

REPORT

Social/Cultural Assessment -
Technical Study Report

DURHAM YORK
RESIDUAL WASTE EA STUDY

REPORT NO. 1009497

EXECUTIVE SUMMARY

The Proposed Durham York Thermal Treatment Facility (the Facility) is being designed to thermally process solid waste that remains after Durham's and York's waste diversion efforts. The Facility will be located approximately 2 (kilometres) south of Highway 401, between Courtice Road and Osborne Road in the Municipality of Clarington. The initial design capacity of the Facility is 140,000 tpy, with the potential that the Facility could be expanded to 400,000 tpy sometime within the 35-year planning period.

This *Social/Cultural Assessment - Technical Study Report* (Report) outlines the scope of Jacques Whitford Stantec Limited's (JWSL) social/cultural assessment that has been completed for use in the Environmental Assessment (EA) for the Undertaking and includes consideration and assessment of the following:

- Baseline social/cultural conditions in the immediate proximity of the Proposed Thermal Treatment Facility Site (the Site), Clarington 01;
- The social/cultural considerations that were assessed throughout the EA and presented in various documents and reports that were developed to support the evaluation of "Alternatives to" and "Alternative methods" resulting in the selection of the preferred Post-Diversion Residual Waste Management System (thermal treatment) and the preferred Site;
- The results of the extensive consultation process that has been undertaken during the course of this EA Study, and documented as part of previous reports and within the EA Record of Consultation; and,
- The site-specific assessment Technical Study Reports that were used to determine the potential effects of the Facility (the Facility and Site) on various aspects of the Environment.

During the EA process a broad suite of social and cultural criteria were considered as part of the evaluation of alternatives. In regards to the selection of the Clarington 01 Site as the preferred Site, it was found:

- That no residential, commercial or other landowners would have to be displaced from the Site as it is owned by the Region of Durham;
- That use of the Site would be consistent with current land use, approved development plans, and proposed land use changes;
- The Site would provide ample onsite buffer area around the footprint of the Facility;
- The nearest residential area designated as future urban residential is 3.2 km from the Site; and,
- The Site had the least number of occupied residences (2) in proximity to the Site and haul route. Note that there is one abandoned residence that is not in suitable condition for occupancy to the northwest of the Site.

Overall, the Clarington 01 Site was found to be comparatively advantaged in regards to Social/Cultural considerations.

The consultation undertaken throughout the EA has addressed the broader suite of public concerns and public attitudes towards the Project and is documented in the Record of Consultation. Consultation on the relative importance of various categories of potential environmental effects indicated that consideration of the socio-economic environment in the EA was regarded as being of importance in the evaluation of alternatives.

This Social/Cultural Assessment focused on assessing the compatibility of the Facility with existing and/or proposed land uses in the vicinity of the Site and along the haul route, considering the potential for disruption to use and enjoyment of residential properties, public facilities and institutions, and cultural and recreational resources. In addition, the assessment considered the potential for the Facility to change community character and the compatibility of the Facility with existing land use designations and proposed land use changes.

Economic considerations are being addressed in a separate Technical Study Report entitled the *Economic Assessment – Technical Study Report*.

As the potential effects on the Social/Cultural environment have been studied extensively throughout the EA Study, an effort was made not to re-examine or replicate the previous net effects evaluation that has taken place, but instead to focus on the specific effects associated with the preferred Undertaking.

The assessment of the compatibility of the Facility with existing and/or proposed land uses considered baseline conditions (land uses in the local area and the surrounding community) and the degree of impacts (e.g., traffic, odour, dust, litter, noise) associated with the Facility as documented in the other Technical Study Reports that have been undertaken to determine the effect of the Facility on the environment.

The review of Baseline information and results of the Air, Acoustic, Traffic, Visual and Archaeological assessments in regards to both the 140,000 tpy initial design capacity scenario and the future 400,000 tpy future capacity scenario indicated that:

- There are few residences (2), communities (none), parks and recreational areas, (2) public facilities or institutions (2) and cultural resources (none) within 1 km of the Site;
- The nearest residential area designated as future urban residential is 3.2 kilometres from the Site;
The Site is surrounded by primarily commercial/industrial and agricultural land uses within the Clarington Energy Business Park (CEBP);
- The haul route to the Site is generally able to accommodate traffic during construction and operations, in the long term Site traffic may make up only 2 to 3 % of the total trips generated in the fully built-out CEBP;
- Odour, dust, litter and vectors/vermin would be controlled through Facility design and operations;
- Predicted noise levels at all nearby Points of Reception are less than the applicable criteria regarding operations at either 140,000 or 400,000 tpy although some potential exists for noise and vibration impacts during construction; and,

- The visual effect of the Facility in addition to other planned and disclosed future projects, given the presence of the other existing structures in the landscape, would have a minimal effect on the landscape, while having an overall medium level effect on some receptors within 1 km and the broader community under both the 140,000 or 400,000 tpy scenarios.

Overall, it was found that the Facility is compatible with existing and/or proposed land uses as:

- The Facility is anticipated to have minimal overall Net Effects in regards to the potential for disruption to use and enjoyment of residential properties;
- The Facility is anticipated to have minimal to no overall Net Effects in regards to the potential for changes in community character;
- The Facility is anticipated to have minimal overall Net Effects in regards to the potential for disruption to use and enjoyment of public facilities or institutions;
- The Facility is anticipated to have minimal overall Net Effects in regards to the potential for disruption to use and enjoyment of cultural and recreational resources; and,
- The Facility is anticipated to have minimal overall Net Effects in regards to its compatibility with existing land use designations and proposed land use changes.

The development of the Facility may encourage development of the Clarington Energy Business Park given the investment in servicing infrastructure associated with the Facility and the future availability of district heating.

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GLOSSARY AND ABBREVIATIONS

** An asterisk (*) beside a defined term indicates that the term is defined in the Environmental Assessment Act.*

Alternatives:	Both alternative methods and alternatives to a proposed undertaking.
Alternative Methods:	<p>Alternative methods of carrying out the proposed undertaking are different ways of doing the same activity.</p> <p>Alternative methods could include consideration of one or more of the following: alternative technologies; alternative methods of applying specific technologies; alternative sites for a proposed undertaking; alternative design methods; and, alternative methods of operating any facilities associated with a proposed undertaking.</p>
Alternatives To:	Alternatives to the proposed undertaking are functionally different ways of approaching and dealing with a problem or opportunity.
Buffer Area:	That part of a disposal site or facility that is not a waste fill area (in the case of a landfill) or is not occupied by a building. (i.e., area between actual facility and the property boundary).
Certificate of Approval:	A license or permit issued by the Ministry of the Environment for the operation of a waste management site/facility.
Durham:	The Regional Municipality of Durham or its geographic area, as the context requires.
Durham/York Residual Waste Study:	The Durham/York Residual Waste Study is a joint initiative between the Region of Durham and York Region to work together to find a way to manage solid waste remaining after at-source diversion.
Energy-from-Waste (EFW):	The recovery of energy in the form of heat and/or power from the thermal treatment of waste. Generally applied to incineration, pyrolysis, gasification but can also include the combustion of landfill gas and gas produced from anaerobic digestion of organic materials.

Environment*:	<p>The environment is broadly defined under the Environmental Assessment Act as follows:</p> <ul style="list-style-type: none">(a) Air, land or water;(b) Plant and animal life, including human life;(c) The social, economic and cultural conditions that influence the life of humans or a community;(d) Any building, structure, machine or other device or thing made by humans;(e) Any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from human activities; or,(f) Any part or combination of the foregoing and the interrelationships between any two or more of them.
Environmental Assessment:	<p>Environmental assessment is a study, which assesses the potential environmental effects (positive or negative) of a proposal. Key components of an environmental assessment include consultation with government agencies and the public; consideration and evaluation of alternatives; and, the management of potential environmental effects. Conducting an environmental assessment promotes good environmental planning before decisions are made about proceeding with a proposal.</p>
<i>Environmental Assessment Act:</i>	<p>The <i>Environmental Assessment Act</i> (and amendments and regulations thereto) is a provincial statute that sets out a planning and decision-making process to evaluate the potential environmental effects of a proposed undertaking. Proponents wishing to proceed with an undertaking must document their planning and decision-making process and submit the results from their environmental assessment to the Minister for approval.</p>
Environmental Effect:	<p>The effect that a proposed undertaking or its alternatives has or could potentially have on the environment, either positive or negative, direct or indirect, short- or long-term.</p>
Government Review Team:	<p>Staff from government ministries and agencies (federal; provincial, including local Conservation Authorities; and, municipal, including local Boards of Health) who contribute to the review of environmental assessment documentation (terms of reference and environmental assessment) by providing comments from their mandated areas of responsibility.</p>

Impact Management Measures:	Measures which can lessen potential negative environmental effects or enhance positive environmental effects. These measures could include mitigation, compensation, or community enhancement.
Impact Studies:	Studies that predict negative consequences (if any) of a proposed undertaking. Air, Visual, Natural Environmental, Traffic, Hydrogeological, Acoustic, Health Risk, Land Use and Hydrological Impact Studies are required under the <i>Environmental Protection Act</i> .
Individual Environmental Assessment:	<p>An Individual Environmental Assessment requires the following steps to fully address the requirements of the EAA:</p> <ul style="list-style-type: none">• Preparation of the Proposed EA Terms of Reference;• Submission of the EA Terms of Reference to the Minister of the Environment for Approval;• Completion of the EA Study in accordance with approved EA Terms of Reference, and;• Submission of the EA Study to the Minister of the Environment for Approval.
Ministry of the Environment (MOE) Ontario:	The MOE monitors pollution and restoration trends in Ontario and uses that information to develop environmental laws, regulations, standards, policies, programs, and guidelines. The MOE works to provide cleaner air, land, and water for Ontarians.
Mitigation:	Measures taken to reduce adverse impacts on the environment.
Municipal Solid Waste (MSW):	Common garbage or trash generated by industries, businesses, institutions, and homes.
Ontario:	The Province of Ontario, or its geographic area, as the context requires.
Post-Closure:	The time period, following the shutdown of a landfill, waste management or manufacturing facility; established for monitoring purposes.
Project:	Encompasses the design, construction (including construction financing) and operation of the EFW Facility, and includes, the EA Study, the supply of municipal waste, and the sale of energy.

Proponent*:	A person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.
Receptor:	The person, plant or wildlife species that may be affected due to exposure to a contaminant.
Regions:	Durham and York collectively.
Relief:	The topographical difference in elevation between the high and low points in a landscape.
Residual:	Amount of a pollutant remaining in the environment after a natural or technological process has taken place; e.g., the sludge remaining after initial wastewater treatment, or particulates remaining in air after it passes through a scrubbing or other process.
Siting:	The process of choosing a location for a facility.
Stack:	A smokestack, or vertical pipe that discharges flue gas or used air.
Stakeholder:	Any organization, governmental entity, or individual that has a stake in or may be impacted by a given approach to environmental regulation, pollution prevention, energy conservation, etc.
Storey:	The space in a building between two adjacent floor levels.
Terrain:	The landscape or lay of the land. The physical features of a tract of land; e.g., landform (or surface expression), active and inactive processes that modify material and form, slope, aspect and drainage conditions. Terrain analysis is the identification of the above land surface features, to a more or less defined depth and determining their areal extent. The identification of special features such as permafrost, erosion, and landforms indicating subsurface structures are included in such analyses.
Topography:	The physical features of a district or region, such as those represented on a map, taken collectively; especially the relief and contours of the land. On most soil maps topography may also mean topography classes that describe slopes according to standard ranges of percent gradient.

Terms of Reference:	A document prepared by the proponent and submitted to the Ministry of the Environment for approval. The terms of reference sets out the framework for the planning and decision-making process to be followed by the proponent during the preparation of an environmental assessment. In other words, it is the proponent's work plan for what is going to be studied. If approved, the environmental assessment must be prepared according to the terms of reference.
Thermal Treatment:	Use of elevated temperatures to treat wastes (e.g., combustion or gasification).
Undertaking*:	An enterprise, activity or a proposal, plan, or program that a proponent initiates or proposes to initiate.
Viewscape:	<p>A visual connection that occurs between a person and the spatial arrangement of urban and landscape features. A viewscape is composed of:</p> <ul style="list-style-type: none">View subject – the view must be of something;Vantage point – the view must be from some place; and,Visual corridor – the area extending out from the vantage point.
Viewshed:	The area from which a line of sight on an object is available.
Waste-to-Energy (WTE) Facility/Municipal-Waste Combustor:	Facility where recovered municipal solid waste is converted into a usable form of energy, usually via combustion.
York:	The Regional Municipality of York or its geographic area, as context requires.



List of Abbreviations

CEBP	Clarington Energy Business Park
CN	Canadian National
CRP	Community Relations Plan
CSSA	Community Social Study Area
EA	Environmental assessment
EFW	Energy-from-Waste
GIS	Geographic Information System
ha	Hectares
LOS	Level of Service
LSSA	Local Social Study Area
MOE	Ontario Ministry of the Environment
MSW	Municipal Solid Waste
OPG	Ontario Power Generation
POR	Point of Reception
ToR	Terms of Reference
tpy	Tonnes per year

UNITS OF MEASUREMENT

Area

km	kilometre
m	metre

REPORT

1.0 INTRODUCTION

Durham and York Regions (the Regions) have partnered to undertake a joint Residual Waste Planning Environmental Assessment (EA) Study. Both municipalities are in need of a solution to manage the residual solid waste that remains after diversion. The Regions are working together to address the social, economic, and environmental concerns through an Environmental Assessment (EA) Study process to examine potential long-term residual waste management alternatives.

1.1 The Environmental Assessment Process

The purpose of the undertaking (i.e., what the outcome of this EA Study is intended to do) as described in the Approved EA Terms of Reference is:

“To process - physically, biologically and/or thermally - the waste that remains after the application of both Regions’ at-source waste diversion 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 EA Study follows a planning approach where environmental constraints or opportunities are considered in the context of the broadly defined environment under the *Environmental Assessment Act* (EAA) (i.e., the natural environment as well as the social, economic and heritage and other “environments” relevant to the undertaking) and potential effects are understood and addressed before development occurs. In accordance with the Approved EA Terms of Reference and EAA, the EA process evaluates: alternatives considering potential effects on the environment; the availability of mitigation measures that address, in whole or in part, the potential effects; and, the comparison of the advantages and disadvantages of the remaining or “net” effects. The result of this process provides the planning rationale and support for a preferred approach and method to implement the undertaking.

It is understood and contemplated that environmental management measures recommended as part of the EA process and this Technical Study Report will in many cases be refined, updated, modified and/or superceded as a result of subsequent approval processes.

The EA document has been prepared and conducted in accordance with the EAA, and in accordance with the Approved Terms of Reference approved by Ontario’s Minister of the Environment on March 31, 2006. There are currently no federal environmental assessment process triggers identified and, therefore, this project does not require approval under the *Canadian Environmental Assessment Act* (CEAA).

This EA process essentially consists of three parts taking place in stages including:

- the Development and Approval of an EA Terms of Reference,

- the evaluation of “Alternatives to” the undertaking; and,
- the evaluation of “Alternative methods” of implementing the undertaking.

The Environmental Assessment Report to which this Technical Study Report is appended provides a detailed description of the EA process undertaken as part of the Durham/York Residual Waste EA Study.

1.2 Purpose of the Report

This Report entitled the *Social/Cultural Assessment - Technical Study Report* has been prepared for the Proposed Thermal Treatment Facility Site (the Site), Clarington 01. This Report reviews potential social/cultural impacts, potential mitigation required, potential net effects and impact management measures. This Report will form part of the supporting documentation and materials for the “Description of the Undertaking”, completed as part of the EA Study.

1.3 Overview of Report Contents

This Report describes the existing social and cultural conditions related to the preferred “Alternative method”, Clarington Site 01, followed by an effects analysis including net effects of the Facility on the subject aspect(s) of the environment and a summary of the required monitoring. The key components of the Report are as follows:

- An explanation of the study methodology, assumptions and limitations, located in Section 2.0;
- A description of existing social and cultural conditions of the Local Social Study Area (LSSA) and Community Social Study Area (CSSA), included in Section 3.0;
- The results of the analyses and the assessment of social cultural effects, located in Section 4.0;
- Impact management, discussed in Section 5.0; and,
- A summary and conclusions regarding social cultural effects, located in Section 6.0.

The information contained in this Report has been used to complete the EA.

2.0 STUDY METHODOLOGY

This social/cultural assessment was undertaken to assess the effects of the Facility on the people and community within the area around the Clarington 01 Site, as appropriate at this stage in the EA Study. The potential effects on the Social/Cultural environment have been studied extensively throughout the EA Study and an effort was made not to re-examine or replicate the previous net effects evaluation that has taken place, but instead to focus on the specific effects associated with the preferred Undertaking.

For example, the potential for the direct loss of property and the displacement of social features such as residences, public amenities and businesses was addressed during the process of selecting the preferred Site, as summarized in Section 2.1.1 resulting in selection of a Site which does not result in property loss or displacement of such features.

A variety of processes and techniques have been used over the course of the EA which have been used to identify potential effects, issues and concerns related to this Facility. The methodology and tools used to determine the potential social/cultural impacts included both qualitative and quantitative information collected throughout the EA Study.

2.1 Data Sources

Information from various previous and new sources made available during the EA process were used to complete this Report including:

- Previous reports and technical studies generated during the EA process and evaluation of “Alternatives to” (i.e., alternative post-diversion residual waste management systems) and “Alternative methods” (i.e., alternative sites);
- The results of the extensive consultation process that has been undertaken during the course of this EA Study, and documented as part of previous reports and within the EA Record of Consultation;
- Various site-specific assessment Technical Study Reports, that were used to determine the potential effects of the Facility (the preferred long-term post residual waste management system and the preferred site) on various aspects of the Environment; and,
- Other documents and studies including the *Durham York Energy from Waste Facility Business Case*.

