
SECTION 3 SCOPE OF WORK

3.1 SCOPE OF WORK OVERVIEW

- .1 The main purpose of this EA study is to determine a preferred biosolids management strategy for HCTP. The EA study shall be undertaken as a Schedule B project under the Municipal Class Environmental Assessment Process.
- .3 In general the work to be completed as part of this EA study process shall include but not be limited to the following:
 - a. Preparation of an inventory of all viable biosolids management options available, including the "do nothing" option of continuing with the operation of the current multiple hearth incinerators at the HCTP.
 - b. An inventory and a screening level assessment of all viable biosolids management options to obtain a short list of biosolids management options to undertake a more detailed assessment.
 - c. Undertaking a Cumulative Impact Assessment (CIA) under the direction of the Environment and Energy Office (EEO) to assess emissions impacts associated with each short listed biosolids management option including truck haulage of biosolids from HCTP and the management of biosolids onsite.
 - d. Undertaking a Health Impact Assessment (HIA) under the direction of TPH using TPH's HIA framework for the short listed biosolids management options.
 - e. Development of a comparative assessment that takes into consideration environmental, social, HIA results, CIA results and financial factors for the short listed biosolids management options for use in determining the best overall approach in selecting a biosolids management strategy for HCTP.
 - f. Consultation with the public, the community surrounding the treatment plant and a broad range of stakeholders as required by the MEA Class EA process, with the intent of keeping them informed of the Project and to gain an understanding of public concerns and values so these can be reflected in the new evaluation of the biosolids management options.
 - g. Preparation of a final detailed stand alone report that brings together information presented in the Technical Memoranda.

3.2 DETAILED SCOPE OF WORK

3.2.1 Present Solids Handling Operations and Future Biosolids Generation Rates

- .1 Complete a detailed review and document the existing biosolids management process being utilized at the HCTP. Also include the impact of the Thickened Waste Activated Sludge facility that is to be commissioned in this review. Prepare an updated solids mass balance during this review.

- .2 Estimate future biosolids generation rates considering future population growth and increases in wastewater flow for both residential and non-residential sources for the next 25 years.
- .3 Prepare a Technical Memorandum detailing the information gathered above (TM 1).

3.2.2 *Identification of a Long List of Biosolids Management Options*

- .1 Prepare a long list of biosolids management and technologies currently available. In preparing a long list of biosolids management options to be considered, emerging technologies should be included. Information gathered for each management option should include but not be limited to:
 - a. A detailed description of the option
 - b. Ability to meet or exceed current regulatory requirements and a discussion on any potential future requirements that may play a role
 - c. Use of the management option in other large scale wastewater treatment plants globally with particular emphasis placed on biosolids programs in North America.
- .2 Upon completion of the long list of options and technologies, a screening level assessment shall be completed. During the detailed evaluation, the screening level assessment will allow the Consultant to focus on a short list of potential options and technologies that are most practical and feasible for the City and that can be implemented in the near term. The screening criteria should include but not be limited to the following pass/fail criteria:
 - a. Ability to meet existing regulatory requirements
 - b. A proven management option or technology that has been used for municipal biosolids for at least 2 years at a facility of similar scale to HCTP
 - c. Technical feasibility, and
 - d. Security of supply and treatment
- .3 Prepare a Technical Memorandum detailing the information gathered and the evaluation completed, detailing the resulting short listed management options resulting from this evaluation (TM2).
- .4 Prepare a long list of modes of transportation that can be used to transport biosolids from the HCTP should an offsite management option be recommended as the preferred option to manage biosolids from HCTP. Qualitatively compare the various transportation modes to one another taking under consideration factors such as but not limited to:
 - a. Ease of implementation at the HCTP
 - b. Third party requirements
 - c. Ease of transport to end use destinations and estimated costs
 - d. Related regulatory requirements

Note. Extensive work was completed during the update of the BMP in 2011 and should be taken into consideration when undertaking this comparison.

- .5 Prepare a Technical Memorandum detailing the relevant information gathered on the various modes of transportation under consideration and recommend one mode of transportation to be carried forward to the evaluation of the short listed biosolids management options (TM3).

