CITY OF HAMILTON

PUBLIC WORKS DEPARTMENT
Water and Wastewater Division

SUBJECT: Phases 3 and 4 of the Class Environmental Assessment for Combined Sewer Overflow (CSO) Control and Woodward Avenue Wastewater Treatment Plant Expansion - (PW06121a) - (City Wide)

RECOMMENDATION:

(a) That the General Manager, Public Works be authorized and directed to file a Notice of Completion, and issue the Environmental Study Report (ESR) for a 30-day review period for the Class Environmental Assessment for Combined Sewer Overflow (CSO) Control and Woodward Avenue Wastewater Treatment Plant Expansion;

(b) That upon completion of the minimum thirty (30) day public review periods, the General Manager, Public Works be authorized and directed to proceed with detailed design and implementation of the preferred solutions of the Class Environmental Assessments for the Combined Sewer Overflow (CSO) Control and Woodward Avenue Wastewater Treatment Plant Expansion.

Scott Stewart, C.E.T.
General Manager
Public Works

EXECUTIVE SUMMARY:
The Water and Wastewater Master Plan completed in 2006 and presented to Council as Report PW06121 and approved on September 13, 2007, represented Phases 1 and 2 of the Class Environmental Assessment (EA) process and recommended expansion and
upgrade of the Woodward Avenue Wastewater Treatment Plant (WWTP) and collection system improvements, to provide capacity for growth, and to reduce contaminant loadings to Hamilton Harbour. The overall strategies were developed to strive to achieve goals set by the Hamilton Harbour Remedial Action Plan (RAP), the Ministry of the Environment CSO Control policy (Procedure F-5-5), and the City of Hamilton Wet Weather Flow Management Policy. In addition, the Biosolids Master Plan, representing Phases 1 and 2 of the Class EA process, recommended a new fluidized bed incineration process, for long-term reliable management of residues generated in the wastewater treatment process. The Class EA process represents the final stages of planning wastewater treatment capacity and CSO management to provide capacity for growth, meet the goals for wet weather flow management, and to protect Hamilton Harbour. The recommended strategy at the Woodward Avenue WWTP includes raw wastewater pumping upgrades, primary treatment process expansion, new membrane processes, new facilities for chlorination and dechlorination of effluent, expansion of the outfall capacity, and a new fluidized bed incineration process for biosolids. The collection system improvements recommended include twinning the sewer between the Sterling CSO outfall to convey flows to the Main-King Tank, a new pumping station to divert CSO from Sherman Inlet, and implementation of real-time control (RTC) to maximize use of system and plant capacity and to reduce CSO at other sensitive areas such as Windermere Basin. The total capital cost is estimated at $500 million (2007 dollars). The study included consultation with the Ontario Ministry of the Environment, three meetings with a Technical Advisory Committee and a Community Liaison Committee established specifically for this Class EA study, and a public meeting held on August 21, 2007. As well, a Public Works Sub-Committee was set up and met numerous times to guide and develop the plan. The Sub-Committee consisted of Councillors Dave Mitchell, Sam Merulla, Lloyd Ferguson, and Bob Bratina and senior staff including Scott Stewart and Joe Rinaldo. Overall the Sub-Committee supported the Master Plan and the approach that is being brought forward for public comment.

**BACKGROUND:**

The City of Hamilton has one of the largest and most complex water and wastewater treatment systems in the country, and is highlighted by the following infrastructure:

- Three (3) wastewater treatment plants
- Seventy (70) sewage pumping stations
- Six (6) combined sewer overflow tanks (with 2 others under construction)
- One (1) main water treatment plant
- Twenty-one (21) water booster stations
- Eighteen (18) water reservoirs and towers
- Four (4) communal well systems
- Approximately 1600 km of sewer pipes, and
- Approximately 1800 km of water mains

Over the years a number of system pressures have emerged resulting in the need for the City to consider upgrades and expansion of its water and wastewater system. In general these pressures are related to the need to accommodate growth, improve the level of capture and treatment of wastewater flows and combined sewer overflows (CSO)
resulting from increased wet weather events, and improve infrastructure to ensure continual compliance with changing water and wastewater policies and legislation.