2.1.1 Summary of Key Relevant Information from Previous EA Documents

The evaluation of alternative Post-Diversion Residual Waste Management Systems (“Alternatives to”) and the evaluation of sites (“Alternative methods”) included the collection of a significant body of social/cultural research for the Region and sites that were considered, and addressed a broad suite of social and cultural criteria.

The evaluation processes and supporting documents relevant to the evaluation of “Alternatives to” and “Alternative methods” are set out in detail in the following reports and their associated appendices and annexes:

- *Evaluation of “Alternatives to” and Identification of the Preferred Residuals Processing System*, May 30, 2006;
- *Thermal Facility Site Selection Process Results of Steps 1-5 Identification of the “Short-List” of Alternative Sites*, March 2007;
- *Thermal Facility Site Selection Process Results of Step 7: Evaluation of Short-List of Sites and Identification of Preferred Site*, September, 2007; and,
- *Final Consultants’ Recommendation and Record of Consultation on the Thermal Facility Site Identification and Evaluation, “Identification of the Consultants Recommended Preferred Site*, December 2007.

The following provides a synopsis of key aspects of the above reports which provide the rationale for the methodology used to undertake this Social/Cultural Assessment of the Facility. In particular, the means by which the social/cultural environment was considered throughout the evaluation of “Alternatives to” and “Alternative methods” is summarized and key information is noted.

Evaluation of “Alternatives to”

In order to identify the preferred “Alternative to”, the evaluation and assessment process used to select the preferred alternative Post-Diversion Residual Waste Processing System evaluated systems based on the application of criteria and indicators that addressed the broad definition of the Environment in the *Environmental Assessment Act* (EAA). In regards to Social/Cultural considerations, the potential for land use conflicts from siting of facilities required for the preferred “Alternative to” were considered on the basis of the number of facilities associated with the system (more facilities could potentially result in a higher potential for conflicts), the location requirements for the facilities (e.g., rural versus urban/industrial lands) and the type and degree of nuisance impacts associated with the types of facilities required. The preferred “Alternative to” *System 2A – Thermal Treatment of MSW and Recovery of Energy followed by the Recovery of Materials from the Ash/Char* was determined to have a major advantage in regards to social/cultural considerations given that this system had comparatively the lowest potential conflict with existing land uses considering: the preference for siting in industrial locations; lowest potential traffic and landfill residue disposal requirements; and, reduced potential for odour emissions.

As part of the evaluation of “Alternatives to”, Step 3, a Draft Report on the Environment (Social/Cultural) Potentially Affected was prepared. This report compiled information on municipal structure and waste management responsibilities, settlement patterns and land use, transportation systems and utility corridors, population, employment, First Nations communities, education, other institutions, recreation and tourism to provide a baseline of information regarding the Social/Cultural Environment in the broad EA study area. Some of this information has been used to describe the context of the broader Community Social Study Area (CSSA).

Evaluation of “Alternative methods”

The evaluation of “Alternative methods”, involved a 7-step evaluation process that was used to ultimately identify the Preferred Site. During this process, social/cultural considerations were taken in to account as follows.

- During Step 2, the Area Screening process, a high-level screening process was implemented to screen out areas potentially unsuitable for siting a facility such as residential areas and areas with natural heritage features. This step was intended to ensure that the areas considered for potential sites would have minimal conflicts with current and proposed land uses. The result of this second step was the identification of areas within Durham and York that were considered generally suitable for the purposes of locating a Thermal Treatment Facility.
- During Step 3, determination of the appropriate site size and configuration, it was assumed that a “single facility, single site” would have a lower potential for environmental and social impacts. A site size sufficient for this Facility including an onsite buffer of sufficient size to mitigate potential impacts to nearby receptors was established.
- During Step 4, potential site identification, the identification of publicly owned and “willing seller” sites was undertaken to minimize the potential need for expropriation and potential displacement of existing users of properties. Screening criteria related to site constraints were applied as were minimum site size requirements resulting in the identification of a Long-list of seven sites.
- During Step 5, the evaluation of Long-list of sites, sites were compared against each other qualitatively and evaluated using criteria such as land use compatibility, proximity to receptors, potential community disruption etc., resulting in the selection of a Short-list of sites.
- Step 7 – Evaluation of Short-list Alternative sites, following consultation, a detailed net effects evaluation was carried out on the four remaining sites to select the Preferred Site, Clarington 01.

Table 2-1 outlines the criteria and indicators that were used to apply Social and Cultural Considerations to the evaluation of the Short-list of Alternative sites.

Table 2-1 Short-list Site Evaluation Social and Cultural Considerations – Criteria and Indicators

Criteria	Indicators
Compatibility with Existing and/or Proposed Land Uses	Consistency with current land use, approved development plans, and proposed land use changes.
	Compatibility with existing land use designations.
	Size of buffer zone available on the site.
	Opportunity for brownfield development.
Residential Areas	Distance from site to designated residential areas within an appropriate separation distance of the site and within an appropriate separation distance of the haul route(s).
	Number and distribution of residences within an appropriate separation distance of the site and within an appropriate separation distance of the haul route(s).
Parks and Recreational Areas	Number and type of recreational areas (i.e., parkland) within an appropriate separation distance of the site and within an appropriate separation distance of the haul route(s).
Institutional Facilities or Areas	Number and type of institutions within an appropriate separation distance of the site or area and within an appropriate separation distance of the haul route(s).

Criteria	Indicators
Archaeological and Cultural Resources	Number and significance of known archaeological and cultural areas at the site based on review of documented sites and the potential for uncovered resources to be located at the site.
Traffic Impacts	Type of roadway (i.e., paved, gravel) and access to business and/or subdivision & proximity of site to major arterial roads or highways.
	Existing and projected volume of traffic along haul route (i.e., high, moderate or low).
	Conformity with Durham's Goods Movement Network

A number of generic impact assessment reports were prepared and used to apply the Short-list criteria and indicators in order to complete the evaluation of "Alternative methods". The reports that pertain to the application of the social/cultural criteria were used in part, to provide the baseline information in Section 3 of this Report, regarding Clarington 01 and the socio/cultural environment in the vicinity of this Site.

The reports used to provide the baseline Social/Cultural information in Section 3 include the:

- Report on Compatibility with Existing and/or Proposed Land Uses;
- Report on Archaeological and Cultural Resources; and,
- Report on Potential Traffic Impacts.

Based on the consideration of the advantages and disadvantages of the Short-list of sites, the preferred site to manage the post-diversion residual waste was Clarington 01. This Site was considered to represent the preferred balance of advantages and disadvantages based on the priorities associated with each of the environmental considerations.

In regards to the selection of the Clarington 01 Site as the Preferred Site, it was found:

- That no residential, commercial or other landowners would have to be displaced from the Site as it is owned by the Region of Durham;
- That use of the Site would be consistent with current land use, approved development plans, and proposed land use changes;
- The Site would provide ample onsite buffer area around the footprint of the Facility;
- The nearest residential area designated as future urban residential is 3.2 km from the Site; and,
- The Site had the least number of occupied residences (2) in proximity to the Site and haul route. Note that there is one abandoned residence that is not in suitable condition for occupancy to the northwest of the Site.

Overall, the Clarington 01 Site was found to be comparatively advantaged in regards to Social/Cultural considerations.

2.1.2 Summary of Information from Consultation

Consultation formed an important part of the EA process. With a project of this size and complexity, extensive public consultation is necessary to provide opportunities for the public to bring forward issues of concern. During the entire EA process, the public has had a range of opportunities to get information and provide input to the Study. The methods used to communicate with the public included:

- Advertisements, email and mailed notices;
- Public information sessions and workshops;
- Public polling undertaken during four key points in the EA process to confirm general community attitudes regarding community priorities, the selection of the preferred post-diversion residual waste management system (EFW) and the selection of the preferred site;
- Opportunities for public delegations;
- Drop-in Centres;
- The formation of a Site Liaison Committee, following selection of the Preferred Site, Clarington 01; and,
- Ongoing availability of points of contact with the Study Team via email, the Study website, regular mail and telephone.

All public and agency consultation has been summarized in the Record of Consultation for the EA Study.

Concerns about the potential impact of the Facility on health, air quality, agriculture, water quality and physical effects such as noise, odour and traffic were raised on numerous occasions. To address these concerns, information has been made available throughout the Study process, peer review opportunities have been provided to the local host community (the Municipality of Clarington) and additional studies such as a generic human health and ecological risk assessment were undertaken.

The following provides a summary of key results of this consultation process:

- The most important consideration identified by the public in regards to the evaluation of “Alternatives to” and the selection of a preferred long-term post-diversion residual waste management system was the Natural Environment, with the Social/Cultural Environment also regarded as being important.
- A significant majority of the public (approximately 80%) that participated in the consultation regarding the preferred “Alternative to” (including those interviewed during public polling) agreed with the consultants’ recommendation the preferred system is *System 2a – Thermal Treatment of MSW and Recovery of Energy followed by Recovery of Materials from the Ash/Char*.
- The most important consideration identified by the public in regards to the evaluation of “Alternative methods” and the selection of a preferred long-term post-diversion residual waste management site was Public Health and Safety and the Natural Environment, with the Social/Cultural Environment also regarded as being important. When participants were asked if they would object to the EFW facility being built in an industrial area in their municipality, 73% responded no.

- Consultation regarding the selection of the Proposed Thermal Treatment Facility Site, Clarington 01, undertaken through issuance of the Technical Study Reports for review, public information sessions and peer review on behalf of Clarington, identified opportunities to enhance the detail, readability and traceability of the EA Study final document but did not identify any considerations that affected the selection of Clarington 01 as the recommended preferred site.
- The results of community polling undertaken in late 2007 in Durham and York Regions (of a representative sample of 400 residents from both Regions) after the announcement of the recommended preferred site, indicated that the majority of the public (approximately 74%) strongly or somewhat agreed with the development of a Thermal Treatment Facility. In regards to the response from Durham residents, approximately 76% strongly or somewhat agreed with the development of a Thermal Treatment Facility. Of the 19% of Durham Residents that somewhat or strongly disagreed with the development of a Thermal Treatment Facility, 40% of those (8% of Durham Residents that responded to the survey) preferred the establishment of a new incinerator somewhere other than Clarington.
- Throughout 2007, 2008 and 2009, following announcement of the Clarington 01 Site, the Municipality of Clarington has been an active participant in the EA process and the broader community continued to actively participate in ongoing consultation processes. Participants in the consultation process expressed concerns about the potential impact of the Facility on health, air quality, water quality and physical effects such as noise, odour and traffic.
- The most recent round of consultation was undertaken in May 2009. Two Public Information Centres (PICs) were held in May of 2009 (12th and 19th) to discuss the results of the Draft Interim Environmental Assessment and Site Specific Studies. A total of 156 residents attended the May 12 PIC, while 87 residents attended the May 19th PIC. Note: the total population of the communities within proximity of the Clarington 01 Site (Oshawa, Clarington) was approximately 219,000 as of 2006, but only a portion of those would reside within 5 km of the Site.

Of those residents that signed in on those dates, approximately 46% provided addresses, which allowed for determination of where some of the concerned/interested residents reside and also gives an idea as to whether geographic distance from the preferred site of the incinerator has a strong influence on PIC attendance. A total of 40% of those individuals that provided their addresses at the May 12th PIC and 56% at the May 19th PIC noted that they lived near the Site (within an approximately 5 km radius including the communities of Clarington, Bowmanville, Oshawa and Courtice). Of the other residents that provided addresses, most of them reside in other areas of Durham Region (58% on May 12th, 43% on May 19th).

At the two PICs a total of 57 comments were received from residents (written/oral). Of these comments 33% came from residents that lived near the site (within approximately 5 km), 40% came from other residents of Durham Region, 19% came from residents who did not provide their address, and 7% came from residents who lived further away (Belleville, Toronto, Sudbury). The themes of the comments received were fairly similar across the board irrespective of where the commenter resided. The main themes recognized were: potential health effects, air emissions, cost of the Facility and other waste management alternatives. The comments provided generally stressed these broader/global themes regarding health, safety and well-being, rather than being specific to the immediate physical effect of the Facility on the character of the community such as visual effects. Individual concerns regarding health, safety and well-being are regarded as general concerns that could affect a resident's perception regarding the character of their community.

Generally, the results of the consultation process undertaken during the EA, particularly in regards to community attitudes towards the Facility, were considered during the assessment of the potential effects of the Facility on the character of the broader community.

2.1.3 Summary of Information from Relevant Site-Specific Assessment Technical Study Reports

Following the identification of the Site, a number of site-specific assessments were carried out on Clarington 01. As appropriate these studies analyzed the impact of the Facility at an initial design capacity of 140,000 tpy and based on the maximum design capacity of 400,000 tpy, on the immediate and surrounding area around Clarington 01. The studies incorporated vendor data once a vendor and technology had been selected.

Effects on the social/cultural environment can occur with nuisances such as emissions of dust, odour, noise or litter which can result in a physical effect on people or the community. For example, the visual effect of construction activities or the presence of a new building could be noticeable to and/or disturb people that live or work in the area.

This assessment of social/cultural effects is largely based on the results of the following site-specific assessments undertaken to determine the physical effect of the Facility which provided essential information utilized in this social/cultural assessment:

- Air Quality Assessment (specifically odour);
- Acoustic Assessment;
- Traffic Assessment;
- Visual Assessment; and,
- Archaeological & Built Heritage Assessment (regarding cultural resources).

An Economic Assessment was undertaken separately from this Social/Cultural Assessment and was applied to determine the potential economic effects of the Facility.

The relevance of each of the above Technical Study Reports in the assessment is noted in Section 2.4 which discusses the application of the Social/Cultural criteria and indicators that were identified as being applicable in this assessment. Generally, the results of these studies were used to determine the potential social/cultural effects, mitigation measures and net effects of the Facility.

2.1.4 Summary of Other Relevant Information

During the course of the EA, a number of additional studies outside of the EA were undertaken to provide supplemental information for various parties.

Of particular relevance to the social/cultural assessment was the *Durham-York Energy-from-Waste Facility Business Case*, May 15, 2008 prepared for the Region of Durham by Deloitte and Touche LLP (Business Case). This Business Case analyzed various landfill options in comparison to the development of the preferred facility (EFW) and was used to guide the decision making process

regarding the issuance of the Request for Proposals (RFP) for the development of the Facility. The findings of the Business Case relevant to the social/cultural assessment include the findings that:

- The EFW option had a number of advantages over the use of an Ontario landfill option, one of which is that it would provide Durham residents with a stable, long-term, local solution that is technologically and environmentally sustainable;
- Benefits and/or reduced effects could be accommodated through enhancements to the Facility design related to: state-of-the-art emission control technologies, inclusion of district heating compatibility with the Clarington Energy Business Park, allowances for enhanced architectural features, and odour control; and,
- The inclusion of district heating and site works associated with the development of the Facility within the Clarington Energy Business Park (CEBP) would be an attractive feature for enterprises looking to locate their businesses in the CEBP.

In addition to the Business Case, the Request for Proposals (RFP) issued in order to select a preferred vendor (Vendor) for the development of the Facility, along with the Proposal submitted by the Vendor (Covanta Energy) provided additional information used in the Social/Cultural Assessment particularly in regards to the potential impact management methods proposed by the Vendor and applied in the determination of the potential net effects of the Facility.

2.2 Facility Characteristics and Assumptions

The results of the EA process undertaken to-date in accordance with the Approved EA Terms of Reference has led to the following conclusions/assumptions applicable in this Social/Cultural Assessment as documented in the various reports and documents referred to in Section 2.1:

- The preferred “Alternative to” is *System 2A – Thermal Treatment of MSW and Recovery of Energy followed by the Recovery of Materials from the Ash/Char*;
- The preferred Site is Clarington 01;
- The preferred method of developing the Facility (a Thermal Treatment Facility on Clarington 01) is through retention of the preferred vendor, Covanta Energy, in accordance with their proposed design;
- The preferred haul route identified for the purpose of assessment of the Undertaking, to access the site during construction and operations will be via Highway 401, Courtice Road, then along South Service Road to Osborne Road. Access to the Site will be from Osborne Road;
- Three timeframes were assumed for the analysis of potential environmental effects. These are:
 - **The Construction Period:** The time during which the Facility would be constructed and commissioned (an approximate 30-month period starting in June 2010).
 - **The Operational Period:** The time during which the Facility would be operated (about 30 years).
 - **The Post-closure Period:** The time after the Facility would be closed (after operations cease). Activities are normally limited to de-commissioning, post-closure monitoring and property maintenance.

- The timeframes for the construction, operation and post-closure periods are commensurate with an undertaking of this type and scale.
- The initial design capacity of the Facility would be 140,000 tonnes per year, with potential for two phases of expansion, to 250,000 tonnes per year and then to 400,000 tonnes per year over the long-term planning period should such expansions be required;
- The assumed initial design of the Facility will include two completely independent waste processing trains at the Facility. Each train will consist of a feed chute, stoker, integrated furnace/boiler, acid gas scrubber, a fabric filter baghouse and associated ash and residue collection systems. Steam produced in the boilers will drive an electrical power generating system consisting of one turbine-generator set, switchgear and an air cooled condenser, to produce electricity for delivery to the grid, for in-plant use and potentially to provide district heating to the neighbouring Courtice Water Pollution Control Plant and Clarington Energy Business Park. The most prominent feature of the Facility is the proposed stack that will rise 87.6 metres above the floor of the boiler.
- The Facility will include a state-of-the-art air pollution control system, be designed for zero discharge of wastewater and all operations and handling of residual waste materials will be fully enclosed. Movement of residual waste, process residues and other materials during operations will be in fully enclosed vehicles.