3.2.3 Cumulative Impact Air Modeling Assessment

- .1 Evaluate the cumulative impact of emissions that may impact air quality in the Scarborough East area of Toronto (Wards 43 and 44) for all short listed biosolids management options. The contribution of criteria air contaminants, persistent organic pollutants and other toxic, carcinogenic and reported substances are to be evaluated. The assessment will be developed with direction from staff from the Environment and Energy Office (EEO).
- .2 Utilizing EEO's Calpuff suite based model (Calpuff Model), the Consultant will:
 - a. Develop appropriate transportation emissions data by volume, transportation type, and time of day, along all travelled modes and arteries (for the purposes of this Proposal, assume road and highway segments between the HCTP and Highway 401);
 - b. Develop appropriate treatment plant emissions data by biosolids treated volume and time of day associated with the short-listed onsite process/management options at HCTP ;
 - c. Input the resulting transportation emissions data and onsite process emissions data as separate layers into the existing local air quality scaled Calpuff Model;
 - d. Establish the required Tier 3 model output files specifically for City Wards 43 and 44 at a minimum receptor grid point density of 200 meters and for each of the City's standard 30 Priority Air Contaminants (listed below) using the EEO's local air quality model;

The City's Priority Air Contaminants (30 PACs)

	Priority Air Contaminant		Priority Air Contaminant
1	Nitrogen Oxides	16	Dichloromethane
2	Carbon Monoxide (CO);	17	Chloroform
3	Sulphur Dioxide	18	Carbon tetrachloride
4	PM _{2.5}	19	Vinyl Chloride
5	PM ₁₀	20	1,2-Dichloroethane
6	VOC (anthropogenic/Biogenic)	21	Trichloroethylene
7	Formaldehyde	22	Tetrachloroethylene
8	Acetaldehyde	23	Ethylene dibromide
9	Acrolein	24	Lead
10	1,3-Butadiene	25	Cadmium
11	Benzene	26	Chromium
12	Toluene	27	Nickel compounds
13	1,4-Dichlorobenzene	28	Mercury
14	PAHs (as B[a]Ps)	29	Manganese
15	Chloromethane	30	Ozone

* NOTE: Ozone concentrations are to be estimated at all receptor points using an appropriate non-photochemical model after the completion of the Calpuff data extraction of the other 29 contaminants has identified the precursors at all receptor points.

- e. Establish the required Tier 3 model output files using the EEO's local air quality model to depict:
- (i) All current emissions emanating from HCTP by time (i.e., the status quo);
 - (ii) All future changes of emissions emanating from the possible introduction and use of an onsite process management option at HCTP by time as a single source point.
- f. Run Tier 3 (i.e., Toronto only) of the Calpuff Model including the transportation emissions data and the onsite processing emissions data as separate layers to obtain output concentration files for City Wards 43 and 44 at the required minimum receptor grid point density of one every 200 meters and for each of the City's standard 30 Priority Air Contaminants to obtain:
- (iii) Annual average concentrations of each contaminant,
 - (iv) 24 hour worse-case concentrations for each contaminant, and
 - (v) The 98th percentile for each contaminant.

Ozone is to be modeled with the aid of an additional non-photochemical model to be created and used to estimate ozone concentration based on the interaction of Calpuff modeled precursors and average regional current monitored levels.

- g. Create separate GIS templates of the receptor points in Wards 43 and 44 including but not limited to boundaries and main roads, and using the template, map (and save to digital file in EEO) :
- (i) The annual average concentrations of each contaminant from all sources
 - (ii) The annual average concentrations of each contaminant from transportation emissions sources only
 - (iii) The annual average concentrations of each contaminant from the existing incinerator emissions sources only
 - (iv) The annual average concentrations of each contaminant from any shortlisted onsite process single source point management biosolids options only
 - (v) The 24 hour worse-case concentrations for each contaminant from all sources
 - (vi) The 24 hour worse-case concentrations for each contaminant from transportation emissions sources only
 - (vii) The 24 hour worse-case concentrations for each contaminant from existing incinerator emissions sources only
 - (viii) The 24 hour worse-case concentration for each contaminant from onsite processing shortlisted single source point biosolids management options
 - (ix) The 98% percentile of the 24-hour worse case concentrations for each contaminant compared against its appropriate air quality criteria value from all sources
 - (x) The 98% percentile of the 24-hour worse case concentrations for each contaminant compared against its appropriate air quality criteria value from transportation emissions sources only

