

7

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

(Regional Council at its meeting on April 22, 2010, adopted this Clause subject to Recommendation No. 3 being amended as follows:

3. Regional Council:

- (a) authorize the Commissioner of Environmental Services to negotiate and execute agreements for reasons of compatibility under the sole source provisions of the Purchasing By-law with Team Duffin (CH2M Hill and AECOM) with Zorix as a sub-consultant to complete odour sampling, monitoring and reporting programs for an estimated assignment not to exceed \$2,000,000; and**
- (b) waive the requirements of the Purchasing By-law and authorize the Commissioner of Environmental Services to negotiate and execute agreements with Team Duffin (CH2M Hill and AECOM) to complete the conceptual design, design, tender documents, site supervision and construction administration of upgrades and refurbishment of the existing Stages 1 and 2, not to exceed \$30,000,000.**

The Environmental Services Committee recommends the adoption of the recommendations contained in the following report dated March 25, 2010, from the Commissioner of Environmental Services.

1. RECOMMENDATIONS

It is recommended that:

1. Regional Council authorize upgrades and advancement of the timing for refurbishment of the existing Stages 1 and 2 liquids treatment process to meet emerging Ministry of the Environment requirements with respect to the Stage 3 Odour Management Plan and the Certificate of Approval (Air).
2. Regional Council authorize:
 - An amendment to the 2010 Capital Budget to establish a project for the Refurbishment of Stages 1 and 2 at Duffin Creek Water Pollution Control Plant with Total Project Budget Authority of \$62 million and 2010 spending of \$6.2

million and that subsequent stages of this project be identified in the 2011 Capital budget together with the realignment and timing of other related projects.

- Issuance of debt in the amount of \$62 million for the funding of the above project to be repaid from future development charges and user charges as outlined in the report.
3. Regional Council authorize the Commissioner of Environmental Services to negotiate and execute agreements for reasons of compatibility under the sole source provisions of the Purchasing By-Law, with:
 - Team Duffin (CH2M Hill and AECOM) with Zorix as a sub-consultant to complete odour sampling, monitoring and reporting programs for an estimated assignment not to exceed \$2,000,000.
 - Team Duffin (CH2M Hill and AECOM) to complete the conceptual design, design, tender documents, site supervision and construction administration of upgrades and refurbishment of the existing Stages 1 and 2, not to exceed \$30,000,000.
 4. Regional Council authorize three additional full time employees, which includes one Project Manager and two Special Project Technologists at an annual cost of \$325,000 to deliver the required work.
 5. The Regional Clerk forward a copy of this report to the Region of Durham.

2. PURPOSE

This report provides information on:

- Status of the progress of ongoing construction contracts for the Stage 3 Process Expansion Projects at the Duffin Creek Water Pollution Control Plant (WPCP).
- The result of recent discussions with the Ministry of the Environment (MOE) staff with respect to compliance with conditions attached to the approved Environmental Assessment (EA) and with regulatory certificates of approval for the Duffin Creek WPCP. These discussions have resulted in significant, immediate impacts to the approved 2010 10-year capital expenditure plan for the Duffin Creek WPCP.

And as a result, this report provides an explanation for:

- The sole source procurement of Team Duffin with Zorix to complete odour sampling, monitoring and reporting program.
- The Commissioner of Environmental Services to negotiate and execute sole source procurement of Team Duffin to complete the conceptual design, design, tender documents, site supervision and construction administration of upgrades and refurbishment of the existing Stages 1 and 2.

- Three additional full time employees, which includes one Project Manager and two Special Project Technologists to implement the required works.

