ATTACHMENT 1

Draft Executive Summary of

Highland Creek Treatment Plant Biosolids Class EA

ES.1 Introduction

The Highland Creek Treatment Plant (HCTP) is one of the four wastewater treatment plants operated by the City of Toronto (the City). It has a rated capacity of 219,000 m^3/d and provides treatment capacity to service approximately 15,250 hectares (37,682 acres) and approximately 500,000 people in the eastern portion of the City of Toronto. The plant provides conventional activated sludge treatment and discharges its effluent into Lake Ontario. Currently, residual solids (sludge) from the treatment process are anaerobically digested and dewatered, and the resulting biosolids are incinerated in two (2) multiple hearth incinerators. Ash is stored temporarily on-site in two (2) lagoons which are emptied and cleaned out once per year, and the ash is hauled off-site for disposal at the City's Green Lane Landfill.

The multiple hearth incinerators are older technology, and a major maintenance program has been implemented to extend their service life so that they can still meet regulatory requirements for another 10 years. In light of the limited remaining servicing life of the incinerators, a new solution is required to manage the plant's wastewater solids.

The City has initiated this Schedule B Class Environmental Assessment (Class EA) to plan a future biosolids management solution at the HCTP. This process has been initiated now to provide adequate time for the design, construction and commissioning of new facilities. The study area defined by the Class EA includes Wards 43 and 44 within the City of Toronto, surrounding the HCTP.

ES.2 Municipal Class Environmental Assessment

The HCTP Biosolids Class EA Study is classified as a Schedule B project, and was conducted to satisfy the requirements of Phases 1 and 2 of the Class EA process, including:

Phase 1: Identification of the problem or opportunity.

Phase 2: Identification and evaluation of alternative solutions to determine a preferred solution.

Members of the public and other stakeholder groups were given opportunities to provide input and comments throughout the process. Notification of study commencement and public notices for three (3) Public Information Centres (PICs) were distributed to residents in the vicinity of the HCTP and placed in local newspaper (Scarborough Mirror, East Section). Information in regards to the Class EA process was provided at each PIC, and posted on the project website.

The findings from Phase 1 and Phase 2 of the Class EA process are summarized in this Final Report, which will be brought to the Public Works and Infrastructure Committee of City Council for consideration. Upon the approval by the City Council, a Notice of Completion will be published in local newspapers, distributed to those on the project contact list, and the final report will be released for a 30-day public review.

ES.3 Project Methodology

This project followed a Schedule B Class EA process and includes the following steps:

1. Review the existing biosolids management program and features of the study area, document the biosolids management needs and criteria, and prepare a Problem/Opportunity Statement.
2. Develop a long-list of biosolids management alternatives and identify a short-list of feasible alternatives for the HCTP via a screening process based on a set of “must-meet” criteria.
3. Identify the best way to transport biosolids from the HCTP via a transportation mode and route analysis considering the suitability and flexibility of the transportation mode, environmental and regulatory requirements, and the associated social and economic impacts.
4. Further analyse the shortlisted biosolids management alternatives to develop information on the design and operating requirements, impacts, and costs, with input from an air quality impact assessment and a noise analysis. This information was then used as input into the Health Impact Assessment (HIA) and the final decision-making model to confirm the preferred biosolids management alternative for the HCTP.
5. Conduct an HIA to evaluate the potential impacts of each alternative on health and wellness of the community and the distribution of the potential impacts within the population. The results of the HIA were used to inform the Class EA and the decision-making process.
6. Determine the preferred biosolids management alternative for the HCTP through a comparative evaluation of the shortlisted alternatives - considering community, health, environmental and economic factors.
7. Prepare a Class EA Report to document the entire study, including consultation activities, information on each biosolids management alternative, and detailed evaluation process. City Council approval and a 30-day public review period are required.

The overall Class EA process for this project is presented in Figure ES1.