2.3 Study Areas

The following study areas were identified and used for the purposes of this *Social/Cultural Assessment Technical Study Report*:

- A Local Social Study Area (LSSA) consisting of all lands within a one kilometre (km) radius around the Site was determined to be appropriate to address the primary effects of the Facility, based on professional judgment and experience in undertaking similar studies for the siting of industrial facilities. Research completed to date on thermal treatment facilities suggests that a one (1) kilometre radius from the Site is sufficient to assess potential impacts based on similar types of industrial developments, other types of waste management facility developments, and the results of the Generic Human Health and Ecological Risk Assessment (HHERA). The LSSA encompassed both the area in the immediate vicinity of the Site and the haul route from the closest 400 series highway (Highway 401) to the Site. The LSSA also includes the near shore of the Lake Ontario shoreline within 1 km of the Site, given that recreational use may be made of this area.
- A Community Social Study Area (CSSA) consisting of a 5 km radius was selected to include any potential broader effects on the general community (

- Figure 2-1). This area was chosen as it includes the nearest residential areas and communities potentially affected by the Facility. This larger community area addresses areas that may be able to discern the Facility from a distance and that are considered to be communities that are proximate to the Facility. It is believed that areas beyond that distance have decreased potential to be affected by the presence of the Facility. The CSSA also includes the near shore of the Lake Ontario shoreline within 5 km of the Site, given that recreational use may be made of this area.



YORK REGION AND DURHAM REGION
RESIDUAL WASTE STUDY

Existing Landuse with the LSSA and CSSA

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- Business
- Residential
- Recreational Facility
- Courtrice Water Pollution Plant
- Inbound Haul Route
- Outbound Haul Route
- Collector
- Expressway / Highway
- Railway
- Watercourse
- Clarington 01 Site
- LSSA
- CSSA
- Clarington Business Park

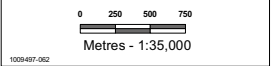


FIGURE NO. **2-1**

Last Modified: May 8, 2009 By: J. Whitford

2.4 Criteria and Application

The potential effects on the Social/Cultural environment have been studied extensively throughout the EA study and an effort was made not to re-examine or replicate the previous net effects evaluation that has taken place, but instead to focus on the specific effects associated with the preferred Undertaking.

For example, the potential for the direct loss of property and the displacement of social features such as residences, public amenities and businesses was addressed during the process of selecting the preferred Site, as summarized in Section 2.1.1 resulting in selection of a Site which does not result in property loss or displacement of such features.

The criteria and indicators for this social/cultural assessment and the method chosen to apply the criteria were selected to avoid replication of these previous efforts and to focus on the potential physical and social effects of the Facility that have been identified as being of concern by those that have participated in the EA consultation process.

For this social/cultural assessment, the following criteria and relevant indicators were considered as set out in Table 2-2 below.

Table 2-2 Social/Cultural Criteria and Indicators

Criteria	Indicators
Compatibility with Existing and Proposed Land Uses (Construction and Operations Cases)	Potential for Disruption to use and enjoyment of residential properties
	Potential for Changes in community character
	Potential for Disruption to use and enjoyment of public facilities and institutions
	Potential for Disruption to use and enjoyment of cultural and recreational resources
	Compatibility with existing land use designations and proposed land use changes (Operations Case only)

The compatibility of the Facility with existing and proposed land uses was generally determined by applying the above noted indicators in consideration of:

- the baseline (existing) and proposed land uses in close proximity to the Site determined through various studies and investigations undertaken during the EA including research and field work; and,
- the results of the various site-specific Technical Study Reports noted in Section 2.1.3 that assessed the potential effects of the Facility on the environment.

The “Potential for Disruption to Use and Enjoyment of Residential Properties” considered the potential for disruption of use and enjoyment of residential properties in the LSSA during the construction, operational and decommissioning/post-closure periods taking into account:

- The number and location of residential households located within 1 km (the LSSA);

- The potential effects, mitigation measures and net effects related to odour, noise, visual intrusion and traffic as determined in the relevant Technical Study Reports.

The “Potential for Changes in Community Character” considered the potential for effects in the broader community in the CSSA during the construction, operational and decommissioning/post closure periods taking into account:

- The proximity of existing and planned residential neighbourhoods within 5 km (the CSSA) were considered along with the proximity of the Site to neighbouring communities and the characteristics of the area around the Site;
- The compatibility of the Facility with the proposed developments and other major projects in the area;
- The results of the consultation process undertaken during the EA, particularly in regards to community attitudes towards the Facility; the potential effects, mitigation measures and net effects related to odour, noise, visual intrusion and traffic as determined in the relevant Technical Study Reports.

The “Potential for Disruption to Use and Enjoyment of Public Facilities and Institutions” considered the potential for effects in the LSSA considering the construction, operational and decommissioning periods taking into account:

- The number, type and location of public facilities and institutions located within 1 km (the LSSA);
- The potential effects, mitigation measures and net effects related to odour, noise, visual intrusion and traffic as determined in the relevant Technical Study Reports.

The “Potential for Disruption to Use and Enjoyment of Cultural and Recreational Resources” considered the potential for effects in both the LSSA and CSSA considering the construction, operational and decommissioning/post-closure periods, taking into account:

- The number, type and location of cultural and recreational resources located within 1 km (the LSSA) and the broader community (the CSSA); and,
- The potential effects, mitigation measures and net effects related to odour, noise, visual intrusion and traffic as determined in the relevant technical study reports.

The “Compatibility with Existing Land Use Designations and Proposed Land Use Changes” considered the compatibility with existing and proposed land use within the LSSA, considering the operational period only, taking into account:

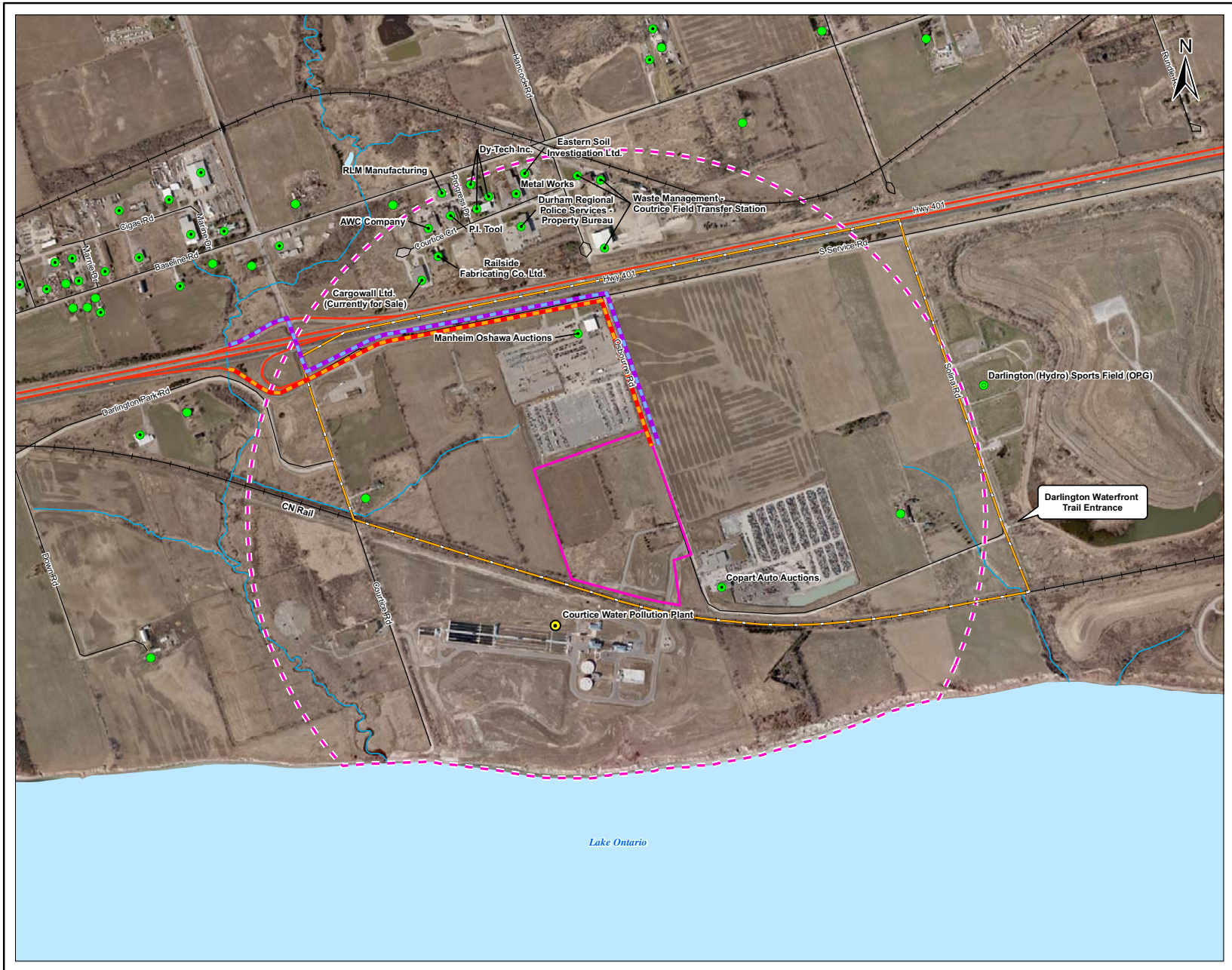
- The existing land use designations and the proposed land use changes within the LSSA; and,
- The potential effects, mitigation measures and net effects related to odour, noise, visual intrusion and traffic determined in the relevant Technical Study Reports as well as other features related to the Facility as documented in the Business Case and/or Covanta proposal regarding the compatibility of the Facility with the current and proposed commercial/industrial land uses in the area.

3.0 DESCRIPTION OF EXISTING CONDITIONS

The Clarington 01 Site is undeveloped land owned by the Region of Durham, located in Lot 27, Broken Front Concession, on the west side of Osborne Road, north of a CN Rail corridor, south of Hwy 401 in the Municipality of Clarington. There are commercial properties north of the Site. The lands east and west of the Site are undeveloped and are currently used for agricultural purposes. The Courtice Water Pollution Control Plant was built just south of the Site and completed in 2008. The Darlington Nuclear Generating Station is located approximately 1.8 km to the east.

The nearest major intersection is Hwy 401 and Courtice Road, which is approximately 1.5 km from the Site. The Site is approximately 12.1 hectares in area and is located in the Clarington Energy Business Park (CEBP).

The following Figure 3-1 illustrates the actual Site outlined in pink.

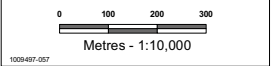


YORK REGION AND DURHAM REGION
RESIDUAL WASTE STUDY

Existing Landuse within 1km of Clarington 01

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- Business
- Residential
- Recreational Facility
- Courtie Water Pollution Plant
- Inbound Haul Route
- Outbound Haul Route
- Collector
- Expressway / Highway
- Railway
- Watercourse
- Clarington 01 Site
- LSSA
- Clarington Business Park
- Waterbody



1009-497-057

FIGURE NO. **3-1**

Last Modified: May 6, 2009 By: J. Whitford

The following table provides a summary of key aspects of the Clarington 01 Site, with additional details regarding existing conditions provided in the following sections.

Table 3-1 Overview of Clarington 01

Factor	
Proximity to Required Infrastructure	
Maximum Distance to Electrical Grid Connection	Less than 300 metres to nearest 44kv transmission line. Interconnection will require further discussions with local power company.
Maximum Distance to Heat and/or Steam Load	Potential access to heat load at Clarington Water Pollution Control Plant (WPCP) located to the southwest of the Site. Additional heat/steam loads may be available based on development of the Clarington Energy Business Park.
Distance to Required Sewer and Water Services	Municipal water and sewer servicing at property line.
Site Accessibility	
Maximum Distance to Major Highway	Approximately 1.5 km to Hwy 401 (interchange 425).
Maximum Distance to Rail Line	CN Rail line adjacent to south side of Site, distance to nearest inter-modal facility unknown.
Maximum Distance to Transit System	Approximately 5 km to nearest bus stop (Prestonvale/Southfield).
Details Regarding Haul Route	
Length of Haul Route	Total distance from Hwy 401 Interchange to Site is approximately 1.5 km.
Land Use along Haul Route	Undeveloped land currently used for agricultural purposes.
Road Type	Paved.
Road Width	Two lane road – one lane in each direction.
Property Size	
Property Size	Approximately 12.1 hectares
Land Use Compatibility	
Official Plan Designation	<u>Regional</u> – Employment Area. <u>Municipal</u> – Prestige Employment / Light Industrial - Holding General Industrial Zone.
Designated Land Use Adjacent to Site	<u>North</u> – Prestige Employment / Light Industrial. <u>South</u> – CN Rail line. <u>East</u> – Light Industrial. <u>West</u> – Light Industrial.
Description of Land Use Adjacent to Site	<u>North</u> – Auto Dealer Exchange. <u>South</u> – CN Rail line, Courtice Water Pollution Control Plant. <u>East</u> – Undeveloped land currently used for agricultural purposes, Auto Auction, Waterfront

Factor	
	Trail runs along east side of property, Darlington Nuclear Generating Station approximately 1.8 km to the East. <u>West</u> – Undeveloped land currently used for agricultural purposes.
Availability of Site	
Ownership and Availability	Region of Durham, Vacant Land.

3.1 General Community Characteristics

The Proposed Thermal Treatment Facility Site (the Site), Clarington 01, is located within the Municipality of Clarington, in the Regional Municipality of Durham. The Site is located approximately 5 km to the east of the outskirts of Oshawa, 4 km to the east of the outskirts of the community of Courtice, and 5 km to the southwest of the outskirts of Bowmanville. The Community Social Study Area (CSSA) is representative of the southerly portion of Clarington, with a current landscape that is a mix of rural, agricultural, residential and commercial characteristics. Population density in the CSSA is representative of the density of rural populations throughout the Region, as only 10% of the Region’s overall population of over 500,000 reside in rural areas. This is encouraged by the Region’s Official Plan that encourages population growth in existing urban areas.

Note: the total population of Durham Region (as of May 2006) was 561,258, and the population of the communities within proximity of the Clarington 01 Site (Oshawa, Clarington) was approximately 219,000, however only a small portion of that population would reside within the CSSA given the distance from Clarington 01 Site to the closest communities. The Site has been designated as employment lands/business park in the Regional and Clarington official plans as noted below, and is part of a larger area of land that has been identified as the Clarington Energy Business Park. This is part of a larger system of Employment Lands in the Region of Durham that is intended and set aside for industrial, commercial and business development in order to attract industries and businesses to the area and to maximize employment opportunities. Vacant employment lands in Clarington are estimated as 832 hectares, with the Site making up about 1.5% of those lands.

3.2 Compatibility with Existing and/or Proposed Land Uses

3.2.1 Land Use Designation of Clarington 01

Clarington 01 is partially used as agricultural land while the remainder of the Site is undeveloped and not being used. The Regional Municipality of Durham Official Plan, as amended by Regional Official Plan Amendment No. 114 (Office Consolidation, 2008), designates Clarington 01 as Employment Areas as illustrated in Figure 3-2. The Municipality of Clarington Official Plan (January 2007 – Office Consolidation) designates the Site as a Business Park. The Municipality of Clarington Energy Business Park Secondary Plan further details the Business Park land use designation as Light Industrial 1 for the north part of Clarington 01 and Light Industrial 2 for the south part. Refer to Figure 3-4 for a copy of Clarington’s Energy Business Park Secondary Plan.

3.2.2 Land Use Designations within one (1) kilometre of Clarington 01

The Regional Official Plan land use designations within the one (1) km radius of the Clarington 01 Site consist of Employment Areas, Waterfront Areas, and Major Open Space Areas. The one (1) km eastern boundary touches the Darlington Nuclear Generating Station. This is illustrated in Figure 3-2, Durham Official Plan Land Use. The Area Municipal Official Plan land use designations within the one (1) km radius of the Site consist of Business Park, Light Industrial, Prestige Industrial, Waterfront Greenway and Environment Protection Area and Utility. This is illustrated in Figure 3-3, Clarington Official Plan Land Use. Field observation of the area determined that the one (1) km radius includes commercial properties, agricultural land and two residential properties. There are park and recreation lands (the Darlington (Hydro) Sport Fields) one (1) kilometre east of the Site.

3.2.3 Land Use Designations along Proposed Haul Route to Clarington 01

The existing land uses along the proposed haul route include agricultural lands, and commercial properties. The Regional Official Plan land use designation along the haul route is Employment Area. The Municipality of Clarington Official Plan land use designation along the haul route is Business Park. The proposed inbound and outbound haul route and the Regional and Area Municipal land use designations along it are also illustrated in Figure 3-2 and Figure 3-3 respectively.