3. BACKGROUND

Stage 3 liquids expansion project on schedule for commissioning by December 2010

Table 1
Stage 3 Liquids Process Expansion Project Progress

Project No	Description	Progress Status
T-07-57	Liquid Modules Expansion	90% complete with anticipated commissioning in December 2010
T-08-03	Preliminary Treatment	Approximately 70% complete with an anticipated commissioning in June 2010
T-08-02	Electrical Substation	95% complete, currently undergoing testing, which is 90% complete. Commissioning in April 2010
T-09-16	Enhanced Phosphorous Removal Upgrade	Awarded to North America Construction on February 4, 2010. Construction starting March 2010, anticipated commissioning by Dec 2010

The progress of the various contracts that comprise the Stage 3 Liquids Treatment Process are well under way (Table 1) with the first stream of the liquid module project anticipated to receive sewage as early as summer 2010. There are lengthy start-up and commissioning periods prior to performance testing of the processes and it is anticipated that the substantial completion milestone will be achieved by December 2010.

Stage 3 solids expansion project now scheduled for commissioning by Spring 2012

The progress of the various contracts that comprise the Stage 3 solids treatment process are underway as outlined in Table 2.

Table 2
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 and Boiler Building	Approximately 75% complete with the anticipated commissioning date remaining in February 2011
T-08-59	New Dewatering and Incineration Facilities	Construction underway since December 2009. Site mobilization and clearing complete, concrete works have commenced in both incineration and dewatering facilities. Although the schedule is currently being finalized, completion is anticipated in Spring 2012.
	Pre-purchased Equipment	50% delivered, currently undergoing installation

A six month delay occurred in delivery of the Solids Process Expansion Projects as a result of the process the Region undertook to secure approval of Provincial and Federal Building Canada Funding. The tender for the New Dewatering and Incineration Facilities contract was closed and ready for award last May (2009). At that time, the Region had applied to the Building Canada Fund and was awaiting confirmation. The formal announcement that the Region's projects qualified for \$93M in funding under the Building Canada Fund was made on August 4, 2009. Through consultation with provincial and federal staff, the Region was advised that while the project qualified for funding, Regional staff could not proceed to award the construction contract until formal written approval was issued by both the federal and provincial governments.

Formal approval of the funding was received in November 2009 and the contract was immediately awarded. The Notice to Commence construction was provided to the construction contractor on December 15, 2009.

As the Liquids Expansion Projects (which remain on schedule) are the critical infrastructure components needed to accommodate approved growth beyond 2010, the six month delay to the Solids Process Expansion Projects can be accommodated with no impact to servicing capacity for approved growth.

Recent reports to Regional Council identify emerging MOE requirements

Recent Environmental Services Committee reports between December 2009 and March 2010 have progressively highlighted emerging MOE requirements related to compliance with conditions of the approved EA and with regulatory certificates of approval required for commissioning the new Stage 3 liquids treatment modules at the Duffin Creek WPCP. In March 2010, requirements to undertake upgrades and rehabilitation of existing Stages 1 and 2 to meet projected flows for 2013 and implementation strategies to minimize impacts to servicing beyond 2013 were reported to Council. As discussions with MOE staff evolved, the need for the Regions to commit to undertake additional upgrades and refurbishment work to achieve additional odour mitigation benefits has become apparent.

This report further explains details of negotiations with the Ministry to develop a work plan that meets MOE objectives to mitigate perceived odour impacts while maintaining adequate treatment capacity.

Ambient air sampling program and Odour Management Plan

The Environmental Study Report for the Stage 3 Process Expansion Projects was completed in late 2006 and was the subject of Part II Order requests most notably from the Town of Ajax. The requests were subsequently denied by the Minister of the Environment in March 2007. Although the requests were denied, the Minister attached a number of conditions to the project.

A number of the conditions addressed the requirement for the Regions to perform an odour impacts program. The measurements and analysis were to be performed using odour units (OU/m³). Results of this program were to be used to create a future odour mitigation plan to be implemented by the Regions. An odour unit is the level at which 50% of a trained panel of expert “sniffers” can detect an odour. A further analysis will determine whether the odour is pleasant or offensive.

Work on the odour study commenced immediately in April 2007 with the procurement of a consultant specializing in odour sampling and testing. The odour sampling program was a lengthy process that was completed in February 2008. The results were input into a computer model to forecast future odour effects possibly generated by the WPCP on the local environment. Meteorological data including wind direction and speed was used to predict the intensity of odours at sensitive receptors in the vicinity of the WPCP.