As a result of these and other pressures, the City initiated the Growth Related Integrated Development Strategy (GRIDS), whereby an integrated planning approach was undertaken which included the Transportation, Storm and Water and Wastewater Master Plan. The goal of the Water and Wastewater Master Plan was to identify the preferred strategy for system upgrades and expansion that would address the above-mentioned pressures through the identification of specific program Objectives. These Objectives were identified as follows:

- To address the development requirements as mandated to grow by the Province under the Places to Grow Legislation as outlined in GRIDS.
- To address capacity limitations with each of the City’s three (3) wastewater treatment plants (WWTPs).
- To meet the Hamilton Harbour Remedial Action Plan (RAP) loading targets for select pollutants from combined sewer overflows (CSO) and wastewater treatment plant effluents.
- To meet the Ontario Ministry of the Environment (MOE) Procedure F-5-5 for combined sewer overflow (CSO) control.
- To meet other MOE policies related to water and wastewater treatment plant effluent discharges.

The Municipal Class EA process, defined by the Municipal Engineers Association (June 2000), is a specific process to satisfy EA requirements for municipal water, wastewater, and road projects. The process includes five phases:

- **Phase 1** Problem Definition
- **Phase 2** Identification and Evaluation of Alternative Solutions to determine a Preferred Solution
- **Phase 3** Examination of Alternative Methods of Implementation of the Preferred Solution.
- **Phase 4** Documentation of the Planning, Design and Consultation Process.
- **Phase 5** Implementation and Monitoring.

On September 13, 2006, Phases 1 and 2 of the Water and Wastewater Master Plan was completed and endorsed by Council through Report PW06121. This Report identified a number of infrastructure upgrades and/or expansions as required to meet the program Objectives and which were classified as per the Class EA process as either Schedule ‘B’ or Schedule ‘C’ projects. Schedule ‘B’ projects typically include infrastructure such as water and sewer pumping stations as well as water distribution and wastewater collection piping networks, which under the Class EA procedures, can proceed to design and construction at completion of Phases 1 and 2 and after a 30-day public comment period. This process was ultimately completed in December 2006, and identified approximately forty (40) projects which were subsequently included in the 2007 Water and Wastewater Rate Budget and are currently programmed to be implemented over the next ten (10) years.
Schedule ‘C’ projects are typically classified as having more potential impact to the environment and require that Phases 3 through 4 of the Class EA process be completed. As part of Phases 1 and 2 of the Master Plan process, a preferred strategy for CSO control and wastewater treatment was developed.

The preferred strategy for the Woodward Avenue WWTP is as follows:

- Expand the average day flow capacity of the Woodward Avenue WWTP from 409 ML/d and average peak capacity of 614 MLD, to 500 ML/d, with a peak capacity of 1,000 ML/d.
- Upgrade the treatment processes to provide tertiary suspended solids and phosphorus removal, a non-toxic plant effluent and year round ammonia removal.

The preferred solution for management of wet weather flows is as follows:

- Expand primary treatment capacity at the Woodward Avenue WWTP to provide a total peak primary treatment capacity of 1,300 ML/d in order to meet the Provincial F-5-5 guideline for treating wet weather flows as well as HHRAP targets for reducing loadings from CSOs to the Harbour.
- Upgrade the raw wastewater pumping station at the Woodward Avenue WWTP to provide reliable pumping capacity at a flow rate of 1,700 ML/d, equivalent to the capacity of the trunk sewers that feed the plant.
- Provide disinfection for primary effluent and raw wastewater bypasses to achieve a non-toxic plant effluent.
- Upgrade the collection system to minimize CSO discharges to sensitive areas, and to convey flows to the Woodward Avenue WWTP, so that the full treatment capacity may be utilized (i.e., there will be no collection system bypassing when the plant is not operating at its wet weather capacity of 1,300 ML/d).

With implementation of the above recommendations, it was determined that the City will achieve its goals on a system-wide basis for wet weather flow capture and treatment, with more than 90% of the wet weather flow receiving treatment in an average rainfall year. However, while overall system goals would be achieved, upgrades to reduce CSO events at specific sensitive locations are required, specifically Cootes Paradise, Sherman Inlet, and Windermere Basin. In addition, it must be noted that the preferred strategy associated with wet weather control of CSOs are based on ‘average rainfall year’ as defined by the Province. Average year rainfall is defined as years with an annual rainfall volume within 5% of the average for all years on record, a wet-weather flow volume within 5% of the annual average wet-weather flow volume for all years on record, and a number of wet-weather flow events within 5% of the average number of annual wet-weather flow events for all years on record. Therefore, it can be noted that for years with annual rainfall below the averages, performance associated with CSO control is expected to be better than the design objectives, whereas performance may not meet the objectives for years with annual rainfall above the average rainfall years.

