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CONSULTING SERVICES FEE INCREASE FOR CHANGE IN SCOPE FOR NOBLETON WATER SUPPLY PROJECT TOWNSHIP OF KING - PROJECT 73160

The Environmental Services Committee recommends the adoption of the recommendations contained in the following report dated October 3, 2011, from the Commissioner of Environmental Services.

1. RECOMMENDATIONS

It is recommended that:

1. Regional Council authorize an increase Blanket Purchase Order B00010744 issued to First Nations Engineering Services Ltd. for the Nobleton Water Supply Project from \$538,960 to \$788,095, excluding HST, for additional consulting services outside the original scope of work and in excess of the contingency and scope change allowance in the Purchasing By-law.
2. The Commissioner of Environmental Services be authorized to adjust the contract administration and site inspection fee using the competitive unit price of \$4,767 per week, excluding HST, to match the actual construction duration in the event future unforeseen delays are encountered, subject to staying within total budget authority for this project.

2. PURPOSE

This report seeks Council authorization to increase Blanket Purchase Order B00010744 issued for additional First Nations Engineering Services Ltd. consulting services outside the original scope of work for the Nobleton Water Supply Project beyond the scope and contingency change allowance provided for in the Purchasing By-law.

3. BACKGROUND

The original bid for consulting services provided a cost savings for the project

The procurement of this engineering assignment resulted in First Nations Engineering Services Ltd. being the successful low bidder for the initially defined work scope with fees of \$477,560. The price from the next low bidder was \$682,697.

During the design stage of this project, additional work scope was required in the amount of \$61,400 which brought the purchase order for this assignment to its current value of \$538,960.

Additional water supply to provide water for Nobleton's ultimate population projection of 6,500 people

The Environmental Assessment for the additional water supply for Nobleton was completed in 2008. The environmental assessment determined that a new well and pumphouse were required to meet the water demand of Nobleton's ultimate population projection of 6,500 people as well as to provide firm capacity in the system.

The environmental assessment also included a groundwater investigation which found the new production well for Nobleton. This well was drilled, tested and developed in 2006 under this groundwater investigation.

First Nations Engineering Services Ltd. was procured through the competitive bid process to design the new water supply system which was completed in 2010.

New production well could not be restored to sand-free condition

Prior to design completion, the new production well was performance tested to ensure it was still a viable water source after sitting idle for about three years. Results indicated that the capacity remained unchanged, but there was an excessive amount of sand in the water.

While in 2006, the original drillers of the well were able to bring it to a sand free condition, several subsequent attempts to re-develop the well at their own cost failed to establish a sand free condition.

A new location for this production well was found on the same site and no longer located under pumphouse

Since the well could not be developed to a sand free condition, the Region, along with their consultants, decided that a new location for the production well was needed and a new well drilled. A new location for this well was found on the same site. In the spring of 2011, a test hole was drilled to measure the well capacity and test the water. The test hole brought favorable results and more testing was completed in the summer of 2011, which confirmed the viability of the relocated well.

The new well is currently being drilled and developed and the new well and pumphouse centre will be awarded and commence construction in early 2012.

Nobleton Pumphouse No. 4 was designed to be located above the production well as is normally done at most of the well pumphouses in York Region. The new location of the

well on the site requires re-design work of the architectural, structural, mechanical and electrical drawings as well as the site and landscape plans.

Delay in the new pumphouse does not affect water supply to the Nobleton community

The existing water supply system in Nobleton has an excess capacity of approximately 466 new units and these new units have only started connecting to the system this past year. As a result, it is anticipated that the additional water supply capacity will not be required in Nobleton until 2013.

The proposed schedule involves completing design revisions and tendering this fall with construction to start in spring 2012 with completion of the work by the end of 2012.

