

10

UPDATE ON THE EXPANSION PROJECTS AT THE DUFFIN CREEK WATER POLLUTION CONTROL PLANT AND STAGE 3 ODOUR MANAGEMENT PLAN COMMITMENTS

The Environmental Services Committee recommends the adoption of the recommendations contained in the following report dated September 1, 2010, from the Commissioner of Environmental Services.

1. RECOMMENDATIONS

It is recommended that:

1. Regional Council authorize the Chief Administrative Officer to execute contracts associated with the New Stages 1 and 2 Upgrade and Refurbishment Project:
 - for reasons of compatibility under the sole source provisions of the Purchasing By-law with approximately seven (subject to change during the design phase) suppliers or manufacturers for process equipment; and
 - approximately seven construction contracts and two equipment pre-purchase contracts (subject to change during the design phase) either through proposals or open bids, tendered through provisions of the Purchasing By-law for construction and installation of pre-purchased equipment.
2. Regional Council authorize the Commissioner of Environmental Services to negotiate and execute agreements for reasons of compatibility under sole source provisions of the Purchasing By-law with:
 - Revay and Associates to assist York and Durham Regions with Project Planning and Monitoring for an amount not to exceed \$1,500,000
 - Resource Environmental Associates Limited to assist York and Durham Regions with the on-site Duffin Creek Health and Safety Program for an amount not to exceed \$1,200,000
 - eBuild.ca to provide a Collaborative Business Platform for document transfer and storage for an amount not to exceed \$500,000
3. Regional Council authorize an increase and extension to the existing CH2MHill assignment under contract P-05-29 for the Stage 3 Expansion Projects from the current value of \$44,247,574 by \$2,770,000 to \$47,017,574 and extend the current expiry date from December 31, 2011 to December 31, 2014. These changes are required to cover additional engineering services for additional site inspection and contract administration.

2. PURPOSE

This report provides information on:

1. The status of progress of the ongoing Projects at the Duffin Creek Water Pollution Control Plant.
2. The requirement for additional consulting services associated with the project planning and monitoring, health and safety matters and documentation transfers and storage.
3. An update of the present status of the Stages 1 and 2 Upgrade and Refurbishment Projects and the preliminary strategy for procurement of the required equipment and construction contracts.
4. Details of additional engineering site services for the Stage 3 Solids Expansion project.

3. BACKGROUND

Immediately following the receipt of the Certificate of Approval (Air) for the Stage 3 Expansion Projects from the Ministry of the Environment on June 18, 2010, sewage was diverted into the new Stage 3 Liquids Process expansion to commence the lengthy start-up and commissioning periods stipulated within the contracts and required to bring the process trains on-line. Once the processes are stabilized and any initial “bugs” in the systems worked out, performance testing can begin.

Contractors are very close to delivering the project on the original schedule for this work. It is anticipated that the project will reach the substantially performed milestone before December 2010.

Stage 3 solids expansion project now scheduled for Substantial Completion by Spring of 2012

Table 1 provides a summary of the progress of work on the new dewatering and incineration facilities. Since commencement of construction in December of 2009, progress has been slightly ahead of schedule due to the mild nature of the past winter and spring periods. With 70% of construction remaining, the schedule is still showing substantial completion for spring of 2012 with total completion in mid 2012.

Table 1
Stage 3 Solids Process Expansion Project Progress

Project No	Description	Progress Status
T-08-08	North Dewatering Building Modifications	Substantial Completion issued in August 2009.
T-08-04	Digester Modifications & Boiler Building	Approximately 80% complete with the anticipated final Substantial Completion date remaining at February 28, 2011.
Project No	Description	Progress Status
T-08-59	New Dewatering & Incineration Facilities	30% complete with an anticipated Substantial Completion date of March 2012.
Various	Pre-purchased Equipment	75% delivered, currently undergoing installation.

Update of progress on Stages 1 and 2 Upgrades and Refurbishment

Since the last Report to Regional Council (Item 7, Report 4, April 22, 2010), Regional staff, in consultation with the operations and maintenance staff of Durham Region have been reviewing the condition of the existing Stages 1 and 2 facilities and are subsequently preparing a Request For Proposal (RFP) for the engineering services required for the pre-design, detailed design, contract administration and resident inspection for the Stages 1 and 2 Upgrades and Refurbishment Project.

4. ANALYSIS AND OPTIONS

Strategies for procurement of pre-purchase equipment and construction contracts

Initial concepts for implementation of the Stages 1 and 2 Upgrade and Refurbishment project have been formed. Table 4 in the Financial Implications section of this report identifies seven different construction contracts which staff presently foresee to be issued and constructed at various times between now and 2017. The scope of each and number of contracts are subject to change during the pre-design portion of the engineering assignment as progress is made.

Pre-purchasing most process equipment is also anticipated for the purposes of compatibility and to provide the necessary engineering information required to complete the design layouts.