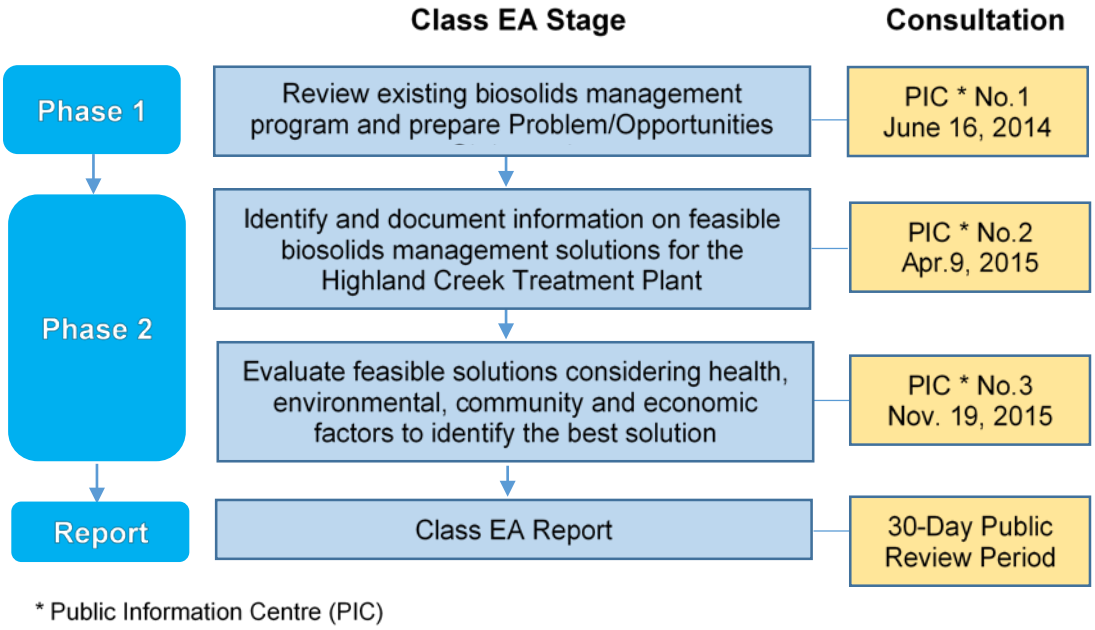

Figure ES1. Highland Creek Treatment Plant Biosolids Management Class EA Process

ES.4 Project Decision-Making Process

A multi-criteria analysis (MCA) was selected for the HCTP Biosolids Management Class EA. Specifically, a weighted summation form of the MCA was used to allow for a systematic, rational and reproducible comparison and ranking of biosolids management alternatives, and to identify those alternatives that best meet the study criteria.

A total of nineteen (19) criteria were developed for the model, and individual criteria were grouped under four broad goals, and performance objectives were identified for each of the goals. The four goals include:

+ Protect public health
+ Minimize impacts to the environment
+ Minimize community impacts
+ Minimize costs

Weights were assigned to each of the four goals based on comment sheet responses from members of the public and verified by members of the City project team. The selected weightings reflect the relative importance of each of these goals to a broad range of respondents. For each criterion, a unique score was assigned based on anticipated benefits, risk and impacts. The total score of each alternative was calculated as the sum of the score for each criterion multiplied by the weight of the criterion.

Various information was developed within the Class EA Study in order to provide comprehensive information and inform in the final decision-making process. These include:

+ Focused studies:
  - Health Impact Assessment (HIA)

- Human Health Risk Assessment (HHRA)
- Cumulative Air Impact Assessment and Modelling
- Noise Impact Assessment
- Traffic Route Assessment

+ Facilities requirements:
  - Process description and schematic
  - Footprint requirement on site
  - Emission control
  - Odour management
  - Health and safety features
  - Noise
  - On-site storage requirement
+ Management approach:
  - Market/outlet description and reliability
  - Contingency
+ Operating requirements:
  - Staffing
  - Electricity use
  - Natural gas use
  - Water use
  - Truck fuel use
+ Costs:
  - Life-cycle costs, including capital and operating costs
+ Impacts:
  - Air emissions
  - Traffic, noise, dust, odour during construction and operation
  - Greenhouse gas (GHG) generation
+ Community feedback:
  - Three (3) PICs
  - Two (2) HIA Stakeholder Workshops

ES.5 Problem and Opportunity Statement

The HCTP generates approximately 110 wet tonnes of biosolids each day (40,150 per year). Currently, the plant has two (2) multiple hearth incinerators that are used to combust the biosolids, resulting in a

residual ash that is stored in lagoons on-site, and ultimately disposed off-site in the City's Green Lane Landfill.

