Clarington
Leading the Way

REPORT
PLANNING SERVICES

Meeting: GENERAL PURPOSE AND ADMINISTRATION COMMITTEE

Date: Tuesday, September 4, 2007

Report #: PSD-097-07 **File #:** PLN 33.3.10 **By-law #:**

Subject: UPDATE ON MUNICIPAL PEER REVIEW OF THE DURHAM/YORK RESIDUAL WASTE ENVIRONMENTAL ASSESSMENT

RECOMMENDATIONS:

It is respectfully recommended that the General Purpose and Administration Committee recommend to Council the following:

1. THAT Report PSD-097-07 be received;
2. THAT Section 3.3 and Attachments 6 and 8A to this report be approved as the Municipality of Clarington's comments, to date, for the Site Selection segment of the EA process;
3. THAT Section 3.4 and Attachments 7 and 8B of this report be approved as the Municipality of Clarington's comments, to date, on the Generic Human Health and Ecological Risk Assessment, a component of the EA process;
4. THAT Clarington request that the Region provide the other reports; including the Traffic Impact Analysis, Archeological Assessment, Air and Groundwater Monitoring, Environmental Impact Study; Land Use, Infrastructure and Servicing Assessments; with sufficient time given to the Municipality and others to review and comment, prior to completing their analysis and selecting a preferred site;
5. THAT a copy of this report be forwarded to the Region of Durham, the Region of York and Ministry of Environment;
6. THAT all interested parties, including the Regions of York and Durham, and the Joint Waste Management Committee, be notified of Council's decision; and
7. THAT Council approve this recommendation FORTHWITH in compliance with the September 4th deadline, set by the Region.

Submitted by:
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Director of Planning Services

Reviewed by:
Franklin Wu,
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JAS/FL/DJC/sn
21 Aug 2007

1.0 BACKGROUND AND PURPOSE OF REPORT

1.1 On April 16, 2007, Council adopted Resolution # C-211-07, as follows (in part):

> "THAT Staff be directed to examine comprehensively all the documentation prepared to date, the adequacy of the public consultation process and to report on alternatives available to the Municipality;
>
> THAT Staff investigate the implications of a proposed waste-to-energy facility on the Energy Business Park including the ability to attract prestige uses including offices and research facilities;
>
> THAT the Regions of York and Durham commit to design a waste-to-energy facility that will not impact the health of present and future residents;..."

1.2 On May 28, 2007, Council adopted the recommendations in Staff Report PSD-070-07 (Attachment 1-Resolution). This report defined the scope of work for the various peer reviews and economic studies to be undertaken to assist Council in determining its position with respect to the proposed Energy from Waste (EFW) facility to ensure that the interests of the Municipality and its residents are protected. In the same report, Staff were instructed to report regularly on the progress and findings of the peer review and analyses being undertaken.

1.3 In the consideration of PSD-070-07, Clarington Council confirmed that the "Alternatives To" (the different technologies for disposal of residual waste) will not be peer reviewed. As noted in Section 2.1.4 below, the thermal treatment of the waste identified by York and Durham Councils as the preferred system includes a number of different technologies, including mass burn incinerators, pyrolosis, and gasification, including plasma arc gasification.

1.4 Consultants have been retained to peer review various aspects of the Environmental Assessment (EA) process, including site selection, as well as the technology procurement process and the potential environmental effects of the proposed facility and not the "alternatives to". Staff and the peer review consultants have met with the Regions' project team on a number of occasions to seek clarification and probe further into the analysis and methodology of the various studies. The Regions' project team for the EA have been co-operative in providing information to the Municipality's peer review consultants and exploring the issues.

1.5 The purpose of this report is:

- to update Council on the EA study and process to date
- to update Council on the progress of the various peer reviews and studies being undertaken by the Municipality of Clarington, specifically those appended to this report:

Attachment 6	Peer Review Report (Rowe) – EA Process and Site Selection
Attachment 7	Peer Review Report (SENES) – Generic Human Health and Ecological Risk Assessment
Attachment 8A	Peer Review Report (AMEC) – Air Quality Aspects of Site Selection

Attachment 8B Peer Review Report (AMEC) – Air Quality Aspects of Generic Human Health and Ecological Risk Assessment

- to update Council on the EFW thermal technology procurement process
- to update Council on the financial impact studies

2.0 YORK/DURHAM RESIDUAL WASTE EA PROCESS

2.1 Environmental Assessment Study

2.1.1 The Regions of Durham and York are currently conducting an EA Study to determine how to manage the residual solid waste remaining after blue box and green box diversion efforts. Key dates in the study process as indicated on the project website are:

• March 2006	Ministry of Environment approval of EA Study Terms of Reference
• June 2006	Selection of preferred approach to managing residual waste (Alternatives To)
• July 2007	Issuance of Request for Qualifications (RFQ)
• September 2007	Consultant recommendation on preferred site (Alternative Methods)
• December 2007	Durham and York Region Council approval of preferred site
• Early 2008	Release of Request for Proposals (RFP)
• Mid 2008	Selection of preferred technology vendor
• 2008	Completion of site specific studies
• Late 2008	Submission of final EA to Ministry of Environment (MOE) for approval
• 2009	EA review and approval by Minister of Environment

2.1.2 The purpose of the undertaking, as set out in the approved Terms of Reference, is:

- To process – physically, biologically and/or thermally – the waste that remains after the application of both Regions' at-source waste programs in order to recover resources – both material and energy – and to minimize the amount of material requiring landfill disposal. In proceeding with this undertaking, only those approaches that will meet or exceed all regulatory requirements will be considered.

- The waste proposed to be managed will be primarily Municipal Solid Waste (MSW) from residential sources generated within Durham and York Regions remaining after at-source diversion, a portion of post-diversion Industrial, Commercial and Institutional (IC&I) waste traditionally managed by the Regions at their waste disposal facilities; and Municipal post-diversion residual waste from neighbouring non-Greater Toronto Area (GTA) municipalities that may provide disposal capacity for processing residues.

2.1.3 A description of the proposed undertaking was developed for the purpose of initiating the EA Study. The undertaking would be a residual waste processing facility(ies) that would be capable of managing the minimum 316,000 tonnes/year of residual wastes projected to remain after the achievement of the Regions' diversion objectives. This amount includes the receipt of a quantity of additional post-diversion waste from other sources. Over the 35-year planning period (2011–2045), it is projected that a minimum of 13.3 million tonnes of residual waste will require management.

2.1.4 In June 2006, the Regions received their consultant's report on the "Alternatives To" (alternative processing systems) for the disposal of residual waste. At that time, both Regions approved the technology options for the EFW facility to be:

- System 2(a) – Thermal treatment of MSW and recovery of energy followed by recovery of materials from ash/char. These include established technologies such as the "mass burn" of waste in an incinerator.

- System 2(b) – Processing of MSW to recover recyclable materials and produce solid recovered fuel (SRF) followed by the thermal treatment of the SRF to produce energy. These are generally new technologies.

2.1.5 Current EA activity involves the identification of a preferred site for the construction and operation of the new thermal treatment facility ("Alternative Methods"). A site with an area of 10 to 12 hectares was determined to be required, although a smaller site could be considered if off-site infrastructure was shared with other sites. The site search was limited to lands within York and Durham Regions. On the short list of sites, five sites were identified in Clarington and one site in East Gwillimbury. Two sites in Clarington have been removed from the short list and are no longer being considered, as discussed in Section 2.2.2 below. The Regions' project team has advised that a preferred site will be recommended in September 2007, with both Regions approving a site by the end of 2007.

2.1.6 The Regions' project team has recently advised that it is their intention to submit an interim EA planning document to MOE in early 2008. This will be after the selection of a site for the proposed facility, but prior to the identification of the preferred specific thermal technology and vendor. The interim, in progress, submission would facilitate early review by Ministry Staff. The Regions must obtain the concurrence of the Ministry to make such an interim submission.

2.1.7 The EA Terms of Reference provide for flexibility in undertaking the study, including adjustments to the sequence of study events. However, they also indicate that the selection of a vendor will be necessary, prior to seeking EA approval, to allow for a sufficiently detailed description of the undertaking (including its design, operation, maintenance, monitoring and contingency measures) and respective net effects.

2.2 Recent Developments

Short List of Sites

2.2.1 On May 22, 2007, Council for the Town of East Gwillimbury resolved that the Town should not be considered a willing host for the proposed thermal treatment facility (see Attachment 3). No commitment has so far been made to site the facility only where there

is a "willing host". Therefore this decision should not affect the status of the East Gwillimbury site on the short list. However, there are concerns it may influence the selection of a preferred site which is discussed later in this report.

2.2.2 On June 19, 2007, the Joint Waste Management Group (JWMG), which is the joint committee of the Regions appointed as the project steering committee, agreed to delete short listed sites 2 and 3 in Clarington (see Attachment 4). The designation of Site 2 in the Durham Regional Official Plan has been confirmed as "Greenlands, Waterfront Areas", and the EA siting criteria are considered to disqualify the site from consideration for a thermal treatment facility. Site 3 was withdrawn by its owner.

2.2.3 As part of the site selection process the following reports: Traffic Impact Analysis; Archeological Assessment; Air and Groundwater Monitoring; Environmental Impact Study; Land Use, Infrastructure and Servicing Assessments, are necessary. The Regions' project team previously committed to release these reports in July; however, they have not been. The Municipality, our peer review consultants, other affected Municipalities and the public have not had an opportunity to review and comment on these studies. It is premature for the Regions' project team to complete their analysis and determine the preferred site in advance of these studies being released, comments provided and due consideration of them.

York Region Participation in the EFW Project

2.2.4 On June 6, 2007, the York Region Solid Waste Management Committee adopted the recommendations in a report from their Director of Solid Waste Management. The report recommended that York Region enter into a revised Memorandum of Understanding with the Region of Durham for the EFW project consistent with a number of matters, including:

- York commits to supply a minimum of 20,000 tonnes per year of municipal waste during the 25 year operating term of the EFW facility, at a rate established by the RFP for the project, less any revenues from the sale of material, heat or electricity.

- York and Durham shall share the capital construction costs for the facility based on the tonnage commitments made for the initial operation of the facility. This represents 12% equity in the facility for York Region for 20,000 tonnes per year.

- Durham will ensure that sufficient capacity exists for York at the EFW facility to service the 20,000 tonnes from York and that the plant is designed to allow future expansions.

- Should York require additional capacity at the facility, it will have an option which it can exercise at any time during the 25 year operating term to expand the facility at its own costs and thereby acquire an increased ownership interest in the facility.

The York Solid Waste Management Committee also passed a motion directing staff to ensure that York has the first right of refusal on any excess capacity at the EFW facility when negotiating the revised Memorandum of Understanding.

2.2.5 On June 20, 2007, Durham Region Council adopted the following motions:

- That staff be directed to examine the option of over-sizing the EFW facility beyond the immediate needs of the two Regions, and to partner on the capital construction and operating costs on an equal basis on facility capacity in excess of their immediate needs.

- THAT York Region shall not have a right of first refusal on any capacity at the EFW facility that it has not contributed financially towards the construction, operating, and other related costs thereof for which it has not made a financial contribution.

2.2.6 On June 21, 2007, York Region Council adopted the report from the Solid Waste Management Committee, as amended by Council. The amendment referred the matter of negotiating the first right of refusal on any excess capacity to the Chief Administrative Officer.

2.2.7 Staff from Durham Region and York Region are currently working on developing a revised Memorandum which will govern the process by which the two Regions will undertake the next steps in the joint EFW project.

2.3 Environmental Protection Act and Other Required Environmental Approvals

2.3.1 The proposed EFW facility will require at least the following approvals under the Ontario Environmental Protection Act (EPA):

- Certificate of Approval (Air) under Section 9 Part II which regulates emissions to the natural environment, in particular air.

- Certificate of Approval (Waste) under Section 27 Part V of the Act for the use, operation, establishment, alteration, enlargement or extension of a waste management facility.

2.3.2 Notwithstanding the facility size developed for the EA study, the EFW facility will be built in phases and EPA approval will be required for each phase. To address the requirements of the EPA and to obtain the required approvals, supporting technical studies and design plans must be completed to a level of detail demonstrating no adverse effects on the natural environment and to show that the applicable environmental standards will be met. As such, the EPA applications will not be made until after a preferred vendor, the specific thermal technology and preferred site is selected, and site specific HHERA has been completed. The Regions' project team currently anticipates that the EPA applications will be submitted in late fall 2008.

2.3.3 The Environmental Bill of Rights (EBR) exempts EPA Act approvals arising from EA Act processes from the requirement to post on the EBR Registry (although they can be posted voluntarily). As such there is no formal opportunity for comment and no opportunity for leave to appeal under the EBR for these approvals. Also, while the EPA Act requires mandatory hearings for waste management projects that would include the proposed thermal waste treatment facility, Regulation 206/97 exempts facilities that are subject to an individual EA. Therefore, in this case, there would be no mandatory EPA Act hearing into these detailed technical approvals and related conditions of approval.

2.3.4 However, the EA Terms of Reference states:

- To establish and operate a solid waste management facility(ies), the Environmental Protection Act (EPA) requires that a Provisional Certificate of Approval be obtained. A detailed work program will be developed once the preferred site is selected and will be prepared in consultation with the public and relevant government agencies.

The Region should provide a detailed work plan for consultation with agencies and the public in relation to the EPA approvals, when they announce a preferred site.

2.3.5 Other potential environmental approvals for an EFW facility include the Canadian Environmental Protection Act, the Federal Fisheries Act, and the Ontario Water Resources Act. The need for approvals under these Acts will depend on the site selected and the way in which the facility development will proceed, and as such application requirements may not be triggered. It is expected that any applications required under these Acts would also be submitted in fall 2008.

3.0 CLARINGTON'S PEER REVIEW OF EA DOCUMENTS (TO DATE)

3.1 Comments on the EA Public Consultation Process

3.1.1 Both the Environmental Assessment Act and terms of reference require public consultation during the EA process. Due to the length and broad scope of the initial phases of the EA it maybe difficult to engage the public in the early stages of the process. It was not until the announcement of the short list of sites that the public became widely engaged in the EA process.

3.1.2 The Regions' project team has provided the Municipality with its "go forward" communications strategy and Staff have provided comments on this strategy. The Region of Durham has responded positively to a number of suggestions made by Staff to capitalize on this heightened awareness. These include:

- providing an additional overview session (June 25, 2007) on the entire process, so that residents can become updated with previous stages of work;
- providing a brief outline of the EA process at the beginning of each meeting;
- providing copies of the EA documentation for the Newcastle and Courtice libraries, in addition to the Bowmanville main branch;
- providing the study documentation on CDs at the public information sessions (especially the Generic Human Health and Ecological Risk Assessment);
- committing to the provision of displays for community events;
- holding public information sessions in 3 locations in Clarington;
- revising advertising material so that people understand that this is a waste project (i.e. remove "light switch" branding); and

- agreeing to meet with community groups in the Municipality (e.g. Wilmot Creek homeowners, Port Darlington Community Association, Newcastle/Bondhead Ratepayers).