4. ANALYSIS AND OPTIONS

First Nations Engineering Services Ltd. provided quotes for change in scope activities essential to address various new project requirements and the changed conditions. Staff reviewed these quotations to ensure the level of effort is reasonable and in line with their original financial proposal for the assignment. Furthermore, since First Nations Engineering Services Ltd. continues to provide services on this project for the original scope of work, extending their assignment represents the best value to the Region for completing the additional required work. Costs for additional work is summarized in Table 1 in the following section.

New well location requires most of the design drawings to be revised

The location and design of the proposed pumphouse was based on the original location of the well. As per the Region's normal practice, the pumphouse was situated above the well which required the pumphouse to be designed in a manner to be able to gain access to the well. This was done through a hatch in the roof.

Not having the well underneath the pumphouse affects most of the architectural drawings, most of the mechanical and electrical drawings and some of the structural and process drawings. Moving the well to another location on the site affects all the site plans and landscaping drawings as well as the requirement of new drawings.

The cost for the re-design is \$45,000 and is summarized in Table 1.

Need for the elevated tank feed results in separating the project into two contracts

This project was originally to be completed as one contract for the pumphouse and watermain along the south and north ends of Highway 27 in Nobleton. Although the

pumphouse was delayed due to the issue with the well, the elevated tank project continued to go forward with completion scheduled for early 2012. This requires the watermain feed along Highway 27 at the north end to be constructed under a separate contract.

This work includes preparing a separate tender package which includes a drawing set and tender documents as well as participating in separate legal review and tender processes.

The cost for separating the project into two contracts is \$19,000 and is summarized in Table 1.

Construction of the watermain to feed the new elevated tank requires additional contract administration and site inspection

It is anticipated that construction of the watermain to feed the new elevated tank in Nobleton will take approximately 40 working days. First Nations Engineering Services Ltd.'s original fee proposal included a daily rate for contract administration of \$235.27 for an additional fee of \$9,411 and a daily rate for site inspection of \$718.11 for an additional fee of \$28,724.

The total cost for additional contract administration and site inspection for the elevated tank feed is \$38,135 and is summarized in Table 1.

Other works completed since the design was finalized prompted the need for additional field survey

Due to the delay of the project, new construction works in the community of Nobleton have been completed by developers and Transportation Services department. These completed works have changed some of the site conditions related to the original design and therefore additional field survey work was required to confirm the new site conditions. Changes to the design were completed as required.

The cost for the required additional field survey work is \$8,000 and is summarized in Table 1.

With two new facilities in Nobleton, the Process Control Narrative for the entire water system needs to be updated

When a consultant designs a facility for the Region, they are required to prepare a process control narrative for that facility. The process control narrative explains how the facility is designed to operate. In most cases, the facility is part of a larger system.

This proposed pumphouse will be the last piece of the Nobleton water system which includes two other pumphouses and two elevated tanks. The process control narrative for

the pumphouse requires updating to include the entire water system so there is only one system process control narrative instead of five individuals ones.

The cost to update the process control narrative to include the entire Nobleton water system is \$18,000 and is summarized in Table 1.

New Supervisory Control and Data Acquisition standards were finalized in September 2011 and will be incorporated into this contract

The Supervisory Control and Data Acquisition Programmable Control Systems design standards and construction specifications were recently updated and the project delay provides the opportunity to update the project documents and drawings prior to going to tender. To wait and deal with these changes during construction will ultimately delay completion of the project.

The cost to incorporate the new Supervisory Control and Data Acquisition/Programmable Control Systems standards into the design and specifications of this project is \$14,000 and is summarized in Table 1.

New water and sewer pumphouse connections required revisions to the Toronto and Region Conservation Authority submission

Design of the water and sewer connection for the new pumphouse was revised, in co-operation with the Township of King, to accommodate servicing local residents along Highway 27 adjacent to the pumphouse.

The revised water and sewer design also required the original submission to the Toronto and Region Conservation Authority to be revised and re-submitted for review.

The cost of the revised Toronto and Region Conservation Authority submission is \$12,000 and is summarized in Table 1.