The incinerators are older technology, and a major maintenance program has been implemented to extend their service life so that they can continue to meet regulatory requirements for another 10 years. At that time, a new biosolids management approach will be needed with capacity to manage 148 wet tonnes per day (54,615 wet tonnes per year). This is the quantity of biosolids that would be generated at the rated capacity of the Highland Creek Treatment Plant – and therefore a key design criteria for this study.

The City needs to start planning for new (future) biosolids management infrastructure at HCTP to allow time for design, construction and commissioning. Through the Schedule B Class Environmental Assessment (Class EA) planning study, there is an opportunity to examine new technologies that may have less impact or offer greater benefit with respect to environmental, community and public health criteria.

ES.6 Review of Biosolids Management Alternatives

Long-list of Biosolids Management Alternatives

Biosolids management alternatives available for the HCTP can be categorized into three general groups, and within each group, several technologies were reviewed to determine their feasibility. The long-list of technologies reviewed under each category is as follows:

+ Category 1: On-site thermal destruction, with off-site residuals management
  - Fluidized bed incineration and ash management;
  - Sludge-to-fuel processes, including gasification and pyrolysis;
  - Other emerging technologies, including super critical water oxidation, plasma assisted sludge oxidation (PASO), and vitrification.
+ Category 2: Biosolids transport off-site for management
  - Beneficial use of biosolids, including land application, further processing into a fertilizer or compost, or landfilling, depending on the contractor(s).
+ Category 3: On-site processing of biosolids to generate a material that can be used as a fertilizer product and transport of this material off-site for distribution/marketing
  - Drying (Pelletization)
  - Alkaline stabilization
  - Lystek process
  - Composting

Each alternative on the long list of biosolids management technologies was assessed (i.e., screened) to evaluate its ability to meet the following criteria:

1. Alternative is in operation and reliable for a minimum of 2 years at a similar scale elsewhere North America.
2. Alternative can fit within the Highland Creek Treatment Plant site.

3. Alternative provides reliable biosolids management on a year round basis.
4. Alternative does not increase traffic to/from the Highland Creek Treatment Plant over and beyond that of a regular biosolids truck haulage program. For instance, there are no additional trucks required to deliver additional chemicals or filler materials to the facility and no additional volumes of end product beyond the volumes of biosolids that would normally be generated at the facility.

Based on the screening criteria, the following biosolids management alternatives were considered feasible for the HCTP and carried forward for more detailed evaluation in the Class EA study:

+ Alternative 1: Incineration (fluidized bed incinerators) with ash management
+ Alternative 2: Biosolids (digested & dewatered) hauled off-site for management
+ Alternative 3: On-site pelletization and pellets hauled off-site for distribution as a fertilizer product

A number of process enhancements were reviewed that should be further evaluated at a later date when developing the design concept and implementation plan for the selected alternative. These include:

+ Incineration of raw sludge and ash recycling (if incineration is preferred)
+ Sludge pre-treatment using thermal hydrolysis (for all alternatives)
+ Energy recovery from biogas (for all alternatives)

Note that none of these enhancements have an impact on the selection of the preferred option, nor will they have any adverse health or environment related impacts. Therefore their exclusion from the Class EA has no material impact on the selection of the recommended alternative.

Transportation Mode Assessment and Route Analysis

Two of the three shortlisted biosolids management alternatives require transport of biosolids or processed biosolids product (i.e., pellets) from the HCTP on the regular, year round basis. The other shortlisted alternative requires transport of ash once a year during a one to two week summer period.

Based on a review of the study area, four (4) potential modes of biosolids transportation were examined. These included:

+ Truck
+ Pipeline
+ Rail
+ Water (barge)

The potential transportation modes were assessed in terms of their suitability for the quantity of biosolids generated, the flexibility to accommodate multiple destinations and changes to the end destinations, environmental and regulatory requirements, as well as the social impacts and economics. The assessment

concludes that trucking is the only suitable mode of transporting biosolids or processed biosolids materials from the HCTP site.

Truck transport from the HCTP site introduces risks associated with traffic safety, as well as noise and other potential negative impacts on the community. In light of these, a comprehensive evaluation of alternative truck routes from the HCTP site to Highway 401 was completed.