Durham Official Plan Landuse

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- Business
- Residential
- Recreational Facility
- Courtiqe Water Pollution Plant
- Inbound Haul Route
- Outbound Haul Route
- Collector
- Expressway / Highway
- Railway
- Clarington O1 Site
- 1 km Radius from Site
- Waterfront
- Darlington Nuclear Generating Station
- Employment Area
- General Agriculture
- Major Open Space
- Waterbody

0 100 200 300
Metres - 1:10,000

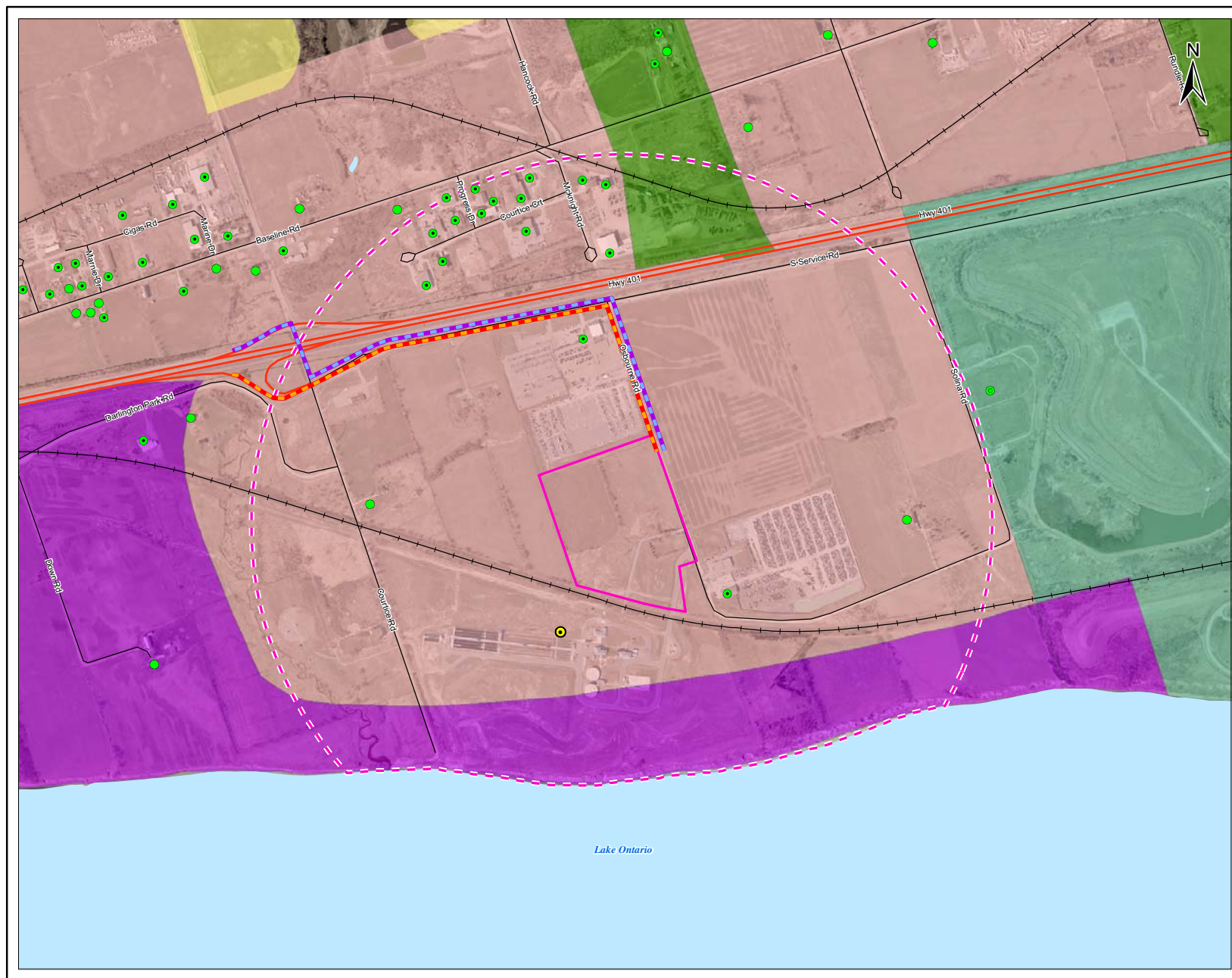
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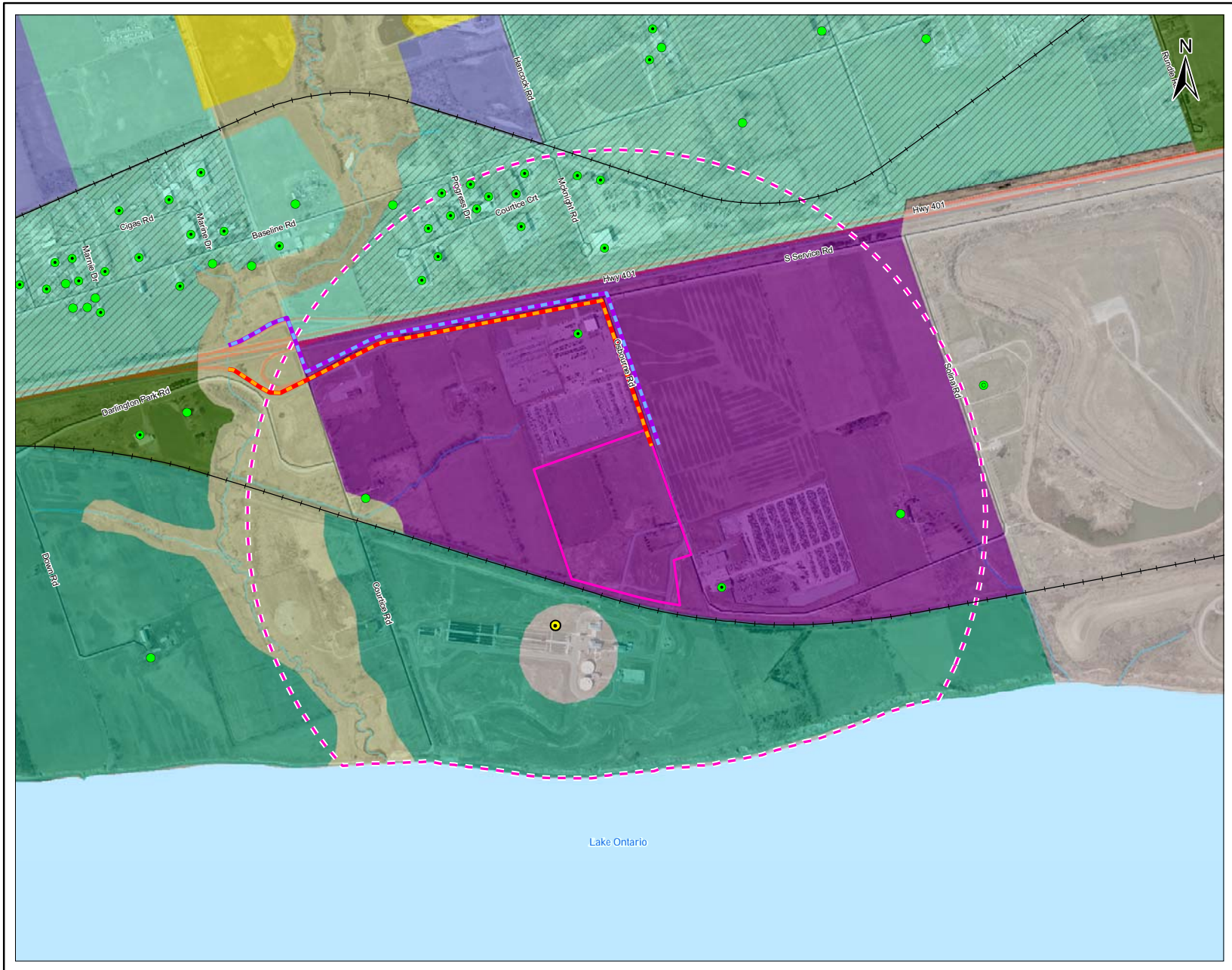


FIGURE NO.

3-2

Last Modified: May 6, 2009 By: J. Whitford





YORK REGION AND DURHAM REGION
RESIDUAL WASTE STUDY

Clarington Official Plan Landuse

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- Business
- Residential
- Recreational Facility
- Courtiice Water Pollution Plant
- Inbound Haul Route
- Outbound Haul Route
- Collector
- Expressway / Highway
- Railway
- Watercourse
- Clarington 01 Site
- 1 km Radius from Site
- Waterbody

Clarington Official Plan Landuse

- General Agricultural
- Light Industrial
- General Industrial
- Prestige Employment
- Business Park
- Environmental Protection
- Waterfront Greenway
- Green Space
- Utility

0 100 200 300
Metres - 1:10,000

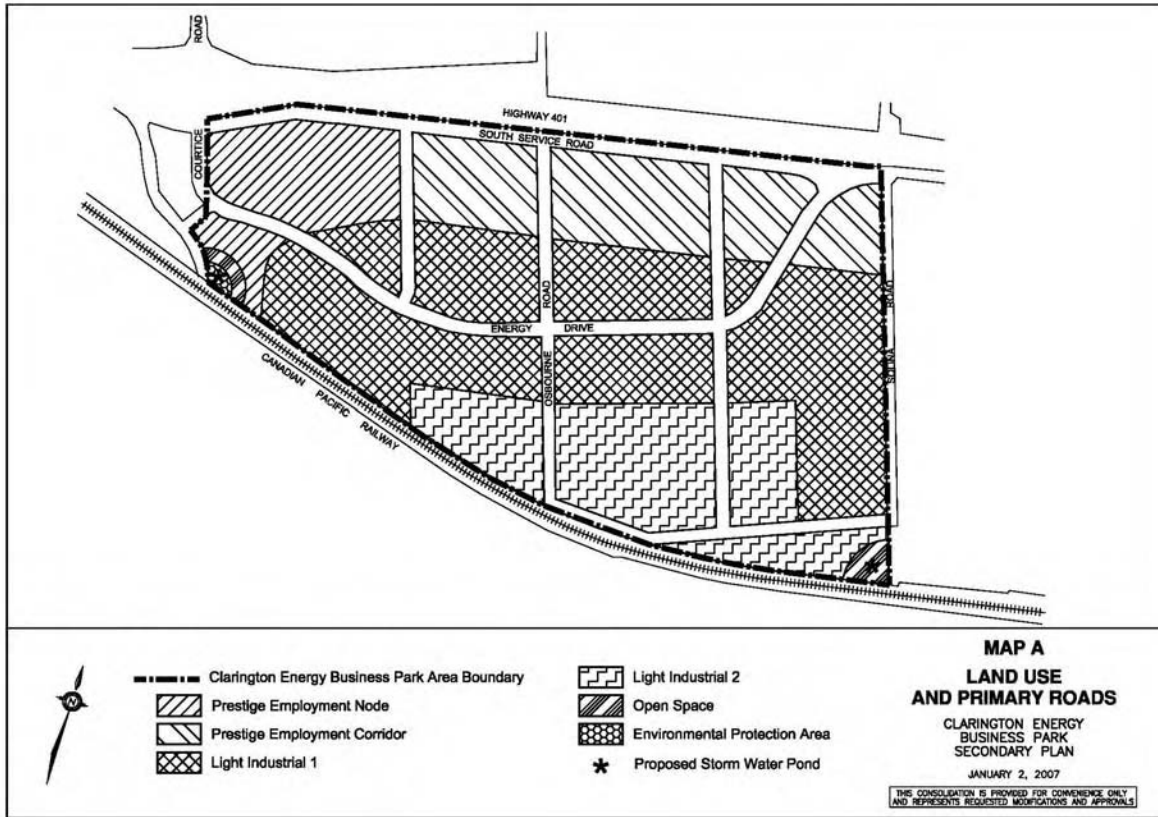
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Area of Interest

FIGURE NO.
3-3

Last Modified: May 6, 2009 By: J. Whitford

Figure 3-4 Clarington Energy Business Park Secondary Plan



3.2.4 Existing Zoning Designations

Municipality of Clarington Zoning By-Law (84-63) of the former Town of Newcastle – December 2005 (last updated January 2008) zones Clarington 01 as (H)ML1 – Energy Park Light Industrial and (H)ML2 – Energy Park General Industrial. The Zoning By-laws used for this Report are those most recently approved by the Municipality of Clarington’s Council.

The Facility would be a component of Durham Region’s Public Infrastructure and as such, its development is not required to conform with existing area municipal planning policies and zoning provisions.

3.2.5 Size of Buffer Zone available on Site

The total area of Clarington 01 is 12.1 hectares. It is estimated that the various buildings associated with the Facility would occupy in the order of 1 to 2 hectares and that in total approximately 45% of the Site will be covered with some form of impermeable surface (buildings, onsite roads and parking areas). The buffer area surrounding the Facility will be occupied by access roads, parking areas and naturalized areas and would be in the order of 9 to 10 hectares.

3.3 Overview of Current Land uses within the LSSA and CSSA

A number of residential as well as recreational features, businesses, and public facilities and institutions located within the vicinity of the LSSA and CSSA were identified to assist with the consideration of potential social/cultural effects that may result from the Facility and are outlined below:

- *Clarington Energy Business Park* – the development area the Facility is located within (includes the two existing commercial operations Copart Auto Auctions and Manheim Oshawa Auctions);
- *Courtice Water Pollution Control Plant* – located to the southwest of the Site;
- *CN Rail* – VIA Rail passenger trains and CN cargo trains– located adjacent to the south boundary of the Site;
- *Highway 401* - The nearest major intersection is Highway 401 and Courtice Road, which is approximately 1.5 km to the north of the Site;
- *Waterfront Trail* – the Waterfront Trail runs west to east along the shore of Lake Ontario, and loops around the Site to the north;
- *Residences* - The nearest residential area designated as future urban residential is 3 km northwest of the Site in the vicinity of Bloor Street and Townline Road, in the community of Courtice. One occupied residence is located approximately 420 metres west of Clarington 01 and one is located approximately 600 metres to the east. There is one abandoned (uninhabitable) residence to the northwest of the property. For the purpose of this assessment, only the occupied residences were considered receptors. Note: both of the identified residences are on-farm residences;
- *Darlington (Hydro) Sport Fields (Ontario Power Generation)* – sport fields (upper and lower), located 1 km to the east;

- *Darlington Nuclear Generating Station (Ontario Power Generation)* - located approximately 2 km to the east;
- *Darlington Provincial Park* – located approximately 2 km to the west;
- *Municipality of Clarington* –the municipality within which the Facility is located;
- *Town of Bowmanville* – the outskirts of which are located approximately 5 km to the northeast; and,
- *City of Oshawa* – the outskirts of which are located approximately 5 km to the west (for the purposes of this assessment, the community of Courtice [approximately 4 km northwest of the Site] is included with Oshawa as one receptor).

Refer to Figure 3-1 for a map of these locations/properties, in relation to the LSSA, the CSSA and the proposed layout of the Facility.

3.3.1 Residential Areas

Designated residential areas were defined in accordance with Regional and Area Municipal Official Plans. The nearest residential area designated as future urban residential is 3.2 kilometres from the Site. There are a total of two occupied residences within the one kilometre boundary, and one abandoned (uninhabitable) residence. No residences are located along the haul route. Outside of the LSSA, along Baseline Road there is a scattering of residences interspersed with commercial properties that comprise the Hamlet of Darlington.

3.3.2 Parks and Recreational Areas

Parks and recreational areas were defined in accordance with Regional and Local Municipal Official Plans. Consideration was also given to Provincial and Federal parks and recreational areas.

There are no recreational areas along the haul route. Clarington 01 is located 1 kilometre from the nearest recreational facility the Darlington (Hydro) Sport Fields. Darlington Provincial Park is located approximately 2 km to the west. The Waterfront Trail runs west to east along the shore of Lake Ontario, and loops around the Site to the north, with the trail head located to the east of the Site.

Boating, fishing and other water-based uses are made of the Lake Ontario shoreline in Clarington. The Lake Ontario shoreline is located approximately 500 m south of Clarington 01.

3.3.3 Public Facilities or Institutions

Public Facilities or Institutions (e.g., schools, hospitals, etc.) were defined in accordance with Regional and Local Municipal Official Plans. The Durham Regional Police Service unit to the north of Highway 401 and the Courtice Water Pollution Control Plant to the southwest of the Site are the only public facilities or institutions located within one kilometre of the Site. There are no Public Facilities or Institutions along the proposed haul route.

3.4 Cultural Resources

For the purpose of this Social/Cultural Assessment, the effect of the Project on pre-historic and historic Archaeological resources was not included as this has been assessed separately and will be addressed separately in the assessment of the net effects of the Undertaking. Only the potential effect on cultural or heritage resources within the LSSA will be identified.

There are no buildings, structures, cemeteries, plantings or other landscape structures or features within 1 km of the Site that would be considered to constitute a built heritage feature or cultural landscape. The landscape within 1 km of the Site consists of: agricultural fields; hedgerows and small woodlots; commercial and industrial uses including the Courtice Water Pollution Control Plant, and two commercial properties, Copart Auto Auctions and Manheim Oshawa Auctions. The Lake Ontario shoreline in proximity to the Site is comprised of some beach areas and recreational areas, including the Waterfront Trail.

The *Stage 2 Archaeological Assessment and Built Heritage - Technical Study Report* noted that there are no significant built heritage features on the Site.

3.5 Baseline Traffic

URS Canada Inc. (URS) was retained to undertake a Traffic Assessment study with respect to the Proposed Thermal Treatment Facility which included documentation of existing (baseline) conditions. The Clarington 01 Site is located in the southeast quadrant of the Courtice Road/Highway 401 interchange with access/egress to/from either South Service Road or Osborne Road. The Site is located in close proximity to Highway 401 and the Courtice Road interchange.

3.5.1 Type of Roadways

The majority of the haul route is along the 400 series highways, especially Highway 401. From the Courtice Road/Highway 401 exit, the length of the haul route is approximately 1.5 kilometres along a paved municipal roadway to the point of access for the Site.

3.5.2 Existing Traffic Operations Assessment

The study area intersections were analyzed on the basis of traffic volumes and existing lane configurations. The assessment for unsignalized intersection operations was based on the results of the Highway Capacity Software (HCS+), which is based on the methodology in the Highway Capacity Manual, 2000. The Highway Capacity Manual is produced by the Transportation Research Board.