An analysis of these predictions was used to develop a mitigation plan to address the possibility of offensive odour complaints from the surrounding community. Components of the WPCP with the highest potential to generate odours are the existing preliminary treatment buildings and open treatment tanks (i.e. Stages 1 and 2). A plan to refurbish the existing stages of the WPCP is included in the later half of the current 10-year Capital Plan.

The Odour Management Plan (OMP) was submitted to the MOE for review and approval in January 2009. During follow-up meetings throughout 2009, MOE staff required modifications and resubmissions, most recently in December 2009 when they advised they required additional modelling work. In the meantime, staff from the Town of Ajax have expressed their concerns to the MOE advising of concerns with odour from the WPCP, despite the fact that no complaints have been logged at the WPCP within the last five years.

Certificate of Approval (Air) will not be issued until Odour Management Plan is approved by MOE

The Regions submitted an application for a CofA(Air) in August, 2007. MOE staff from the Environmental Assessment and Approvals Branch (EAAB) recently confirmed they would not issue the CofA(Air) to the Regions until the additional modelling work and OMP is reviewed and approved by the MOE. Furthermore, MOE advised that the CofA(Air) will include additional conditions to be implemented in the near term directed at odour control and mitigation. Imposition of these conditions has resulted in a significant scope of work and cost to implement the upgrade and refurbishment of the liquids treatment modules of Stages 1 and 2.

4. ANALYSIS AND OPTIONS

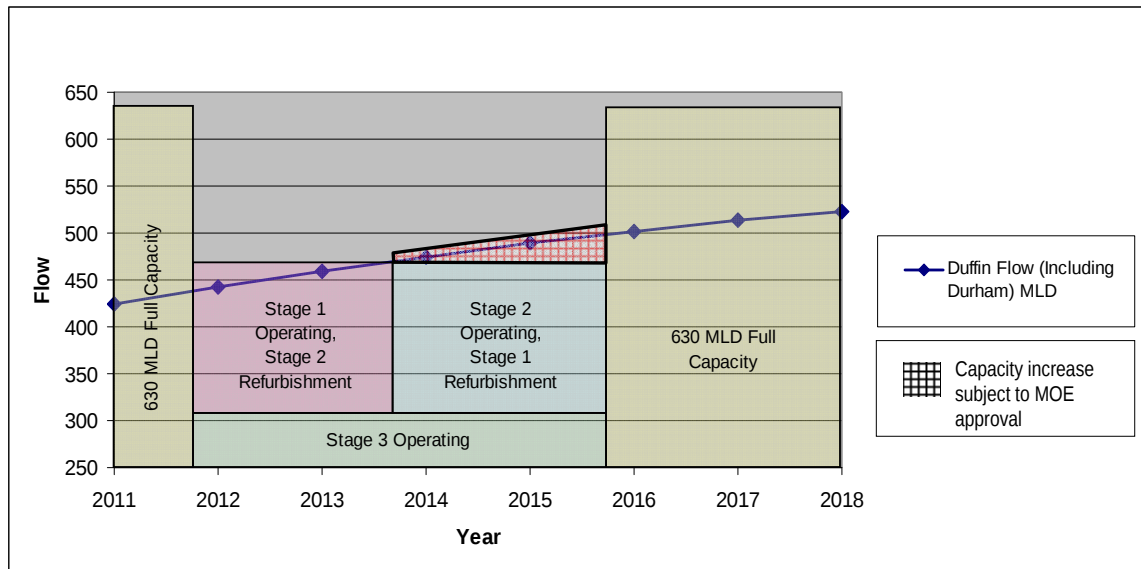
Conditions imposed by the MOE in the amended CofA(Air) impact the 10-Year Capital Work Program at Duffin Creek

To enable commissioning and operation of the Stage 3 Expansion, the Regions require two approvals from the MOE. The first, the CofA(Sewage), was issued to the Regions in 2007 prior to commencement of any construction at the site. The second, the CofA(Air), is required for any equipment or process that will discharge contaminants into the natural environment, i.e. outdoor air.