A total of six (6) potential routes from the HCTP to the nearest Highway 401 intersections were identified. The potential routes were evaluated based on fifteen (15) criteria related to safety, operational requirements and community impacts. Information about land uses on each road segment, bicycle routes, pedestrian routes, public transit, signaling, road and intersection features and traffic was considered in the analysis.

Based on the analysis, two routes were found to have the least potential impacts to the community. These were carried forward in the detailed analysis. The routes are as follows:

+ Route 1 runs west along Coronation Dr. from Beechgrove Dr. to Manse Rd., where it turns north towards Lawrence Ave. It then turns west at the signalized intersection of Manse Rd. and Lawrence Ave. East, and north on Morningside Ave. towards Highway 401. This route is approximately 7 km in length.
+ Route 4 starts northbound on Beechgrove Dr. and turns east on Lawrence Ave. E., then north at the signalized intersection of Lawrence Ave. and Port Union Rd, proceeding northbound towards Highway 401. This route is approximately 6 km in length.

ES.7 Development of Shortlisted Biosolids Management Alternatives

The three (3) short-listed Biosolids Management alternatives were analysed to identify their environmental, community, health and economic impacts. Two supporting studies were completed to support the analysis – namely an Air Quality Impact Assessment and a Noise Impact Assessment.

Although not a viable solution due to the age and condition of the existing multiple hearth incinerators, the "do nothing" scenarios was included for comparison purposes.

Alternative 1: On-Site Fluidized Bed Incineration with Ash Management

For Alternative 1, the plant's existing anaerobic digestion process would continue to be operated. The resulting biosolids would be dewatered to a solids content of 25-30% before being fed to new fluidized bed incinerators. The existing older multiple hearth incinerators would continue to operate until the new infrastructure is in place.

Incineration takes advantage of the fuel value of feed materials and the energy can be recovered to generate electricity, mechanically drive blowers, or for process and building heating at the HCTP.

The design concept for Alternative 1 would be based on providing two (2) incinerators, each with the ability to manage the full capacity of biosolids generated at the HCTP and therefore provide the necessary redundancy. In other words, if there is a malfunction in the system, there is always a back-up system to allow for uninterrupted service. This is critical in the design of municipal biosolids treatment facilities as there is limited ability to interrupt or suspend the continuous treatment of wastewater. In addition to the currently existing emission treatment equipment used for the multiple hearth incinerators (i.e., wet scrubbing

to remove particulate matter and water soluble air contaminants), new air pollution control equipment with mercury reduction technology would also be installed.

There is potential for the new fluidized bed incinerators to be constructed in the existing multiple hearth incineration building. The construction would be staged such that one fluidized bed incinerator would be constructed in the currently unoccupied space within the building, and following commissioning, the existing multiple hearth incinerators would be taken out of service and demolished. The second fluidized bed incinerator could then be constructed in the place of the old multiple hearth units. It is anticipated that a condition assessment of the existing stack would be conducted to confirm its suitability for continued long term service.

Ash would be stored on-site in the existing lagoons which would be cleaned out once per year (during a one to two week summer period) and hauled off-site for disposal in the City's Green Lane Landfill. Note that reuse of the ash has not been considered in this study but is a viable option to be assessed during implementation. At the full HCTP rated capacity, it is estimated that a total of 86 trucks (40-tonne capacity) are needed to dispose of the ash.

The incineration process can use either undigested (raw) sludge or digested biosolids. While the digesters are undersized for the full volume of sludge that can be generated at the HCTP rated capacity, digested and undigested sludge/biosolids can be blended before being fed to the fluidized bed incinerator units. Therefore, there is no need to expand the digester capacity under this alternative.

Alternative 2: Transport Biosolids Off-Site with Contracted Off-Site Management

For Alternative 2, dewatered biosolids would be hauled from the HCTP by one or more contractors, and stored, further processed, distributed or disposed of off-site. Contractors would be selected through a competitive bidding process by the City. There are a number of possible management approaches that contractors could use. These include:

+ Seasonal storage with beneficial use on agricultural land, in accordance with Ontario's Nutrient Management Act (NMA) and other Provincial regulations
+ Further processing into a fertilizer product, meeting requirements of the Federal Fertilizers Act, and distribution as a fertilizer
+ Further processing into a compost, meeting Canadian Council for the Ministers of the Environment (CCME) Compost Guidelines
+ Landfilling in a municipal landfill, in accordance with the Certificate of Approval for the landfill and the Environmental Protection Act (in Ontario), or the legislation of the specific jurisdiction
+ Other uses (e.g. land reclamation), in accordance with applicable regulations.