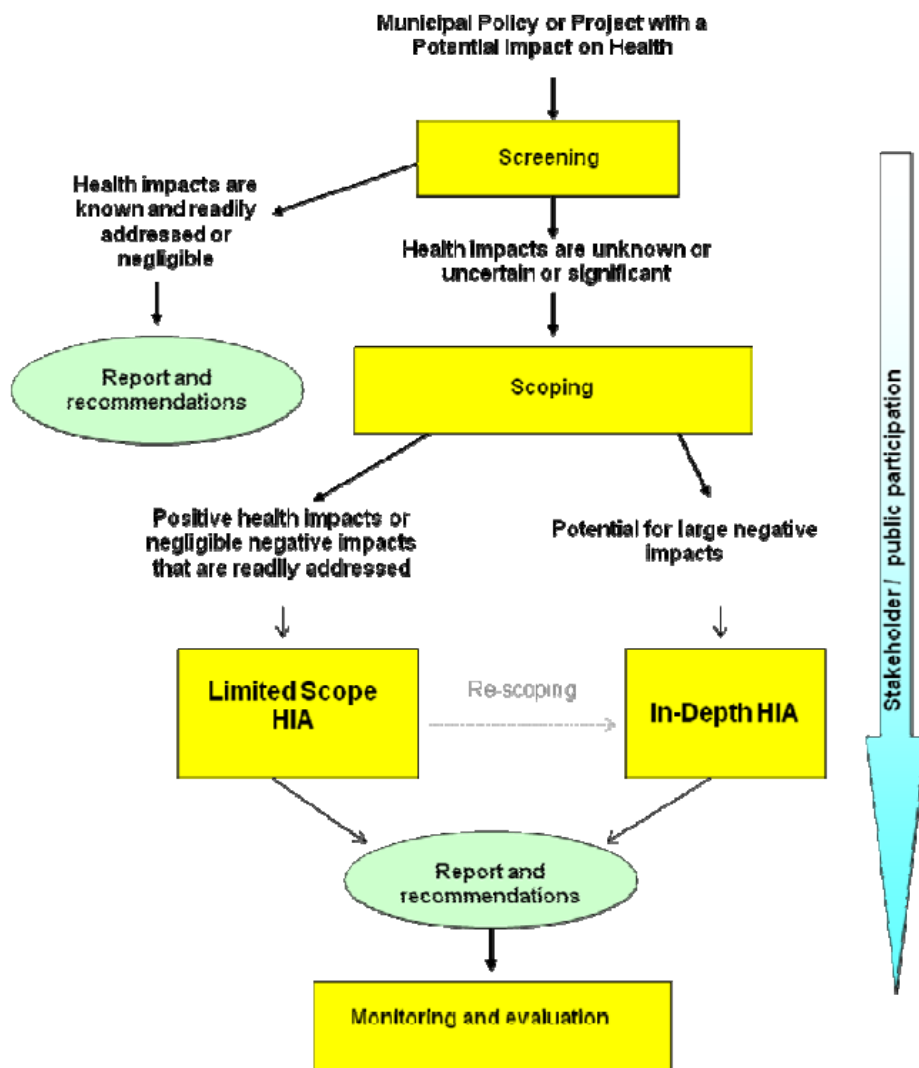
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- (xi) The 98% percentile of the 24-hour worse case concentrations for each contaminant compared against its appropriate air quality criteria value from existing incinerator emissions sources only; and
 - (xii) The 98% percentile of the 24-hour worse case concentrations for each other contaminant compared against its appropriate air quality criteria value from any other onsite processing shortlisted single source point management biosolids management options.
- h. Critically analyze and evaluate the nature, significance and confidence of all results obtained in (g) above.
- .3 Prepare a Technical Memorandum (TM 4), satisfactory to City Staff of EEO and the City's Project Team, that fully illustrates and explains the nature and significance of all current and potential future emissions and all resultant concentrations from current operations, potential future truck emissions and potential future fluid bed incinerator emissions associated with HCTP operations. This Technical Memorandum shall be prepared in four parts as follows:
- a. TM 4(a)-Evaluation of all potential contributing impact sources (as are to be included in the model)
 - b. TM 4(b)-Details of the development of all model inputs (i.e. project specific Tier 1 layer emissions data, model inputs and output files and model run procedures, including the non-photochemical model, used to produce all required outputs)
 - c. TM 4(c)-Description and provision of results (i.e. all required maps as per 3.2.3 g(i) to (xii))
 - d. TM 4(d)-Analysis and evaluation of results
- .4 Ensure that future modifications and query/answers of the model run(s) can be satisfactorily addressed in-house by City staff in order to facilitate any subsequent public involvement and City staff's preparation of final reports to City Council.
- .5 The information and data obtained from this assessment will be utilized in the HIA.