Staff will continue to provide advice to the Region on how the public consultation can be improved for Clarington residents as the remaining steps of the EA study are carried out. However, this is the Regions process.

3.1.3 The EA Terms of Reference calls for the establishment of a public liaison or advisory committee representing a broad range of interests across the study area in order to "focus public input" on the EA study. The Regions consider the appointment of public members to sit on the JWMG as fulfilling the requirement for a public liaison/advisory committee. Staff do not concur that the project steering committee can also function satisfactorily as the public liaison/advisory committee contemplated by the EA terms of reference.

3.1.4 The Regions have contemplated the formation of a citizen advisory group to "play a role in formulating the Host Community Agreement" as set out in Report #2007-J-14. The relevant extract forms Attachment 5 to this report. The mandate of this citizen advisory group as currently envisioned by the Regions would not address the role of the public liaison committee as set out in the EA Terms of Reference.

3.1.5 As indicated in section 2.3.4 of this report the Region should detail how the Environmental Protection Act application and conditions for approval are to be addressed as part of the public consultation process.

3.1.6 Because of the tight timeline that the Region is pursuing for this project, timely communication with the public about the process and any deviations from the anticipated schedule is highly important; as such providing clear and accurate messages through all available media outlets should be a priority for the Regions' project team.

3.2 Synopsis of the Peer Review Gap Analysis of EA Study Process (TO DATE)

3.2.1 A gap analysis is a comparison of the EA documentation to date and the requirements of the EA Terms of Reference, the Environmental Assessment Act and regulations. Consistency with the Terms of Reference is very important when the Minister of Environment or the Environmental Review Tribunal decide on an EA application. A gap analysis provides the Municipality and the Regions' project team with a check that their work to date meets or exceeds the requirements.

3.2.2 Numerous technical and background studies have been prepared as part of the EA study. The manner in which this information is communicated, disseminated and carried forward into the next stages of the process are all part of the EA process. The process is complex, multi-faceted and takes a considerable amount of time to complete.

3.2.3 It is important that the Municipality and Clarington residents have confidence in the EA process. As such, Council authorized a gap analysis peer review to audit compliance with the approved EA Terms of Reference, and the Environmental Assessment Act and its regulations.

3.2.4 The Peer Review Consultant and Staff have met with the Region and their project team to probe where the links between the supporting information and analysis could be strengthened, some of which has been identified in the Site Selection comments below and Attachment 6. The Regions' project team is reviewing and addressing the areas in which additional analysis and information is required to address the gaps that have been identified. As the gap analysis is an iterative process it would be premature (other than for the site selection) to comment on the gap analysis until the Regions and their project team have an opportunity to respond. Staff can report that the discussions are collegial and productive and will provide updates as the process evolves.

3.3 Synopsis of "Alternative Methods" (Facility Siting) Draft Report and Peer Review Comments

Background

3.3.1 The draft Terms of Reference, as prepared by the Regions and submitted to MOE, proposed an approach for identifying a site for the new waste management facility (Alternative Methods). Council, in its comments on the draft Terms of Reference in February 2006, questioned the adequacy of the site selection process and strongly objected to the focus on publicly owned lands. These comments noted that the then draft Terms of Reference unfairly prejudiced the site search in favour of lands owned by the two Regional governments, in particular the significant area of land owned by the Region of Durham near the Courtice waterfront. The Terms of Reference for the EA Study, as approved by the Minister of Environment on March 31, 2006, were not revised to address Clarington's concerns.

3.3.2 The Municipality's peer review consultants, in consultation with staff, have identified a number of issues with the site selection process. These are summarized below and are discussed in more detail in the consultants' peer review of the site selection process, which are Attachments 6 and 8A (air quality) to this report.

3.3.3 The Municipality's peer review consultants have not had access to the other background studies such as the Traffic Impact Analysis, Archeological Assessment, Air and Groundwater Monitoring, Environmental Impact Study, Land Use, Infrastructure and Servicing Assessments as they have not been released. As such, the Municipalities comments on Site Selection are incomplete. The other studies would have provided additional insights and could have identified specific requirements that Clarington could request if that site were selected. As an example, if Site 1 is the preferred site it is most likely that a separate access road from the existing street network will be a Municipal requirement; however, without the Traffic Impact Analysis we have no basis to make this comment.

3.3.4 The delay of this Staff report and the attached peer review reports has facilitated the necessary discussion and finalization of Clarington's peer review comments, to date, by ensuring that the interpretations made and information gathered were accurate. While the Regions' project team has reviewed the peer review reports, changes made have been done so based on the clarification provided by the Regions' project team and to ensure the language is accurate. Clarington's peer review consultants are independent of the Regions' project team and are providing advice to Clarington.

Site Selection Process (Attachment 6)

3.3.5 The Site Selection Short List Draft Report does not provide screening maps to show which parts of the study area were excluded under each of the criteria, and it does not provide sufficient explanation as to how each of the criteria were applied. This information has recently been supplied to the municipal peer review consultant; however; for this step of the process to be traceable, the proponent should provide screening maps at an appropriate scale and a description of how each of the criteria were applied as part of the project documentation.

3.3.6 The proponent has acknowledged that while the Regions' project team identified an exclusion area around federally regulated airports, this criteria was applied to the future Pickering airport, but was not applied to the Oshawa airport, which is federally regulated. This oversight will be addressed by the Regions' project team during the review period.

3.3.7 The information presented in the Site Selection Short List Draft Report does not describe a comprehensive approach to the identification of public lands. The Regions' project team has indicated that the distribution of materials to other public agencies such as federal and provincial ministries and land-related agencies was the same as the process to elicit interest from potential willing sellers. However, there was no follow-up by the Regions' project team with the various public agencies to ensure that all public sites were being considered. As such, the public lands identified at this step of the process may not have identified and considered all of the potential siting opportunities on public lands.

3.3.8 Inclusion within the "Protected Countryside" areas under the Greenbelt legislation is listed in the Site Selection Short List Draft Report as an exclusionary feature for the purpose of Step 2 of the site selection methodology. However, the Report indicates that a change in direction was undertaken to bring lands in the Greenbelt into the site selection process, but does not describe whether or how lands in the Greenbelt were examined to identify potential public and willing seller sites other than the East Gwillimbury Site 1. There may be other potential siting opportunities in the Greenbelt that have not been identified.

3.3.9 The Site Selection Short List Draft Report does not provide a full description of how consultation on the proposed methodology and criteria affected the approach now being undertaken. While the "Report on Consultation on Proposed Siting Methodology and Criteria" describes the consultation process undertaken, it is equally important to show how the results of the consultation were considered in making any changes to the methodology and criteria and in assigning priorities for the comparison of short listed sites.

3.3.10 While the land use designations (Official Plan and Zoning) are industrial they are not the same for the three sites under consideration. It will depend on which site is selected whether an Official Plan and/or zoning amendment will be necessary. Whether the Regions' project team has accurately interpreted Clarington's Official Plan and Zoning By-laws is difficult to discern without having access to Land Use Assessment study.

3.3.11 There are concerns with how the proposed EFW facility would integrate into the Energy Park in particular, with the objective of attracting high profile, prestige uses. For

example, a prestigious office use would likely have concerns regarding compatibility with a large EFW facility including the impacts of garbage trucks passing through this area.

Evaluation of Short List of Sites and Preferred Technology (Attachment 6)

3.3.12 There is uncertainty regarding the size of the facility being sought by the proponent and the size of site required to accommodate it. The EA Terms of Reference indicate the facility will be required to treat a minimum annual 316,000 tonnes/year over the 35 - year (2011-2045) planning period. However, a maximum, a range, or an actual proposed capacity for the facility, is not indicated, in effect providing for no upper limit on the scale of the facility.

3.3.13 The Terms of Reference also refer to a potential need to identify contingency or surplus disposal capacity and any capacity for waste from outside the study area, or IC&I waste from within York and Durham Regions when identifying the minimum site size requirement during the EA. In addition, one of the indicators for the criteria for the evaluation of the short listed sites includes "area surplus to minimum requirement provided by site". This suggests that there is no maximum site size and that larger sites may be preferred. The site selection process, as presently structured, would appear to give preference to large sites.

3.3.14 This raises a concern with respect to the potential for continuous expansions of the proposed EFW facility in the future. Given economies of scale, the costs related to constructing a new EFW facility, and the new waste management regulation issued by the Province which allows for the fast-tracking of EA approvals for EFW facilities, there would appear to be a significant incentive to expanding the Durham/York EFW facility in the future rather than building a new facility. In this regard, it is imperative that the Regions commit to a maximum size for the proposed new facility. The Region should commit that any expansion beyond 450,000 tonnes would be a new and separate EA study and would address cumulative effects.

3.3.15 The recently revised study schedule provides for a preferred site to be identified and an interim EA planning document to be submitted to MOE prior to the selection of a vendor and specific thermal technology. The short-listed sites will be evaluated and a preferred site selected on the basis of the Generic Human Health and Ecological Risk Assessment (HHERA) and a generic project description for a thermal treatment facility. Given the wide range of thermal technologies available, each of which would have different environmental profiles, the actual effects of the facility cannot be determined until the preferred vendor/technology has been identified, bringing the validity of the site evaluation into question. In this regard, the Regions' project team has commited to re-visiting the short-list site evaluation after a vendor/technology has been selected to determine if the site comparison remains valid and if a change in the preferred site is warranted.

3.3.16 The additional studies (Traffic Impact Analysis; Archeological Assessment; Air and Groundwater Monitoring; Environmental Impact Study; Land Use, Infrastructure and Servicing Assessments) may eliminate some of the remaining 4 sites from consideration. The Region should consider carrying forward at least two geographically separate sites through the RFP to provide for the optimum siting opportunity in relation to the specific technology and the specific HHERA.

3.3.17 The methodology to be employed by the Regions' project team in evaluating the sites has not been specified. In discussion, the Regions' project team have indicated that weightings will be given where applicable and the different sites will be assigned a series of advantages/disadvantages. Typically in an EA process either the "reasoned argument" or "arithmetical weighting" methods are employed, sometimes both are used as a cross-check on each other. Because the evaluation methodology has not been detailed in advance by the project team and since it has been publicly stated that there is "willing host" preference, we are unclear if the Clarington sites may be viewed differently than the East Gwillimbury site.

Evaluation of Air Quality Impacts in Site Selection Process (Attachment 8A)

3.3.18 The Regions' project team has developed a list of criteria and indicators for the evaluation of the short-listed sites, with a number of considerations (measures) identified for each. A number of modifications recommended by the Municipality's peer review consultants are discussed below.

3.3.19 Under the criterion "Air Quality Impacts and Ambient Air Quality Testing", it is recommended that two additional considerations be added:

- Identification of other significant emissions sources (both current and future) for each of the candidate sites. This would include major industries and major transportation corridors, including the future Highway 407 extension.

- Assessment of potential impact zone changes as a result of local meteorological conditions. Normally, impact zones are considered to be circular; however, this approach may not be appropriate for some sites due to such factors as local topography or the channelling of wind direction along the lake shore.

3.3.20 Under the criterion "Compatibility with Existing and/or Proposed Land Uses", specific attention should be given to sensitive receptors, in addition to residential uses (including designated lands in the Official Plan). Other sensitive uses include schools, day cares, and hospitals.

3.3.21 Under the criterion "Capital Costs, Operation and Maintenance Costs", additional site specific mitigation measures are listed as an indicator. This suggests that different sites might require different air pollution control systems, and that the cost of employing these systems will be a determining factor in site selection. It should be clarified that the best control technology available for emissions will be employed for each of the candidate sites.

3.3.22 The Regions' project team has responded that:

> "Through the competitive RFQ/RFP process, the Region will be looking for the Best Available Technology Not Entailing Excessive Cost (BATNEEC). Based on operating data around the world, it has been proven that the types of facilities being considered have the ability to operate below the current regulatory requirements in the Province of Ontario. Where a lower emission option is available (within reason) this will be identified and preferred..."

Clarington's peer review consultants will comment further on the implications of the Regions' project team approach as more information is provided on the specific technology, facility design and anticipated emissions.

3.4 Synopsis of Generic Human Health and Ecological Risk Assessment and Peer Review Comments

Background

3.4.1 A Generic Human Health and Ecological Risk Assessment (HHERA) was undertaken by the Regions' project team in order to study the potential health and environmental impacts and the feasibility of siting an EFW facility in either Durham or York Regions. The report was intended to identify potential issues of concern that should be closely examined during the conduct of a site specific risk assessment.

3.4.2 The generic study developed an extensive list of chemicals of potential concern (COPCs). Maximum emission concentrations for all selected COPCs were considered for the air dispersion modeling to illustrate a realistic worst-case scenario for the proposed technology. Three facility scenarios were modeled, ranging from 133,000 tonnes/year to 400,000 tonnes/year. A multiple exposure pathways assessment (air, agricultural products, soil, fish, surface water, country foods, backyard garden, breast milk) was used to determine human exposure risk for carcinogenic and non-carcinogenic chemicals. Several different human receptors were selected to represent a wide range of exposures, including a subsistence farmer, a first nations person, a commercial worker and a toddler at the daycare. Three life stages for most of the identified receptors (infants, toddlers, adult), as well as a composite receptor (from birth to 75 years), were assessed.

3.4.3 Based on the scientific methodology employed, the generic risk assessment concluded that contaminant emissions for a 400,000 tonne/year thermal waste treatment facility would be within MOE criteria for all chemicals, and that predicted concentrations of contaminant emissions to air (including background concentrations) did not pose an unacceptable risk to receptors at the maximum point of impingement. No unacceptable risk to the natural environment was identified. A limited number of potential human health and ecological concerns were identified; these were attributed to the overly conservative approach of the assessment. Nevertheless, these specific issues were identified as requiring attention during the site specific risk assessment.

3.4.4 Council directed that a peer review be undertaken of the Generic HHERA in response to concerns expressed by the public regarding the environmental and human health effects of the emissions from a thermal treatment facility. The peer review undertaken by the Municipality's consultants (Attachment 7) focused on whether the risk assessment had been undertaken competently in accordance with generally accepted principles for human health and ecological risk assessments, and whether or not, the scientific methodology used and the conclusions reached are appropriate and defensible. As well, a specific peer review was undertaken of the air quality aspects of the Generic HHERA (Attachment 8B).

Peer Review of Generic HHERA (Attachment 7)

3.4.5 The peer review concluded that the Generic HHERA for the EFW treatment facility is comprehensive and conforms to risk assessment guidance. For example, the peer review noted that the selection of the different types of receptors, as well as the life stage for calculations of exposure to carcinogenic and non-carcinogenic chemicals, is appropriate as these life stages represent the most exposed life stages. It was also found that the overall approach used in the Generic HHERA was conservative, potentially resulting in a significant over-estimation of exposure and risk.

3.4.6 The peer review identified a number of areas where the study could be clarified to be more transparent. However, it was concluded that these changes would not change the overall conclusions of the assessment as the risks are predicted to be very low, and in fact the calculated risks would likely be lower when the appropriate technology and site is selected. A specific discussion on nano-particles was suggested to address a concern identified by the public. As well, it was suggested that a "plain-language" summary of the report be prepared so that members of the public can better understand the approach and results of the risk assessment.