At the HCTP, a new biosolids truck loading facility would be required. The existing multiple hearth incinerators would continue to operate until the new truck loading facility is in operation.

The truck loading facility would be designed based on a "maximum week" production rate of 210 m^3/d (for the design year of 2032) and accommodate 5.5 days of dewatered biosolids storage, resulting in a total biosolids storage volume of 1,200 m^3. The facility would enable a truck (40-tonne capacity) to be loaded within a 30 minute period. Prior to discharge, odourous air would be contained and treated in a single stage

biofiltration process. It is estimated that approximately 4 to 6 trucks (40-tonne capacity) per weekday are required at the plant capacity to haul biosolids off-site on a year round basis.

The existing digesters at the HCTP were designed on the premise that raw sludge can bypass the anaerobic digestion process and go directly to the multiple hearth incinerators when the digestion process is overloaded or when components are out of service for maintenance. For Alternative 2, the incineration facility would be decommissioned, and conversion to a beneficial use strategy would require the anaerobic digestion process to provide the necessary system reliability to handle normal and adverse operating conditions as well as planned maintenance for tank cleaning. New digesters would need to be constructed under Alternative 2 in order to provide the necessary 15 days digestion capacity required by existing provincial regulations.

Alternative 3: On-Site Pelletization with Contracted Off-Site Management of Pellets

Biosolids pelletization involves the use of heat to evaporate water from biosolids, generating a finished material with a total solids concentration of 90% or greater. It is preferable that the dried material be in pellet form, typically 2 to 4 mm in size, to make it suitable for marketing as a fertilizer. The high temperature in the process reduces pathogens within the biosolids to below detection level, resulting in a material that can be registered under the Canadian Food Inspection Agency (CFIA) as a fertilizer product.

Pelletizers require significant energy input to elevate the temperature of the water in the biosolids to the point of evaporation. Where available, natural gas is generally used as the source of energy. Alternatively, biogas generated in the digestion process can be used to provide a portion of the energy demand.

The volume of dried pellets generated from the process is about 30% of the volume of the biosolids feed material. Due to the risk of reheating and spontaneous combustion, the dried product must be stored where it can be kept dry; engineered silos and other systems can be used to meet this need. Alternatively, the pellets can be bagged or hauled off-site for management/distribution soon after production, but short-term on-site storage would be still be required to optimize the haulage operation.

The pellets would need to be hauled from the HCTP site therefore requiring an on-site truck loading facility (with short term storage) specifically designed to handle the pellet product. The number of trucks required to haul pellets would be 1 to 2 trucks per week day on a year round basis.

The design of the pelletization facility would include two dryers, each with capacity to process biosolids generated at the HCTP design capacity - for redundancy and maintenance purposes. In addition, an enclosed truck loading facility similar to the facility discussed for Alternative 2 would also be needed in order to load trucks that would haul the finished product. The equipment would be enclosed in a building with engineered storage silos. Odour control would be provided to capture air and treat odours from the pelletization facility and the truck loading facility. Dust control features would also be included within both the pelletizer and truck loading facility

As noted for Alternative 2, the digesters at the HCTP are undersized to process the full volume of sludge generation. Biosolids pelletizers require digested biosolids as feed material as experience has shown that undigested biosolids do not properly form into pellets. Therefore, expansion of the digestion capacity is required for this alternative.

Summary

Table ES1 presents a summary of key information related to each of the short-listed alternatives. All the information was used as input into this study and the final decision-making process of the Class EA.