Process equipment pre-purchases

In the various anticipated construction contracts, there will be specialized equipment required for the treatment processes. There are three reasons for pre-purchasing equipment:

1. The equipment is very specialized and has a very long delivery period. It is therefore advantageous to pre-purchase the equipment prior to tendering the construction contract so that delivery can be timed to coincide with facility construction.
2. Compatibility with existing facilities to ensure the same or similar equipment is installed in the new facility. The majority of the equipment listed below is the same as recently provided through the Stage 3 expansion project.
3. Certain engineering information on the prepurchased equipment is required by the consultants to complete the design of the facility, i.e. dimensions, weight, capacity, etc.

Table 2 below summarizes the preliminary, anticipated pre-purchase equipment list of nine items (seven sole source tenders and two open-bid tenders). Similarly with the construction contracts, the scope of each and number of equipment pre-purchase contracts are subject to some change during the pre-design portion of the engineering assignment as progress is made.

Table 2
Conceptual Equipment Procurement

Equipment Description	Reason for Pre-purchase	Proposed Tender Method*	Estimated Value
High Voltage Transformers and Switchgear	1, 2, 3	Sole-Source	\$2,000,000
Low Voltage Switchgear and Stand-by Generators	1, 2, 3	Sole-Source	\$4,500,000
Raw Sewage Pumping Equipment	1, 2, 3	Sole-Source	\$8,000,000
Preliminary Treatment Screens	1, 2, 3	Sole-Source	\$800,000
Preliminary Treatment Screening and Grit Washing and Handling Systems	1, 2, 3	Sole-Source	\$1,500,000
Odour Control Biofilters	1, 2, 3	Sole-Source	\$3,000,000
Primary Treatment Sludge Collection Bridges and Scum Collectors	1, 3	Open Bid	\$6,000,000

Effluent Water Pumps Upgrades	1, 2, 3	Open Bid	\$500,000
Total			\$30,300,000

* At the time of writing this report it is anticipated that these will be tendered, however, during conceptual design, it may be decided a proposal may be the better method of procurement.

Sole source procurement represents approximately 79% and open bids 21% of the estimated values of pre-purchased equipment.

Continuous work will be required to finish Stage 3 Expansion Project and initiate the Stages 1 and 2 Upgrade and Refurbishment

There will be a significant amount of coordination and planning required to maintain a stable and uninterrupted level of service between the existing water pollution control plant operations, the commissioning and operation of the Stage 3 expansion projects and the new Stages 1 and 2 Upgrades and Refurbishment projects.

Similarly with the previous Stage 3 projects, staff recognizes that the Stages 1 and 2 projects will involve multiple pre-purchase contracts and multiple construction contracts. Coordination, scheduling and planning, plus the monitoring and cost control efforts on behalf of the Regions will be a large undertaking. It is foreseen that a significant effort will be required to ensure that the treatment capabilities of the overall water pollution control plant be maintained while completing the work before the end of 2017 as required by the Conditions of the CofA(Air) detailed previously in the April Report.

Project Planning and Monitoring: Revay and Associates

As part of the Stage 3 Expansion Projects, the Region secured Revay and Associates through a separate competitive RFP for consulting services to assist staff with the overall project planning and monitoring. Revay and Associates was the successful proponent and since award in 2005 has been able to provide assistance and guidance with the project in many ways.

The main areas of this assistance have been overall program and individual project scheduling; engineering and construction cost controls and earned value calculations; construction schedule monitoring, claim control, risk analysis and mitigation measure issues.

It is recommended that authority be given for a further assignment to be negotiated with Revay to maintain compatibility of services throughout the Stage 1 and 2 Upgrades and Refurbishment Project to the end of 2017. It is estimated that the cost of this assignment will not exceed \$1.5M, based upon the same hourly rate schedule as currently allowed under their present assignment.

Health and Safety: Resource Environmental Associates

Similarly to Revay and Associates above, Resource Environmental Associates were secured through a competitive RFP for the Stage 3 Expansion Projects. Resource Environmental Associates were procured as a third party consultant to assist in the preparation of and continual monitoring of the Duffin Creek water pollution control plant Contractor/Constructor Health and Safety Program.

During the Stage 3 expansion projects, there were four different contractors on the site simultaneously, plus consultants and Durham operations staff. To satisfy health and safety requirements, the Regions awarded an assignment to REA to assist the Regions with preparation of a comprehensive site-wide Health and Safety Program. All workers and staff on-site must adhere to the requirements of this program. Additionally, REA performs safety audits on a regular basis on all the construction sites, provides reports and liaison with all health and safety committees.

It is recommended that authority be given for a further assignment to be negotiated with REA to maintain compatibility of services throughout the Stages 1 and 2 Upgrades and Refurbishment Project to the end of 2017. It is estimated that the cost of this assignment will not exceed \$1.2M based upon the same hourly rate schedule as currently allowed under their present assignment.