Optimization of the system operation is required to maximize the use of the existing system so that there are no CSO bypasses when the Woodward Avenue WWTP has
treatment capacity remaining. Furthermore, local area upgrades are required in areas with local capacity limitations where basement flooding events have been experienced. These system upgrades will require a separate program of investigations and remediation, outside the scope of this Class EA study.

As such, the preferred strategy for the Combined Sewer Overflow (CSO) Control and Woodward Avenue Wastewater Treatment Plant Expansion are considered Schedule 'C' initiatives and therefore must continue through to Phases 3 to 4 of the Class EA process. The purpose of this Class EA Phases 3 and 4 process is to develop design concepts and an implementation plan for the preferred strategy for wastewater treatment, combined sewer system upgrades and expansion including the incorporation of the recommendations from the Biosolids Master Plan.

**ANALYSIS/RATIONALE:**

While initiating Phases 3 and 4 for this Class EA, the wide range of stakeholders associated and interested in the successful expansion and upgrading of the City’s combined sewer system and main wastewater treatment facility was considered. As such, a dedicated project team comprised of staff and external consultants was established, as well as a number of special committees including Technical Advisory Committee (TAC), Community Liaison Committee (CLC), and Public Works Sub-Committee (PWSC). The involvement of these committees is discussed later in this report.

Prior to developing alternatives and design concepts, an evaluation process was developed and used to complete a comparative evaluation of alternative design concepts for implementing the wastewater treatment and combined sewer system management strategies as recommended in the Water and Wastewater Master Plan. This process is described as follows:

1. Evaluation criteria were identified based on the City’s Triple Bottom Line of Environmental, Social, and Economic factors. Evaluation criteria are the criteria that were used to compare qualities or factors of importance in selecting the preferred alternatives.

2. Value weights were assigned to each criteria category. Each criterion was weighted accordingly to the relative importance of that particular category. This methodology established a scoring system sensitive to a unique set of Hamilton priorities.

3. Due to the criticality of the final Evaluation Criteria in determining the preferred strategy, the TAC, CLC and PWSC were all provided the opportunity to comment on the Evaluation criteria and weighted values, as outlined in Table 1 below.

4. The established criteria were used to score alternatives. The criteria and weights were used to develop a total score for alternative design concepts. The total score is the sum, across criterion, of the average score for each criteria category, multiplied by the value weight for that criteria category. Scores were assigned to each alternative based on the impact, technical and cost information developed for each.

Table 1 presents a finalized list of criteria and weights, developed with input from City staff.
### Table 1  Evaluation Criteria and Value Weights