URS undertook a series of turning movement counts during a.m. and p.m. peak periods at the Courtice Road / Highway 401 ramp terminals (north and south). Additional traffic information was obtained from the Municipality of Clarington, as well as the Ministry of Transportation. This information included Turning Movement Counts (TMC) and 24-hour automated traffic recorders (ATR) for Courtice south of Bloor Street (March 2006 – ATR).

The Clarington 01 Site is in close proximity (adjacent) to Highway 401, which has the following annual average daily traffic (AADT) counts based on 2003 Ministry on Transportation (MTO) data:

- Bennett Road: 70,900 vehicles per day; and,
- Courtice Road: 82,600 vehicles per day.

Level of Service (LOS) is a qualifying measure of traffic operations at an intersection, which is based on vehicular delay (per vehicle) for a 15-minute analysis period. LOS is summarized on a grading system, LOS 'A' being the best service condition and LOS 'F' being the worst. For example, LOS 'C' means that vehicles experience a delay at an intersection of greater than 20 seconds but less than 35 seconds. The level of service for two-way stop controlled intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time.

The volume-to-capacity ratio is a measure of the proportion of the calculated intersection capacity that is utilized by the modeled traffic volumes. The higher the volume-to-capacity ratio, the more congested operations are perceived at the studied intersection. A volume-to-capacity ratio of 1.00 implies that the intersection (or specific movement being assessed) operates at capacity.

With respect to the Level of Service, both Highway 401/Courtice Road ramp terminal intersections were found to operate at LOS B (LOS B is greater than 10 seconds but less than 15 seconds) during the a.m. and p.m. peak hours. The volume-to-capacity at the 401/Courtice Road interchange ranged from 0.2 to 0.57 depending on the time of day. Both ramp terminal intersections (Courtice Road/Highway 401) were found to operate acceptably under existing traffic conditions, lane configurations and traffic control.

3.5.3 Conformity with Durham's Goods Movement Network

The Regional Municipality of Durham Official Plan Amendment No. 114, Section 11.3.5 (Goods Movement) states that: "Schedule 'C' - Map C4", the Strategic Goods Movement Network identifies preferred haul routes that are planned to accommodate commercial vehicles on a year round basis, and which link major generators of traffic.

Infrastructure to support this network will be considered as part of the capital works program and will be subject to budgetary considerations. The routing of all waste vehicles will be completed to ensure that the requirements of the Strategic Goods Movement Network are achieved. In particular, waste vehicles, where possible, will eventually utilize a 400 series highway on-route to the Site. Once the vehicles exit the 400 series highway, they will travel the haul route which in most cases is less than 1.5 kilometres along a local municipal road network.

It is the Study Team's interpretation that this flow of traffic for Clarington 01 would be in accordance with Durham's Strategic Goods Movement Network.

4.0 RESULTS OF ANALYSIS

4.1 Odour

The potential for effects from odour associated with the Facility was assessed in the *Air Quality Assessment - Technical Study Report*. The assessment of the potential effects of the Facility on air quality was performed by conducting dispersion modelling to predict the downwind concentrations of air contaminants and comparing these predictions to regulatory standards, objectives and guidelines.

4.1.1 Odour during Construction

No odours are anticipated during construction of the actual Facility itself. At the later stages of construction, waste will be brought to the Site for commissioning activities. Minimal potential odour is expected during commissioning. At that time, all usual dust and odour control methods used for normal operations will be applied. These are further described in the following section. No differences in the potential for odour during construction has been identified between the 140,000 tpy Facility and the Facility with a maximum design capacity of 400,000 tpy.

4.1.2 Odour during Operation

The refuse to be processed in the Facility will be a heterogeneous mixture of many materials and may include odorous substances. Potential odour emissions sources associated with the processing of the refuse would be:

- truck transportation of waste onto the Site;
- refuse handling and storage on Site; and,
- refuse combustion.

The refuse trucks will be fully enclosed to reduce the potential for odour emissions while transporting refuse. Waste haulers will be required to regularly empty the leachate storage container on the refuse trucks to ensure that leaking onto public roads and/or runoff to stormwater management ponds on the Site will be prevented. The tipping building will be equipped with multiple bays to minimize refuse truck line-ups outside the tipping building during peak truck arrival periods.

The tipping building will be equipped with motor operated entrance/exit doors. The doors will remain closed except for when vehicles are entering or exiting the tipping building. Combustion air will be drawn from above the storage pit, which will maintain a negative pressure in the tipping building and help prevent the escape of dust and odour. Therefore odour emissions from refuse handling and storage onsite are expected to be negligible.

The air from the tipping building/storage pit will be combusted with the waste in the stoker and the resulting combustion gases passed to the boiler furnace/combustion chamber. In the combustion chamber, unburned gases from refuse combustion in the stoker will be directed into a high temperature combustion zone to permit the maximum burnout of vapours and elimination of odours. The flue gas will

then be routed through the Air Pollution Control (APC) equipment train, which includes a scrubber which will also aide in reducing odours. The low level emissions of Volatile Organic Compounds (VOCs) from the stack are not expected to have an appreciable potential for odour.

Based on the proposed mitigation measures for odour control noted above, there is not expected to be adverse off-property odour effects due to the onsite operations under either the 140,000 tpy or 400,000 tpy scenarios. Odour emissions from refuse trucks during offsite travel will be minimized by utilizing fully enclosed trucks.

4.1.3 Odour during Decommissioning (Post-closure)

Upon decommissioning, receipt of residual waste would cease. Facility decommissioning would entail removal of process units and related facilities and re-vegetation of the area. Decommissioning emissions are expected to be no greater than construction emissions and were therefore appropriately assessed qualitatively. Removal of the Facility from the property could ultimately reduce the potential for odour in the area depending on the use of the Site in the post-closure period.

4.2 Noise

The potential for effects from noise associated with the Facility was assessed in the *Acoustic Assessment - Technical Study Report*. The assessment was undertaken and the report was prepared in accordance with the Ontario Ministry of the Environment (MOE) and Health Canada (HC) noise guidelines in support of an Individual Environmental Assessment conducted under the EAA. The assessment follows the requirements of MOE publications and guidelines.

4.2.1 Noise during Construction

Some potential exists for noise and vibration impacts during the construction phase of the Facility. There are two construction activities that are likely to create elevated sound levels that are difficult to mitigate. These are:

- Pile driving activities associated with the construction at the facility (if required); and,
- Increased short-term (i.e., 1-hour) offsite vehicle traffic associated with the construction of the Facility.

These activities would only be a concern during worst-case conditions. They are temporary and of short duration relative to the Facility construction, and would cease upon completion of construction activities. Pile driving effects could be reduced through alternative technologies, controls, and scheduling. Construction vehicle traffic is predicted to be acceptable against applicable criteria, but short-term (i.e., 1-hour) effects during peak demand are possible. These peaking issues can be reduced through scheduling and planning of vehicle trips. No differences in the potential for noise during construction has been identified between the 140,000 tpy Facility and the Facility with a maximum design capacity of 400,000 tpy.

A monitoring program and contingency plan is recommended to address any issues that may arise during the construction and post-closure periods of the Facility. Post-closure noise effects would be assessed against the applicable criteria at the time of closure.

4.2.2 Noise during Operation

Source sound power levels were estimated for the significant noise sources in the Facility based on:

- measured data from similar equipment;
- manufacturer's information; and,
- published resources.

Based on ambient noise measurements conducted in the Acoustic Study Area (ASA) near the critical receptors (the two residential properties within 1 km of the site and a third property on Baseline Road to the north of the Site), the existing minimum background 1-hour sound exposure levels generally occurred at night (i.e., 23:00 h to 07:00 h) and ranged from 47 dBA (A-weighted decibels) near Courtice Road, and 38 dBA near the Baseline Road. As a result, the measured ambient noise levels were applied for most receptors. The Facility was also assessed against Health Canada's proposed noise criteria.

Acoustical modelling of significant noise sources was conducted using a computerized noise model, CADNA/A, using the algorithms from ISO 9613. The results were assessed for compliance at the nearest Points of Reception (PORs) based on the relevant noise criteria.

The predicted noise levels at all nearby PORs are less than the applicable criteria for both the 140,000 tpy and 400,000 tpy operational scenarios assessed for the Facility.

Current standards for building Facility equipment and process units incorporate efficiencies and design enhancements that reduce sound emissions. Where necessary, mitigation measures can be included to ensure applicable noise criteria are met at PORs as predicted. Such mitigation measures may include the use of equipment control options such as:

- enclosures;
- local or property-line barriers;
- mufflers and silencers; and,
- acoustic baffles or insulation.

Selection and design of specific mitigation measures would be subject to the detailed design of the proposed equipment.

During operation, the Facility is predicted to meet applicable provincial and federal noise criteria at nearby receptors under all operating scenarios. The transition zones (i.e., setback distances), equipment sound specifications, and mitigation controls designed into the Facility help to ensure noise criteria are met at offsite receptors. No differences in the potential for noise during operations has been identified between the 140,000 tpy Facility and the 400,000 tpy Facility.

4.2.3 Noise during Decommissioning (Post-closure)

Facility decommissioning would entail removal of process units and related facilities and re-vegetation of the area. Noise generated during decommissioning is expected to be no greater than construction. Post-closure noise effects would be assessed against the applicable criteria at the time of closure.

4.3 Dust

The potential for effects from dust associated with the Facility was assessed in the *Air Quality Assessment - Technical Study Report*. The assessment of the potential effects of the Facility on air quality was performed by conducting dispersion modelling to predict the downwind concentrations of air contaminants and comparing these predictions to regulatory standards, objectives and guidelines.

4.3.1 Dust during Construction

Construction activities for the Facility would include:

- Site preparation (clearing, cut and fill, site levelling, etc);
- foundation and building construction; and,
- assembly of plant components.

Dust emissions from construction activities could have a temporary effect on local air quality. These emissions are associated with land clearing, ground excavation, cut-and-fill operations and equipment traffic on the Site. Generally, fugitive dust emissions are: (1) proportional to the disturbed land area and the level of construction activity; (2) limited to periods of the day and week when the construction activities take place; and (3) vary substantially from day to day with varying meteorological conditions. Under dry, windy conditions, wet suppression can be used to control these fugitive dust sources.

Vehicles on the construction Site are sources of exhaust emissions. Construction activities such as welding, use of solvents, sand blasting and painting can also affect air quality in the construction area. These activities are typically localized and can be mitigated through implementation of vehicle maintenance programs, etc.

Construction emissions are expected to occur intermittently during daylight hours over the duration of the construction period (about 30 months). Relative to operational emissions, construction emissions will be minor, short-term and transitory, and as such, were not modelled. Construction emissions are exempted from the Ontario Certificate of Approval process under O. Reg. 524/98.

To reduce the potential for wind-blown dust under dry, windy conditions, the following mitigation measures would be used:

- Construction exits will be employed to stabilize all construction entrances and exits and prevent mud from tracking on roadways from construction vehicles;
- Temporary and permanent grassing will be used for all areas of disturbance;
- Dust control will be used during dry conditions to prevent any blowing of dust;

- Work will be staged consistent with MOE requirements;
- All disturbed land will be stabilized within 14 days. In the event that temporary grassing cannot be performed due to cold weather conditions, mulching will be provided. Permanent grassing of site will be provided once warm weather grasses can be planted; and,
- Exhaust emission controls for construction equipment will meet Ontario Drive Clean standards and proper maintenance of equipment and vehicles will be conducted.

Temporary, short-term dust emissions from construction are expected. No differences in the potential for dust during construction has been identified between the 140,000 tpy Facility and 400,000 tpy Facility.

4.3.2 Dust during Operation

The following controls and strategies could be used to control fugitive emissions from the Facility:

- All materials loading and unloading will be managed to prevent scattering and blowing of debris.
- The boilers, refuse storage area, residue storage area, air pollution control area and turbine/generator will be fully enclosed.
- The residue building will be equipped with roll-up doors to allow vehicles to drive through.
- All residue storage areas will be roofed (i.e., protected from rain), drained, and filtration ventilated.
- The fly ash will be stabilized prior to truck loading and subsequent transportation.
- Residue handling systems will be designed for a minimum number of transfer points to minimize drops which can result in air emissions.
- The residue storage building and all conveyors external to buildings will be completely enclosed and filtration ventilated. The residue storage building will be provided with a filtered ventilation system. The residue storage building will not be connected to any other structures in such a fashion as to enable dust to infiltrate to other parts of the Facility.
- Residue containers or trucks will be loaded in an enclosed building. Residue containers will be enclosed, watertight and covered so as not to present a hazard to either plant personnel or the general public while residue is being loaded and transported to the landfill.
- In general, all residue loading and unloading systems will be designed to be dust free and designed to meet requirements for residue loadout established by the MOE. In particular, no visible emissions of dust from any doorway, window, vent, louver or other opening will be allowed.
- Between the furnace and the residue storage building, the residue handling systems will be fully automatic. Sensors will be provided with alarms for readout and recorded on the DCS in the Central Control Room for any system failure.
- All residue mixing and/or handling areas will be fully enclosed, well ventilated and sufficiently protected from extreme weather conditions (e.g., freezing conditions, etc.). In addition, all such areas will be designed to facilitate cleanup and good housekeeping.
- All outside conveyors handling residue will be fully enclosed. All outdoor APC fly ash conveyors will be insulated and heat traced.

It is expected that dust emissions from operations will be managed via facility design and operational controls, resulting in no long-term net effects. No differences in the potential for dust during operations has been identified between the 140,000 and the 400,000 tpy Facility scenarios.

4.3.3 Dust during Decommissioning (Post-closure)

Facility decommissioning would entail removal of process units and related facilities and re-vegetation of the area. Decommissioning emissions are expected to be no greater than construction emissions and were therefore appropriately assessed qualitatively. Removal of the Facility from the property could ultimately reduce the potential for dust in the area depending on the use of the Site in the post-closure period.

4.4 Vermin/Vectors

The potential effects associated with vermin or vectors that is commonly associated with management of waste is partially minimized by the preferred technology, thermal treatment, which eliminates/prevents the potential for attraction of gulls and the majority of other vermin/vectors to the residual waste. Other vermin/vectors commonly associated with waste management (i.e., rodents) have been addressed through evaluation of the proposed design and operations for the Facility. No differences in the potential for vermin/vectors during construction and/or operations has been identified between the 140,000 Facility and the 400,000 tpy Facility.

4.4.1 Vermin/Vectors during Construction

No vermin/vectors are anticipated during construction of the actual Facility itself. At the later stages of construction, waste will be brought to the Site for commissioning activities. At that time all usual vermin control methods used for normal operations will be applied. These are further described in the following section.

4.4.2 Vermin/Vectors during Operation

Pest/vector control will be subcontracted to a qualified local company. Selection of the contractor will be based on qualifications and experience with similar types of plants and/or large industrial or commercial facilities having significant pest/vector control requirements. The control program is intended to provide, at least twice per month, applications of spray and traps throughout the refuse handling areas and administrative areas. Selection of the contractor will also be based on the program the Vendor proposes to implement. All doors to the main building and auxiliary structures will be kept closed except when being used. No effects from vermin/vectors are anticipated during operations.

4.4.3 Vermin/Vectors during Decommissioning (Post-closure)

Facility decommissioning would entail removal of process units and related facilities and re-vegetation of the area. No vermin are anticipated during decommissioning as waste receipts would cease. As necessary all usual vermin control methods used for normal operations will be applied. Removal of the

Facility from the property could ultimately reduce the potential for vermin/vectors in the area depending on the use of the Site in the post-closure period.

4.5 Litter

The potential effects of litter that is commonly associated with management of waste is partially minimized by the preferred technology, thermal treatment, which limits the potential for litter normally associated with landfill disposal. The management of litter that could be generated at the Site was addressed through evaluation of the proposed design and operations for the Facility. No differences in the potential for litter during construction and/or operations has been identified between the 140,000 Facility and the 400,000 tpy Facility scenarios.

4.5.1 Litter during Construction

Minimal litter is anticipated during construction of the actual Facility itself. At the later stages of construction, waste will be brought to the site for commissioning activities. At that time all usual litter control methods used for normal operations will be applied. These are further described in the following section.

4.5.2 Litter during Operation

Litter control throughout the Site will be routinely conducted on a daily basis. The tipping floor will be cleaned as an on-going procedure during hours of receiving waste. In addition, the access roads, parking facilities and other paved and unpaved areas of the Site including fences will be policed as needed each waste delivery day. All doors to the main building and auxiliary structures will be kept closed except when being used. No net effects from litter are anticipated during operations.

4.5.3 Litter during Decommissioning (Post-closure)

Facility decommissioning would entail removal of process units and related facilities and re-vegetation of the area. Minimal litter is anticipated during decommissioning. All usual litter control methods used for normal operations will be applied. Removal of the Facility from the property could ultimately reduce the potential for litter in the area depending on the use of the Site in the post-closure period.

4.6 Traffic

The potential for effects from traffic associated with the Facility was assessed in the *Traffic Assessment - Technical Study Report*. The assessment of the potential effects of the Facility in regards to traffic, assessed the traffic impact of the Facility on the adjacent road network, identified any road and/or traffic control improvements required as a result of the development both during construction and operations, and forecast future traffic demands based on proposed development in the area including the build out of the Clarington Energy Business Park (CEBP).

The Facility is expected to be operational by 2013, with construction starting in 2010. Access to and from the Site during construction and operation is expected to be along Courtice Road, South Service Road and Osborne Road.

4.6.1 Traffic during Construction

Both ramp terminal intersections (Courtice Road/Highway 401) were found to operate acceptably under existing traffic conditions, lane configurations and traffic control. Traffic signals are not warranted at either ramp terminal intersection, and are not expected to be warranted at the time of construction.