Peer Review of Air Quality Aspects of Generic HHERA (Attachment 8B)

3.4.7 The air quality assessment for the HHERA was found to be reasonable for a generic assessment. The model used was the most appropriate for dispersion modeling. Emissions were conservatively assumed to be at a maximum and any actual system is expected to perform better than the emission levels used in the generic study. The COPCs assessed by the HHERA is extensive and it is unlikely that any chosen technology would emit a chemical that would be a cause for concern that has not been included in the generic assessment. As well, the meteorological data used (Pearson Airport and Buffalo) is consistent with MOE's recommended practice for assessing air quality in the York/Durham area, and is appropriate for the generic study. The study has also accounted for the localized effect of the lake on dispersion.

3.4.8 The only area of concern with respect to the air quality model relates to the background air quality data used. Key emissions sources in the Clarington area (e.g. St. Marys Cement, Oshawa urban area, General Motors, Ameristeel, Highways 401 and 35/115 and the future 407 link), could affect the conclusions of the HHERA. As well, the current background assessment only considers major contaminants measured by MOE monitoring stations. The air quality background assessment and risk assessment should consider the background levels of other contaminants of concern related to thermal waste treatment; specifically dioxins, furans and heavy metals such as mercury.

4.0 UPDATE ON THE REGIONS' TECHNOLOGY PROCUREMENT PROCESS

4.1 Throughout the public information sessions and as the technology selection process has evolved, there has been considerable discussion on the various technologies that could be considered for a thermal treatment facility. A number of different thermal technologies currently exist or are in the development stage. These range from well-established technologies such as conventional combustion/incineration to emerging technologies such as plasma arc.

4.2 The Regions are employing a two-step process for selecting a vendor and a thermal treatment technology. The first step is the issuance of a Request for Qualifications (RFQ) to vendors of thermal treatment technologies, while the second step is the Request for Proposals (RFP) to qualified vendors.

4.3 On July 12, 2007, Durham and York Regions jointly issued a "Request for Qualifications to Design, Build and Operate an Energy From Waste Facility", with the closing date for submissions being October 11, 2007. The RFQ states that the capacity of the new facility at start-up in 2011 will be between 150,000 and 250,000 tonnes per year, with future scalability to accommodate growth to as high as 400,000 tonnes per year over the life of the anticipated contract (35 years). It is also stated that negotiations between Durham and other municipalities regarding waste supply commitments are presently on-going and the required initial capacity of the EFW facility will be finalized prior to the issuance of the RFP.

4.4 Following completion of the RFQ stage, an RFP will be issued, most likely in early 2008. The RFP will describe the Regions' requirements and performance expectations for the design, construction and operation of the EFW facility. Qualified respondents identified through the RFQ process will be invited to provide detailed proposals, including the design, construction and operating contract. After reviewing the RFP submissions, the successful qualified respondent (the "preferred vendor with a specific thermal technology") will be selected. This step is expected to occur in mid 2008.

4.5 The potential technologies to be considered through the RFQ/RFP process exhibit a wide range of advantages and disadvantages, and a number of factors will be used to evaluate the various systems and identify a preferred system. It is important to note that the factors the Regions may favour (e.g. minimal cost, optimum energy generation) may not necessarily coincide with those factors that would be most favourable to Clarington (e.g. lowest air emissions, high quality architectural treatment).

4.6 To respect the timelines identified for the RFQ the Peer Review comments on technology procurement will not be available until after October 11, 2007 or when the RFQ closes. The Municipality can make suggestions to the Region to include specific requirements in the RFP for the thermal technology, based on the recommendations from our consultants; however, it is the Region's RFP. It should also be noted that because of confidentiality requirements, the Municipality would not have any opportunity to review a draft RFP. Furthermore, the Municipality cannot participate in the process once the RFP is issued.

4.7 While the Municipality can make requests during the EA process with regard to the standards for emissions, monitoring and other aspects of the thermal treatment facility, it will not be until the vendor is chosen and a detailed facility design is developed that environmental protection measures will be identified. As such, the EPA submission and the conditions attached to the Certificates of Approval to operate the facility will be a very important aspect in ensuring that the Municipality's and residents concerns with respect to protection of human and environmental health are appropriately addressed.

4.8 It is important for Council to understand that a decision on the site will be made without knowing the technology vendor, the specific thermal technology, the contemplated design of the EFW plant or the results of the site specific HHERA.

4.9 Subsequent reports from the Peer Review Consultants and Staff will address these issues more fully when the Site Specific Risk Assessment is prepared, the RFQ process is complete, and when the Municipality knows the timing of the EPA submission.

5.0 UPDATE ON FINANCIAL IMPACT STUDIES

5.1 Clarington Energy Business Park

5.1.1 The Energy Park contains two of the potential locations of the EFW facility that meet the siting criterion as set out in the EA Terms of Reference. Although the Energy Park planning contemplated that there may be some alternative power generation, there were concerns about the impact of an EFW facility, its scale and emissions.

5.1.2 Part of the preparation of the economic analysis will be to determine the impact (positive and/or negative) that an EFW facility will have on attracting other businesses to the Energy Park. The consultants for these studies have been retained and are working on the background analysis, their work will be reported on at a later date.

5.2 Assessment Base

5.2.1 As mentioned above, one of the major opportunities that the Energy Park represents is the anticipated improvement in the Municipality's tax base and ratio. Not only would the development of the Energy Park create a new stream of taxation income, it would help move the Residential/Commercial-Industrial ratio from the existing 91/9 towards the 75/25 target set out in the Official Plan.

5.2.2 The Municipality has waited a considerable length of time for sanitary sewer and municipal water services to be provided to industrial areas to increase their marketability. By providing serviced industrial areas, Clarington can begin the process of attracting more employers and providing a better live/work lifestyle for residents.

5.2.3 The Municipality, as part of its due diligence for both Section 5.1 above and this section, has retained two multi-national firms to assist in determining impacts, if any. At this time, the consultants work has not progressed to a point where an update can be provided, other than to indicate they are working through a number of different scenarios.

6.0 UPDATE ON OTHER ISSUES

6.1 Throughout the previous deputations to Council have identified a number of issues that will be addressed in part by the Municipality's peer review. These include:

- A comparison of Ontario's A-7 Guidelines with the European Union and American guidelines;
- The effect of differences in the waste stream between Europe and York/Durham on emissions from an EFW facility;
- Costs related to achieving lowest possible emissions at an EFW facility;

- The applicability of the conclusions in the peer review undertaken by Dr. Pengally of the health study component of the Halton Region EFW report;

On June 20, 2007, Durham Region Council adopted the following motion:

> THAT in addition to providing his comments from the peer review of the results of the Consultant's Generic Human Health and Ecological Risk Assessment Study for the York/Durham EFW Environmental Assessment Project, Durham Region's Medical Officer of Health also be requested to conduct a separate review and report on the consultant's study for Halton Region on the potential health and environmental effects of an EFW facility and the peer review that were done on that study.

Clarington's Peer Review comments on the Generic Human Health and Ecological Risk Assessment have been made available to the Medical Officer of Health to assist him in his review. These comments are summarized in section 3.4 of this report and Staff are recommending no further action on this item, at this time.

6.2 Other items that Staff are addressing as part of the recommendations of PSD-070-07 (Attachment 2) not included in this report are:

- Matters to be included in the Request for Proposals;
- Matters to be addressed in a Host Community Agreement.

Staff and the peer review team are continuing to review information related to these issues. Future reports will provide more information on these topics.

7.0 CONCLUSION

7.1 As the purpose of this report is to meet the Regions deadline we are asking the Committee to approve the recommendations FORTHWITH as set out in this report.

7.2 It is premature for the Regions' project team to be making an announcement of the preferred site (scheduled for the September 25th JWMG meeting) without the Municipality and others having access to the studies the Regions project team previously indicated would be available in July. These reports are critical to understanding the potential impacts on the Clarington sites, in particular the Energy Park. Sufficient time for the interested municipalities, agencies and public to review and comment, and the Regions' project team to consider the comments prior to recommending a preferred site is necessary.

7.3 The Regions' project team should provide the methodology for application of the evaluation criteria in the determination of the preferred site in advance of it being applied so that Clarington can be assured that the resolution by East Gwillimbury does not bias the application of the evaluation criteria and so that the process is traceable.

7.4 The Region has committed to revisit the short-list site evaluation after a vendor/technology has been selected to determine if the site comparison remains valid and if a change in the preferred site is warranted. The Region should consider whether the anticipated cost saving of determining a preferred site prior to knowing the specific thermal technology is adequate justification given the potential costs to revisit the short-list site evaluation and the problems that changing the preferred site could involve. The Region should consider whether carrying forward at least two geographically separate sites through the RFP to provide for the option on siting in relation to the specific technology and the specific HHERA may be beneficial.

7.5 Council has yet to determine if, and then under what conditions, Clarington will be a host community of the energy from waste facility. The Regions have not yet reached a number of key decision points in the EA process, such as the selection of a site and a specific thermal technology and vendor.

7.6 Staff will continue to work with the peer review consultants to monitor the EA process and provide comments/advice to Council.

Attachments:

Attachment 1	Glossary of Terms
Attachment 2	Resolution from PSD-070-07.
Attachment 3	Town of East Gwillimbury Resolution
Attachment 4	Map – Short List of Alternative Sites in Clarington
Attachment 5	Extract from Durham Region Report #2007-J-14
Attachment 6	Peer Review Report (Steven Rowe) – Gap Analysis of EA Process and Review of Site Selection
Attachment 7	Peer Review Report (SENES) – Generic Human Health and Ecological Risk Assessment
Attachment 8A	Peer Review Report (AMEC) – Air Quality Aspects of Site Selection
Attachment 8B	Peer Review Report (AMEC) – Air Quality Aspects of Generic Human Health and Ecological Risk Assessment

List of Interested Parties to be Notified of Councils decision:

Joachim Baur
Alexandra Bennett
Barry Bracken
Kathi Bracken
Wendy Bracken
Karen Buck
Terry Caswell
Katie Clark
Shirley Crago
Kevin Diamond
Wayne Ellis
Linda Gasser
Jaison Gibson
Glenda Gies
Tenzin Gyaltsan
Ron Hosein
Dr. Debra Jefferson
Laurie Lafrance
Lee McCue
Warren McCarthy
Cathrine McKeever
Kerry Meydam
John Mutton, Municipal Solutions
Karen Nichol
Dave Renaud
Jim Richards
Andrew Robson
Yvonne Spencer
Nicole Young
Lucy Wunderlich
Ontario Power Generation
Anthony Topley
Paul Andre Larose
Don Wilkinson
Noah Hannah
Katherine Miles

GLOSSARY OF TERMS

BATNEEC	Best Available Technology Not Entailing Excessive Cost
COPC	Contaminant of Potential Concern
EA	Environmental Assessment
EBR	Environmental Bill of Rights
EFW	Energy From Waste
EPA	Environmental Protection Act
HHERA	Human Health and Ecological Risk Assessment
IC&I Waste	Industrial, Commercial, and Institutional waste
MOE	Ontario Ministry of the Environment
MSW	Municipal Solid Waste
RFP	Request for Proposals
RFQ	Request for Qualifications
SRF	Solid Recovered Fuel

Resolution GPA 367 07

THAT Report PSD 070 07 be received.

THAT Staff be instructed to carry out the requirements of Resolution C 211 07 by preparing the studies in accordance with the scope of work set out Report PSD 070 07.

THAT Mr. Steven Rowe be retained to undertake the scope of work as outlined in Section 4 2 Site Selection and Section 4 Gap Analysis of Report PSD 070 07 and further to advise on the scope of work set out in Section 5 1 Oversight of Technology Procurement Process and 5 2 Potential Environmental Effects of Report PSD 070 07.

THAT SENES Consultants Limited be retained to undertake the scope of work as outlined in Section 5 1 Oversight of Technology Procurement Process of Report PSD 070 07 and further to assist with the scope of work set out in Section 5 2 Potential Environmental Effects of Report PSD 070 07.

THAT AMEC E C Services Ltd be retained to undertake the scope of work as outlined in Section 5 2 Potential Environmental Effects of Report PSD 070 07.

THAT C B Richard Ellis Ltd be retained to undertake the scope of work set out in Section 6 1 Impact on Clarington Energy Business Park and Section 6 2 Impact on Assessment Base of Report PSD 070 07 and further to assist with the scope of work set out in Section 6 3 Community Stigma.

THAT the Director of Finance be authorized to retain a multi disciplinary accounting firm to undertake the scope of work set out in Section 6 3 Community Stigma and Section 64 Host Community Agreement of Report PSD 070 07.

THAT the Municipal Solicitor and Consulting Engineer Totten Sims Hubicki provide information professional opinion estimates and advice as deemed appropriate.

THAT the Directors of Finance and Planning Services be instructed to strike a committee comprised of Clarington staff and consultants similar in composition to the Region of Durham s committee in order to facilitate discussions related to the Host Community Agreement.

THAT the Directors of Finance and Planning Services be instructed to take any additional actions or retain any additional consultants deemed necessary to ensure the Municipality has carried out its due diligence.

THAT the Region be requested to work in cooperation with Clarington Staff to improve the public engagement process as noted in Section 4 3 and the Air Shed Study process as noted in Section 5 2.

THAT the Purchasing By Law 2006 127 be waived.

THAT the Director of Planning Services and the Director of Finance be authorized to negotiate and approve contracts with the consultants deemed necessary to complete the due diligence for the Municipality as identified in Report PSD 070 07.

THAT Council authorize the Mayor and Clerk to sign the necessary by laws to engage the consultants and execute the contracts deemed satisfactory by the Director of Planning Services and the Director of Finance.

THAT the peer reviews and studies referenced in Report PSD 070 07 be deemed to be part of the necessary studies to complete due diligence as referenced in the motion approved by Durham Region Council on April 18 2007 and that the Director of Finance be directed to recover these due diligence costs from the Region of Durham as set out in their motion.