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description/Considerations</th>
<th>Relative Value Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance (emerging contaminants)</td>
<td>Maximizes the removal of emerging contaminants, such as endocrine disruptors.</td>
<td>2%</td>
</tr>
<tr>
<td>Energy efficiency (greenhouse gases)</td>
<td>Minimizes the use of energy and generation of greenhouse gases.</td>
<td>5%</td>
</tr>
<tr>
<td>Flexibility</td>
<td>Best achieves performance objectives under full range of conditions (i.e., flows, loadings, rainfall events).</td>
<td>10%</td>
</tr>
<tr>
<td>Operational simplicity</td>
<td>Represents technology concept that is simplest to operate and maintain, and therefore has most performance reliability.</td>
<td>8%</td>
</tr>
<tr>
<td>Demonstrated technology performance</td>
<td>Minimizes risk of poor performance and environmental impacts because there is confidence through experience in technology performance.</td>
<td>8%</td>
</tr>
<tr>
<td>Constructability</td>
<td>Can be constructed with minimum potential risk of poor treatment performance and non-compliance, due to processes off-line or tie-ins.</td>
<td>8%</td>
</tr>
<tr>
<td><strong>Total Environment</strong></td>
<td></td>
<td>41%</td>
</tr>
<tr>
<td><strong>Social Impacts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential odours</td>
<td>Minimize potential for odours to nearby community from process technology and with long buffer distance.</td>
<td>9%</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>Construct facilities that are invisible or attractive to the community and other adjacent land users (e.g., consider view from new walking trail, or visual impacts of new CSO storage facilities).</td>
<td>3%</td>
</tr>
<tr>
<td>Land use/land acquisition</td>
<td>Enhance current land, surface water uses and minimize loss of land uses (e.g., ball diamond, land acquisition and potential affects on nearby land uses) (e.g., loss of property values). Considers potential archaeological and cultural heritage resource impacts and mitigation requirements.</td>
<td>5%</td>
</tr>
<tr>
<td>Community impacts during construction</td>
<td>Minimize potential impacts during construction to local community from noise, dust and traffic during construction, and minimize period of construction and related impacts.</td>
<td>3%</td>
</tr>
<tr>
<td>Ability to facilitate growth in the community</td>
<td>Meets or exceeds schedule to provide capacity and allow development and corresponding employment growth.</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Total Social</strong></td>
<td></td>
<td>25%</td>
</tr>
<tr>
<td><strong>Economic Impacts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital cost</td>
<td>Net present value (NPV) cost of construction and 20 years of operations and maintenance (O&amp;M). Lowest cost receives full score.</td>
<td>27%</td>
</tr>
<tr>
<td>Financial Risk</td>
<td>Minimizes risk of unplanned capital or O&amp;M investment because there is confidence through experience in technology performance and O&amp;M needs.</td>
<td>5%</td>
</tr>
<tr>
<td>Future Costs</td>
<td>Minimizes future costs beyond 2031 for plant expansion, because expansion can occur on existing site, and/or further land acquisition and cost of facilities in new location are not required.</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Total Economic</strong></td>
<td></td>
<td>34%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>100%</td>
</tr>
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</table>
Once the evaluation matrix was finalized, various design alternatives were identified for each of the specific combined sewer components identified for upgrades, and for the upgrade and expansion to the Woodward Avenue WWTP. The following activities were carried out to develop and evaluate wastewater treatment alternatives:

**Combined Sewer Overflow (CSO) - Wet Weather Flow Control**

The following activities were carried out to develop alternatives to achieve the goals for wet weather (CSO) control:

1. The project team met in May 2007 to brainstorm and screen a long list of potential treatment technologies for wet weather flow control to achieve performance goals. From that workshop, a short list of feasible technologies was confirmed.

2. The project team developed conceptual design requirements, capital, operating and life-cycle costs and site layouts for the short-listed concepts, and identify potential impacts and mitigation measures. This information was used to complete the comparative evaluation of concepts.

3. The project team met with an extended City staff, including senior staff from the Water and Wastewater Division, to present the preliminary concepts, and receive input as related to operations and maintenance. This information was used to refine the evaluation.

Consistent with the Master Plan recommended strategy, a major component of the wet weather flow control is to provide capacity at the Woodward Avenue WWTP to treat wet weather flows. To that end, the following projects are recommended for the Woodward Avenue WWTP:

- Upgrade the existing raw wastewater pumping station to provide flexibility, redundancy and reliability to pump peak wet weather flows and minimize system surcharging.
- Modify the existing outfall to be used only for raw wastewater and primary effluent bypasses.
- Provide ability to chemically enhance primary treatment, to ensure performance can be achieved during peak sustained flows.
- Modify the existing disinfection facilities to provide chlorination and dechlorination to primary effluent bypasses and emergency raw wastewater bypasses.

As noted, by providing treatment capacity for wet weather flow at the Woodward Avenue WWTP, the system-wide goals for capture and treatment will be met. However, reducing the number of CSO events at the following locations is required to protect these sensitive areas:

- Cootes Paradise: Reduce CSO events at the Sterling CSO
- Sherman Inlet: Reduce CSO events at the Birch CSO
- Windermere Basin: Reduce CSO events at the Parkdale CSO.
A full range of technology options were considered and evaluated in detail for each location, including:

- CSO storage tanks, to capture flows during wet weather and release flow back to the collection system for treatment during dry weather.
- Reallocation of flows from a sensitive CSO outfall to an upstream or downstream location where the receiving water is less sensitive.