The MOE indicated that the CofA(Air) will contain 10 conditions the Regions are legally bound to comply with. In summary, the conditions require the Regions to upgrade and refurbish the liquids treatment modules of existing Stages 1 and 2, with the objective of achieving odour reduction benefits and paying particular attention to odour mitigation measures in the immediate future.

During review of these conditions, regional staff determined that to implement the upgrade and refurbishment of the existing stages, it is necessary to shut down one entire stage at a time to complete the work. This will remove essentially 25% of the total treatment capacity of the WPCP during the four to five year period required for construction of the work. A further review of projected flow rates based on forecast growth indicates the 75% treatment capacity available will not be sufficient to meet Regional needs prior to completion of the upgrades as shown in Figure 1.

Figure 1
Projected Duffin Creek WPCP Flows and Treatment Capacity



This capacity limitation resulting from partial shutdowns leaves the Regions with the only option of accelerating the work required. Even then, the aggressive schedule provides staff with significant capital delivery and operational challenges. During recent discussions with MOE on the CofA (Air) conditions, the Regions expressed concerns with this limitation and requested MOE approve additional operational flexibility to ensure adequate treatment capacity is maintained throughout construction of the work. In an effort to try to scope the work required in the time frames presently dictated, staff consulted with the Stage 3 Expansion design experts to explore and understand different options or alternatives available to execute the work in a timely manner.

Additional work required to satisfy the 10-year Capital Plan

Included in later stages of the approved 2010 10-year Capital Plan are several projects to refurbish old, obsolete and irreparable equipment nearing the end of its useful service life in the liquids treatment modules of existing Stages 1 and 2. Approximately \$68 million is identified for this work. As replacement of these major components require a major shut-down of the various portions of the facility, it is highly recommended this work be coordinated and carried out simultaneously with odour mitigation upgrades.

Summary of conditions imposed by the Ministry through the Stage 3 CofA(Air)

The Regions current understanding of the conditions that are to be imposed in the CofA(Air) is that the Regions would be required to:

- Prepare and implement an odour monitoring and reporting program for the Duffin Creek WPCP. The program is to be submitted for approval to the MOE by May 15th, 2010, and involves field sampling and odour panel testing at sensitive receptors within three kilometres of the plant (beginning by late June and ending late September 2010). An analytical report of the results is to be submitted to the MOE with copies provided to the Town of Ajax and the City of Pickering.
- By December 31, 2010, undertake and submit to the MOE a “Best in Class” technology and engineering review to identify odour mitigation measures for upgrade and refurbishment of Stages 1 and 2, taking into consideration the results of the odour monitoring and reporting program. Copies of the review are also to be provided to the Town of Ajax and City of Pickering.
- In consultation with MOE, and considering comments received during design of the Stage 1 and 2 upgrades and rehabilitation, evaluate and explain the rationale for any technically feasible odour mitigation measure from the best in class technology review that are not carried forward for implementation. Provide a summary report to the MOE regarding the implementation of proposed odour mitigation measures included in the design and explain how these measures will mitigate odour emissions at the plant.
- Undertake construction of the upgrades and refurbishment of the liquids treatment modules one stage at a time with completion of both stages by 2017.
- Prepare and implement an odour monitoring and reporting program for the Duffin Creek WPCP. The program is to be submitted for approval to the MOE as soon as possible after upgrades and refurbishment of Stages 1 and 2 are complete. The program involves another round of odour sampling and analysis to be submitted to the MOE with copies provided to the Town of Ajax and the City of Pickering.
- The preparation of an updated odour management plan within 3 months of the completion of construction and commissioning of the upgrades and refurbishment. This report is also to include identification of any additional odour mitigation measures and timelines for implementation that may be needed to address any remaining odour concerns.
- The MOE, York and Durham Regions are also required to form a working group that will meet semi-annually to receive updates on the progress of the work and will provide opportunities for the Town of Ajax and the City of Pickering to ask questions and present concerns related to odours from the Duffin Creek WPCP.