Construction of the Facility is expected to generate 44 two-way peak hour trips in the first year, 94 two-way peak hour trips in the second year and up to 122 two-way peak hour trips in the third year. The existing Courtice Road/Highway 401 interchange will accommodate additional traffic associated with construction works. The eastbound left turn at the south ramp terminal intersection is expected to operate at LOS "E" in the p.m. peak hour. The lower LOS is due to growth in background traffic.

Road/pavement improvements may be required to South Service Road and Osborne Road to accommodate future trucks associated with the construction of the Facility, as well as Site-generated trucks once the Facility is operational. Pavement testing along the haul route will be completed by the Region of Durham if the Project is approved to confirm if road reconstruction/pavement improvements are required.

4.6.2 Traffic during Operation

The Facility is expected to generate up to 34 truck trips per day in the initial design capacity scenario with a waste throughput of 140,000 tpy. The Facility is anticipated to generate up to 77 truck trips per day operating at the future case potential expansion of the Facility to 400,000 tpy. For both the 140,000 tpy and 400,000 tpy throughputs, approximately 22 passenger vehicle trips per day are expected. No traffic control measures are required on the adjacent road network to accommodate traffic during operations of the Facility.

Partial and full build-out of the future CEBP was used in the analysis under 2013 and 2023 traffic conditions. The future CEBP is estimated to generate a total of 2,100 two-way trips once fully built-out. Traffic associated with a partial build-out of the subject lands (Courtice Road to Osborne Road by 2013) was calculated to be in the 800 to 900 vehicles per hour range. The Facility would add 40 two-way trips during a.m. and p.m. peak hours operating at 140,000 tpy and 62 two-way trips operating at 400,000 tpy, accounting for 2 to 3% of the total trips generated in the fully built-out CEBP.

Both ramp terminal intersections could require traffic signals by the ultimate 2023 horizon year with the full build-out of the CEBP. With the partial development of the subject lands assumed for the 2013 horizon year, only the south ramp terminal intersection is expected to require traffic signals. Traffic on the westbound approach (off-ramp) at the north ramp terminal intersection is expected to experience delays of up to one minute during the p.m. peak hour with a stop control.

The south ramp terminal is expected to have critical movements in the 2023 horizon year. Specifically, eastbound left turning traffic and northbound through traffic will experience LOS “F” operations in the p.m. peak hour under the traffic signal control. Widening of Courtice Road to four lanes through the interchange would alleviate the problem, resulting in shorter delays and traffic queues on eastbound and northbound approaches at this intersection.

The northbound left turn lane at the north ramp terminal intersection is expected to carry over 900 vehicles per hour during the p.m. peak hour. The 95th percentile queue on the northbound approach at the north ramp terminal intersection is expected to extend to the south ramp terminal intersection in the p.m. peak hour (2023 horizon year). A loop ramp to accommodate traffic origination from the south and destined to the west (S-W) at this location would alleviate the queuing problem.

In addition, CEBP traffic destined to Highway 401 west will have the flexibility in accessing Highway 401 by diverting to the improved Holt Road interchange at the east end; however, resulting in minor out-of-way travel (back-tracking). This will result in further reduction of left turning traffic volumes on the northbound approach at the north ramp terminal intersection at Courtice Road.

All other study area intersections were found to operate at good Levels of Service under 2013 and 2023 traffic conditions.

4.6.3 Traffic during Decommissioning (Post-closure)

Facility decommissioning would entail removal of process units and related facilities and re-vegetation of the area. Traffic during decommissioning is expected to be no greater than during construction. Removal of the Facility may result in an ultimate decrease in overall traffic in the area depending on the use of the Site in the post-closure period.

4.7 Visual

The potential for visual effects associated with the Facility, was assessed in the *Visual Assessment - Technical Study Report* for both the 140,000 tpy and potential future 400,000 tpy scenarios. This *Visual Assessment- Technical Study Report* included consideration and assessment of the following:

- The sensitivity of the landscape and the identified receptors to the potential change in the visual aesthetics that would result from the development of the Facility;
- The magnitude of the potential effects on the landscape and the identified receptors resulting from the development of the Facility; and,
- The anticipated overall level of effect on each identified receptor.

The visual impact assessment focused on:

- Visibility of the Durham/York Thermal Treatment Facility structures;
- Effects on receptors; and,
- Local community viewshed analysis.

4.7.1 Visibility during Construction

Visual effects associated with construction would include site clearing, grubbing, and associated ground disturbance, which may be considered unsightly. Large construction equipment could be visible from different vantages around the Site, potentially resulting in visual disturbances.

The duration of the construction period for the 140,000 tpy Facility is currently anticipated to be approximately 30 months. However, construction activities would take place in stages. The early stages of construction would have the greatest potential for visual effects during this period; however, this intensive stage of construction will be of short duration.

The maximum design capacity of the Facility (400,000 tpy), would include the addition of structures and an additional stack adjacent to the west side of the 140,000 tpy footprint. If the potential expansion is required, much of the initial ground preparation will have already taken place during construction of the 140,000 tpy Facility. The duration and extent of visual effects from construction of the expanded Facility would be similar to or of lesser extent than the effects from initial construction of the 140,000 tpy Facility.

4.7.2 Visibility during Operation

140,000 tpy Base Case

The visual effects associated with the Facility during operation, considered the Facility, and specific structures associated with the Facility, including the buildings and Facility stacks.

Within 1 km of the Site, other industrial facility structures are as visible, if not more visible, than the Facility. Currently, two commercial properties, Copart Auto Auctions and Manheim Oshawa Auctions are situated within the Clarington Energy Business Park (CEBP). Additionally, as the Facility would be situated between these commercial properties, the Courtyce Water Pollution Control Plant and the Clarington Energy Business Park, when travelling along the Highway 401 and local thoroughfares, the addition of the Facility would not represent a considerable change to the current landscape.

The visual characteristics of the Facility and the adjacent industrial landscape type are considered to exhibit minimal scenic attributes with respect to landscape distinction. As the CEBP is built-out and the proposed Highway 407 interchange ramps are developed, this will increase the industrialization of the landscape, resulting in a minimal overall visual sensitivity and reduced landscape sensitivity within 1 km of the Facility.

The Facility will be visible from within 1 km, and no mitigation is possible to reduce the visual effects of the Facility due to the minimal viewing distance from the adjacent roadways. The presence of the Facility cannot be readily shielded from the adjacent roadways, and would result in a change to the existing local landscape for the duration of the operational period for the Facility.

It is possible that on days with very low temperatures, water vapour emissions from the stack may be visible. However, this will be dependent on local climate conditions.

Lighting from the Facility is not expected to create a nuisance at nearby receptors as the exterior lighting system has been designed to minimize nuisance lighting on neighbouring receptors. For an elevated light source, such as the stack and other process units, as required by the Canadian Aviation Regulations, use of low intensity, or slow flashing white lights is recommended to decrease potential nuisance effects on nearby receptors, and to reduce potential effects on wildlife (i.e., bird collisions).

Development of the Facility would be compatible with the landscape character and local and regional distinctiveness, in keeping with the current land use designations and zoning of the Clarington Energy Business Park. There are no seasonal residents (i.e., cottagers), and very few permanent residents in this area. While there is some recreational use within the LSSA, the main source of potential direct effects would be to the Waterfront Trail users. These recreationists already make use of the trail system, which traverses other highly industrial areas in the Oshawa area and through Darlington Nuclear Generating Station property. Overall, the addition of the Facility will be a source of visual intrusion, and to a lesser extent, as a visual obstruction of Lake Ontario.

Receptors within the CSSA would remain largely unaffected by activities during the construction and operational periods of the Facility.

As described in the Host Community Agreement, Durham will incorporate a cash allowance of up to nine million dollars for the provision of architectural treatments and upgrades to the Facility which would reduce the visual impact that could result from the presence of the Facility.

Hedgerows and small woodlots occur throughout the LCSA, providing some visual obstruction from various vantages. Additionally, a berm of approximately 350 m by 800 m with an average elevation of 25 to 30 m is situated to the east of the site, associated with the Ontario Power Generation's Darlington Nuclear Generating Station. This berm would block much of the visual effects to the east. If visual concerns are raised by receptors in the vicinity of the Facility then various strategies towards mitigating these effects would be assessed, such as possibly planting trees or other suitable vegetation at the receptor location to provide a screen against the line of the sight of the Facility

The potential for visual effects from the development of a new facility is highly subjective and varies across receptors. However, due to the presence of existing industrial structures and commercial buildings a certain level of visual impact is already present. The Facility is being constructed in an area that is not a pristine landscape but, rather, one that has already been influenced by human activities. As a result, the cumulative effect of the Facility in addition to other planned and disclosed future projects, given the presence of the other existing structures in the landscape, would have a minimal effect on the landscape, while having an overall medium level effect on some receptors within the LSSA and CSSA.

400,000 tpy Maximum Design Capacity

The magnitude and sensitivity of the potential visual effect on receptors within the LSSA and CSSA have been assessed for the 400,000 tpy scenario and a viewshed analysis was undertaken. The future case potential expansion of the Facility to the 400,000 tpy scenario would include the addition of approximately 14 structures, including an additional stack. The two stacks and the upper portions of the process units of the 400,000 tpy scenario Facility would continue to be the most prominent features

that would be visible from within the PSVSA. Only the tallest structures, specifically the stacks, could be visible within the broader LCSA and on a Regional basis however, the visibility of the stacks is affected by distance and the presence of vertical obstructions.

The baseline visual characteristics of the area for the 400,000 tpy Facility scenario would include the initial 140,000 tpy scenario Facility. Additionally, future projects in the Clarington Energy Business Park would also act to reduce the landscape magnitude and sensitivity to the expansion scenario.

It should also be noted that the sensitivity of the receptors to the potential future case expansion of the Facility to 400,000 tpy scenario would likely be much reduced from those values identified for the 140,000 tpy scenario. As the built character of the Clarington Energy Business Park would be greater than what is currently present, the expansion would not add considerably to the visual characteristics of the PSVSA.

Development of the 400,000 tpy scenario would be considered to be a relatively minor additional visual component when existing and planned future developments are taken into account. In the future case, other existing projects in the PSVSA and LCSA would include the expansion of express toll route Highway 407 to connect to Highway 401 in the vicinity of the Facility, the expansion of the existing Darlington Nuclear Generating Station, and Clarington Energy Business Park would contain more business and industry than currently present.

Future Build-out of the CEBP Visual Conditions

The presence of additional facilities and infrastructure in the future within the CEBP (i.e., the proposed OPG buildings, Energy Drive) and in the immediate area (i.e., Highway 407 expansion interchange ramps) are situated in relatively close proximity to the Facility and would obstruct the view of the Facility from other locations within the CEBP or the LSSA. Employees and visitors to the OPG building and visitors centre and Energy drive are expected to experience the greatest visual effect from the construction and operation of the Facility. Based on the level of interest in their environment, and duration of exposure to the views, there would be an overall medium level of visual impact to these locations. It is expected that users of Highway 401 and 407 will experience a negligible effect to the casual nature of the viewing opportunities, however due to the high number of users of these major thoroughfares, this would result in an overall medium level of visual effect.

4.7.3 Visibility during Decommissioning (Post-closure)

The visual effects associated with post-closure/decommissioning, are expected to be similar to those experienced during construction and of similar duration. Demolition and removal of structures at the Facility would likely occur first and could be the most visually apparent phase of the decommissioning, despite its expected short-term timeframe. These activities could potentially include the presence of piles of debris, demolition equipment, and land remediation activities on the Site.

During the post-closure period, there would be minimal visual effects during the early phase of decommissioning, as tall structures would be dismantled. The overall effects of decommissioning would be positive as the removal of the Facility would result in a less obstructed skyline. However, at the time of decommissioning, the CEBP would be built-out such that these additional facilities and structures

would act to obstruct the view of the activities on the Site for many nearby receptors. These decommissioning activities would be temporary in nature and the overall effect experienced by receptors for the decommissioning and post-closure period is anticipated to be minimal.

4.8 Application of Social/Cultural Criteria

The compatibility of the Facility under the 140,000 tpy scenario and the 400,000 tpy Facility scenario, with existing and proposed land uses generally considered:

- the baseline (existing) and proposed land uses in close proximity to the Site determined through various studies and investigations undertaken during the EA including research and field work, as documented in Section 3.0; and,
- the results of the various technical study reports as documented in Sections 4.1 through 4.7, which assessed the potential effects to the environment of the Facility.

As noted in Sections 4.1 through 4.7 there are little to no differences between the potential effects to the environment of the Facility at 140,000 tpy versus 400,000 tpy. Therefore the evaluation of the net effects of the Facility on the social/cultural environment presented as follows, would apply to both the 140,000 tpy and the 400,000 tpy scenarios.

4.8.1 Potential for Disruption to Use and Enjoyment of Residential Properties

The “Potential for Disruption to Use and Enjoyment of Residential Properties” considered the potential for disruption of residential properties in the LSSA during the construction, operational and decommissioning/post-closure periods.

There are a total of three residences within one kilometre (the LSSA), one of which is abandoned. One of the two occupied residences is rented and the other is owned by the current resident. No residential properties are located along the haul-route. The Facility does not require the displacement of any residents from their properties, however, in the longer term the designated land use within the immediate vicinity of the Site within the Clarington Energy Business Park will encourage the development of commercial/light industrial land uses.

Effects were examined based on the potential effects, mitigation measures and net effects related to odour, dust, noise, visual intrusion and traffic as determined in the relevant technical study reports and in the case of litter and vermin was determined through the examination of the Covanta proposal and professional judgement and are summarized as follows.

Table 4-1 Potential for Disruption to Use and Enjoyment of Residential Properties

Parameter	Potential Effect	Mitigation	Net Effects
Odour	<p>Two occupied residential properties are located within 1 km of the Site.</p> <p>Minimal to no odour is expected to residential receptors during construction, or decommissioning/post-closure.</p> <p>Potential for odour from post-diversion residual waste received during operations.</p>	<p>Mitigation of odours during operation includes:</p> <p>Management of residual waste on enclosed vehicles and on enclosed tipping floor</p> <p>Air from tipping floor is used as combustion air, destroying odours and maintaining negative pressure within receiving area</p>	No Net Effects
Noise	<p>Two occupied residential properties are located within 1 km of the Site.</p> <p>Some potential exists for short-term noise and vibration impacts to residential receptors during the construction phase of the facility under worst-case conditions, in regards to pile driving and peak construction traffic.</p> <p>Predicted noise levels from Facility Operations at all nearby residential receptors are less than the applicable criteria for the operational scenario assessed for the Facility. No potential exists for noise from traffic during operations as the level of increased traffic during the operational period is minimal.</p>	<p>Pile driving effects could be reduced through alternative technologies, controls, and scheduling.</p> <p>Construction vehicle traffic is predicted to be acceptable against applicable criteria, but short-term (i.e., 1-hour) effects during peak demand are possible. These peaking issues can be reduced through scheduling and planning of vehicle trips.</p> <p>No mitigation measures are predicted to be necessary at the Facility during regular operation as the Facility meets MOE noise criteria. Potential mitigation measures can be included in the Facility design to ensure noise criteria are met including equipment controls; setback limitations or property-line barriers. The need for controls will be confirmed during detailed design.</p>	<p>Temporary Short -term Net Effect during Construction</p> <p>No Long term Net Effect</p>
Dust	<p>Two occupied residential properties are located within 1 km of the Site.</p> <p>Dust emissions from construction and for decommissioning activities could have a temporary effect on local air quality.</p> <p>Dust emissions from Operations would be managed via facility design and operational controls.</p>	<p>Dust control during construction can be accomplished through a number of physical and operational methods such as construction exits, timely revegetation, watering, and staging of work.</p> <p>Mitigation of dust during operation includes:</p> <ul style="list-style-type: none"> ▪ Management of residual waste on enclosed vehicles and on enclosed tipping floor ▪ Air from tipping floor is used as combustion air, destroying odours 	<p>Temporary Short term Net Effect during Construction</p> <p>No Long term Net Effect</p>

Parameter	Potential Effect	Mitigation	Net Effects
		<p>and maintaining negative pressure within receiving area</p> <ul style="list-style-type: none"> Management of ash and residues using various measures to reduce ash emissions. 	
Vermin/Vectors	<p>Two occupied residential properties are located within 1 km of the Site.</p> <p>Minimal potential to attract vermin/vectors during construction and decommissioning.</p> <p>Some potential to attract vermin/vectors during operations as the facility will be accepting residual waste with a small proportion of food residuals.</p>	Pest/vector control subcontracted to a qualified local company.	No Net Effects
Litter	<p>Two occupied residential properties are located within 1 km of the Site.</p> <p>Minimal potential for litter during construction and decommissioning.</p> <p>Some potential for litter during operations, but minimized based on management of residual waste in enclosed vehicles and buildings. Any off-site litter that leaves the Site could be a nuisance to nearby residential receptors.</p>	Litter control throughout the site will be routinely conducted on a daily basis.	No Net Effects
Traffic	<p>No residential properties are located along the haul route.</p> <p>The intersections and existing road network along the haul route can accommodate traffic associated with construction, although some pavement improvements may be required.</p> <p>No traffic control measures are required on the adjacent road network to accommodate traffic during operations of the Facility. Traffic during operations will account for 2 to 3% of the total trips generated in the fully built-out CEBP.</p>	None required	No Net Effects

Parameter	Potential Effect	Mitigation	Net Effects
Visual	<p>The two residential receptors have a clear line of sight to the Facility.</p> <p>During construction and decommissioning these residential receptors could experience short-term visual disturbance.</p> <p>During operation these residential receptors will be able to view the majority of the buildings on the Site, and are expected to experience a medium level visual effect. Some potential visual disturbance is already present as the landscape has already been influenced by human activities.</p>	<p>It is not possible to eliminate visual effects within 1 km of the Site.</p> <p>To reduce the potential visual impact of the facility, Durham has agreed to provide a cash allowance of \$9 million for architectural treatments and upgrades to the Facility. Various measures can be considered including:</p> <ul style="list-style-type: none"> ▪ Facility design including choice of neutral colours and materials; ▪ Planting of vegetative screens; ▪ Choice of exterior lighting systems to minimize nuisance effects. 	Medium Level Long term Net Effects

Considering that there are very few residential receptors (2) within the LSSA and considering the potential effects, mitigation measures and net effects for the various parameters as documented in the supporting Technical Study Reports and as outlined above, the Facility is anticipated to have minimal overall net effects in regards to the “Potential for Disruption to use and enjoyment of residential properties”.