Based on the detailed evaluation, the following overall strategy was recommended:

- Divert flows from the Sterling service area to utilize available capacity in the Main-King CSO tank. The recommended approach to twin a section of pipe under Highway 403 to relieve an hydraulic limitation in the Main-King service area; this option offers the benefit of reducing local area constrictions while maximizing the use of the existing Main-King tank.
- Construct a pumping station at the Birch CSO outfall (Sherman Inlet) to reallocate flow to the Wentworth CSO outfall, and minimize discharges to the Sherman Inlet.
- Implement weir adjustments and system improvements to reallocate CSO from the Parkdale CSO to the Dunn CSO.
- Implement real-time control (RTC) improvements, including monitoring and automation of system control structures, to optimize the system operation and maximize capacity during a full range of wet weather flows.

**Woodward WWTP Expansion and Upgrade**

The following activities were carried out to develop alternatives to achieve the goals for expanding and upgrading the level of treatment at the Woodward Avenue WWTP:

1. An ‘expert panel’, including specialists in wastewater treatment processes, design, construction and cost estimating, met at a workshop with City staff in December 2006 to brainstorm and screen a long list of potential treatment technologies for the Woodward Avenue WWTP to achieve capacity and performance goals. From that workshop, a short list of feasible technologies was identified.
2. The project team developed conceptual design requirements, capital, operating and life-cycle costs and site layouts for the short-listed concepts, and identify potential impacts and mitigation measures. This information was used to complete the comparative evaluation of concepts.
3. The project team met with a larger group of City staff in May 2007 to present the preliminary concepts, and receive input as related to operations and maintenance, and this information was used to refine the evaluation.
4. At a secondary workshop with the ‘expert panel’, held at the end of May 2007, the recommendation for the preferred design concept was confirmed.

A full range of technologies were evaluated and screened for upgrading the Woodward Avenue WWTP. Seven short-listed alternatives were evaluated in detail using the criteria and scoring system described above. The preferred technology is described as follows:
Expand primary treatment capacity to provide redundancy for maintenance and ensure system performance.

Construct a new membrane filtration plant, to provide tertiary treatment of effluent from the existing conventional activated sludge (CAS).

Construct a new membrane bioreactor plant, parallel to the existing CAS plant and new membrane filters, to provide additional secondary and tertiary treatment capacity.

Construct a new outfall to be dedicated to convey tertiary treated effluent to Redhill Creek.

Construct new disinfection facilities for chlorination/dechlorination for treated effluent.

Implement the recommendations of the Biosolids Master Plan for on-site processing of wastewater residuals.

Complete plant upgrades to ensure that the existing facilities will operate reliably into the future.

Upgrade the power feed into the WWTP to meet the requirements of the plant expansion and upgrades.

Rationale for selecting this treatment alternative is as follows:

- The new secondary/tertiary treatment processes represent technologies that can consistently and reliably achieve the stringent effluent treatment objectives.
- The new treatment processes fit within the existing site with minimal disruption to existing buildings and processes, and allow land to remain for future expansion if required. Furthermore, there is minimal construction of new facilities along Woodward Avenue or Brampton Street reducing negative impacts to the neighbouring community. Some other alternatives required relocation of existing facilities to provide adequate site capacity.
- The treatment process train represents a relatively simple process to operate and maintain, compared to other options evaluated.
- The upgrades can be constructed with minimal disruption to the operation and performance of the Woodward Avenue WWTP during construction.
- The capital cost for these upgrades are at the low end of the range of all the options evaluated.

The above strategies represented the highest scoring options when considering all evaluation criteria for minimizing environmental, social and cost impacts.

**ALTERNATIVES FOR CONSIDERATION:**

Alternatives to endorsing the Class Environmental Assessment for Combined Sewer Overflow (CSO) Control and Woodward Avenue Wastewater Treatment Plant Expansion are:
Alternative 1 – Endorse the Class Environmental Assessment for Combined Sewer Overflow (CSO) Control and Woodward Avenue Wastewater Treatment Plant Expansion

For this alternative, the Class EA study is endorsed and the Environmental Study Report will be filed for a 30-day public review period, as per the Municipal Class Environmental Assessment process. Endorsement of the plan will provide staff with clear direction for proceeding with the design and construction of projects to provide capacity for growth, and meet the goals for wet weather management and improvements to Hamilton Harbour.