Pumphouse No.3 in Nobleton has a different Remote Programmable Unit than the other facilities

Environmental Services is implementing a program to replace existing Remote Programmable Units in all water and wastewater facilities in York Region. The Remote Programmable Unit holds the programming for the facility to allow it to operate automatically and requires communication with the other facilities. The new Remote Programmable Units are a different make than the existing Remote Programmable Units which will make communication between the different Remote Programmable Units less than ideal.

Staff recently completed a pilot project to replace the Remote Programmable Units in a number of water and wastewater facilities. This pilot project included replacing the

Remote Programmable Units in the existing Nobleton Pumphouse No.2 and the existing Nobleton elevated tank. With the new pumphouse and the new elevated tank being constructed with the new Remote Programmable Units, this left the existing Nobleton Pumphouse No.3 as the only facility in the Nobleton water system with an old Remote Programmable Unit.

To ensure proper communication between all the facilities in Nobleton, the Remote Programmable Unit in Pumphouse No. 3 needs to be replaced with a new Remote Programmable Unit. Adequate funding for this work is included in the Operations, Maintenance and Monitoring program to replace all the existing Remote Programmable Units in water and wastewater facilities in York Region.

The cost for engineering to replace the existing Remote Programmable Unit in Nobleton Pumphouse No.3 with a new Remote Programmable Unit under this contract is \$95,000 and is summarized in Table 1 below. This cost is in line with the engineering completed in the pilot project.

5. FINANCIAL IMPLICATIONS

The total requested consulting services fee increase for the additional required project scope, as summarized in the Table 1 is \$249,135, exclusive of HST.

Table 1
Summary of Fee Increase for Additional Required Project Scope

Item No.	Description	Fee (\$)
1	Re-design pumphouse and site for new well location	45,000
2	Separate project into two contracts	19,000
3	Additional contract administration and site inspection	38,135
4	Additional field survey	8,000
5	Update Process Control Narrative for Nobleton Water System	18,000
6	Update Supervisory Control and Data Acquisition specifications with latest standards	14,000
7	Update Toronto and Region Conservation Authority submission	12,000
8	Include new Remote Programmable Unit for Nobleton Well 3	95,000
Total Fee Increase		\$249,135

Sufficient funding available in the approved 2011 Total Project Budget Authority to complete the additional scope

The total project estimate is \$8,950,000 which includes the consultant fees for planning, design and construction, property and the construction estimate of \$4,730,000. The approved 2011 Total Project Budget Authority for this project is \$10,420,000. The consulting services fee increase for the significant change in scope for this project will

bring the total engineering costs to 16.6% of construction. Given the issues associated with failure of the initial well, the redesign required for the revised well location and other additional scope components, this is acceptable.

Since 2002, approximately 960 purchase orders with a total value of approximately \$1.8 billion have been issued to secure engineering, consulting and construction services on water and wastewater projects. Of these, approximately 97 or 10% of the purchase orders have required increases beyond the increases allowed in the Regional Purchasing By-law. The total value of such increases is approximately \$85 million or 4.8 % of the total original value of the purchase orders.

6. LOCAL MUNICIPAL IMPACT

The Nobleton water system provides water to the community of Nobleton in the Township of King and will service a population of about 6,500. Currently the Nobleton water system has excess capacity but does not have firm capacity. The addition of a new well and pumphouse will provide the firm capacity needed to secure the potable water supply for Nobleton and its residents.

The new well and pumphouse is scheduled for completion by the end of 2012.

7. CONCLUSION

The additional scope of work and associated fees explained in this report are essential to complete the project late in fall 2011.

It is recommended that Blanket Purchase Order B00010744 issued to First Nations Engineering Services Ltd. for consulting services for the Nobleton Water Supply Project be increased to \$788,095, excluding HST to accommodate change in scope.

For more information on this report, please contact Daniel Kostopoulos, Director, Capital Planning and Delivery, Environmental Services at extension (905) 830-4444 Ext. 5070.

The Senior Management Group has reviewed this report.