Collaborative Business Platform: eBuild.ca

In 2005, the Region elected to use a “web-based” Collaborative Business Platform to electronically store and transfer the massive volume of documents for the Stage 3 projects. Using any connection to the internet and a protected web-site, staff from the Regions, consultants, each pre-purchase supplier and each contractor can access and transfer documents and drawings instantaneously. The system also tracks documents to maintain logs and tracks review times. Staff estimates that this system has saved the Regions the project costs associated with the photo-copying, packaging and couriers transferring correspondence, particularly since most of the suppliers are located in Europe and the United States.

It is recommended that authority be given for a further assignment to be negotiated with eBuild.ca to maintain compatibility of services throughout the Stages 1 and 2 Upgrades and Refurbishment Project. It is estimated that the cost of this assignment will not exceed \$500,000 based upon the same rate schedule as currently allowed under their present assignment to the end of 2017.

Impact to the current Engineering Services Assignment for the Stage 3 Expansion Project P-05-29

The original 2005 RFP underestimated the staffing requirements for contract administration and construction inspection services as well as the duration of the assignment. In May 2008, Regional Council (Report 5, Item 2) increased the budget and provided a one year extension until December 2011. The complexity and size of the projects require significant coordination between the consultant's office staff and on-site staff, not only during construction but through commissioning. Additionally, the award of the construction contract was delayed from May, 2009 to November, 2009 while the Regions awaited the award and confirmation of Federal and Provincial funding of \$46.67M each for a total of \$93.33M. This, in addition to delays in securing approvals from the MOE, resulted in the need to extend the funding and expiry date.

The new dewatering and incineration facilities (solids expansion project) contract now estimates total completion mid 2012 with a 2-year warranty period; therefore staff recommends an increase of \$2.77M and an extension until December 2014.

5. FINANCIAL IMPLICATIONS

Estimated Costs for additional Consulting Services

As summarized in Table 3, it is recommended that the following services continue to be retained to provide necessary assistance to project staff compatible with existing service provided.

Table 3
Additional Cost Estimates for Consultants

Description	Total Estimate
Revay and Associates	\$1,500,000
Resource Environmental Associates	\$1,200,000
eBuild.ca	\$500,000
Additional Coordination/Site Inspection Solids (36 months)	\$2,770,000
Total	\$5,970,000

Funding for the new assignments above will be split 67% from Development Charges and 33% from Rates. (Similar to engineering for Stages 1 and 2 Upgrades and Refurbishment Project as identified in Environmental Services Report 4 to Regional Council in April, 2010)

The additional Coordination/Site Inspection for the Stage 3 Solids Expansion Project will be approximately 91% Development Charges.

Estimated costs for the future Odour Management Plan Mitigation Measures and refurbishment of the existing infrastructure.

Table 4 provides a preliminary cost breakdown for various construction contracts required to mitigate odours from Stages 1 and 2.

Table 4
Conceptual Contract Strategy and Cost Estimates for Upgrade and Refurbishment of Stages 1 and 2 (for information only)

Description	Total Estimate
Electrical Substation	\$15,000,000
Raw Sewage / Influent Pumping Station	\$40,000,000
Headworks	\$50,000,000
Primary Treatment	\$20,000,000
Secondary Treatment	\$35,000,000
Effluent Water Upgrades	\$5,000,000
Site Civil	\$5,000,000
Total	\$170,000,000

Note: The costs above include pre-purchased equipment and all costs are included in the approved Total Project Budget Authority.

Costs Shared with Durham Region

The above costs for the refurbishment of the existing facility will be shared with the co-owner, Durham Region. The exact cost sharing split is currently being negotiated, but is likely to be approximately 80% York, 20% Durham.

6. LOCAL MUNICIPAL IMPACT

The Stages 1 and 2 Upgrade and Refurbishment project will provide long term reliable and secure sewage treatment capacity at the Duffin Creek water pollution control plant for York and Durham residents connected to the YDSS. Stage 3 provides the required capacity for approved growth. Excellent effluent quality discharged from the water pollution control plant protects Lake Ontario which is the primary source of drinking water for these same residents.

7. CONCLUSION

To ensure the Stages 1 and 2 Upgrade and Refurbishment Project planning and monitoring, proper health and safety program monitoring and timely and accurate document transfer and storage is accomplished, staff recommend the authority be

provided to secure these services on a sole-source basis to companies familiar with the site and the Region's processes.

The Amended CofA(Air) to include Stage 3 requires that the Stages 1 and 2 Upgrade and Refurbishment be completed prior to the end of 2017. To meet this strict delivery schedule, adoption of the proposed strategy for pre-purchase of equipment and timely award of construction contracts as detailed in Section 4 of this report will ensure timely deliveries to site, compatibility with existing equipment and provide the design engineers with the technical information required to complete accurate construction documents.

The Stage 3 liquid expansion project remains on schedule for substantial completion of the work by December 2010 and final completion by summer of 2011. Completion of the Stage 3 solids expansion project is scheduled for the summer of 2012. The complexity of the overall project dictates a high level of coordination between the contractors, the consultants, York Region's project management team and the operations staff.

For more information on this report, please contact Daniel Kostopoulos, Director, Capital Planning and Delivery at Ext. 5070.

The Senior Management Group has reviewed this report.