Specifically, a number of explicit issues will be addressed, as follows:

- Lack of wastewater treatment capacity to service planned growth.
- Significant bypass events of raw wastewater from the Woodward Avenue WWTP during wet weather periods.
- Poor reliability in the existing raw wastewater pumping station.
- Number of bypass events to sensitive receivers, including Cootes Paradise, Sherman Inlet, and Windermere Basin.
- Elimination of chlorinated effluent being discharged to the environment.
- Inadequate level of treatment to meet loading reduction targets established by Hamilton Harbour Remedial Action Plan.

This is the preferred alternative.

Alternative 2 – Do Not Endorse the Class Environmental Assessment for Wastewater Treatment and Wet Weather Flow Management in the Woodward Avenue WWTP Service Area

This option does not address the issues identified above and will limit the amount of development that may proceed in the future. The Ontario Ministry of the Environment (MOE) may not allow the City to continue to approve development unless there is a plan in place that identifies when and where additional wastewater treatment capacity will be provided to support growth, thus leading to a City-wide development freeze. The City will also not address the water quality concerns in Hamilton Harbour in a timely manner. In addition, the City has three years to bring its Official Plan (OP) into compliance with the Places to Grow document. In order to do so, the City must also have a plan in place to service the additional growth identified through GRIDS in the OP. In addition, delays in proceeding with the recommendation will jeopardize the Federal and Provincial funding as the timeline associated with these programs will not be met and under the terms of these agreements, funding would be forfeited.

This alternative is not recommended.
FINANCIAL/STAFFING/LEGAL IMPLICATIONS:

Financial Implications:
The financial cost to implement the combined sewer overflow (CSO) upgrades is estimated to be $82 million while the cost to implement the Woodward WWTP expansion is estimated at $420 million for a total of $502 million. These costs will be included as part of the 2008 Water, Wastewater and Storm Capital Budget and programmed over a 10-year forecast which is to be presented to Council in the fall.

Staffing Implications:
It is anticipated that staffing will be impacted initially from a Capital Works perspective as staff will be required to undertake the design and construction of these various assignments. In addition, Plant Operations will also be impacted as more staff will be required to operate and maintain this infrastructure once they are commissioned. On both counts, the Water and Wastewater Division has been strategic in re-organizing the existing staffing levels to address the immediate staffing needs. Future staffing needs will be assessed over the implementation period and increased staffing levels will be brought forward to Council as part of the annual Water, Wastewater and Storm Budget process.

Legal Implications:
There are no known legal implications associated with this recommendation however, municipal undertakings such as road improvements, water and wastewater projects are subject to Ontario’s Environmental Assessment Act. The Act allows for the approval of Class Environmental Assessments and the municipality has the option of following the planning process set out in the Municipal Engineers Association Class Environmental Assessment (June 2000). This study has followed the Master Plan Approach. The City is required to file the Master Plan/Environmental Study Report on the public record for a minimum 30-day review period. Only the Schedule C projects and not the Master Plan itself will be subject to the Part II Order appeal process (bump-up).

POLICIES AFFECTING PROPOSAL:

The Public Works Strategy Plan, Innovate Now
The recommendations from this report will assist in meeting the Public Works key goal, to be recognized as the centre of environmental and innovative excellence in Canada. In addition, implementing the recommendations will also assist Public Works in building on our Strategic Vision Drivers as follows:

- Communities (Services our communities connect with and trust) –

Implementing wastewater treatment expansion and upgrades in conjunction with CSO control strategies will improve our local environment. Hamilton Harbour has been designated an Area of Concern (AOC) since the mid-1980’s and many initiatives have been undertaken by stakeholders across the region to improve Harbour water quality. Hamilton wastewater improvements will continue recent stakeholder progress with the ultimate goal of delisting the AOC. A cleaner environment will result from this work
through reduced water pollution, contributing to a healthier community and a greater ability to make use of the waterfront and the Harbour as an area for recreation. In addition to the benefit that this new infrastructure will provide to the City and its residents, the selected approach minimizes the potential use of City green space needed for infrastructure. The proposed work includes technology which conserves footprint to benefit the community by retaining more existing green space and providing future expansion options past 2031.