The Regions continue to advise MOE that completion of the required work by these dates is aggressive and subject to the receipt of timely approvals from the MOE.

Concept value engineering workshop conducted to review options

Staff were very successful during the original design phase of the Stage 3 Expansion projects using Value Engineering (VE) sessions to review and refine the design as it progressed. The outcome of the sessions provided the Regions with design revisions where savings could be realized without compromising functionality or performance.

Following a similar process, staff held a comprehensive VE workshop to analyse Stage 1 and 2 upgrades and refurbishment to address both the MOE requirements regarding odour mitigation as well as plant rehabilitation requirements including evaluating costs, schedule, compatibility and constructability.

The recommendations for upgrades and refurbishment of the existing Stages 1 and 2 liquid process treatment to address anticipated MOE requirements are summarized below:

Headworks upgrades provide significant odour reduction benefits

The OMP requires that significant additional work be carried out to mitigate odour emissions. The headworks facility is one of the leading contributors to point source odours and requires odour reduction equipment before discharge of air emissions to the atmosphere. The draft conditions attached to the CofA(Air) require that this work be completed prior to 2017.

The existing headworks are located in two buildings, one for Stage 1 and another for Stage 2. The buildings house screens for large particle removal, and detritors, for grit removal. This equipment and technology is over 30 years old and operational performance is not optimal. Any work performed inside the buildings, apart from minor maintenance, requires that they be upgraded to current Ontario Building Code standards and National Fire Protection standards for explosion proof areas. This work is extensive, time consuming and complicated.

Therefore, it is recommended one new Headworks facility be constructed that will be suitable for both Stages 1 and 2. This facility can be designed to provide operational flexibility to various treatment trains within Stages 1 and 2 that are not presently available. When compared to refurbishment of the existing headworks, this option is cost effective and can be constructed with minimal interruption to the current operation of the WPCP.

Subsequently, after commissioning of the new headworks building and with the operational flexibility available, individual trains of the existing stages can be removed for refurbishment. This provides security in operation to meet the MOE effluent discharge criteria without fear of operational upsets or overloading.

Equipment in the existing Headworks for Stages 1 and 2 is older technology that would benefit from higher efficiency achievable with new equipment.

Since most of this work is being driven by the conditions attached to the Environmental Assessment of the Stage 3 Expansion, it is anticipated that 80% of the \$50M estimated cost qualifies for funding through development charges (DC's) while 20% is for upgrades and should be rate funded.

Pump station upgrades to be implemented concurrently with odour mitigation works

The existing raw sewage pumping station currently has a firm capacity of 460 MLD. Until now it is only operated occasionally to provide “scouring” velocities within the inlet sewers during periods of low flow. In 2013, when the new Southeast Collector sewer is operational, the WPCP will require an immediate firm capacity of approximately 630 MLD. The existing station is not designed to be expanded, so a new solution is required. It is recommended that a new raw influent pumping station be designed and built.

The influent pumping station is required primarily to accommodate the additional flows created by growth, but will also replace existing infrastructure. The estimated \$40M costs are to be funded as 80% growth (DC’s) and 20% refurbishment (rate) related.

Primary treatment upgrades include replacement of deteriorated travelling sludge removal bridges

Enhancements to the chemical precipitation process accompanied with sludge blanket measurement and control equipment will mitigate odour emissions from the primary clarifiers. However, the main equipment in the primary settling tanks are aluminum bridges that travel from end to end across the top of the primary treatment tanks to scrape settled sludges and skim floating oils and greases from the surface. These bridges are over 30 years old and exhibit fatigue cracking in primary members and connections, despite having been reinforced and repaired numerous times. As these bridges are nearing the end of their useful service life it is recommended that the bridges be replaced. It is also recommended that other smaller, old ancillary equipment be replaced at the same time while the units are out of service.

With the majority of the \$20M estimated cost assignable to the replacement of existing infrastructure, the costs are estimated to be funded as 20% DC’s with the remaining 80% through rates.