3.2.4 Health Impact Assessment

- .1 Undertake under the direction of Toronto Public Health (TPH) an in depth HIA using the draft Toronto Public Health HIA framework developed by Jacques Whitford, 2008 (see http://www.toronto.ca/health/hphe/pdf/draft_hia_framework.pdf). The HIA will serve to discuss and determine the positive and negative health impacts of the identified biosolids management options and technologies being proposed for the HCTP and to identify ways to decrease any adverse health impacts should they arise from the preferred chosen management strategy.
- .2 The in-depth HIA will be conducted on each of the short listed biosolids management options and technologies identified in section 3.2.2 above. An in-depth HIA includes a screening and scoping phase (see figure 1). Stakeholder and public input (consultation) must be obtained at the scoping and in-depth stages of the HIA. It is anticipated that the in-depth HIA phase will require a minimum of two consultation points, which will be identified in the HIA Plan.

- .3 Prepare an HIA Plan and present it in the form of a Technical Memorandum (TM 5) that outlines in detail how each step of the HIA will be undertaken. This Plan should include but not be limited to:
 - a. A list of potential stakeholders such as health experts, academia, a member of the HCTP NLC and others as applicable to participate in the scoping and in depth stages of the HIA. This list shall be reviewed and discussed with the City Project Team prior to being finalized.

Figure 1: Proposed TPH HIA Process



- .4 The five factors that must be included in the evaluation as per the HIA Framework include:
 - a. Environmental
 - b. Access to Services
 - c. Lifestyle

- d. Equity
 - e. Social and Economic
- .5 Results obtained from the CIA should be incorporated into the HIA for each of the short listed biosolids management options.
- .6 Prepare a Technical Memorandum for each of the following (three technical memoranda in total, TM 6, 7 and 8) that provides:
- a. The results of the screening phase that identifies the potential health concerns of each of the management options under consideration
 - b. The results of the scoping phase with recommendations for the areas that will need an in-depth analysis
 - c. The results of the in-depth assessment that summarizes the negative and positive health impacts of each option and ranks the approaches according to their overall health impacts and how the results will be incorporated into the comparative evaluation model.

3.2.5 Comparative Evaluation Model

- .1 Working with the City's Project Team, a comparative evaluation model shall be chosen and prepared that takes into consideration environmental, financial and social factors in addition to incorporating the results of the HIA and CIA. The selection and formation of this model shall be done in a full day workshop with the City's Project Team.
- .2 Prepare a Technical Memorandum (TM 9) that outlines various comparative evaluation models that can be utilized, the model chosen to be utilized in evaluating biosolids management options for this EA study and the factors that will be taken into consideration.
- .3 Upon finalization of the comparative evaluation model, the short listed biosolids management options and technologies shall be evaluated and compared using this model with input from the City Project Team during a full day workshop. The results of this evaluation shall be detailed in a Technical Memorandum (TM 10).
- .4 Select a preferred biosolids management strategy that best meets the City's requirements for HCTP and prepare a final report that detail and discusses the basis for recommending the preferred biosolids management strategy using the process and findings above. The preferred strategy shall meet all schedule B requirements under the Municipal Class Environmental Assessment process.

3.2.6 Final Report

- .1 A final stand alone report shall be prepared that ties together all Technical Memoranda in sufficient detail in the main body of the report and in compliance with Municipal Class EA requirements.

3.2.7 Project Timeline and Schedule

- .1 The approximate timeline for this project is expected to be approximately 12 months. This is only the City's suggested timeline. If the Proponent considers the timeline to be too short or too long, this is to be identified in your Proposal. Within the Proposal, the Proponent is responsible for identifying a timeline that they are committed to accomplishing.