Table ES1. Summary of Information on the Shortlisted Biosolids Management Alternatives for the Highland Creek Treatment Plant

Item	Base Case	Shortlisted Alternatives		
	Alternative 0: On-site multiple hearth incineration of biosolids	**Alternative 1: On-site fluidized bed incineration of biosolids**	**Alternative 2: Hauling biosolids off-site for management**	**Alternative 3: On-site pelletization and haulage and management off-site**
Biosolids material to be managed	Ash	Ash	Biosolids	Pellets
Number of trucks/y	86	86	1,365	395
New facilities to be constructed	N/A	• Fluidized bed incineration facility	• Truck loading facility • Additional digesters	• Pelletization facility • Pellets loading facility • Additional digesters
On-site odour management	• Minimal odour potential during operation, incinerator is enclosed in a building • Ash is odourless	• Minimal odour potential during operation, incinerator is enclosed in a building • Ash is odourless	• Truck loading facility designed to enclose trucks when loading • Odorous air from building collected and treated	• City staff will experience odour within drying facility • Odorous air from drying and truck loading facility collected and treated • Truck loading facility designed to enclose trucks when loading
On-site noise management	• Facility is sound insulated	• Facility would be required to be sound insulated so that there would be no increase in noise level at property line	• Facility would be required to be sound insulated so that there would be no increase in noise level at property line	• Facilities would be required to be sound insulated so that there would be no increase in noise level at property line
Contingency for management alternative	• 1 redundant multiple hearth incinerator provides contingency	• 1 redundant fluidized bed incinerator provides contingency	• 2 loading bays within truck loading facility provides contingency for hauling off-site • Sufficient contracts in place to manage biosolids on a year round basis	• 1 redundant dryer unit provides contingency • 2 loading bays within pellets loading facility provides contingency for hauling off-site
Total GHG emissions (kg CO_2 eq/y)	8,737,000	1,149,000	1,702,000	3,338,000
Total Capital	N/A	$107,000,000	$112,500,000	$148,000,000

Item	Base Case	Shortlisted Alternatives		
	Alternative 0: On-site multiple hearth incineration of biosolids	**Alternative 1: On-site fluidized bed incineration of biosolids**	**Alternative 2: Hauling biosolids off-site for management**	**Alternative 3: On-site pelletization and haulage and management off-site**
Annual O&M Total	N/A	$4,670,000	$8,438,000	$5,808,000
25-y Life Cycle Cost	N/A	$267,000,000	$387,700,000	$346,000,000

ES.8 Detailed Evaluation of Biosolids Management Alternatives

The three (3) shortlisted biosolids management alternatives for the HCTP were evaluated through a comprehensive decision-making model to provide rationale for the ranking of alternatives relative to their ability to meet the project goals. As all of the alternatives include haulage of material, in one form or other, from the plant; the evaluation was based on all alternatives using either of the two highest ranked routes, i.e., Route 1 (along Morningside Ave.) or Route 4 (along Port Union Rd.). The impact assessment of the biosolids management alternatives included the following categories:

+ Health
+ Environment
+ Community
+ Cost

The summary of the scores, weighted scores and ranking of the alternatives are presented in Table ES2. The incineration alternative (Alternative 1) would result in the least community impacts and lowest costs. Biosolids haulage (Alternative 2) scored the lowest with respect to community impacts, capital costs and operating costs. The health impacts associated with the alternatives are very small and there are no appreciable differences in health impacts for each of the three short-listed alternatives.

Table ES2. Summary of Scores and Rankings of the Shortlisted Biosolids Management Alternatives for the Highland Creek Treatment Plant

Goal and Weighting	Performance Objective	Criteria	Alternative 1 Fluidized Bed Incineration		Alternative 2 Haul Biosolids Off-Site		Alternative 3 Pelletization	
			Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Protect Public Health (33%)	Minimize Impacts to the Health of Members of the Community	1. Minimize health impacts due to air emissions	5	33%	5	33%	5	33%
		2. Minimize stress related health impacts	5		5		5	
		3. Minimize risk of unsafe traffic conditions	5		5		5	
		4. Minimize health impacts from contamination of soils	5		5		5	
		5. Minimize health impacts that may result due to changes to the neighbourhood characteristics	5		5		5	
		6. Minimize risk of increasing health inequities	5		5		5	
Minimize Impacts to the Environment (27%)	Protect Air Quality	7. Minimize environmental impacts due to air emissions	5	24%	5	22%	5	25%
	Protect Global Climate	8. Minimize greenhouse gas emissions	5		5		5	
	Protect Surface Water, Groundwater, Land and Terrestrial Resources	9. Recover soil conditioning and fertilizer value of biosolids	2		4		5	
		10. Minimize impact of spills or other adverse events during processing, handling, transportation and management	5		4		5	
		11. Minimize impacts during construction	5		5		5	
	Ensure a Reliable and Sustainable End Use	12. Minimize risks caused by service disruptions in the end use market	5		2		3	
		13. Minimize the use of non-renewable resources and energy sources	4		3		4	