Secondary treatment upgrades required to meet new more stringent effluent criteria and enable construction phasing

The new amended CofA (Sewage) issued for the Stage 3 Project requires that the entire WPCP (Stages 1, 2 and 3) meet new, more stringent effluent criteria for biological nutrient removal (mainly ammonia). This requires existing Stages 1 and 2 to be operated differently than currently designed. While operable to meet the new criteria, Stage 1 and 2 capacity is reduced and flexibility in the system is diminished. As part of the VE workshops, the team identified a method whereby greater flexibility could be restored by providing additional capacity to the aeration tanks, adding step-feed capability and modifying the return activated sludge feed location. It is also recommended that the

aeration tanks be modified to provide increased capacity and flexibility in operation. An added benefit is the significant reduction in the risk of an event where the effluent criteria compliance limits imposed by the MOE may be compromised.

As with the other facilities in Stages 1 and 2, some of the equipment is over 30 years old and will also be upgraded and replaced.

With some of the \$35M estimated cost assignable to benefit the treatment flow capacity, the costs are estimated to be funded as 50% DC's with the remaining 50% through rates.

Electrical substation is required to increase load capacity and replace aging infrastructure

The above noted upgrades of the headworks and pumping station will require an increase in load capacity to the electrical substation, servicing Stages 1 and 2, that is presently not available. In addition, the electrical infrastructure in the existing substation is over 30 years old. Many of the existing systems are obsolete and spare parts are difficult to locate and procure. A reliable source of power is fundamental to the continual operation of the WPCP.

It is recommended to build a new substation in the proximity of the existing station with modern equipment to meet today's standards and to include a new central stand-by power generation facility for additional security. When compared to refurbishment of the existing electrical substation, this option is cost effective and can be achieved with the added benefit of minimal interruption to operation of the WPCP.

The estimated \$15M cost is anticipated to be apportioned as 33% growth (DC) and 67% retrofit (rate).

Effluent pumping station upgrades required to use recycled effluent water instead of drinking water in various treatment processes

The existing equipment and infrastructure is 30 years old and is obsolete. It is required to provide feed treated water to several of the existing plant processes. Upgrading the system would provide greater security and reliability. It is recommended that the existing effluent water pumping station be upgraded with new equipment that would be more efficient, more secure and more reliable.

This work will involve replacement of old, obsolete equipment and the estimated \$5M cost is therefore 100% funded through rates.

Internal plant infrastructure for water, stormwater, electrical power, fire alarms, control wiring etc, to be refurbished

To affect the above changes and ensure reliable operations, it would be prudent to review and repair/replace deteriorated components of the 30 year old infrastructure, buried watermains, power cables, etc.

This work will involve replacement of old, obsolete equipment and the \$5M allowance is therefore 100% funded through rates.

Odour sampling, monitoring and reporting program required to be completed in 2010

One of the draft conditions attached to the CofA(Air) by the MOE requires the Regions to prepare and implement an ambient odour monitoring and reporting program by May 31st for review and written approval. The program involves air sampling and odour testing within a radius of 3 km of the WPCP over the period of June 2010 to at least the end of September 2010. The MOE is now requiring samples be collected under three different atmospheric conditions, unlike the previous program conducted in 2007/8 where samples were taken only when an odour was detected. This will result in the need to take significantly more samples than before and will correspond to an increase in costs.

The prime consultant used for that program was Team Duffin, comprised of CH2M Hill Canada and AECOM in co-operation with Zorix. Zorix was awarded the project through the Region's competitive procurement process.

Due to the restricted time frames imposed by the MOE on this initiative, and to ensure compatibility with previous odour sampling and monitoring services, it is recommended that Team Duffin and Zorix be sole sourced and assigned this task. Staff estimate the cost of this work will not exceed \$2,000,000.

Conceptual and detailed design, preparation of tender documents, supervision of construction and contract administration to be completed prior to 2017

Other conditions of the CofA(Air) requires the Regions to design, tender and complete the construction of the refurbishment of the existing Stages 1 and 2 by no later than 2017, subject to delays resulting from circumstances not under control of the Region, i.e. adverse weather, labour or material shortages and subject to the receipt of timely approvals from the MOE and other approval agencies.