THAT Staff report regularly to Council on the progress and findings of the peer reviews and analyses being undertaken and the Host Community Agreement discussions and

THAT all interested parties be notified of Council s decision including the Regions of York and Durham Councils and the Joint Waste Management Committee

H.5. Motion re Residual Waste Processing & Energy from Waste Facility

Moved by Councillor Johnston **Seconded by**: Councillor Morton

WHEREAS The Town of East Gwillimbury is supportive of waste diversion options that encourage the sustainability of the environment;

AND WHEREAS one of the short-listed sites for the proposed "Residual Waste Processing and Energy from Waste Facility" is on Garfield Wright Drive in the Town of East Gwillimbury;

AND WHEREAS Council of the Town of East Gwillimbury has considered this proposal and expresses the following concerns:

WHEREAS, WITH RESPECT TO NATURAL HERITAGE, the proposed site is zoned industrial and is located in the Provincial Greenbelt, at the headwaters of the Black River – an important part of the Lake Simcoe watershed. There is a potential risk of environmental harm from spillage, emissions, or other unintended events when placing a significant waste management facility in a headwaters area, and:

WHEREAS, WITH RESPECT TO AIR EMISSIONS, although emissions from incineration at such a facility must meet provincial standards– any emission will have an environmental impact;

AND FURTHER, WITH RESPECT TO AIR EMISSIONS, it is noted that the Town of Newmarket has had very negative experiences with the Halton Recycling facility adjacent to Highway 404, particularly with odour and air quality;

AND WHEREAS, WITH RESPECT TO AGRICULTURE, the proposed facility would be located in close proximity to a number of food producing farms, and the Town is concerned about any possible effects emissions might have with respect to agricultural operations in East Gwillimbury;

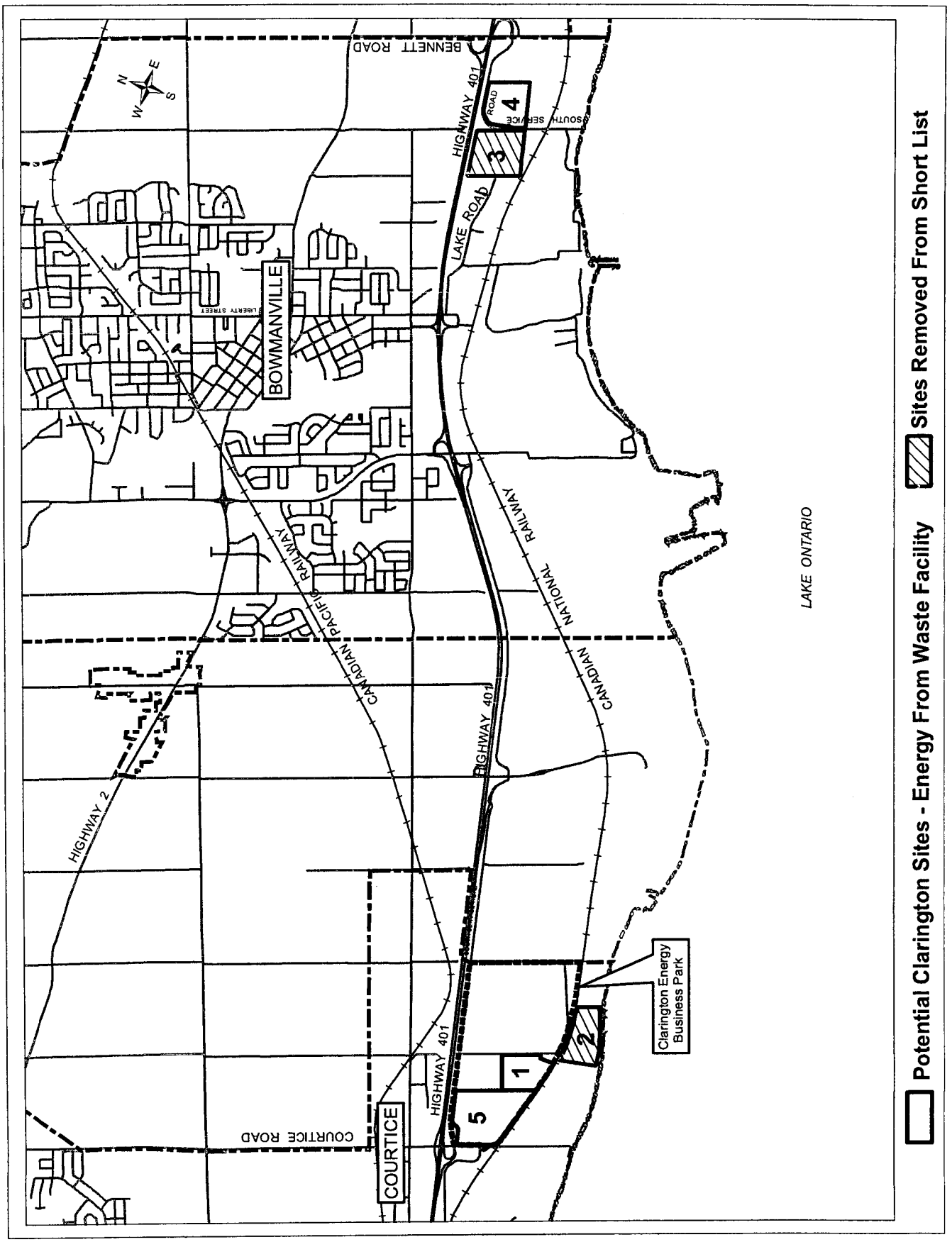
WHEREAS WITH RESPECT TO TRAFFIC AND IMPACT ON LOCAL ROADS, any waste facility brings with it the issue of truck traffic. The Town does not wish to experience truck traffic hauling waste to an incineration facility, and problems can arise with odour, spillage, debris, litter and pollution from engine exhaust;

THEREFORE BE IT RESOLVED THAT the Town of East Gwillimbury should not be considered as a willing host to the proposed "Residual Waste Processing and Energy from Waste Facility".

Councillor Hauseman requested that a recorded vote be taken:
Councillor Hackson - Yes
Councillor Hauseman - Yes
Councillor Johnston - Yes
Councilor Morton - Yes
Mayor Young – Yes

Carried. C 2007-192DLS

Mayor Young advised that Council will carry back to York Region the message that the Town of East Gwillimbury is not a willing host to this facility.


BENNETT ROAD
HIGHWAY 401
SOUTH SERVICE ROAD
LAKE ROAD
BOWMANVILLE
LIBERTY STREET
CANADIAN PACIFIC RAILWAY
CANADIAN NATIONAL RAILWAY
HIGHWAY 2
COURTICE
COURTICE ROAD
Clarington Energy Business Park
LAKE ONTARIO
1
2
3
4
5
Potential Clarington Sites - Energy From Waste Facility
Sites Removed From Short List

- Compliance with air emissions;
- Reduced property values;
- Visual impact of facility;
- Monitoring and reporting of key performance parameters;
- Traffic control measures; and,
- Activating a Public Liaison Committee.

- The formation of a Public Liaison Committee (PLC) can play a role in formulating a Host Community Agreement. The PLC can allow the local residents to feel recognized and respected. It also allows them to understand that they are part of the process and thus empowered to participate.

- After a site has been selected for the facility, a PLC can be formed and they can provide input into the final version of the Host Community Agreement to reflect the concerns of the community.

- Funds have been provided in the 2007 EFW operating budget for external legal advice to assist in the preparation of a draft Host Community Agreement. It is anticipated that the final Host Community Agreement can be negotiated with the successful local area municipality.

- It is recommended that the Region agree to negotiate and be responsible for executing a Host Community Agreement with the local area municipality with the preferred site, to be based upon the principles included as Attachment 4.

7.0 NON-FINANCIAL CONSIDERATIONS

7.1 Health and Environment: The Ministry of the Environment Evaluation of Waste Disposal Options

- In July 1999, the Ministry of the Environment (MOE) released a 290 page technical report on a series of risk assessments it conducted on two generic type waste disposal facilities, each having a disposal capacity of 6.6 million tonnes of waste over twenty years.

- The final report was titled *"Environmental Risks of Municipal Non-hazardous Waste Landfilling and Incineration"* and it evaluated a large-scale incinerator and a large landfill site (see details included as Attachment 5).

- This is a highly technical and scientific document that examines all aspects and possible impacts that a landfill site or an incinerator might have on the environment, on public health, on the ecology including risks to humans, animal and aquatic life.

INTERIM REPORT: GAP ANALYSIS OF THE EA PROCESS AND REVIEW OF THE SITE SELECTION PROCESS

Prepared for:

The Municipality of Clarington

By:

Steven Rowe Environmental Planner

August 2007

Table of Contents

1. Introduction

1.1 Background

Steven Rowe Environmental Planner has been retained by the Municipality of Clarington to review a site selection process being conducted by the Regions of York and Durham that will ultimately lead to the identification of a preferred site and vendor/technology for a thermal treatment or Energy-from Waste facility. The facility would process waste derived from York and Durham Regions and potentially other municipalities. The site selection process forms part of a study being conducted under the Ontario Environmental Assessment (EA) Act to identify an undertaking "to process....the waste that remains after the application of both Regions' at – source waste diversion programmes in order to recover resources – both material and energy – and to minimize the amount of material requiring landfill disposal."

The primary focus of this review is the approved Terms of Reference document and "Draft Report, Thermal Facility Site Selection Process, Results of Steps 1-5, Identification of the "Short List" of Alternative Sites", prepared by MacViro Consultants Inc. (now Genivar) and Jacques Whitford Limited and dated March, 2007 (the "Site Selection Short List Draft Report"). Consultation material in relation to the EA was also reviewed, and a meeting between Clarington and York/Durham staff and consultants was held on June 29, 2007 to identify issues requiring further clarification.

1.2 Status under the Environmental Assessment Act

This EA is considered to be an "individual EA", and is to be carried out in accordance with Terms of Reference (TOR) that were approved on March 31, 2006 by the Ontario Minister of the Environment for this specific undertaking. The Terms of Reference indicate that the EA is to be carried out in accordance with Section 6.1(2) of the Act, which encompasses the requirements relating to the content of an environmental assessment. Section 6.1(2)) is as follows:

Subject to subsection (3), the environmental assessment must consist of,

(a) a description of the purpose of the undertaking;

(b) a description of and a statement of the rationale for
    (i) the undertaking,
    (ii) the alternative methods of carrying out the undertaking, and
    (iii) the alternatives to the undertaking

(c) a description of,

(i) the environment that will be affected or that might reasonably be expected to be affected, directly or indirectly,

(ii) the effects that will be caused or that might reasonably be expected to be caused to the environment, and

(iii) the actions necessary or that may reasonably be expected to be necessary to prevent, change, mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment, by the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking;

(d) an evaluation of the advantages and disadvantages to the environment of the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking; and

(e) a description of any consultation about the undertaking by the proponent and the results of the consultation.

Section 6.1(3) referred to above allows the terms of reference to consist of information other than that required by subsection 6.1(2), however the submitted and approved TORs require the proponent to undertake the most comprehensive level of EA planning under Section 6.1(2). The Terms of Reference show how the requirements of Section 6.1(2) are to be met. They do not replace Section 6.1(2).

1.3 The New Waste Management Regulation

On March 23, 2007 a new Regulation 101/07 under the Environmental Assessment Act came into effect. The Regulation provides for an "Environmental Screening Process" for certain waste management projects in accordance with a new "Guide to Environmental Assessment Requirements for Waste Management Projects". This process is less rigorous and can be conducted more quickly than the individual EA process – for example there is no requirement for a Minister – approved TOR, and no requirement to identify and compare alternatives such as alternative technologies or systems (alternatives "to" the undertaking) or alternative sites (alternative methods of carrying out the undertaking).

Some waste management undertakings – including thermal treatment facilities with energy recovery of the scale proposed by York and Durham Regions – are now permitted to proceed through the Environmental Screening Process rather than an individual EA. Section 10 of the Regulation provided an opportunity to proponents such as York and

Durham Regions who had submitted EAs or proposed TORs to switch to the Environmental Screening Process if they notified the Director of the Environmental Assessment and Approvals Branch of the Ministry of the Environment within 60 days of the Regulation coming into effect.

On April 24, 2007 the Joint Waste management Group (JWMG) established to oversee the EA process decided not to take advantage of this opportunity. Therefore, the proposed undertaking continues to be subject to requirements set out in the approved TOR.

1.4 Adoption of a Preferred Alternative to the Undertaking

On May 30, 2006 the Durham/York JWMG recommended that their respective Regional Councils approve of their consultants' recommendations regarding the preferred "alternative to the undertaking" or waste management technology system. In fact the recommendations encompass, potentially, two generic types of system:

> "Based on the comparative evaluation process we, the Consultant team, recommend that ***System 2(a) -Thermal Treatment of Mixed Solid Waste and Recovery of Energy followed by Recovery of Materials from Ash/Char*** -is the system that offers the preferred balance of advantages and disadvantages given the environmental priorities established by the study area communities and the Joint Waste Management Group. In reaching this recommendation, it is recognized that new technologies categorized in System 2(b) – Thermal Treatment of Solid Recovered Fuel may ultimately offer important benefits."

System 2(a) would include established technologies such as the "mass burn" of waste in an incinerator. The "new technologies" forming part of System 2b include gasification of waste (and burning the resulting gas to provide energy), and plasma arc treatment. These processes are described more fully in the materials generated during the "alternatives to" part of the process. The recommended waste management technology system was adopted by the regional Councils of Durham and York on June 21 and 22 respectively, 2006.

According to the Site Selection Short List Draft Report, the original proposal in the TOR to allow potential technology vendors to submit sites as well as technologies for consideration has been changed so that sites and technologies will now be considered separately.

1.5 Site Selection Process

The site selection process, part of which is reviewed in this report, is being undertaken to identify a preferred site for the proposed residual waste management system. To date the proponents have:

- Identified a required site size and configuration;
- Confirmed that the process should identify a single site rather than two or multiple sites
- Undertaken screening to identify a "long list" of sites, followed by evaluation to produce a "short list" of sites.

This process is reported in the Site Selection Short List Draft Report, which has been released for consultation prior to the final step of the process that would identify a preferred site. While it is called a draft, we understand that it is considered by the proponents to be final, and will become so with the submission of the EA. The "Short List" comprises four sites (including two sites identified as one) in the Municipality of Clarington and one site in the Town of East Gwillimbury. The proponents have indicated that they wish to announce a recommended preferred site in late September 2007.

The JWMG meeting summaries for January 20 and February 20, 2007 indicate that the preferred vendor and exact thermal technology for the facility will not be selected until after the preferred site is identified. More recently Clarington's staff and consultant were told that the proponent team intends to submit an interim EA planning document to enable the Ministry of the Environment and other interested parties to review the process to date at the end of 2007, before the preferred vendor has been selected. The Regions committed to having full information on the vendor's technology and the preferred site in its final EA submission. The proponents made a commitment that when the preferred vendor has been selected a sensitivity analysis would be undertaken to confirm that the process leading to the selection of the preferred site remains valid.

There have been further developments in relation to the Short List and the process as a whole, subsequent to the release of the above draft report:

On May 22, 2007 Council for the Town of East Gwillimbury resolved that the Town should not be considered a willing host for the proposed thermal treatment facility. Since no commitment has so far been made to site only where there is a "willing host", this decision does not affect the status of the East Gwillimbury site on the Short List.

On June 20, 2007 Council for Durham Region adopted recommendations in a Special Works Committee report that staff be directed to examine the option of over-sizing the Energy from Waste facility beyond the immediate needs of the two Regions, and to partner on the capital construction and operating costs on an equal basis on facility capacity in excess of their immediate needs, and that York Region should not have right of first refusal on any capacity for which it has not made a financial contribution.

On June 21, 2007 Council for York Region adopted recommendations in

a Solid Waste Management Committee Report and decided to reduce its waste contribution to the proposed thermal treatment facility to 20,000 tonnes per year, with an option to expand the capacity of the facility in the future at its own cost. York has a contract with a waste pelletization firm to accept some of its waste and it also has an opportunity to utilize capacity at the Green Lane landfill facility near St. Thomas in Elgin County. The apparent disconnect between this resolution and the Durham Region resolution above remains to be resolved.