3.3 GENERAL PROJECT REQUIREMENTS

- .1 The general requirements for provision of engineering services to be provided by the successful Proponent to the City of Toronto are as specified in the Appendices. It is the responsibility of the Proponent to familiarize themselves and comply with the project and contractual requirements of the City as specified in the Appendices, and to ascertain the full scope of work and the engineering services required for the project, prior to submission of the proposal, including:
 - a. Technical Services Guidelines for Major Works Facilities Projects (refer to Appendix A).
Note that significant changes/updates have been made to Appendix A effective September 2012 and should be carefully reviewed by all Proponents. Of particular note are new requirements in A.4 through A.7 on PCS Guidelines, and the use of Master P&ID's, and Master Single Line Diagrams, and the requirements for Electrical Control Schematics.
 - b. RFP Terms and Conditions (Appendix B)
 - c. Submission Forms (Appendix C)
 - d. Specimen Contract Agreement, including Insurance Forms and Statutory Declarations (Appendix D)
 - e. Project Reference Material (Appendix E)
- .2 Proponents are to confirm on-site to their own satisfaction, both the accuracy of the information provided in the City's RFP and the current site conditions prior to submission of proposals.

The City's general project requirements are included in Appendix A.1. General requirements include project management and administration procedures, approvals, and standards. The Proponent is responsible for reviewing this information and familiarizing themselves with the City's requirements, and shall comply in its entirety. The following clauses provide additional, project specific requirements, and are to be read in conjunction with the Appendices. Where there is a conflict, the provisions in this section shall take precedence.

- .3 At the beginning of the project, the Consultant is to provide a baseline workplan for review and approval by the City. The workplan will be a refinement of the Proposal, which will define in detail the scope of work and schedule for the Project. The schedule is to be updated monthly and reviewed at progress meetings. Changes to the project schedule require a written explanation and must be approved, in writing, from the City.
- .4 In addition to the project meetings required in accordance with Appendix A.1, include for:
 - a. Two (2) additional annual meetings (for each year of the project) with the City's Project Team. The focus of these meetings will be to address project management issues (scope, schedule, and fees), issues resolution, and proactive project planning.
 - b. Two (2) Public Meetings
 - c. Two (2) HCTP Neighbourhood Liaison Committee (NLC) meetings;
 - d. One (1) workshop to discuss Air Modeling Assessment;
 - e. One (1) workshop to discuss Health Impact Assessment;
 - f. Two (2) workshops to discuss Comparative Evaluation Model, and;
 - g. One (1) workshop to discuss the evaluation of biosolids management options
 - h. Two (2) HIA Stakeholder Meetings
- .5 Note that the Project shall comply with City requirements with respect to Health & Safety (note orientation requirements)

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- .6 Specific exceptions/modifications to Appendix A.1 include:
 - a. Section A.1.14: Delete
 - b. Section 1.15.1.7: Safety equipment is to be provided by the Consultant, but paid for in accordance with Section 7.3.

3.4 ENVIRONMENTAL ASSESSMENT PROCESS

The City's general requirements for environmental assessments are included in Appendix A.2 . The Proponent is responsible for reviewing this information and familiarizing themselves with the City's requirements, and shall comply in its entirety. The following clauses provide additional, project specific requirements, and are to be read in conjunction with the Appendices. Where there is a conflict, the provisions in this section shall take precedence.

- .1 The Consultant is responsible for ensuring that the overall EA process is managed effectively within the shortest possible timeframe and within the available budget. The final responsibility for ensuring that all the conditions of the EA process are met lies with the Consultant.
- .2 The Consultant will work in conjunction with the City of Toronto Public Consultation Unit. A staff person will be assigned to the project and will sit on the Project Team. Public consultation staff will be involved in the planning with the Consultant as early in the project as possible. The Public Consultation Unit will be responsible for those activities outlined in Appendix A.2.5. The Consultant will be responsible for the preparation of draft public consultation materials and presentation of information to the public.
- .3 A Provisional allowance has been made in the Cost of Services Breakdown to cover services required to respond to Part II Order Requests. Should Part II Order requests be received, the City will request assistance in answering the request and the Consultant will provide an outline of the scope of service, cost and time required to address issues raised, and upon written approval, provide the agreed-upon services.
- .4 The Canadian Environmental Assessment Act (CEAA) applies to federal authorities for projects for which there is a trigger: a federal authority is providing land, funding, permits/authorizations, or is the Proponent of the Project. This study may require an assessment under both the Canadian EA Act and the Ontario EA Act. The Consultant must have knowledge and experience of both processes.
- .5 The Consultant will be expected to conduct EA work in accordance with coordination procedures developed by the two levels of government and shall be responsible for identifying, during the Class EA process, which aspects of the undertaking may trigger the CEAA. When the Act is triggered by the proposed undertaking, the Consultant shall be responsible for notifying the CEA Agency and/or the Responsible Authority (RA) and submitting a detailed Project Description to assist the Lead RA in determining the type of environmental assessment, including the scope of project and assessment required, under the CEAA.
- .6 Based on the instructions and comments provided by the Lead RA, the Consultant, shall be responsible for the efforts and activities necessary to satisfy both federal & provincial EA requirements in accordance with coordination procedures developed by the two levels of government, including any Screening Report and/or EA Report (Draft & Final) if deemed necessary by the RA, but may require public consultation and communication services. The Consultant shall work with City staff to undertake any required consultation activities and assist in ensuring compliance with both the federal Canadian EA Act and the provincial EA Act.