This will require a significant effort to complete the conceptual design, detailed design and prepare contract tender documents prior the tendering period in time to meet the aggressive schedule imposed by the conditions as shown in Table 3.

Table 3
Preliminary Schedule for Upgrades/Refurbishment of Stages 1 and 2

Description	Estimated time to Complete	Start Date	End Date
Current OMP			
Odour Sampling Program – Preparation of OMP Reporting	8 months	Apr 2010	Dec 2010
Design and Construction			
Conceptual Design	6 months	Apr 2010	Sept 2010
Detailed Design	12 months	Oct 2010	Sept 2011
Tender and Award	3 months	Oct 2011	Dec 2011
Stage 2 Construction	24 months	Jan 2012	Dec 2013
Commissioning of Stage 2	6 months	Jan 2014	Jun 2014
Stage 1 Construction	24 months	Jul 2014	June 2016
Commissioning of Stage 1	6 months	July 2016	Dec 2016
Future OMP			
Odour Sampling Program – Preparation of OMP Report	12 months	Jan 2017	Dec 2017

Team Duffin have been working on Stage 3 Expansion Projects since 2005 and understand the requirements and needs of the Region and the MOE. They are intimately familiar with the existing facility and have been instrumental in assisting staff to understand and develop the scope of work with cost and time estimates. The plant is very complex with many interconnections between the various processes. It would take a significant effort for another design group to become familiar with plant processes. The risks to the Regions and the natural environment associated with a misunderstanding are significant. Also, staff estimates that approximately 9 months would be saved by sole sourcing.

A review of the milestone dates in the preliminary schedule shown in Table 3 is extremely aggressive and allows no time for staff to procure the engineering assignment through normal procedures. It is therefore recommended that Regional Council authorize the sole source procurement of this assignment to Team Duffin to expedite upgrades and refurbishment required by new CofA (Air) conditions. This is the same team that completed the original Odour Sampling Program, air dispersion modeling and OMP report. The team is familiar with the issues and requirements of the MOE and is capable to expedite the work. Costs and engineering fees will be comparable for this work as the initial OMP, subject to inflationary adjustments and the new, more comprehensive scope of work for this assignment. The consulting rates to be used for engineering work associated with Stages 1 and 2 refurbishment are the same hourly rates currently implemented on the Stage 3 expansion (obtained in 2006 using a competitive procurement process) and fixed to the end of 2011, after which are subject to annual inflationary increases.

One Project Manager and two Special Project Technologists are required to manage delivery of this work

Construction and commissioning of the current Stage 3 Expansion Projects are expected to continue through to 2012. The work identified above must commence immediately as existing staff will continue to be engaged full-time with the current workload. Additional capital delivery staff are needed to ensure proper control of the new work identified above.

One Project Manager and two Special Project Technologists are required to manage delivery of the project and oversee the Region's interests. This project is highly complex due to the retrofitting with existing facilities, highly constrained construction site and aggressive schedule. Outsourcing this role to external consultants would be significantly more expensive. In addition, despite the fact that the Region outsources the vast majority of work, these roles involve significant non-delegable tasks that are best managed using internal staff, including oversight of engineering service consultants, authorizing payments and making decisions to best manage risks to the Region.

5. FINANCIAL IMPLICATIONS

Estimated costs and funding sources required to accomplish upgrades and refurbishment

Table 4 provides a conceptual cost breakdown and funding apportionment for the various components of the work required to upgrade and refurbish the liquid treatment modules in Stages 1 and 2.