4.8.2 Potential for Changes in Community Character

The “Potential for Changes in Community Character” considered the potential for effects in the broader community, particularly residential neighbourhoods, in the CSSA during the construction, operational and decommissioning/post closure periods.

The proximity of existing and planned residential neighbourhoods within 5 km (the CSSA) were considered along with the proximity of the Site to neighbouring communities. The compatibility of the Facility with the proposed developments and other major projects in the area was considered.

The nearest residential area designated as future urban residential is 3.2 kilometres from the Site to the northwest on the outskirts of the built-up area of Courtice. No existing or planned residential neighbourhoods are located along the haul-route off of the 400 series highways. Over 1 km to the north of the Facility, on the north side of the 401, there are a scattering of residences along Baseline Road interspersed with commercial properties representing the Hamlet of Darlington. The outskirts of Oshawa are located approximately 5 km to the west, the outskirts of the community of Courtice are located approximately 4 km northwest of the Site and the outskirts of Bowmanville are located approximately 5 km to the northeast of the Site. The area within 5 km around the Site is representative of the southerly portion of the municipality of Clarington, with a current landscape that is a mix of rural, agricultural, residential and commercial characteristics and a relatively low population density.

In regards to the existing community characteristics around the Site, the Site is currently surrounded by commercial/industrial features (including two auto auction businesses, the Courtice Water Pollution Control Plant, the CN rail line to the south of the Site and the Darlington Nuclear Generating Station to the east) and undeveloped land that is intended to be developed as part of the Clarington Energy Business Park.

Physical effects on these communities, that could affect community character were examined based on the potential effects, mitigation measures and net effects related to odour, dust, noise, visual intrusion and traffic as determined in the relevant technical studies and are summarized as follows.

Table 4-2 Potential for Changes in Community Character

Parameter	Potential Effect	Mitigation	Net Effects
Odour	<p>Minimal to no odour effects are expected over the construction, operational, and decommissioning period as:</p> <ul style="list-style-type: none"> ▪ the closest 'community' (the hamlet of Darlington) is located over 1 km to the north of the Facility and has a relatively low density of residential households ▪ the closest existing or planned built up area is located 3.2 km to the northwest of the Site; and, ▪ as the design and operations of the facility would minimize the potential for odours of sufficient concentration to be detected at these distances. 	None Required	No Net effects
Noise	<p>Some potential exists for short-term noise and vibration impacts to residential receptors in the hamlet of Darlington during the construction phase of the facility under worst-case conditions, in regards to pile driving and peak construction traffic. No construction noise effects are expected to the broader community outside the 1km LSSA.</p> <p>No noise effects are expected to the broader community outside the 1km LSSA over the operational period as predicted noise levels at all nearby residential receptors are less than the applicable criteria for the operational scenario assessed for the Facility.</p>	<p>Pile driving effects could be reduced through alternative technologies, controls, and scheduling.</p> <p>Construction vehicle traffic is predicted to be acceptable against applicable criteria, but short-term (i.e., 1-hour) effects during peak demand are possible. These peaking issues can be reduced through scheduling and planning of vehicle trips.</p>	<p>Temporary Short -term Net Effect during Construction</p> <p>No long term Net Effects</p>
Dust	<p>No dust effects are expected over the construction, operational, and decommissioning period as:</p> <ul style="list-style-type: none"> ▪ the closest 'community' (the Hamlet of 	None Required	No Net effects

Parameter	Potential Effect	Mitigation	Net Effects
	<p>Darlington) is located over 1 km to the north of the Facility and has a relatively low density of residential households</p> <ul style="list-style-type: none"> the closest existing or planned built up area is located 3.2 km to the northwest of the Site; and, as the design and operations of the Facility would minimize the potential for dust emissions. 		
Vermin/Vectors	<p>No effects from Vermin/Vectors are expected over the construction, operational, and decommissioning period as:</p> <ul style="list-style-type: none"> the closest 'community' (the Hamlet of Darlington) is located over 1 km to the north of the Facility and has a relatively low density of residential households the closest existing or planned built up area is located 3.2 km to the northwest of the Site. 	None Required	No Net effects
Litter	<p>No litter effects are expected over the construction, operational, and decommissioning period as:</p> <ul style="list-style-type: none"> the closest 'community' (the Hamlet of Darlington) is located over 1 km to the north of the Facility and has a relatively low density of residential households the closest existing or planned built up area is located 3.2 km to the northwest of the Site; and, as the design and operations of the facility would minimize the potential for litter emissions. 	None Required	No Net effects
Traffic	<p>No residential communities are located along the haul route between highway 401 and the Site.</p> <p>The intersections and existing road network along the haul route can accommodate traffic associated with construction, although some pavement improvements may be required.</p> <p>No traffic control measures are required on the adjacent road network to accommodate traffic during operations of the Facility. Traffic during operations will</p>	None required	No Net Effects

Parameter	Potential Effect	Mitigation	Net Effects
	account for 2 to 3% of the total trips generated in the fully built-out CEBP.		
Visual	<p>During construction and decommissioning the closest residential communities are unlikely to experience any short-term visual disturbance.</p> <p>During operation the closest residential communities (including the Hamlet of Darlington) may be able to view a portion of the Stack, and are expected to experience a medium level visual effect, primarily due to the permanent nature of the change to the viewscape and the high number of viewers with a proprietary interest.</p> <p>Due to the built-up nature of the population centres that are further from the Site the Facility would only be a moderate change to the landscape. Additionally, the greater distance of these communities and the intervening visual obstructions would interfere with the line of sight to the Facility. These factors would result in unremarkable/minimal changes in the components or character of the landscape.</p>	<p>To reduce the potential visual impact of the facility, Durham has agreed to provide a cash allowance of \$9 million for architectural treatments and upgrades to the Facility. Various measures can be considered including:</p> <ul style="list-style-type: none"> ▪ Facility design including choice of neutral colours and materials; ▪ Planting of vegetative screens; ▪ Choice of exterior lighting systems to minimize nuisance effects. 	<p>No Short-term Net Effects</p> <p>Minimal Long-term Net Effects</p>

The area within 5 km of the Site is a mix of rural, agricultural, residential and commercial characteristics and has a relatively low population density. The Clarington 01 Site is within an area designated for development as employment lands and is part of the Clarington Energy Business Park, and is situated well away from built up communities. Development of the Facility is expected to result in unremarkable/minimal changes in the components or character of the landscape.

Considering the significant distance from the Facility to the nearest existing and planned communities, the characteristics of the current landscape and considering the potential effects, mitigation measures and net effects for the various parameters as documented in the supporting Technical Study Reports and as outlined above, the Facility is anticipated to have minimal to no overall net effects in regards to the “Potential for changes in Community Character”. The Facility will be one contributor to the transition of the immediate area to commercial/industrial uses in accordance with the planned development of the CEBP.

In regards to the social relations and interactions of the Facility in the community, there continues to be good participation in consultation processes and the general community continues to express various concerns regarding the Facility. The results of the consultation process and responses received from the community regarding the Draft Interim Environmental Assessment and Site Specific Studies have

been documented and addressed in the EA and have been considered in completion of this Social/Cultural Assessment.

As documented in Section 2.1.2, a total of 243 residents attended the two public information centres held in May 2009 (12th and 19th). Of those attendees that provided their addresses, around half of these indicated that they resided relatively near (in communities within 5 km) the proposed Facility. This would represent a very small proportion of the residents in the communities of Oshawa, Courtice and Bowmanville that would live within 5 km of the Site. The majority of the remaining attendees that provided addresses reside in other communities within Durham Region. The main themes of the comments received from the attendees were in regards to potential health effects, air emissions, cost of the Facility and the need to consider other waste management alternatives. The comments provided generally stressed these broader/global themes regarding health, safety and well-being, rather than being specific to the immediate physical effect of the Facility on the character of the community such as visual effects. Individual concerns regarding health, safety and well-being are regarded as general concerns that could affect a resident's perception regarding the character of their community.

Various impact management measures have been identified (as discussed in detail in Section 5) that could serve to provide a forum to discuss and address community concerns including the formation of the Facility Site Liaison Committee and the development of a Community Relations Plan (CRP) to establish a plan through which Durham, York, and Covanta staff would relate to the local community. The proposed environmental surveillance program will provide the public with information regarding stack, ambient air and soil monitoring test results, addressing concerns related to human health risks associated with the Facility.

4.8.3 Potential for Disruption to Use and Enjoyment of Public Facilities and Institutions

The "Potential for Disruption to Use and Enjoyment of Public Facilities and Institutions" considered the potential for effects in the LSSA considering the construction, operational and decommissioning periods.

The number, type and location of public facilities and institutions located within 1 km (the LSSA) were considered. There are two public facilities or institutions located within 1 km of the Site, including the Durham Regional Police Service unit to the north of Highway 401 and the Courtice Water Pollution Control Plant located to the southwest of the Site. Consideration of the potential effects on public facilities and institutions considered the potential effects on both the employees of such facilities and public users of these facilities. Neither facility represents a particularly sensitive public facility (i.e., hospital or daycare) as neither facility would have a high rate of public visitation or requirement for intensive outdoor use of the areas surrounding the Facility.

Effects were examined based on the potential effects, mitigation measures and net effects related to odour, dust, noise, vermin, litter, visual intrusion and traffic as determined in the relevant Technical Study Reports and are summarized as follows.

Table 4-3 Potential for Disruption to Use and Enjoyment of Public Facilities and Institutions

Parameter	Potential Effect	Mitigation	Net Effects
Odour	<p>Minimal to no odour is expected affect Public Facilities or Institutions during construction, or decommissioning/post-closure.</p> <p>Potential for odour from post-diversion residual waste received during operations.</p>	<p>Mitigation of odours during operation includes:</p> <ul style="list-style-type: none"> ▪ Management of residual waste on enclosed vehicles and on enclosed tipping floor. ▪ Air from tipping floor is used as combustion air, destroying odours and maintaining negative pressure within receiving area. 	No Net effects
Noise	<p>Some potential exists for short-term noise and vibration impacts to Public Facilities or Institutions during the construction phase of the facility under worst-case conditions, in regards to pile driving and peak construction traffic.</p> <p>Predicted noise levels at the residential receptors close to these Public Facilities or Institutions are less than the applicable criteria for the operational scenario assessed for the Facility.</p>	<p>Pile driving effects could be reduced through alternative technologies, controls, and scheduling.</p> <p>Construction vehicle traffic is predicted to be acceptable against applicable criteria, but short-term (i.e., 1-hour) effects during peak demand are possible. These peaking issues can be reduced through scheduling and planning of vehicle trips.</p> <p>No mitigation measures are predicted to be necessary at the Facility during regular operation as the Facility meets MOE noise criteria. Potential mitigation measures can be included in the Facility design to ensure noise criteria are met including equipment controls; setback limitations or property-line barriers. The need for controls will be confirmed during detailed design.</p>	<p>Temporary Short-term Net Effect during Construction</p> <p>No Long-term Net Effects</p>
Dust	<p>Dust emissions from construction and for decommissioning activities could have a temporary effect on local air quality.</p> <p>Dust emissions from Operations would be managed via Facility design and operational controls.</p>	<p>Dust control during construction can be accomplished through a number of physical and operational methods such as construction exits, timely revegetation, watering, and staging of work.</p> <p>Mitigation of dust during operation includes:</p> <ul style="list-style-type: none"> ▪ Management of residual waste on enclosed vehicles and on enclosed tipping floor. ▪ Air from tipping floor is used as combustion air, destroying odours and maintaining negative pressure within receiving area. ▪ Management of ash and residues 	<p>Temporary Short-term Net Effect during Construction</p> <p>No Long-term Net Effects</p>

Parameter	Potential Effect	Mitigation	Net Effects
		using various measures to reduce ash emissions.	
Vermin/Vectors	<p>Minimal potential to attract vermin/vectors during construction and decommissioning.</p> <p>Some potential to attract vermin/vectors during operations as the facility will be accepting residual waste with a small proportion of food residuals.</p>	Pest/vector control subcontracted to a qualified local company.	No Net Effects
Litter	<p>Minimal potential for litter during construction and decommissioning.</p> <p>Some potential for litter during operations, but minimized based on management of residual waste in enclosed vehicles and buildings. Any offsite litter that leaves the Site could be a nuisance to nearby Public Facilities or Institutions.</p>	Litter control throughout the Site will be routinely conducted on a daily basis.	No Net Effects
Traffic	<p>No Public Facilities or Institutions are located along the haul route.</p> <p>The intersections and existing road network along the haul route can accommodate traffic associated with construction, although some pavement improvements may be required.</p> <p>No traffic control measures are required on the adjacent road network to accommodate traffic during operations of the Facility. Traffic during operations will account for 2 to 3% of the total trips generated in the fully built-out CEBP.</p>	None required.	No Net Effects
Visual	The two Public Facilities or Institutions have a partially obscured line of sight to the Facility. In the case of the Courtyce WPCP, the only structure visible is the stack. In regards to the Durham Regional Police Service unit, a portion of the stack could be seen from this location, but the majority of the facility will be obscured by existing vegetation and commercial buildings as well as vertical relief.	<p>It is not possible to eliminate visual effects within 1 km of the Site.</p> <p>To reduce the potential visual impact of the facility, Durham has agreed to provide a cash allowance of up to \$9 million for architectural treatments and upgrades to the Facility. Various measures can be considered including:</p> <ul style="list-style-type: none"> ▪ Facility design including choice of neutral colours and materials; ▪ Planting of vegetative screens; 	Medium Level Long term Net Effects

Parameter	Potential Effect	Mitigation	Net Effects
	<p>During construction and decommissioning these receptors might experience some short-term visual disturbance.</p> <p>During operation these Public Facilities or Institutions are expected to experience a medium level visual effect. Some potential visual disturbance is already present as the landscape has already been influenced by human activities.</p>	<ul style="list-style-type: none"> Choice of exterior lighting systems to minimize nuisance effects. 	

Considering that there are only two (2) Public Facilities or Institutions within the LSSA and considering the potential effects, mitigation measures and net effects for the various parameters as documented in the supporting Technical Study Reports and as outlined above, the Facility is anticipated to have minimal overall net effects in regards to the “Potential for Disruption to Use and Enjoyment of Public Facilities or Institutions”.

4.8.4 Potential for Disruption to use and Enjoyment of Cultural and Recreational Resources

The “Potential for Disruption to Use and Enjoyment of Cultural and Recreational Resources” considered the potential for effects in both the LSSA and CSSA considering the construction, operational and decommissioning/post-closure periods.

The number, type and location of cultural and recreational resources located within 1 km (the LSSA) and the broader community (the CSSA) were considered.

There are no buildings, structures, cemeteries, plantings or other landscape structures or features within 1 km of the Site that would be considered to constitute a built heritage feature or cultural landscape.

There are four recreational resources located within the LSSA and in the CSSA within relatively close proximity to the Site. Potential effects on these resources would be considered to represent the ‘worst case’ potential effects to cultural and recreational resources given their proximity to the Site and that the primary use of all three facilities is out-of-doors. They include the:

- Waterfront Trail – the Waterfront Trail runs west to east along the shore of Lake Ontario, and loops around the Site to the north with the trail head being located just over 1 km to the east of the Site;
- Darlington (Hydro) Sport Fields (Ontario Power Generation) – sport fields (upper and lower), located 1 km to the east;
- Darlington Provincial Park – located approximately 2 km to the west; and,
- The Lake Ontario shore – located approximately 500 m to the south of the Site.

Effects were examined based on the potential effects, mitigation measures and net effects related to odour, dust, noise, litter, visual intrusion and traffic as determined in the relevant Technical Study Reports and are summarized as follows.

