Report. Greenway Pollution Control Centre Class Environmental Assessment. Meeting on July 19, 2010. Agenda Item #9, Page 63.

Environment and Transportation Committee Report. Greenway PCC Optimization Study and Class EA. Appointment of Consultant. Meeting on September 8, 2008. Agenda Item #2, Page 5.

BACKGROUND

Purpose:

A Class Environmental Assessment (EA) was completed in 2009 for an 18 mega litre per day (MLD) expansion and upgrade of the Greenway Wastewater Treatment Plant to service growth in the City of London. This report recommends the engineering team of CH2MHill, Aecom and Eramosa for the design of the expansion and upgrade.

Background:

The Greenway Wastewater Treatment Plant is London's largest treatment plant and a crucial component of the City's wastewater treatment infrastructure. The facility has undergone many expansions since its inception in the early 1900s. The current configuration consists of a common headworks for screening and grit removal, three liquid treatment trains (Sections 1, 2 and 3) and biosolids thickening, dewatering and incineration.

With the recent projects to remove the old multi-hearth sludge incinerator, add rotating drum thickeners and centrifuges, and improve ash handling, there is now sufficient space at Greenway to increase the capacity from 152 to 170 mega litres per day (MLD).

A Greenway Expansion Roadmap Technical Memorandum was prepared in 2011/2012 with the objectives to increase the rated capacity of the plant, improve effluent quality to meet future effluent criteria and enable the plant to handle and treat combined sewer overflows (CSOs) to meet criteria from the Ministry of the Environment's Procedure F-5-5 *Determination of Treatment Requirements for Municipal and Private Combined and Partially Separated Sewer System.*

The proposed expansion will optimize the existing assets reducing the cost of construction to approximately half that of new capacity. The EA identified two 9 MLD expansions for the Greenway plant, with an expected cost for the first 9 MLD expansion between $19 million and $27 million. The expected cost for an 18 MLD expansion, as identified in the expansion roadmap, is $30 million. Expanding Greenway by 18 MLD at this time will also allow the deferral of $3M in works at Vauxhall and $12 million at Adelaide as planned over the next 10 years. Flows can be diverted from Vauxhall to Greenway through minor sewer reconfigurations and from Adelaide through the existing Medway pumping station. Diverting the flows in this way offers the following advantages:

- At Greenway, the conveyance systems and works will be common and it will be cheaper and more efficient to size new pipes, inlet works and finals for 18 MLD now rather than rebuild them in the future to handle another 9 MLD; an 18 MLD expansion at Greenway is optimal at this time.
- Future capacity expansions can be optimized and sized across the combined system as needed. For example, currently the need for an additional 2 MLD at Adelaide will trigger a 4 MLD expansion at that plant. With the combined system, a 2 MLD expansion can potentially be done at the smaller Vauxhall plant where a smaller expansion may be more practical.
- These assets, including the electrical and mechanical equipment, have a finite life cycle which begins when the assets are commissioned, regardless of the utilization rate. This strategy will allow more effective utilization of assets.
- Many of the operating and maintenance costs for these assets are non-variable and do not reflect the utilization of the capacity - they are 100%, regardless of the actual flows. Maximizing the utilization of the assets reduces the overall operations and maintenance costs per mega litre treated.

Increased wet weather flow from inflow and infiltration in sewers can lead to basement flooding, combined sewer overflows and bypasses at treatment plants. The majority of excess flows above the rated capacity of Greenway already receive partial treatment in primary clarifiers before discharge to the river (a secondary bypass). Chemically Enhanced Primary Treatment (CEPT) improves solids removals in primary clarifiers through the use of coagulants (metal salts) and flocculants (polymers).

The Roadmap was prepared to confirm dry weather and wet weather capacity and develop a logical sequence for phasing the work. The project will be further complicated by the need to keep the plant in operation through the various construction phases. Computer simulations were undertaken to ensure the hydraulics and treatment efficiencies can be achieved and as the design proceeds, further enhancements will be evaluated in the context of reducing costs and enhancing the value of the works.

The proposed expansion will be completed in three phases as follows:

Phase 1

- Construction of a new headworks building to treat the flow from the Gordon Avenue (or Westminster)Trunks from the south;
- Construction of new waste activated sludge storage and sludge off-loading facilities to free up space in the existing ash basin area for final clarifiers;
- Re-configuration and re-rating of Section 2 with new anoxic and swing zones and increased capacity;
- Re-configuration of the Section 2 primary clarifiers for Chemically Enhanced Primary Treatment (CEPT) for treatment of excessive wet weather flows; and
- Installation of a new effluent outfall for increased capacity.