On June 19, 2007 the JWMG agreed to delete short listed sites 2 and 3 in Clarington. The designation of Site 2 in the Durham Regional Plan has been confirmed as "Greenlands, Waterfront Areas", and the EA siting criteria are considered to disqualify the site from consideration for a thermal treatment facility. Site 3 was withdrawn by its owner.

While the long-listed Whitby site was rejected due to land use and traffic constraints and Clarington Site 2 was later rejected due to its Official Plan designation there are also differences in the degree of potential impact among the remaining short listed sites.

Sites 1 and 5 in Clarington are within the Clarington Energy Business Park. Site 1 is designated "Light Industrial 1" (approximately the north half) and "Light Industrial 2" (south part). The "Light Industrial 2" designation is the only one that allows for "waste-to energy facilities", which may be permitted by site specific zoning amendment, subject to conditions. Uses involving waste processing are specifically excluded from the "Light Industrial 1" designation.

Site 5 is designated "Prestige Employment Node" (north/west part) and "Light Industrial 1" (south part) in the Energy Business Park Secondary Plan. Uses involving waste are not listed among the permitted uses for the "Prestige Employment Node".

Site 5 includes the western part of the proposed "Energy Drive", a primary road that would "provide the main entrance to the Energy Park and the primary address for development", according to the Secondary Plan. An energy-from waste plant occupying the whole of Site 5 would displace the main entrance to the Energy Park from the Courtice interchange on Highway 401.

Clarington Sites 3 and 4 are within the Bowmanville Urban Boundary. Site 3 is designated Prestige Employment Area, Light Industrial Area and Environmental Protection Area. Site 4 is designated Prestige Employment Area. None of these designations specifically provides for thermal waste treatment facilities. There are existing and proposed residential uses in close proximity: the Port Darlington Neighbourhood Secondary Plan designates lands for residential use a short distance to the south of these sites, and the Wilmot Creek community is located to the east. Also, the Durham Region Official Plan and the Clarington Official Plan identify a

proposed interchange between Lambs Road and Highway 401 that would be displaced by a thermal treatment facility on Site 4. A proposed industrial service road passes through both Sites 3 and 4.

2. Site Selection in the Approved Terms of Reference

2.1 Requirement that the EA is to be in Accordance with the Terms of Reference

Section 6.1(1) of the EA Act states that: "The proponent shall prepare an environmental assessment for an undertaking in accordance with the approved terms of reference"

In Section 9.(1)(2), "the Minister shall consider.....the approved terms of reference.....when deciding an application". The same requirement applies if the Minister refers an EA decision to the Environmental Review Tribunal.

Consistency with the TOR is therefore a very important consideration when the Minister or the Environmental Review Tribunal decides on an EA application.

The "Reasons for Approval" in the Minister's March 31, 2006 Notice of Approval for the Terms of Reference are as follows:

1. The TOR ensures that the EA will be completed using a comprehensive public and government agency consultation process that is open and transparent;
2. The TOR ensures that the completed EA will contain a sufficient level of detail to accurately assess the environmental effects of the alternatives and the proposed undertaking; and,
3. The TOR sets out a planning process that will ensure the completed EA will be consistent with the purpose of the EAA and the public interest.

These considerations would be relevant to any evaluation about whether an EA or a matter in an EA is in accordance with the TOR.

2.2 Participation of Preferred Vendors in the EA

The point at which preferred vendors enter the EA process is relevant to the facility siting process because the design characteristics and the potential net effects of the facility (and therefore the site, or alternative sites) are not fully known until the waste processing system is identified. If the specific design and effects of the facility are not known during a site selection process, the potential effects of a site must be based on assumptions rather than actual knowledge. The proponents anticipate that because of the conservative assumptions being made that there will

not be issues that would cause reconsideration of the site after the preferred vendor is selected.

Section 2.2 of the TOR notes that "this EA Study may result in the identification of a preferred undertaking.... that would require a competitive process and selection of a vendor(s) to partner with the co-proponents in the development of the facility(ies) for the preferred residuals processing system. (This) will likely be necessary, prior to seeking EA Approval, to allow for a sufficiently detailed description of the undertaking (including its design, operation, maintenance, monitoring and contingency measures) and respective net effects". However; the date of the actual contract between the Region and the vendor does not affect the EA submission.

2.3 The Facility Site Selection Process

2.3.1 Review of Evaluation Methodology and Criteria

"Step 1" of the site selection process involves review and confirmation of the proposed evaluation methodology and criteria with the public and agencies (TOR Section 6.2). This review process was undertaken and documented in a report:

"Results of Public and Agency Consultation on Proposed Facility Siting Methodology and Criteria, Step 1 Report on Consultation", dated September 2006. The report describes the consultation approach and events, but provides little detail on how the proponents' team applied the results of the consultation in refining the proposed criteria or establishing priorities. Section 2.5 of the Site Selection Short List Draft Report describes four "refinements" to the process resulting from the consultation, but does not comprise a comprehensive description in this regard.

2.3.2 Identify Areas Within Which Sites may be Located

Section 4.2 of the TOR states:

"The process of identifying siting alternatives for a processing facility(ies) will not seek to consider all lands within the study area but rather, will focus on those lands considered to be generally suitable for the processing of post-diversion residual waste such as existing and/or designated industrial lands. Accordingly, the following types or categories of sites will be considered at the EA evaluation:

- Publicly owned lands that meet the minimum site size and configuration requirements for the type of facility(ies) being pursued and that are located in areas that are considered to be generally suitable for the processing of residual waste; and,
- Lands offered by a "willing seller" property owner that exhibit the

minimum site size and configuration requirements for the type of facility(ies) being pursued and that are located in areas that are considered to be generally suitable for the processing of residual waste."

Privately owned lands not being offered by the property owner would only be considered if it is determined that the above categories of sites do not present a reasonable range of siting alternatives.

Step 2 of the siting process as identified in the TOR is to apply siting constraints to the entire study area (York and Durham Regions) and identify those lands "considered to be generally suitable for the purpose of locating the preferred disposal system". This evaluation is to be based on criteria in Table F-1, Appendix F, as further modified in Step 1. These exclusionary criteria comprise:

- Designated lands protected by Provincial/Federal legislation and provincial land use plans and policies such as the Oak Ridges Moraine Conservation Plan, Green Belt Plan and Provincial Policy Statement;
- Designated residential areas and appropriate separation distances
- Specified natural heritage features and appropriate separation distances;
- Prime agricultural lands
- Institutional facilities (e.g. schools, hospitals) with appropriate separation distances;
- Areas around federally regulated airports as per Transport Canada guidelines.

Map 1 attached to this report is extracted from the Site Selection Short List Draft Report and shows the "unconstrained" areas remaining after the application of Step 2.

There is no mapping showing the constraints under which different parts of the study area were excluded.

2.3.3 Identify Minimum Site Size

Step 3 of the siting process involves identification of a required site size for the facility. The actual minimum site size is unclear from Section 4 of the Site Selection Short List Draft Report. The preferred range appears to be 9.1-13.7 ha.

2.3.4 Identify Long List of Sites

A "long list" of siting opportunities would be identified in Step 4 of the process through review of publicly owned lands and issuance of a request for "willing seller" properties if necessary. Step 4 also included an option to revise and reapply the criteria if a reasonable number of "long list" alternatives was not identified. As reported in the Site Selection Process Draft Report, the proponents' team examined public lands, issued two calls for willing sellers, and identified a long list of seven sites – five in Clarington, one in Whitby and one in East Gwillimbury.

2.3.5 Identify Short List of Sites

Step 5 in the TOR provides for the "long list" of sites to be evaluated to produce a short list if more than three long listed sites are identified. The evaluation would be based on "preliminary factors" in Table F-2. These factors are the same as those actually applied in Step 5 of the site selection process and comprise:

- Proximity to required infrastructure;
- Site accessibility;
- Potential impact of the haul route (i.e. traffic, noise, land use, cost)
- Property size;
- Land use compatibility;
- Availability of site;
- Potential impacts on unregulated airport operation.

When this step was undertaken the Whitby site was removed from the process based on identified constraints regarding the potential impact of the haul route, land use compatibility, and availability of the site. The remaining short list comprises four sites in Clarington (with Sites 1 and 2 paired and considered as one), and one in East Gwillimbury. The locations and features of the short-listed sites are provided as Maps 2 – 7 to this report.

2.3.6 Preferred Site and Vendor/Technology

Steps 6 and 7 remain to be undertaken. Step 6 includes the issuance of a request for qualifications to technology vendors and consultation on the short listed sites. Step 7 includes the issuance of a Request for Proposals to qualified technology vendors. This would be done concurrently with the comparative evaluation of the short listed sites in accordance with criteria in Table F-3, Appendix "F". The proponents have subsequently provided Clarington with revised criteria, indicators and considerations for this evaluation, as provided in Appendix A to this report. The criteria are as follows:

- Air quality impacts and ambient air quality testing;

- Water quality impacts (surface water and groundwater);
- Environmentally Sensitive Areas and Species Impacts, Aquatic and Terrestrial Ecology Impacts;
- Compatibility with existing and/or proposed land uses;
- Archaeological and Cultural Heritage Resources;
- Traffic Impacts;
- Capital Costs, Operation and Maintenance Costs;
- Compatibility with Existing Infrastructure, Design/Operational Flexibility Provided by Site;
- Complexity of Required Approvals;
- Complexity of Required Agreements.

The TOR anticipated that the preferred vendor/technology would need to be known prior to seeking EA approval, however an interim EA planning document may be submitted to the MOE before the preferred vendor is selected. The final EA submission will have to include the preferred vendor and exact thermal technology.

2.3.7 Human Health and Ecological Risk Assessments

The TOR does not specifically commit the proponents to undertake health and ecological risk assessments. In June 2007, however, the proponents produced a "Generic Human Health and Ecological Risk Assessment Study" prepared by their consulting firm Jacques Whitford. Although "a limited number of potential human health and ecological concerns were identified in this conservative, generic EFW facility risk assessment", "overall it was determined that an EFW thermal treatment facility could be sited in Durham and York Regions". A site specific health and ecological risk assessment is to be conducted for the preferred site, however there will be no individual health and ecological risk assessments for each of the short listed sites. The comparison of short listed sites will not consider health and ecological risk information which would include not only the effects of emissions from the facility but also differing ambient air quality conditions and differences in the numbers and types of existing or proposed sensitive receptors around each site. The risk assessment work conducted in support of this process is being peer reviewed by Clarington's consultant team.

3 The Site Selection Process Peer Review

3.1 Approach to Process Review

This review or "gap analysis" of the Site Selection Short List Draft Report is intended to identify whether the process conducted to date and as currently proposed is in accordance with the TOR and is consistent with the requirements of Section 6.1(2) of the EA Act, as required by the TOR.

Considerations in this evaluation include:

- Whether the proponent identified a reasonable range of siting alternatives, as required by the TOR;

- Whether the proponent is following a clear, logical and traceable process to compare and evaluate siting alternatives. This principle has been established over many years of Ontario EA practice as a requirement for EA planning. The current (June 2007) MOE Code of Practice for Terms of Reference states: "A clear, logical and traceable assessment is one in which anyone with the same information could reach the same conclusion without any additional assumptions."

- Whether the proponent is utilizing a sufficient level of detail of information to accurately assess the environmental effects of all alternatives and the proposed undertaking, given as a reason for approval of the TOR by the Minister;

- Whether the proponent consulted with interested parties and described the results of the consultation, as required by the EA Act.

3.2 Identified Issues

The following initial issues have been identified in the review of the Site Selection Short List Draft Report to date. The significance of these issues will become clearer through dialogue with the proponents and their consultants as the peer review process unfolds.

3.2.1 Traceability of the Study Area Screening Process

The Site Selection Short List Draft Report does not provide sufficient information to support the identification of the unconstrained areas shown in Map 3-1 of the Report (and Map 1 attached to this report). For this step of the process to be traceable, the proponent should have provided screening maps and a description of how each of the criteria were applied. Without this, it is not possible to assess whether the information used was accurate or was applied consistently.

For example, there is insufficient information to demonstrate how land was screened from consideration around federally regulated airports. The screening criteria require exclusion of "areas around federally regulated airports as per Transport Canada Guidelines". The rationale for the criterion in Table 2-2 of the report relates to "land uses that are hazardous to aircraft operations (i.e. organic waste at waste processing sites that may either attract birds or adversely affect flight visibility).

There are at least three federally regulated airports in the study area – Pickering (proposed but already regulated), Oshawa, and Buttonville. All

of these have federal airport zoning by-laws that regulate such matters as the height of structures and the location of waste disposal facilities in their vicinity. The height of structures is not specifically referenced in the criterion rationale, but was apparently considered based on consultation materials (e.g. the record of the PIC at the Clarington Beach Centre in Bowmanville on April 2, 2007). The areas that could potentially be excluded by this criterion are quite large, but the by-law requirements vary and are subject to interpretation in some areas. The proponent team's response to a Greater Toronto Airports Authority comment on this criterion (Consultation on the TOR, Table 3) suggests that impact related to birds and organic waste would at least be limited because all operations at the facility would be "within a closed environment".

The report does not explain how these requirements were interpreted for each airport, nor what parts of the study area were excluded based on that specific criterion. In Table 7-6 of the report, the Oshawa airport is identified as unregulated, which suggests that not all regulated airports were included in the screening process. Depending on the extent of the area to be excluded, this could conceivably affect short listed sites located in Clarington.

The Site Selection Short List Draft Report should include screening maps showing those parts of the study area excluded under each criterion and a rationale as to how each criterion was applied. The unconstrained areas in Map 3-1 should be shown in at a larger scale so that their location and configuration can be properly identified. The proponent team has indicated to Clarington staff that it has screening maps, and these will be examined as part of the review process. Without this information it is not possible to conclude that Step 2 of the site selection process arrived at a complete range of siting opportunities, or whether there are additional parts of the study area that should have been screened out from further consideration, given the screening criteria.

3.2.2 Site Size and the Selection of a Reasonable Range of Alternatives

The required capacity of the undertaking has a bearing on the size and configuration of the waste processing facility, and therefore the minimum size and configuration of sites that will be identified and considered during the site selection process.

In Section 3.2 of the TOR it is stated that the undertaking would be capable of managing the minimum annual 316,000 tonnes/year that would remain after the achievement of the Regions' waste diversion objectives, also including post-diversion waste from other sources. It is estimated that a minimum of 13,300,000 tonnes of residual waste will require management over the 35 -year (2011-2045) planning period. The TOR also refers to a potential need to identify contingency or surplus disposal capacity and any capacity for waste from outside the study area, or Industrial and Commercial waste from within York and Durham Regions

when identifying the minimum sits size requirement during the EA planning process. The approved TOR itself does not specify a maximum, a range, or an actual proposed capacity for the facility. As noted in Section 1.4 above, York Region has now reduced its proposed level of involvement in the thermal waste processing facility, although it still wishes to retain the option to expand the facility if required. There is no upper limit on the scale of the facility.