- **People (Skilled teams ready for any situation)** –

This program demonstrates the ability of our City staff to respond to an important and complex opportunity that affects our community. Implementing proposed wastewater improvements requires the knowledge and skill of many staff that work with the system on a daily basis. Through an extensive consultation process stakeholders including many employees were invited to provide their input and contribute throughout the process of decision making. The proposed solution represents forward and innovative thinking that will highlight the City of Hamilton as a leader in protecting the environment. The implementation of advanced wastewater treatment technology on a significant scale demonstrates strong leadership in the industry and represents new ideas that will attract talented people who aspire to work for a forward-thinking municipality. Pivotal projects such as this have the ability to contribute to the positive image that Hamilton seeks to maintain and will promote a sense of pride in staff.

- **Process (Smart processes to match our needs)** –

Throughout the development process, plans have been formulated to ensure that all aspects of the Triple Bottom Line (TBL) approach to problem solving are considered. Social, Environmental, and Economic impacts were all assessed to provide a balanced approach to the preferred alternative. A detailed scoring and evaluation process was employed in order to effectively arrive at the optimal solution which meets Hamilton specific goals and objectives. The result is a sustainable long-term approach that addresses pressures from City growth, legislated requirements, and environmental protection.

- **Finances (Sound finance management for the long haul)**

The recommended alternative outlined above represents a strategy which will address several complex issues facing the City of Hamilton. Growth and development, Hamilton Harbour remediation, and government policy and legislation have all been considered in the development of the CSO control and wastewater treatment expansion plan. A significant capital upgrade plan is required to carry out this initiative. Economic impact to the City was a significant factor in the decision-making process. The end result is a program of upgrades which represent the lower range of costs among all options being considered while satisfying all of the program goals and objectives.

Other policies affecting or impacting this report include:

- **Ontario Environmental Assessment Act**
- **Ontario Environmental Protection Act**
- **Hamilton Harbour Remedial Action Plan**
• Water and Wastewater Master Plan Policy Paper, endorsed by Council on May 11, 2005
• Canadian Environmental Protection Act
• MOE Procedure F-5-5
• MOE Procedure F-5-1

**RELEVANT CONSULTATION:**

As a result of the wide range of stakeholders associated and interested in the successful expansion and upgrading of the City’s combined sewer system and main wastewater treatment facility, a number of special committees including Technical Advisory Committee (TAC), Community Liaison Committee (CLC) and Public Works Sub-Committee (PWSC) were created. In addition, a number of Public Information Centres were held. The following summarizes the consultation process.

Public Health Services was also consulted as it relates to disinfection of the Woodward Avenue effluent. Currently, disinfection is practiced seasonally between May and October. Public Health Services expressed concern with potential social impacts associated with lack of disinfection during the off season. As a result, year round disinfection will now be considered throughout the design phase of the project.

There has also been consultation throughout the various phases of the Water and Wastewater Master Plan with Corporate Services, with respect to the Financing and Development Charges components; and also the Planning and Economic Development Department with respect to the phasing of development.

The following is a summary of the various committee meetings which were undertaken throughout Phases 3 and 4 of this project:

**Technical Advisory Committee**
- February 28, 2007
- June 14, 2007
- October 4, 2007

**Community Liaison Committee**
- March 6, 2007
- June 14, 2007
- September 26, 2007

**Public Works Sub-Committee**
- March 20, 2007
- May 23, 2007
- July 9, 2007
- September 27, 2007

**Public Information Centres**
- August 21, 2007
In addition, the Class EA process requires the Proponent to contact all relevant Review Agencies at each of the prescribed Mandatory Points of Contact. The Review Agency list was established at the beginning of the study and notifications made by mail to all as required.

**CITY STRATEGIC COMMITMENT:**

By evaluating the “Triple Bottom Line”, (community, environment, economic implications) we can make choices that create value across all three bottom lines, moving us closer to our vision for a sustainable community, and Provincial interests.

Community Well-Being is enhanced. □ Yes □ No
Maximum utilization of existing infrastructure

Environmental Well-Being is enhanced. □ Yes □ No
Supports improvement to Hamilton Harbour Water Quality

Economic Well-Being is enhanced. □ Yes □ No
Maximum utilization of existing infrastructure and supports future growth, both employment and residential, within the City of Hamilton

Does the option you are recommending create value across all three bottom lines? □ Yes □ No

Class EA evaluation process considered natural environment, social environment and economics in all decisions

Do the options you are recommending make Hamilton a City of choice for high performance public servants? □ Yes □ No