Table 4
Preliminary Cost Estimates for Upgrades/Refurbishment of Stages 1 and 2

Description	Total Estimate	DC Funded	Rate Funded	2010 Proposed Budget
Headworks	\$50M	80%	20%	\$0.5M
Raw Sewage / Influent Pumping Station	\$40M	80%	20%	\$0.2M
Primary Treatment	\$20M	20%	80%	\$0.5M
Secondary Treatment	\$35M	50%	50%	
Electrical Substation	\$15M	33%	67%	
Effluent Water Upgrades	\$5M		100%	
Site Civil	\$5M		100%	
Sub Total	\$170M	\$98.5M	\$71.5M	
Allowances for engineering, contingency, and indirect costs	\$30M	\$19.5M	\$10.5M	\$5M
Total	\$200M	\$118M	\$82M	\$6.2M

It is anticipated that approximately \$6.2M will be spent in 2010 mainly for engineering related work. Due to long lead times for procurement of specialized equipment, it is anticipated that several equipment pre-purchase contracts will also be issued in 2010. To secure adequate funding authority for contracts to be awarded in 2010, this report recommends an amendment to the 2010 Capital budget to establish a project with Total Project Budget Authority of \$62M (\$2M for odour sampling, monitoring and reporting; \$30M for design, tender documents, site supervision and construction administration; \$30M for equipment pre-purchase contracts) and 2010 spending of \$6.2M to be repaid from future development charges and user charges. This report also recommends that subsequent stages of this project be identified in the 2011 Capital Budget together with the realignment and timing of other related projects.

Refurbishment costs are 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 yet to be agreed, but is likely to be 80% York, 20% Durham.

The Region's approved 2010 10-year Capital Plan for the Duffin Creek WPCP includes \$68M for liquid process refurbishment plus \$146M for the biosolids processes refurbishment. The additional \$132M is to support additional liquid process upgrades required to obtain approvals of the Stage 3 Expansion and is required between 2010 and 2017. The current 10-year budget for biosolids upgrades should not be deferred or used to supplement the additional liquids requirements because the incineration processes will

need rehabilitation within the next 10-years. Anticipated expenditures in 2010 are estimated at \$6.2M.

Additional staff would result in \$325,000 per annum

An additional \$325,000 per annum is required for additional full time employees (Project Manager, \$125,000 plus two Technicians, \$100,000 each) including benefits and payroll burden required to manage the implementation of this additional work. The scope of work identified in this report will need to commence immediately (upon approval) and will continue at an aggressive pace until the end of 2017. Beyond this work, approximately \$220M in additional work is identified in the 10-year capital plan for projects in other facilities at the WPCP including the future outfall construction.

6. LOCAL MUNICIPAL IMPACT

The Stage 1 and 2 refurbishment and upgrades will provide long term reliable and secure sewage treatment capacity at the Duffin Creek WPCP for York and Durham residents connected to the YDSS. Excellent effluent quality discharged from the WPCP protects Lake Ontario which is the primary source of drinking water for these same residents. The additional odour reduction benefits will mitigate potential for odours in adjacent communities in the City of Pickering and the Town of Ajax.

7. CONCLUSION

The Stage 3 Expansion of Duffin Creek WPCP remains on track for commissioning the Liquids Process Expansion by December 2010 and commissioning the Solids Process Expansion by Spring 2012.

As part of the CofA (Air) required for commissioning and operating the Stage 3 Expansion, the MOE has imposed 10 mandatory conditions requiring upgrades and refurbishment of the existing Stage 1 and 2 Liquids treatment process. The upgrades and refurbishment are necessary to achieve additional odour management benefits as part of the Odour Mitigation Plan for the WPCP. Implementation of the Stage 1 and 2 upgrades and refurbishment will require partial shutdown of the existing plant, reducing available treatment capacity by 25%. The upgrades and refurbishment work will take approximately 6-7 years to complete. Flow projections, based on approved growth rates confirm advancement of the timing for this work is required to begin in 2010.

To deliver the required work will require advancement of currently approved funding and approval of additional funding in the amounts of \$68M and \$132M respectively. Three additional staff including one Project Manager and two Special Project Technologists will be required to expedite delivery of this work.

Implementing the upgrades and refurbishment of Stage 1 and 2 Liquid Process will comply with the Ministry of the Environment's mandatory conditions of the CofA (Air) and will ensure continued and reliable long-term treatment capacity for York and Durham residents.

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.