Section 4.2 of the Site Selection Short List Draft Report describes how a required site size of 9.1-13.7 ha was established for the site selection process, based on a proposed configuration of a thermal waste processing site shown on Drawing 41, however this was based on waste quantity assumptions that were developed prior to York Region's announcement. This matter has been discussed with the proponent team and Clarington staff have been assured that the reduced volume of waste would not result in a substantially reduced site size, since the size is more dependent on fixed parameters such as buffers and queuing areas than on the scale of the facility building. Staff were assured that no sites previously rejected based on size would need to be brought back into the process. Clarington's peer review team will review the sizing assumptions against current predicted volumes and examine the screening maps and unconstrained areas to confirm this information.

There is a further potential issue in relation to maximum site size. Section 4.3 of the Site Selection Short List Draft Report indicates a requirement for a site within the range of 9.1-13.7 or 16 ha, although some components would need to be accommodated off site for a site at the bottom end of this range. The November 2006 and February 2007 "calls for willing sellers" request a site of approximately 10-12 ha. for a "stand alone" facility. The sizes of the remaining short listed sites as calculated by the proponent team are 12.1, 15 and 27.4 ha for Clarington Sites 1, 3 and 5 respectively, and 11 hectares for the East Gwillimbury site.

One of the indicators for the revised criteria for the evaluation of the short listed sites includes "area surplus to minimum requirement provided by site". This suggests that there is no maximum site size and that "bigger is better", even though occupation of a much larger site than needed (such as Clarington Site 5) could result in inefficiencies regarding the use of serviced industrial land and may not be consistent with policy provincial supporting land use intensification. The potential to locate a facility within a larger site in such a way as to minimize environmental impact and enable the site to be subdivided would be useful considerations in the evaluation.

At the same time, there is now an indication that the proposed facility may be "oversized" (i,e the proponents would seek approval for and build a facility for a larger waste volume than they would actually need). Notwithstanding the requirement to fully describe the "purpose" of the

undertaking in an EA (usually understood to include the a rationale for the required scale of facility), a larger site may provide more flexibility for facility oversizing, and a larger facility may prevent a need for further environmental approvals for expansion to meet needs that are so far unspecified.

These issues raise a question over the role of this indicator in the evaluation process.

3.2.3 Identification of Public Lands in the Site Selection Process.

Section 5.2 of the Site Selection Short List Draft Report indicates that public lands were identified both through discussion with the Durham and York Region Real Estate and Economic Development Departments, and through contact with of the public agency representatives, as part of the identification of "willing seller" sites. Section 5.3 indicates that the November 2006 "call for willing sellers" included distribution of the "call" to area municipal contacts. The February 2007 "Request for Expressions of Interest" was identified in newspapers (local newspapers within the study area, plus the Daily Commercial News) and distributed to companies, associations and local municipalities (Appendix 5(b)). There is no indication in the report of distribution of materials to or direct contact with other public agencies such as federal and provincial ministries and land-related agencies. Public lands identified at this step are mapped in Appendix 6. The Site Selection Short List Draft Report does not give sufficient information to confirm that all potential siting opportunities on public land were identified and considered. If opportunities for siting on publicly owned sites other than municipal sites were not directly canvassed, there is potential for suitable sites owned by public agencies other than municipalities to have been omitted from the process.

3.2.4 Lands in the Greenbelt

Section 2.5.2 of the Site Selection Short List Draft Report indicates that:

> "The location of a potential site within designated "Protected Countryside" areas under the Greenbelt legislation is listed as an exclusionary feature for the purpose of Step 2 of the site selection methodology. However, the Consultant Team decided that potentially suitable sites located in the Greenbelt Plan area would be considered for further review and public comment. Further, opportunities to expand an existing component of Durham's and/or York's solid waste management system located within the Greenbelt Plan area would also be considered in order to utilize existing resources. This approach would accommodate the possible identification of additional siting opportunities and reflect that this type of infrastructure is not prohibited under the Greenbelt Plan."

The expansion of the search area to include the Greenbelt after a search for siting opportunities that excluded the Greenbelt carries the implication that there may be public and private siting opportunities in the Greenbelt that have not been identified. The proponents should clarify this situation and propose measures to resolve this uncertainty if required.

3.2.5 Comparison of Alternatives to the Undertaking, Alternative Methods of Carrying Out the Undertaking, and Description of the Undertaking

As noted in Section 2.2 above, the Terms of Reference indicate that identification of a preferred vendor "will likely be necessary, prior to seeking EA Approval, to allow for a sufficiently detailed description of the undertaking (including its design, operation, maintenance, monitoring and contingency measures) and respective net effects".

It could be argued that a preferred vendor/technology would also be required to enable the comparison of the short list of sites to reflect the actual characteristics and effects of the undertaking. While this could be implied to be required by Section 6.1(2) of the EA Act in terms of the requirement for "an evaluation of the advantages and disadvantages to the environment of the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking", this is not specifically required by the TOR.

We understand from discussion with the proponent's consultants that an interim EA planning document is now proposed to be submitted in advance of the selection of a preferred vendor/technology.

The selected "Alternative to" in this process can accommodate a wide range of technologies including "mass burn" incineration, gasification and plasma arc processing, each of which would have different profiles in terms of environmental effects. While the proponents could impose minimum requirements and conduct site selection based on these assumptions, the actual effects and land requirement of the facility cannot be determined until the preferred vendor/technology has been identified. The proponent's intent not to undertake health and ecological risk assessments for each candidate site will also limit the extent to which the environment affected by the undertaking, i.e. background conditions and populations and features affected – will be considered for each site.

The proponents will not be able to provide a complete description of the undertaking in the interim EA planning document, since it will be submitted before the vendor/technology has been identified. The proponents will provide additional information in the submitted EA document to describe the specific technology selected. In addition, as requested by the Clarington team, a sensitivity analysis will be conducted to determine whether the preferred site should change once the details of the specific

preferred technology and its environmental effects are known.

In addition, one of the criteria for the evaluation of the short list is "complexity of required agreements" which, according to the "indicator" in the recently released criteria, would mean that the order of preference for sites would be a Region-owned site, willing seller sites, and expropriated sites. This is not strictly an environmental consideration, but would favour Region-owned over privately owned sites. The weighting of criteria and its application will be the subject of future review.

While this review relates primarily to siting rather than vendor/technology selection, we also suggest that the proponent provide information to describe how the principles and requirements of the EA Act are to be applied in the comparison and selection of vendors and technologies.

3.2.6 Consultation

While the "Report on Consultation on Proposed Siting Methodology and Criteria" describes the consultation process undertaken, it is equally important to show how the results of the consultation were considered in making any changes to the methodology and criteria and in assigning priorities for the comparison of short listed sites. During the initial review of documents Appendix 3, "Comment and Response Tables", was missing from the report as posted on the Internet, however we understand it has now been posted on the project website and it will be reviewed.

4. Conclusion

The proponent team has used the approved Terms of Reference as a basis for identifying five short-listed sites for a proposed energy-from waste facility, four of which are in Clarington and one in the Town of East Gwillimbury The team is now evaluating and comparing these sites and intends to announce a recommended preferred site in late September 2007.

An initial review of the site selection materials indicates that they do not provide enough information to support the conclusions reached. Additional information will be required from the proponents to verify the results arising from each step of the process to date.

Issues in relation to the site selection process conducted to date are:

- The Site Selection Short List Draft Report does not provide screening maps to show which parts of the study area were excluded under each of the criteria, and it does not provide sufficient explanation of how each of the criteria were applied. The process is not traceable as described.

- Despite the lack of screening information it is apparent, for example, that not all federally regulated airports were

considered in the screening, and it is not clear whether or how federal requirements were applied in relation to organic waste as an attractor for birds, or stack height as an obstruction to aircraft, or both. If all regulated airports are considered under a consistent approach this may result in the exclusion of additional lands from the study area.

- The information presented in the Site Selection Short List Draft Report does not describe a comprehensive approach to the identification of public lands. There may be public lands in the study area owned by agencies that were not directly approached as part of the process.

- There is uncertainty regarding the size of the facility being sought by the proponent team and the size of site required to accommodate it. The process as presently structured would give preference (other things being equal) to a large site such as the 27.4 hectare Clarington Site 5, when the site size being sought is around 10-12 ha. There is also ambiguity over the scale of facility that would be required, with a proposal by York Region to scale back its involvement, and by Durham Region to seek expanded capacity. On a large site there may be no physical limitation on the ultimate scale of a thermal treatment facility.

- The sites in the Clarington Energy Business Park are being analyzed as part of a different economic study and could have either a positive or negative affect; the effects are potentially different depending on which site is selected.

- The Report indicates that a change in direction was undertaken to bring lands in the Greenbelt into the site selection process, but it does not describe whether or how lands in the Greenbelt were examined to identify potential public and willing seller sites other than the East Gwillimbury Site 1. There may be other potential sites in the Greenbelt that have not been identified.

- The Site Selection Short List Draft Report does not provide a full description of how consultation on the proposed methodology and criteria affected the approach now being undertaken.

In relation to the site evaluation and comparison currently under way:

- The proponent team now proposes to identify a recommended preferred site and to submit an interim environmental

assessment planning document to the Ministry of the Environment in the fall of 2007, before a preferred vendor and the exact thermal technology has been identified. This would mean that a site would be selected without knowledge of the facility that would be sited on it or its specific environmental effects. Therefore the assumption being made by the consulting team must be reviewed in light of information on the specific selected technology and its environmental effects.

- It would be greatly preferred if information on the vendor/technologies and their environmental effects was available for the site comparison. The final EA submission will have to include the vendor and specific technology to meet the EA terms of reference and EA Act.

- There is also concern that the process of selecting a preferred vendor/technology through the ongoing Request for Qualifications and future Request for Proposals may not meet EA Act requirements.

In relation to the short-listed sites identified in Clarington:

- There are existing and proposed residential uses in close proximity to Sites 3 and 4, which are in the Bowmanville Urban Area.

- The Durham Region Official Plan and the Clarington Official Plan identify a proposed interchange between Lambs Road and Highway 401 that would likely be displaced by a thermal treatment facility on Site 4.

- A proposed industrial service road passes through both Sites 3 and 4.
- A thermal treatment facility occupying the whole of Site 5 would displace the primary entrance to the Clarington Energy Business Park from the Courtice Interchange, and the western part of the 'spine' route through the park. The Energy Business Park was initiated, planned and approved in partnership with Durham Region, and there is potential for an EFW facility to compromise the vision and planned function of the Park. The proponents are examining alternative siting concepts for each site and not all of each site will necessarily be required.

The proponents' staff and consultants have been informed of these issues, and Clarington staff and consultants are continuing to work with the proponents' team to obtain more information in an attempt to resolve

them to the extent possible.

It is possible unresolved issues in the process will undermine the validity of the process as a whole. The information provided during the peer review should be provided to the public and other interested parties as well as to Clarington so that the EA process is traceable, supportable and complete.

We will report on progress in this regard and on the potential significance of any remaining issues at some future date.

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12 July 2007

Municipality of Clarington
via email: flangmaid@clarington.net
jszwarz@clarington.net

Attention: **Faye Langmaid and Janice Szwarz**

RE: **Peer Review of Generic Human Health and Ecological Risk Assessment – Durham-York Residual Waste Study**

Dear Faye and Janice,

SENES Consultants Limited was retained by the Municipality of Clarington to undertake a peer review of the generic human health and ecological risk assessment conducted for the proposed thermal treatment energy from waste treatment facility to be sited in the Durham or York Region. The risk assessment document reviewed is entitled:

> *Generic Human Health and Ecological Risk Assessment – Durham-York Residual Waste Study.* Prepared by Jacques Whitford. June 14, 2007.

The purpose of a peer review is to offer an opinion as to whether the risk assessment has been undertaken competently in accordance with the generally accepted principles for human health and ecological risk assessments. A peer review must also comment on whether or not the conclusions that have been reached are appropriate and defensible. The peer review was conducted in accordance with the Health Canada and the Ontario Ministry of the Environment guidelines for site-specific risk assessment and the "Reviewer's Checklist for Risk Assessments". In general, this peer review is organized according to the topics specified in the checklist.

It should be noted that during the course of this review, the approach and the equations employed were evaluated. Spot-checks were completed for input parameters and for some of the calculations, and reasonableness checks were completed for the results. We did not attempt to reproduce all calculations.

1.0 GENERAL

The scope of work as outlined in Section 1.1 is clearly stated. The report recognizes that this risk assessment serves as a tool in the much larger scope of siting an EFW facility. The assessment also fully recognizes that when a site and appropriate technology is selected that a site-specific risk assessment will be necessary to evaluate the potential health effects from this facility.

2.0 PROBLEM FORMULATION/HAZARD IDENTIFICATION

2.1 SELECTION OF CHEMICALS OF POTENTIAL CONCERN

As the technology for the facility has not been selected, the risk assessment relied on several sources of information to derive their chemicals of potential concern such as MOE documents and guidelines relating to incineration as well as a U.S.EPA document on hazardous waste combustion facilities and a human health risk assessment for the Brampton Energy from Waste facility. This was an appropriate way to select the chemicals of potential concern and the report also acknowledges that the lack of specific data from the facility is a limitation of the assessment – this is appropriate. Even though site-specific data is not available, the list of chemicals of concern is quite lengthy and it is unlikely that a chemical that would be a cause for concern has been omitted from the list.

3.0 AIR QUALITY AND BASELINE MODELLING

This section of the report provides a brief overview of the air quality modelling that is discussed in Appendix I. Since the technology is unknown, three different scenarios involving treatment of waste were assessed from an air quality perspective namely the consideration of processing waste using one, two or three units (the maximum proposed capacity of the facility). This is an appropriate evaluation given the generic nature of the assessment.

A review of the air dispersion modelling is being conducted by a separate company (AMEC). The initial review indicated that the general approach taken is reasonable and therefore we proceeded with the review of the remaining parts of the risk assessment. However, it is noted that there may be detailed comments on the air dispersion modelling provided in a separate document.

Some information is provided on background air quality in order to assess the cumulative risk to airborne chemicals. The report acknowledges that the background concentrations used in the assessment are limited and that background data from the study area are important for use in the site-specific risk assessment. We agree with this statement and emphasize that the collection of background data especially on criteria pollutants such as NO_x, SO_x, CO and fine particulate matter are integral to the site-specific risk assessment.

The comparison of predicted air concentrations to air quality criteria from the Ontario Ministry of the Environment is appropriate for the air quality section of the document. Health based comparisons are done later in the risk assessment. It should be noted that background SO2 concentrations provided on Table 3-5 have not been used in Table 3-6 of the document; this should be corrected.

4.0 EXPOSURE POINT CONCENTRATIONS

4.1 PREDICTING MULTI-MEDIA EXPOSURE POINT CONCENTRATIONS

The U.S.EPA methodology for Hazardous Waste Combustion Facilities was used to predict exposure point concentrations. This is appropriate.