Phase 2

- Construction of new final clarifiers for Section 3;
- Decommissioning of existing Section 3 final clarifiers;
- Re-configuration and re-rating of Section 3; and
- Re-configuration of Section 3 primary clarifiers for Chemically Enhanced Primary Treatment (CEPT) for wet weather flow conditions.

Phase 3

- Conversion and decommissioning of Section 3 final clarifiers to Section 1 aeration tanks;
- De-commission existing Section 1 aeration tanks;
- Provision of co-treatment of Section 1 and 3 raw sewage in Section 3 primary clarifiers;
- Re-configuration and re-rating of Section 1; and
- Re-configuration of Section 1 primary clarifiers for Chemically Enhanced Primary Treatment (CEPT) for wet weather flow conditions.

The addition of new capacity for dry weather and wet weather flow will enable a number of process improvements with the expansion as described below:

- The new headworks will clear up a flow splitting bottleneck that limits the amount of flow that can reach Sections 2 and 3.
- The addition of new Section 3 final clarifiers will allow the existing inefficient clarifiers to be abandoned and re-configured as aeration tanks to replace existing shallow and inefficient aeration tanks in Section 1.
- The new effluent configuration will allow disinfection of the secondary effluent using the existing UV system while the wet weather CEPT effluent will be disinfected using peracetic

acid, (PAA) a much less capital intensive alternative. Both effluents will be combined in a common outfall to the river.
- The addition of anoxic and swing zones in each section will increase capacity, reduce power consumption, and provide denitrification of wastewater which helps meet emerging future standards for nitrite and nitrate removal.
- Split flow treatment where wet weather flow is fed directly to aeration while CEPT is underway will minimize the potential for raw wastewater bypasses.

Discussion

Given the anticipated fees for the project and the complexity of the assignment, the procurement of consulting services followed a two stage process with Requests for Expressions of Interest (EOI) and Requests for Proposals (RFP).

Four (4) EOI submissions were received on February 16, 2012. A review by a team from Wastewater Treatment Operations, JEB Project Support Services and RV Anderson and Associates (RVA) determined that 3 of the consultant teams would be requested to submit proposals. RFP 12-15 was provided to the short listed teams on March 12, 2012 and Proposals were received on April 11, 2012.

An evaluation by WTO, JEB Project Support Services and RVA was conducted and the proposal from the partnered team of CH2MHill, Aecom and Eramosa offers the City the highest value on this project.

Conclusions:

The expansion and upgrade of the Greenway Wastewater Treatment Plant will provide the City of London with an additional 18 MLD of capacity to service the Greenway, Vauxhall and Adelaide sewersheds. The capacity can be utilized to defer an additional $15 million in expansions while minimizing increases in operating and maintenance costs across this combined system. This flexibility will better allow the City to target and optimise future expansions. The upgrades will include chemically enhanced primary treatment to handle and treat wet weather flows to Ministry of the Environment Procedure F-5-5 standards. When all three phases of the expansion are complete, the plant is projected to have an increased rated capacity of 170 MLD and a wet weather treatment capacity of 512 MLD.

The phased approach for expansion and upgrades will allow the plant to remain operational while construction contracts are underway.

The procurement of engineering services followed a two stage process where Requests for Expressions of Interest were received and evaluated to select a short list of consultants who were then invited to submit detailed proposals.

Based on a review of the 3 short-listed proposals by a team from Wastewater Treatment Operations, JEB Project Service Support Services and RV Anderson and Associates, it is recommended that the partnered consulting team of CH2MHill, Aecom and Eramosa be appointed to carry out the detailed design and construction administration for all expansion phases.

Acknowledgements:

This report was prepared within the Wastewater Treatment Operations Division by Richard Todd, P. Eng. Environmental Services Engineer.

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SUBMITTED BY:	RECOMMENDED BY:
GEORDIE GAULD **DIVISION MANAGER** **WASTEWATER & TREATMENT OPERATIONS**	**JOHN BRAAM, P.ENG.** **ACTING EXECUTIVE DIRECTOR, PLANNING, ENVIRONMENTAL AND ENGINEERING SERVICES AND CITY ENGINEER**

May 9, 2012

RJT/rjt

Attach: Appendix “A” – Sources of Financing

c.c. Mr. Warren Saint, P.Eng. – CH2MHill