- .7 The payment for these services (as per item .5 and .6 above) related to the Federal EA requirements will be made from the provisional allowance identified in section 7.3 (refer to Table 7-2).
- .8 The City may wish the Consultant to provide additional, optional, project meetings at the City's sole discretion. The Consultant is to provide a provisional cost for the following items as per Table 7-3:
 - a. One (1) additional Public Meeting
 - b. Four (4) additional City Project Meetings
 - c. Two (2) additional project workshops
 - d. One (1) additional HIA Stakeholder Meeting
- .9 Qualifications approach, and resources should be identified in the relevant sections of your Proposal (refer to Section 6) and priced (Section 7) accordingly
- .10 Specific exceptions/modification to Appendix A.2 includes:
 - a. Section A2.6: Delete

3.5 SUMMARY OF PROJECT SUBMISSIONS

- .1 The following table summarizes the major project submissions, and provides general guidelines on the number of versions and quantities. The “number of versions” indicates, for the same document, the number of draft versions which will be submitted for review to the City, plus a final version (for example, if 3 versions are specified, this means a draft, second draft and a final version, assuming noted deficiencies are adequately addressed). The Proponent should note that other deliverables are also required, as specified within this document.

Submission	Number of Versions	Number of Hard Copies
Technical Memorandum 1	2	5
Technical Memorandum 2	2	5
Technical Memorandum 3	2	5
Technical Memorandum 4	2	5
Technical Memorandum 5	2	5
Technical Memorandum 6	2	5
Technical Memorandum 7	2	5
Technical Memorandum 8	2	5
Technical Memorandum 9	2	5
Technical Memorandum 10	2	5
HIA Plan	2	5
Public Consultation Plan	2	5
Final Environmental Study Report	3	5

- .2 With each printed submission, include a CD containing the same documents in pdf, and the documents in their native (WORD, Excel, etc.) format.

3.6 ALTERNATIVES SUGGESTED BY PROPONENT

- .1 The City is interested in innovative solutions and will consider alternative strategies and approaches in the execution of the Project. However, alternatives presented by the Proponent, but not specifically requested by the City, will not be included in the evaluation process as a separate submission.
- .2 Should a Proponent wish to present an alternative design idea at the proposal stage, the proponent must first provide **a full and complete proposal based on the base bid described in the RFP.**
- .3 Any alternative proposed must be of sufficient detail to allow the City to completely review and understand the merit(s) of the alternative and subsequent benefit(s) to the City. The City reserves the right to accept or reject any alternative and is under no obligation to consider any alternative.
- .4 In the event that the proponent has identified a suggested improvement in the project scope, the related cost impact is **NOT TO BE INCLUDED IN THE PROPONENT'S BASE PROPOSAL OR CITY OF TORONTO ALTERNATIVES PRICING.** The cost related to the proponent's suggested improvement/innovation idea is to be presented separately.
- .5 The award of the project will be based on the evaluation criteria as noted in the "Proposal Evaluation and Selection" section of the RFP, with the **cost points established on the BASE PROPOSAL.** If the proponent elects to submit pricing for an alternative, this pricing will only be used as the basis for fee negotiation, once the successful proponent has been selected.
- .6 A portion of the technical proposal score however, will be allocated to highlighting alternative, innovative solutions, where they are sufficiently detailed and demonstrate superior knowledge and technical expertise of the team, and demonstrate an advantage to the City.
- .7 A specific, separate section of the technical proposal may then be used to describe the alternative design approach.
- .8 Cost of Services proposals for Proponent's alternatives are to be included in the Cost of Services envelope, along with the base proposal.