Three species of mercury were assessed in the risk assessment: direct inhalation of elemental mercury, direct and indirect exposure to vapour and particulate bound mercuric chloride and indirect exposure to methyl mercury. This is appropriate.

Air

Air concentrations used in the risk assessment came directly from the air dispersion modeling. This is appropriate.

Soil

Soil concentrations were predicted based on wet and dry deposition of particles as well as vapour deposition. This is appropriate. Soil concentrations were calculated differently depending on whether the chemical was a carcinogen or a non-carcinogen. For carcinogenic chemicals – soil concentrations were averaged over the operating lifetime of the facility (i.e. 35 years). For non-carcinogenic chemicals the highest annual soil concentration was used. This is appropriate for the HHRA. It is noted that for the comparison provided in Table 4-1 and for the ERA, it would be appropriate to use the highest annual soil concentration.

A 10 cm deposition zone was selected for use in the soil calculations since JW contends that over a 35 year period there will be a downward migration of chemicals to at least this depth and that the majority of exposure is from media grown in tilled soil (e.g. garden produce). Although downward migration will occur, 10 cm is likely an over-estimate for a 35 year period. Nevertheless, we agree that for the HHRA it is reasonable to use the 10 cm soil mixing zone. This assumption may not be conservative for the exposure experience by ecological receptors, particularly as it relates to direct contact. In addition, this may have an impact on the runoff to a waterbody depending on the characteristics of the watershed. Therefore, a conservative approach was not necessarily adopted. However, considering the low HQ values presented in the report, a change in this parameter would not alter the conclusions of the report.

The predicted soil concentrations are compared to background concentrations based on the OTR98; while this is appropriate, the assessment would benefit from some discussion of the Ontario Ministry of the Environment Table 1 values (i.e. background) as this document is more accessible.

The statement on pg 20 needs to be modified as the statement says "....in all cases resulted in soil loadings of less than 1% of natural background concentrations." The soil concentration for dioxins is 1% of natural background and thus the statement should be modified to indicate this.

Surface Water

Surface water concentrations were calculated for a hypothetical 1 square kilometer lake. This seems to be a reasonable assumption but some rationale should be provided as to the selection of the size of the lake.

The risk assessment indicates that residents in Durham and York are on municipally supplied water that will not be influenced by the selection of the sites. Thus the inclusion of the drinking water pathway is a conservative assumption.

Backyard Gardens

Garden produce was divided into above ground and below ground vegetables and above ground produce was further subdivided into exposed and protected categories. This is appropriate.

Agriculture and Country Foods

COPC concentrations were calculated in wildgame, beef and dairy products and chicken and eggs. This is appropriate.

Breast Milk

Concentrations of organic COPC were calculated in breast milk as the risk assessment indicated that metals would not accumulate in breast milk. A more detailed discussion was provided for lead and mercury and the rationale for exclusion from the breast milk pathway. This is appropriate.

Need consistency in describing COPC – in the risk assessment use pollutant, analyte contaminant chemical.

5.0 HUMAN HEALTH RISK ASSESSMENT

5.1 SELECTION OF RECEPTORS

Several different human receptors were selected to represent a wide range of exposures:

- A resident with a backyard garden and who obtains fish from the local lake.
- A subsistence farmer who harvests 100% of his/her food from the local area
- A first nation person who hunts and fishes in the area and consumes 100% of their country food from the area.
- A commercial worker and a toddler at the daycare.

Infants and toddlers were considered for exposures to non-carcinogenic chemicals and a composite receptor which encompasses all life stages was considered for exposure to carcinogenic chemicals. For the commercial worker an adult was selected. The selection of the different types of receptors as well as the life stage for calculations of exposure to carcinogenic and non-carcinogenic chemicals is appropriate as these life stages represent the most exposed life stages.

The selection of the residential receptor is also appropriate as this receptor represents the typically exposed individual in the study area. The consideration of the subsistence farmer covers someone who only eats locally raised food and nothing else and therefore serves as a surrogate for individuals in the study area who would consume only locally grown produce and meat.

5.1.2 Chemicals of Potential Concern

This has already been addressed in Section 3 and thus this section is repetitious.

5.1.3 Exposure Pathways

The risk assessment considered the following pathways:

- Direct exposure to vapours or particulates;
- Direct soil contact;
- Drinking water;
- Food chain uptakes:
    - Garden Produce;
    - Agriculture;
    - Hunting and Fishing;
- Breast Milk.

In this section the selection of receptor characteristics was discussed. Inhalation rates, soil ingestion rates and drinking water rates were all obtained from Health Canada (2004). Breast

milk ingestion was taken from Richardson (1997) based on Canadian populations. However, food chain intakes were obtained from the U.S.EPA. No discussion is provided in the food chain uptake section to indicate why the U.S.EPA rates were used over values provided by Health Canada. A reference is made to Appendix A; however, Appendix A only provides tables and no discussion. It is recommended that a clearer rationale for the selection of the values for the food chain intakes should be provided.

5.1.4 Conceptual Model

This section provides illustrations as well as tabulates the different exposure pathways of the various receptors selected for the assessment. This is appropriate.

5.2 TOXICITY ASSESSMENT

This section discusses the toxicity values that were selected for the assessment. The section outlines the various reputable agencies that were reviewed in the selection of the toxicity values. The section also discusses the precedence for the selection of the TRVs from IRIS or Health Canada first followed by other agencies. This is appropriate for this assessment. However, for the site-specific risk assessment it is recommended that a discussion of the selection of each TRV for each chemical of concern be provided based on a toxicological point of view since this is a requirement of the Ministry of the Environment.

There is a somewhat detailed discussion on bioavailability; however a bioavailability of 100% was used in the assessment. For clarity of the discussion, it is suggested that this section be shortened to indicate that 100% bioavailability was used. This is appropriate for this type of assessment.

In addition, all short term ambient air quality criteria are provided in the risk characterization section. These TRVs should be discussed in this section and not the risk characterization section. The short term values for the gaseous pollutants were mainly obtained from the WHO and are health based values. There is no discussion as to whether the short-term values from Texas are health based or the rationale for their use. This needs to be provided. It should also be acknowledged that AAQC values may not be true health based toxicological values and thus the use of them must be considered in this context.

There is no discussion on fine particulate matter and why the U.S.EPA values were selected in this analysis over the Canada Wide standards for fine particulate matter. Also it needs to be acknowledged that the Canadian Environmental Protection Act/Federal Provincial Advisory Committee Working Group on Air Quality Objectives and Guidelines (CEPA/FPAC WGAQOG) recommends a 24-hour average $PM_{2.5}$ health reference level of 15 $\mu g/m^3$ below which statistically significant health effects cannot be determined. It is suggested that a small discussion on the applicability of the health based limits to nano particles be provided as that seems to be a community concern.

5.3 EXPOSURE ASSESSMENT

The exposure assessment discusses qualitatively how the intakes were calculated and provides some generic equations. Appendix C, D, and E provides the calculations.

A few inconsistencies were found in our review of the appendices. For example, in Appendix C in the table on physical-chemical properties a MF of 0.01 is applied to all PAHs and is stated as obtained from USEPA 2005, yet a review of this document shows that this factor is only used for BEHP. The text provides additional discussion that the MF of 0.01 for PAHs is based on a study by Hoefelt (2001). The complete citation for this reference is not included and we are unable to comment on the appropriateness of this factor.

The equations for estimating concentrations in animals other than wild game were not provided. However, the input parameters for estimating the concentrations in other animals (e.g. cows) are provided in Table C.1 (note title of this table should be modified), and are appropriate.

5.4/5.5 RISK CHARACTERIZATION/EFFECTS ASSESSMENT

The risk characterization for the human health risk assessment provides equations on how to calculate risks for carcinogens and HQ values for non-carcinogens. The report appropriately discusses the use of a 1×10^{-6} value for assessing cancer risks and a HQ value of 0.2 for assessing non-cancer risks.

The first part of the assessment discusses the assessment of short-term effects. As discussed in the previous section, ambient air quality standards were used for comparison for the metals and organic compounds. As these AAQC may not be true health-based values, the limitations of this approach should be discussed. There is also a discussion of the use of an HQ value of 1 to assess these effects. Care should be taken with this approach as background was not considered in some of the calculations. For example, SO_2 HQ values presented in Table 5.8 do not include background even though background was presented in an earlier section. In addition, on this table, the title AAQC should be used with caution. No discussion is provided as to whether the Alberta Environment values are health-based and whether they are appropriate for use in this assessment. It should also be noted that hydrogen chloride and hydrogen fluoride are not considered combustion gases and thus a different terminology should be used for discussing these gaseous pollutants.

The second part of the assessment focuses on the long term assessment using multi media pathways. This is appropriate; however a more detailed discussion should be provided based on the PEEL values on the Tables for dioxins since there is a perception that because the values were high, a substitution of the PEEL values was appropriate. Perhaps this discussion would be better suited to the uncertainty section since there is uncertainty in the emission values used in the assessment.

5.6 UNCERTAINTY ASSESSMENT

There is an extensive discussion on uncertainty in the report; however, there is no uncertainty discussion of the selection of the size of the hypothetical waterbody and the effect of this assumption on the calculations. The discussion on background concentrations is not applicable to uncertainty and needs to be changed to discuss the uncertainty in not using background and not on the background sampling program that would be undertaken. Similar to this is the discussion on drinking water which also does not focus on uncertainty.

There is a discussion on transfer factors used to calculate concentrations in various media. The following statement is provided "Typically these assumptions are conservative and tend to overestimate rather than underestimate risks". Caution needs to be exercised in using this statement because for a number of chemicals this statement is not correct.

The discussion on sensitive populations provided in Section 5.6.3.2 really is a discussion on TRVs and should be discussed in this section.

The uncertainty section would benefit from a tabulation of the uncertainties and their effect on the assessment.

5.7 OVERALL HUMAN HEALTH RISK ASSESSMENT

The human health risk assessment for the EFW treatment facility conforms to risk assessment guidance. However, there are a number of ways that it can be clarified for ease of reading and to be more transparent. These changes will not change the overall conclusions of the assessment as the risks are predicted to be very low.

Nanoparticles were not explicitly discussed in the report and a discussion should be provided within the report to include these particles since it is a community concern. However, even though the report does not discuss these particles explicitly, they are captured within the assessment of fine particulate matter and thus have been captured within the assessment since they are assumed to act like vapours.

Similarly, individuals who only eat food and produce in the York-Durham area are not explicitly evaluated in the assessment; however the inclusion of a subsistence farmer in the assessment captures their exposure, since the subsistence farmer is assumed to eat 100% of his food from the maximum concentration location. Individuals who consume agricultural food from the area would have a lower exposure since their produce and food would be coming from areas that would be located further away than the subsistence farmer and the air dispersion analysis shows that concentrations drop off substantially the greater the distance from the facility.

There is some quantification of the effect of the assumptions provided in the uncertainty section. Overall, the approach was conservative and potentially results in an overestimation of exposure. Since the chronic exposure indicated that HQ values and risk values were orders of magnitude

below a risk level of 1 x 10^{-6} and a hazard quotient of 0.2, substantial changes (i.e. orders or magnitude) would be needed to change the results of the assessment. Thus, the overall conclusions of the assessment will not change and in fact the calculated risks would likely be lower when the appropriate technology and site is selected.

The summary of the risk assessment in Section 5.7 should reflect some of the discussion provided above. However, it must be emphasized that a site-specific assessment is needed when the appropriate technology and site is selected.

6.0 ECOLOGICAL RISK ASSESSMENT

The ecological risk assessment follows the paradigm outlined by the CCME and other regulatory agencies. The scenarios selected are the same as for the human health risk assessment and are appropriate.

6.3 PROBLEM FORMULATION

The problem formulation, identification of chemicals of concern and conceptual model are appropriate.

The selection of ecological receptors is also appropriate.

6.4 EXPOSURE ASSESSMENT

The selection of pathways of exposure is appropriate. We concur that the inhalation pathway is insignificant but caution the extrapolation of the results of the human health inhalation results to animals as there is a large uncertainty there since they may not act the same toxicologically and some ecological receptors may be more sensitive than humans.

Generic equations are provided for exposure and Appendix H provides all the calculations for Intakes.

There are some inconsistencies between the text in the appendix and the tables. For example, the body weight of a mallard duck is given as 1.16 kg in the discussion in H.1.1.8, whereas a value of 0.15 kg is provided in Table H.8. It appears that the table for the belted kingfisher and mallard are switched. In general, the ecological profiles appear reasonable although there are some parameters that we could not verify (e.g. food ingestion rate for muskrat appears low compared to the values given in USEPA 1993).

The appendix states that a value of 0.01 for f_{oc} is used; this is not consistent with the default value of 0.001 used by the MOE.

The equations provided for uptake factors in Appendix H are appropriate. The use of the bioavailability and metabolic factors is not clear. These factors have the effect of reducing the concentrations in biota by up to a factor of 100 yet the basis of their derivation is not provided. Further rationale and discussion needs to be provided before these values are applied.

6.5 HAZARD ASSESSMENT

The toxicity values provided in Appendix H appear to be appropriate. One clarification that should be made is with respect to the use of the MOE generic guidelines. Some of the values provided in Table H.22 are cited as OME (2004). The value provided are the generic guidelines which do not necessarily correspond to phytotoxicity benchmarks. For example, for benzene the guideline is 5.3 mg/kg (correctly provided in Table H.22); however this value is based on protection of human health from the soil-to-indoor air pathway. The ecotoxicity component of the guideline for benzene is 25 mg/kg. For other CoPC such as chloroform, there is no ecotoxicity component of the generic guideline. Therefore, the use of the generic guidelines as benchmarks to assess potential effects on terrestrial vegetation (Table H.22) and soil invertebrates (Table H.23) is questionable.

There is a discussion of scaling in this section; however an acknowledgement should be provided to indicate that while scaling is still being used in ERAs that there is a movement away from scaling and what the potential effect of this would be on the results.

A rationale is needed fro the use of an uncertainty factor of 5 to convert from an acute or subchronic dose to a chronic dose and the use of a value of 6 to convert from a lethal dose to a LOAEL.

Only SO_2 was assessed from a phytotoxicity perspective. It is suggested that NO_2 also be evaluated and the WHO provides appropriate values for this assessment.

6.6 RISK CHARACTERIZATION

The risk characterization equations are provided and indicate that a HQ value is calculated for each exposure pathway and then summed. While this is not inappropriate, the total intake is generally calculated as was done for the human assessment and then divided by the TRV. A benchmark of 0.2 was used for the comparison benchmark, this is likely appropriate as background concentrations have not been included in the modelling.

6.7 UNCERTAINTY ASSESSMENT

There is an extensive discussion on uncertainty in the report; however, there is no uncertainty discussion of the selection of the size of the hypothetical waterbody and the effect of this assumption on the calculations. There is no discussion on the omission of background concentrations from the ERA.

There is a discussion on the use of TRVs and we agree that mammalian toxicity data should not be used for avain species; however no statement is provided as to the effect of this omission. The discussion on chemical speciation is really a discussion on TRVs and should be provided in this section.

The uncertainty section would benefit from a tabulation of the uncertainties and their effect on the assessment.