Goal and Weighting	Performance Objective	Criteria	Alternative 1 Fluidized Bed Incineration		Alternative 2 Haul Biosolids Off-Site		Alternative 3 Pelletization	
			Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Minimize Community Impacts (24%)	Maximize Quality of Community Life	14. Minimize potential sources of nuisance odours	5	23%	3	15%	3	15%
		15. Minimize potential for other nuisance community impacts (noise, traffic, dust, mud, aesthetics)	5		4		5	
		16. Minimize negative public (as defined by community members that participated in the stakeholder consultation, mostly local neighbourhood) opinion and perception of risk	5		1		2	
		17. Minimize community impacts during construction	4		4		4	
	Maximize Quality of HCTP Working Conditions, Staff Health and Safety	18. Minimize odours, noise, dust and other potential exposures associated with the operation of biosolids facilities at the HCTP	5		4		2	
Minimize cost (16%)	Minimize cost	19. Minimize capital, operating and lifecycle costs.	5	16%	3.4	11%	3.9	12%
Total Weighted Score				**96%**		**81%**		**85%**

ES.9 Health Impact Assessment (HIA)

As an enhancement over and above previously conducted biosolids studies, this Class EA study includes input from a HIA conducted under the guidance of staff from Toronto Public Health. The HIA was used to inform the Class EA process by providing an in-depth assessment of the potential health impacts of biosolids management alternatives for HCTP and by providing a thorough review of the alternatives from a health risk and health equity perspective.

Overall, the health impacts associated with the alternatives are very small and there are no appreciable differences in health impacts for the three short-listed alternatives. All alternatives evaluated would achieve substantial reductions in air emissions compared to the Base Case. Among the three alternatives, fluidized bed incineration (Alternative 1) is anticipated to result in the highest release of air pollutants, and the haulage of biosolids off-site (Alternative 2) and on-site pelletization and haulage off-site (Alternative 3) is expected to increase risks related to truck traffic (i.e., safety, odour and noise). For the shortlisted haulage routes, Route 4 (along Port Union Rd) has lower predicted impacts on the community in terms of pedestrian safety, noise and vulnerable population, compared to Route 1 (along Morningside Ave).

Results of the HIA were used in the final decision-making process to determine the preferred biosolids management alternative for the HCTP.

ES.10 Summary of Consultation Results and Community Input

The development of this HCTP Biosolids Class EA included an active public consultation program that sought the comments and concerns of the public and other stakeholders.

In general, the majority of the members of the public showed strong support towards the fluidized bed incineration (Alternative 1), while expressing strong opposition to additional truck traffic through the community (Alternatives 2 and 3). To a much lesser extent, there were concerns expressed about the health impacts of land application of biosolids (Alternative 2) or pellets (Alternative 3), as well as concerns regarding air emissions from incineration.

Comments and concerns raised during the public consultation process were taken into consideration in the HIA study and the evaluation of relative impacts of each alternative. A number of mitigation measures were identified through the HIA study which would be put in place to reduce any impacts to community health, depending on the preferred alternative selected. These mitigation measures included mercury capture and wet scrubbers for incineration air emission control, standard operating procedures for safe transport of biosolids materials, odour control strategies for biosolids and pellets processing and truck loading facilities, as well as dust control features for the pelletization facility.

ES.11 Recommendations

Overall, Alternative 1 (fluidized bed incineration with ash management) is the recommended biosolids management alternative for the HCTP. It would result in the lowest overall impact and has the following advantages:

- Most reliable biosolids management alternative for the HCTP (least dependent on external factors such as third party service providers);
- Lowest GHG emissions, lowest use of diesel fuel and no natural gas use;
- Most supported alternative by members of the local community (i.e., residents and community associations within Wards 43 and 44);
- Lowest truck traffic (no change from the current operations);
- Least odourous and least impact to HCTP staff - working conditions; and
- Lowest capital, operating and therefore life-cycle cost.