6.8 OVERALL ERA

The ecological risk assessment for the EFW treatment facility conforms to risk assessment guidance. However, there are a number of ways that it can be clarified for ease of reading and to be more transparent. These changes will not change the overall conclusions of the assessment as the risks are predicted to be very low.

There is a qualitative discussion provided of the effect of the assumptions provided in the uncertainty section. Overall, the approach was conservative and potentially results in an overestimation of exposure. Since the assessment indicated that HQ values and risk values were orders of magnitude below a hazard quotient of 0.2, substantial changes (i.e. orders or magnitude) would be needed to change the results of the assessment. Thus, the overall conclusions of the assessment will not change and in fact the calculated risks would likely be lower when the appropriate technology and site is selected.

7.0 SUMMARY

The human health and ecological risk assessment for the EFW treatment facility is comprehensive and conforms to risk assessment guidance. However, there are a number of ways that it can be clarified for ease of reading and to be more transparent. These changes will not change the overall conclusions of the assessment as the risks are predicted to be very low.

Nanoparticles were not explicitly discussed in the report and a discussion should be provided within the report to include these particles since it is a community concern. However, even though the report does not discuss these particles explicitly, they are captured within the assessment of fine particulate matter and thus have been captured within the assessment since they are assumed to act like vapours.

Similarly, individuals who only eat food and produce in the York-Durham area are not explicitly evaluated in the assessment; however the inclusion of a subsistence farmer in the assessment captures their exposure, since the subsistence farmer is assumed to eat 100% of his food from the maximum concentration location. Individuals who consume agricultural food from the area would have a lower exposure since their produce and food would be coming from areas that would be located further away than the subsistence farmer and the air dispersion analysis shows that concentrations drop off substantially the greater the distance from the facility.

Overall, the approach was conservative and potentially results in an overestimation of exposure. Chronic exposure for humans indicated that HQ values and risk values were orders of magnitude below a risk level of 1×10^{-6} and a hazard quotient of 0.2. Similarly for the ecological risk assessment predicted HQ values were below a HQ value of 0.2. Therefore, substantial changes (i.e. orders or magnitude) would be needed to change the results of the assessment. Thus, the overall conclusions of the assessment will not change and in fact the calculated risks would likely be lower when the appropriate technology and site is selected.

The ecological risk assessment should provide an analysis of the phytotoxic effects of nitrogen dioxide.

It must be emphasized that a site-specific assessment is needed when the appropriate technology and site is selected and it is recommended that plain language summary of the report be provided so members of the public can understand the approach and results of the risk assessment.

This report has been written by Harriet Phillips, Ph.D. and Stacey Fernandes, M.A.Sc., P.Eng., of SENES Consultants Limited.

Yours very truly,

SENES Consultants Limited

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July 19, 2007

Faye Langmaid

Manager of Special Projects
Municipality of Clarington

Dear Faye

Re: Peer Review Site Selection Criteria – "Evaluation of "Short-List" of Alternative Sites

AMEC was retained by the Municipality of Clarington to undertake a peer review of the air quality issues for specific aspects of the Environmental Assessment for the proposed thermal treatment plant to be sited in either Durham Region or York Region.

The following peer review addressed the process that is proposed for selecting the preferred site from the four short listed sites. The review addresses material in

> Background Document 2-3; Consideration of "Alternative Methods" of Implementing the Undertaking; Prepared by MacViro and Jacques Whitford. December 2005 and the revised Table 2-3 to that document.

The criteria proposed for the selection of the preferred site address air quality in a number of areas. The primary criterion is "Air Quality Impacts and Ambient Air Quality Testing", with indicators of "local meteorological conditions" and "distance travelled from the main source (s) of waste generation to the site". The list of considerations indicates that this criterion is predominantly looking at background air quality and specific local meteorological conditions that might indicate that there are specific changes to potential impacts at the sites. This is appropriate.

We would recommend two additions to the "considerations"; other significant sources (current and future) and an assessment of potential impact zones changes as a result of local meteorological conditions. It might be argued that the baseline monitoring that has recently started will capture some of these existing sources. Unfortunately, given the timing of the site selection, the baseline monitoring will be of short duration and may not do justice to other sources. As such, the deliverable should include a discussion and assessment of other nearby significant sources for each of the candidate sites (e.g. major transportation corridors, major industries). Similarly where proposed future plans are already being considered (e.g. 407 extension), these too should be assessed and evaluated under this criterion.

The local meteorological conditions need to be assessed with respect to potential impact zones. The impact zones for air quality will be used in other criteria to assess potential impacts. Typically, these are considered to be circular zones radiating out from the plant. Local

meteorological conditions may indicate that a circular air quality impact zone is not appropriate. For example, if there were channelling of wind direction along the lake shore or due to local topography, impact zones may need to be extended in those directions.

In the original document, it was noted under the criterion that "Air impacts associated with the facility are addressed under other criteria related to sensitive uses i.e., residential areas, institutions, etc.)". This comment has been dropped in the most recent table, but is still implicit in the approach for the various criteria. We accept this split, as a change in air quality itself is not the impact; it is the impact on specific receptors that is important.

The MOE has developed guidance materials for land use compatibility. These guidelines, entitled "Land Use Compatibility: Implementation D1-D6", were developed to provide recommendations for suitable distances from different industrial activities to sensitive land uses. The guides assume that industries are meeting all required standards, but recognizes that industries could still have nuisance (e.g. odour, dust, noise) impacts related to normal activities or upset conditions. MOE requires that distances to sensitive receptors be considered. Sensitive receptors include houses, schools, day-cares (even when located in industrial or commercial areas) and hospitals. This compatibility is considered separate criteria for residential and for institutional areas.

The proposed indicators for residential sensitive receptors are appropriate, but we would recommend some clarification to these indicators. The distance to residential areas is important, but the actual distance to specific residential uses (i.e. actual residential, not just zoned residential) is also important. This might be captured under the "number and distribution of residences", but is not clearly mentioned. This may require the development of different levels (i.e. zones) of potential impact based on simple site specific modelling. As noted, any indicators would apply to both the facility and the haul route.

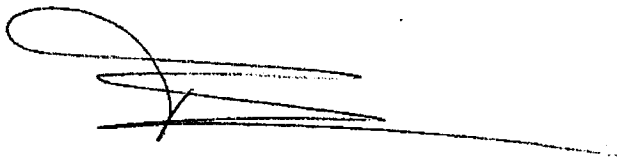
Other sensitive receptors also need to be considered in the site ranking. Though some of this is captured under "institutional" assessment, specific attention should be given to sensitive uses such as schools, day cares and hospitals. As with the residential indicators, numbers and distances are key indicators.

The above indicators focus on existing sensitive uses. A similar comparison should be done for approved development plans and proposed land uses.

Under the criterion "capital costs, operation and maintenance costs" there is some discussion of additional site specific mitigation requirements. Though not discussed in this document, there is also a statement in the "Generic Human Health and Ecological Risk Assessment" that if the site specific risk assessment shows unacceptable risks that further emission reductions ("enhance the performance of the technology") could be undertaken to reduce the risk. This suggests that different sites might require different air pollution control systems. Though we recognize that any facility has to only meet specific air standards, we would recommend that as technology is assessed and options considered, that a thorough assessment be undertaken to ensure that any chosen site has the best control technology. It would not be acceptable to either increase

emissions to just meet standards or ignore cost effective technologies that could reduce emissions well beyond standards. An appropriate discussion of the costs and benefits of these control technologies should be considered.

Yours truly,
AMEC Americas Limited



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July 19, 2007

Faye Langmaid

Manager of Special Projects
Municipality of Clarington

Dear Faye

Re: Peer Review "Generic Human Health and Ecological Risk Assessment" – Air Quality

AMEC was retained by the Municipality of Clarington to undertake a peer review of the air quality issues for specific aspects of the Environmental Assessment for the proposed thermal treatment plant to be sited in either Durham Region or York Region.

The following peer review addresses the air quality aspects of the generic human health and ecological risk assessment. ("Generic Human Health and Ecological Risk Assessment – Durham-York Residual Waste Study; Prepared by Jacques Whitford; June 2007" (HHERA))

The peer review assessed the key aspects of the air quality assessment component. These included:

- Model
- Meteorological Data
- Sources and Emissions
- Site
- Background
- Results

These are discussed in the following sections.

Model
The assessment used the most recent version of the MOE's recommended AERMOD dispersion model. It is a U.S. EPA developed model that is widely used. This model assesses the dispersion on an hourly basis from multiple sources. It also accounts for building effects on contaminant dispersion. The model also accounts for deposition of metals and contaminants. This is currently the most appropriate model for dispersion modelling.

Meteorological Data
Ideally dispersion modelling is done with very specific site meteorology. This is typically not available for most sites. Standard practice, recommended by all regulatory agencies, is to use the most appropriate near-by meteorological data set. In the HHERA, Pearson wind data and Buffalo upper air data was used for the assessment. This is consistent with MOE's

recommended practice for assessing air quality in the York/Durham area. This is appropriate for the Generic HHERA.

One specific aspect that must be considered during any assessment is the localized effect of the lake on dispersion. The lake can decrease dispersion (i.e. higher concentrations) from tall stacks. The HHERA has considered this effect in their assessment of impacts.

Local meteorological data will need to be considered during the site specific HHERAs.

Sources and Emissions

The HHERA used MOE Guidance documents and emission data for the Peel Energy from Waste facility to select the chemicals of potential concern. The HHE RA recognizes that these may change with the selection of final technology. Even though technology specific emission data is not yet available, the list of chemicals of concern is extensive. It is unlikely that any chosen technology would emit a chemical that would be a cause for concern that has not been included in this assessment.

The HHERA uses the Peel incinerator emissions for most emissions. The study uses the maximum test results from three years of test data. (We have not yet reviewed this data). For the key components covered by MOE Guideline[1] A7, the HHERA uses the maximum emissions (i.e. the standards) allowed under those MOE guidelines. As a result, the modelling was really done under maximum potential emissions. Any actual system can and will do better than the emission levels used in the HHERA.

The MOE guidelines are considered by MOE to be a combination of "Maximum Achievable Control Technology (MACT)" and "Lowest Achievable Emission Rate (LAER) [2]" principles depending on the parameters". As such, these levels are not specific to human health or environmental impact. These emission guidelines are based on MOE's determination of lowest emissions based on their assessment of possible emission control technologies. Once it is demonstrated that these emissions can be met, further assessment is undertaken to determine if the impact of these emissions can then meet appropriate impact standards (see Results section below).

The emission standards in the Guideline have not changed for at least five or more years. It would be appropriate for the proponent to get a specific statement from MOE that MOE will

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[1] The standards are called "guidelines" by MOE. Though this may imply that these are not a legal requirement, MOE has been consistent in applying all of their guidelines in the review and approval requirements. MOE will not issue a Section 9 approval unless all guidelines are met.

[2] "MACT" is considered to be best emission reduction technology considering the costs and efficiencies of different technologies. This is usually defined by the regulators and is considered to be the most appropriate technology for emission reductions for an entire industry sector. "LAER" is considered to be the maximum emission reductions that can be achieved for a specific facility. This is typically defined in the U.S. and used where airsheds are already compromised for a given pollutant. Economics are not considered in a LAER determination, but control technologies must be demonstrated to be applicable to the industry.

support the position that the standards in A-7 do reflect their current understanding of MACT and LAER. The current limits are reasonable, but not sure they would still define current LAER. We also recommend that a thorough comparison of MACT and LAER be undertaken and discussed for each key parameter reflecting the control technologies/thermal technologies that the MACT and LAER determinations are based on.

The site specific HHERA should account for specific technology and expected emissions from the chosen technology.

The modelling also accounted for on-site truck emissions. This is appropriate.

Site
The modelled site lay out accounted for a 257 m by 240 m (6.2 ha) site. It was assumed that the buildings were 40 m from the property line. Building heights varied between 15 m and 40 m; with a stack height of 65 m. This is consistent with reasonable dimensions for other sites.

Dispersion would change with stack height. Taller stacks would increase dispersion and shorter stacks would cause the emissions to be caught in the building wake and increase concentrations.

The approach used is appropriate for the generic HHERA.

For the site specific HHERA, we would recommend using actual building configurations appropriate for the chosen technology. As well, an assessment of stack height and concentrations should be undertaken for the final site plan to determine optimum stack height.

Background
The HHERA has considered background air quality based on existing MOE monitors. The MOE monitors were located in Newmarket, Stouffville, Oshawa and Mississauga. Though these are appropriate to provide a general regional background, these monitors will not pick up specific nearby sources. As a result, the generic HHERA does reflect the regional background air quality, but it does not reflect any significant sources near the short list sites. Key sources in the area that will impact the site specific local air quality include St. Marys Cement (SMC), Oshawa urban area, General Motors and major transportation corridors (e.g. 401 and 35/115). As the site specific studies are undertaken and the final site selection is undertaken, local sources and specific local background has to be assessed as part of the air quality, site selection and HHERA assessments.

The MOE monitoring stations only consider a number of the key emissions (e.g. SO_2, NO_x, $PM_{2.5}$). These stations do not monitor a number of the contaminants of concern related to thermal waste treatment. These would include dioxins and furans and key heavy metals (e.g. mercury). We would recommend that background levels for other contaminants also be developed. This could be done initially from key literature reports (e.g. Environment Canada's speciated VOC studies). This could have been included in the generic HHERA, but must be included in the site specific HHERAs.

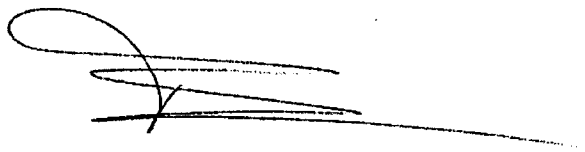
Results
The results of the air quality assessment were used in the HHERA to assess risk through the air exposure pathway and through other multi-media pathways. The assessment focussed on the locations of maximum impacts for both inhalation exposure and deposition. The results were also compared against appropriate MOE standards. The MOE ambient air standards are based on the effect that occurs at the lowest concentration. In some cases, this might be impacts on vegetation or even a nuisance basis (e.g. odour). Human health and impacts on humans are considered in all cases. All modelled compounds were below MOE air quality standards.

Summary
The air quality assessment for the HHERA was reasonable for a generic assessment. Emissions were conservatively assumed to be at potential maximum emissions. Actual emissions from any chosen technology will be less than emissions that were assessed. As such, predicted impacts related to the emissions from the facility are considered to be conservative and actual impacts will be lower.

The only area of concern is the inclusion of background air quality data. We recognize that the HHERA is generic, but site specific backgrounds could significantly change the risk levels. Key sources in the area that will impact the site specific local air quality include St Marys Cement, Oshawa, General Motors and major transportation corridors (e.g. 401 and 35/115). This could effect not only the conclusions of the HHERA, but must also be considered in the final site selection process.

As well, the current background assessment only considers major contaminants measured by MOE monitoring stations. The air quality background assessment and risk assessment should also consider the background levels of other contaminants of concern; specifically dioxins and furans and heavy metals.

Yours truly,
AMEC Americas Limited



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