Table 4-4 Potential for Disruption to Use and Enjoyment of Cultural and Recreational Resources

Parameter	Potential Effect	Mitigation	Net Effects
Odour	<p>Minimal to no odour is expected to recreational receptors during construction, or decommissioning/post-closure.</p> <p>Potential for odour from post-diversion residual waste received during operations.</p>	<p>Mitigation of odours during operation includes:</p> <ul style="list-style-type: none"> ▪ Management of residual waste on enclosed vehicles and on enclosed tipping floor; and ▪ Air from tipping floor is used as combustion air, destroying odours and maintaining negative pressure within receiving area. 	No Net Effects
Noise	<p>Some potential exists for short-term noise and vibration impacts to recreational receptors in close proximity to the Site (within 1km) during the construction phase of the facility under worst-case conditions, in regards to pile driving and peak construction traffic. However, the use of these facilities is transitory.</p> <p>Predicted noise levels at all nearby residential receptors within 1 km are less than the applicable criteria for the operational scenario (either 140,000 tpy or 400,000 tpy) assessed for the Facility and therefore minimal to no effect is anticipated for the recreational facilities that are generally further away and as the use of these facilities is transitory.</p>	<p>Pile driving effects could be reduced through alternative technologies, controls, and scheduling.</p> <p>Construction vehicle traffic is predicted to be acceptable against applicable criteria, but short-term (i.e., 1-hour) effects during peak demand are possible. These peaking issues can be reduced through scheduling and planning of vehicle trips.</p> <p>No mitigation measures are predicted to be necessary at the Facility during regular operation as the Facility meets MOE noise criteria. Potential mitigation measures can be included in the Facility design to ensure noise criteria are met including equipment controls; setback limitations or property-line barriers. The need for controls will be confirmed during detailed design.</p>	No Net Effects
Dust	<p>Dust emissions from construction and for decommissioning activities could have a temporary effect on local air quality.</p> <p>Dust emissions from Operations would be managed via facility design and operational controls.</p>	<p>Dust control during construction can be accomplished through a number of physical and operational methods such as construction exits, timely revegetation, watering, and staging of work.</p> <p>Mitigation of dust during operation includes:</p> <ul style="list-style-type: none"> ▪ Management of residual waste on enclosed vehicles and on enclosed tipping floor. ▪ Air from tipping floor is used as combustion air, destroying odours and maintaining negative pressure within receiving area. 	<p>Temporary Short-term Net Effects</p> <p>No Long-term Net Effects</p>

Parameter	Potential Effect	Mitigation	Net Effects
		<ul style="list-style-type: none"> Management of ash and residues using various measures to reduce ash emissions. 	
Litter	<p>Minimal potential for litter during construction and decommissioning.</p> <p>Minimal potential for effects from litter on recreational resources during operations, based on proximity to these receptors and management of residual waste in enclosed vehicles and buildings.</p>	Litter control throughout the Site will be routinely conducted on a daily basis.	No Net Effects
Traffic	<p>No recreational properties are located along the haul route.</p> <p>The intersections and existing road network along the haul route can accommodate traffic associated with construction, although some pavement improvements may be required.</p> <p>No traffic control measures are required on the adjacent road network to accommodate traffic during operations of the Facility. Traffic during operations will account for 2 to 3% of the total trips generated in the fully built-out CEBP.</p>	None required.	No Net Effects
Visual	<p>The three closest recreational receptors have varying lines of sight to the Facility:</p> <ul style="list-style-type: none"> The Waterfront Trail will have views of the Facility from a number of vantage points; Looking west from the Darlington (Hydro) Sports Fields, the visible structures would include the stack and the process buildings; Looking east from Darlington Provincial Park, the stack can be seen however the majority of the process buildings are obscured by existing vegetation; and, Looking north from the Lake Ontario Short, only visible 	<p>It is not possible to eliminate visual effects within 1 km of the Site.</p> <p>To reduce the potential visual impact of the facility, Durham has agreed to provide a cash allowance of \$9 million for architectural treatments and upgrades to the Facility. Various measures can be considered including:</p> <ul style="list-style-type: none"> Facility design including choice of neutral colours and materials; Planting of vegetative screens; and, Choice of exterior lighting systems to minimize nuisance effects. 	Medium Level Long term Net Effects

Parameter	Potential Effect	Mitigation	Net Effects
	<p>structure would be the stack.</p> <p>During construction and decommissioning these recreational receptors could experience short-term visual disturbance.</p> <p>During operation these recreational receptors are expected to experience a medium level visual effect. Some potential visual disturbance is already present as the landscape has already been influenced by human activities.</p>		

Considering the number and type of recreational land uses within the LSSA and in close proximity to the Site within the CSSA and considering the potential effects, mitigation measures and net effects for the various parameters as documented in the supporting Technical Study Reports and as outlined above, the Facility is anticipated to have minimal overall net effects in regards to the “Potential for Disruption to Use and Enjoyment of Cultural and Recreational Resources”.

4.8.5 Compatibility with Existing Land use Designations and Proposed Land use Changes

The “Compatibility with Existing Land Use Designations and Proposed Land Use Changes” considered the compatibility with existing and proposed land use within the LSSA, considering the operational period.

The existing land use designations and the proposed land use changes on and adjacent to the Site were determined and noted in Section 3.2, and are summarized as follows:

Table 4-5 Land Use Designations

Official Plan Designation	<p><u>Regional</u> – Employment Area.</p> <p><u>Municipal</u> – Prestige Employment / Light Industrial - Holding General Industrial Zone, Site is designated as part of the Clarington Energy Business Park.</p>
Designated Land Use Adjacent to Site	<p><u>North</u> – Prestige Employment / Light Industrial.</p> <p><u>South</u> – CN Rail line.</p> <p><u>East</u> – Light Industrial.</p> <p><u>West</u> – Light Industrial.</p>
Description of Land Use Adjacent to Site	<p><u>North</u> – Auto Dealer Exchange.</p> <p><u>South</u> – CN Rail line, Courtice Water Pollution Control Plant.</p> <p><u>East</u> – Undeveloped land currently used for agricultural purposes, Auto Auction, Waterfront Trail runs along east side of property, Darlington Nuclear Generating Station approximately 1.8 km to the east.</p> <p><u>West</u> – Undeveloped land currently used for agricultural purposes.</p>

The Regional Official Plan land use designations within the one (1) km radius of the Clarington 01 Site consist of Employment Areas, Waterfront Areas, and Major Open Space Areas. The one (1) km eastern boundary touches the Darlington Nuclear Generating Station. This is illustrated in Figure 3-2, Durham Official Plan Land Use. The Area Municipal Official Plan land use designations within the one (1) km radius of the Site consist of the Clarington Energy Business Park, Light Industrial, Prestige Industrial, Waterfront Greenway and Environment Protection Area and Utility. This is illustrated in Figure 3.3, Clarington Official Plan Land Use. Field observation of the area determined that the one (1) km radius includes commercial properties, agricultural land and three residential properties (one of which is abandoned). There are park and recreation lands (the Darlington (Hydro) Sport Fields) one (1) kilometre east of the Site.

The existing land uses along the proposed haul route include agricultural lands, commercial properties, and one abandoned/derelict residential property. The Regional Official Plan land use designation along the haul route is Employment Area. The Municipality of Clarington Official Plan land use designation along the haul route is Business Park. The proposed inbound and outbound haul route and the Regional and Area Municipal land use designations along it are also illustrated in Figure 3-2 and Figure 3-3 respectively.

The effects were examined based on the potential effects, mitigation measures and net effects related to odour, noise, visual intrusion and traffic determined in the relevant Technical Study Reports as well as other features related to the Facility as documented in the Business Case and/or Covanta proposal regarding the compatibility of the Facility with the current and proposed employment area/business park land uses in the area as follows.

Table 4-6 Compatibility with Existing Land Use Designations and Proposed Land Use Changes

Parameter	Potential Effect	Mitigation	Net Effects
Odour	Potential for odour from post-diversion residual waste received during operations.	Mitigation of odours during operation includes: <ul style="list-style-type: none"> ▪ Management of residual waste on enclosed vehicles and on enclosed tipping floor. ▪ Air from tipping floor is used as combustion air, destroying odours and maintaining negative pressure within receiving area. 	No Net Effects
Noise	No potential effect of noise to adjacent existing or proposed land use designations during operations is expected as, the predicted noise levels at all nearby residential receptors within the same area are less than the applicable criteria for the operational scenario assessed for the Facility.	<ul style="list-style-type: none"> ▪ No mitigation measures are predicted to be necessary at the Facility during regular operation as the Facility meets MOE noise criteria. Potential mitigation measures can be included in the Facility design to ensure noise criteria are met including equipment controls; setback limitations or property-line barriers. The need for controls will 	No Net Effects

Parameter	Potential Effect	Mitigation	Net Effects
		be confirmed during detailed design.	
Dust	Dust emissions from Operations would be managed via Facility design and operational controls.	<p>Mitigation of dust during operation includes:</p> <ul style="list-style-type: none"> ▪ Management of residual waste on enclosed vehicles and on enclosed tipping floor. ▪ Air from tipping floor is used as combustion air, destroying odours and maintaining negative pressure within receiving area. ▪ Management of ash and residues using various measures to reduce ash emissions. 	No Net Effects
Vermin/Vectors	Some potential to attract vermin/vectors during operations as the Facility will be accepting residual waste with a small proportion of food residuals.	Pest/vector control subcontracted to a qualified local company.	No Net Effects
Litter	Some potential for litter during operations, but minimized based on management of residual waste in enclosed vehicles and buildings. Any offsite litter that leaves the Site could be a nuisance to adjacent existing or proposed land use designations.	Litter control throughout the Site will be routinely conducted on a daily basis.	No Net Effects
Traffic	<p>Existing or proposed land use designations located along the haul route would not be negatively affected by use of this route for haul of operational materials as the land use designation on the haul route is Employment Area and Business Park.</p> <p>The intersections and existing road network along the haul route can accommodate traffic associated with construction, although some pavement improvements may be required.</p> <p>No traffic control measures are required on the adjacent existing road network to accommodate traffic during operations of the Facility.</p> <p>Estimates of future traffic scenarios based on the full build out of the Clarington Energy</p>	None required for Operations prior to full build out of the CEBP. The full build out of the CEBP will drive the need for road network improvements.	No Net Effects

Parameter	Potential Effect	Mitigation	Net Effects
	<p>Business Park and the expanded Facility (400,000 tpy) indicates that there would be some requirement for road network improvements (widening of Courtice Road, traffic signals). Traffic during operations will account for 2 to 3% of the total trips generated in the fully built-out CEBP.</p>		
<p>Visual</p>	<p>The Facility will be visible to the majority of existing and proposed land uses within 1 km, and no mitigation is possible to reduce the visual effects of the Facility due to the minimal viewing distance from the adjacent roadways.</p> <p>Within 1 km of the Site, other existing industrial facility structures are as visible, if not more visible, than the Facility. Currently, two commercial properties, Copart Auto Auctions and Manheim Oshawa Auctions are situated within the Clarington Energy Business Park. Additionally, as the Facility would be situated between these commercial properties, the Courtice Water Pollution Control Plant and the Clarington Energy Business Park, when travelling along the Highway 401 and local thoroughfares, the addition of the Facility would not represent a considerable change to the current landscape.</p> <p>The visual characteristics of the Facility and the adjacent industrial landscape type are considered to exhibit minimal scenic attributes with respect to landscape distinction.</p> <p>During operation receptors within 1 km will be able to view the majority of the buildings on the Site, and are expected to experience a medium level visual effect. Some potential visual disturbance is already present as the landscape has already been influenced by human activities.</p>	<p>It is not possible to eliminate visual effects within 1 km of the Site.</p> <p>To reduce the potential visual impact of the facility, Durham has agreed to provide a cash allowance of \$9 million for architectural treatments and upgrades to the Facility. Various measures can be considered including:</p> <ul style="list-style-type: none"> ▪ Facility design and Architecture including choice of neutral colours and materials; ▪ Planting of vegetative screens; and, ▪ Choice of exterior lighting systems to minimize nuisance effects. 	<p>Minimal Net Effects</p>

Considering the existing and proposed land use designations within the LSSA and considering the potential effects, mitigation measures and net effects for the various parameters as documented in the supporting Technical Study Reports and as outlined above, the Facility is anticipated to have minimal overall net effects in regards to the “Compatibility with Existing Land Use Designations and Proposed Land Use Changes”.

The *Durham-York Energy from Waste Facility Business Case*, May 15, 2008 prepared for the Region of Durham by Deloitte and Touche LLP (Business Case) noted that the inclusion of district heating and site works associated with the development of the Facility within the Clarington Energy Business Park (CEBP) would be an attractive feature for enterprises looking to locate their businesses in the CEBP.

This would essentially increase the compatibility of the Facility with the current and proposed land uses in the vicinity which are likely to include commercial and light industrial uses that could benefit from the availability of district heating and potentially district cooling provided by the Facility.

5.0 IMPACT MANAGEMENT

Impact management measures are measures that can be applied to lessen potential negative environmental effects or enhance positive environmental effects. These measures can include prevention, mitigation measures, compensation, or community enhancement initiatives.

In regards to this Social/Cultural Assessment, a series of impact management measures have been outlined in the supporting Technical Study Reports to minimize nuisance effects and their potential to affect the physical and social environment. The majority of mitigation measures that are most closely related to the effects on the social environment have been noted in Section 4.8. The following sections provide a brief summary of the impact management measures from the supporting Technical Study Reports and other supporting documents that are relevant to this Social/Cultural Assessment.

5.1 Summary of Measures in Supporting Technical Studies

A brief synopsis of the impact management measures that are closely related to the effects on the social environment, identified in the Supporting Technical Study Reports is provided in Table 5.1.

Table 5-1 Impact Management Measures

Issue	Summary of Impact Management Measures	Supporting Technical Study Report
Noise	<p>Construction/decommissioning: monitoring and protection plan to address potential noise and vibration impacts associated with the Facility</p> <p>Operational: No mitigation measures are predicted to be necessary at the Facility during regular operation as the Facility meets MOE noise criteria. Potential mitigation measures can be included in the Facility design to ensure noise criteria are met including equipment controls; setback limitations or property-line barriers. The need for controls will be</p>	Acoustic Assessment

Issue	Summary of Impact Management Measures	Supporting Technical Study Report
	confirmed during detailed design.	
Traffic	<p>Construction: road reconstruction/pavement improvements may be required for the section of South Service Road between the interchange and Osborne Road, as well as the section of Osborne Road between South Service Road and the future site access. Pavement testing along the haul route will be completed by the Region of Durham if the Project is approved to confirm if reconstruction/pavement improvements are required.</p> <p>Operational: No impact management measures are required to address current traffic conditions, but upon full build out of the Clarington Energy Business Park some improvements (signals, turning movements, widening of Courtice Road) may be required.</p>	Traffic Assessment
Dust	<p>Construction: various measures including the use of construction exits, temporary and permanent grassing, dust control measures, staging of work and emission controls for construction equipment.</p> <p>Operational: various controls and strategies to control fugitive dust emissions from the Facility including the use of fully enclosed trucks to haul materials, loading and unloading materials in enclosed areas, stabilization of fly ash, residue loading and unloading systems designed to be dust free, and draw of combustion air from above the storage pit, which will maintain a negative pressure in the tipping building and help prevent the escape of dust and odour.</p>	Air Quality Assessment
Odour	<p>Construction: no mitigation necessary until residual waste is received upon which time the operational measures to control odour emissions would be used.</p> <p>Operational: various controls and strategies to control odour emissions including the use of fully enclosed trucks to haul materials, loading and unloading materials in enclosed areas, and draw of combustion air from above the storage pit, which will maintain a negative pressure in the tipping building and help prevent the escape of dust and odour.</p>	Air Quality Assessment
Visual	<p>Construction/Decommissioning: Timely removal of debris would lessen the effect associated with these phases.</p> <p>Operational: No mitigation is possible to reduce the visual effects of the Facility on adjacent roadways to the activities and would result in a change to the existing local (1 km) landscape for the duration of the operational period for the Facility. To reduce the potential visual impact of the facility, Durham has agreed to provide a cash allowance of up to \$9 million for architectural treatments and upgrades to the Facility. Wooded areas and hedgerows could assist in obstructing views of the Facility from various vantages.</p>	Visual Assessment

5.2 Summary of Measures in Other Documentation

Additional impact management measures have been identified in other documentation relevant to the Facility including: the RFP issued by Durham and York to identify the preferred Thermal Treatment Facility Vendor; the Proposal submitted by Covanta Energy who was selected as the preferred Vendor;

recent (Spring/Summer 2009) Committee and Council reports and the Host Community Agreement between Durham and Clarington. A brief summary of the measures outlined in each of these documents is provided below.

5.2.1 Durham-York Decisions (2008) Reflected in the RFP

Durham and York have addressed impact management through a series of decisions made during the competitive process used to select the preferred technology Vendor, and have publicly identified a number of impact management measures that can mitigate the effects of the Project on the social/cultural environment including:

- A requirement that the successful Vendor ensure incorporation into the design and installation of the Facility of the most modern and state-of-the-art emissions control technologies in order to meet or exceed the European Union monitoring and measurement standards and commit to maximum achievable control technology for emissions standards and monitoring;
- An agreement to provide accurate and timely information on emission levels to the public through a variety of means;
- The requirement that the Facility design include negative pressure loading bays to minimize the escape of fugitive odours from waste delivery and handling with the air used as combustion air; and,
- That unloading and handling of waste vehicles would take place indoors to minimize noise and that any equipment incorporating fans will optimize noise attenuation measures at source.

5.2.2 Covanta Proposal

Impact management measures noted in the Covanta proposal that are closely related to the effects on the social environment include:

- Use of construction methods and means to minimize the impact of fugitive dust, odour, noise, traffic, and debris emissions during construction;
- Monitoring of contractors' conformance with standards and practices for compliance with applicable health and safety regulations, minimizing air pollution, controlling water pollution; controlling noise and providing hearing safety for workers;
- Development and implementation of a Community Relations Plan (CRP) through which Durham, York, and Covanta staff would relate to the local community, including advance notification to local authorities and residents near the Facility of any unusual noises or activities (e.g., steam blows, pile driving) or other events that may be of concern to the local community. The plan will also establish contacts and procedures for providing accurate and timely information to the community in the event of an unforeseen incident that may cause concern or impact upon the community.
- Development and implementation of a community complaints system for construction and operations; and,
- Design and operational methods to minimize the impact of fugitive dust, odour, noise, traffic, and debris emissions during operation.

5.2.3 Durham-York Decisions (2009) Related to the EA Submission

In June 2009, a number of key reports related to the EA Submission were brought to Committee and Council in both Durham and York. Some of these reports include commitments to impact management measures that serve to mitigate the effects of the Project on the social/cultural environment including: the report and recommendations associated with the Site Specific Human Health Risk Assessment (SSHHERA); and the report and recommendations associated with the Host Community Agreement

Durham and York have made decisions based on the results of the SSHHERA (which found that the EFW as proposed will not pose an unacceptable health risk), in regards to the environmental surveillance that would be undertaken once the Facility begins operation. These decisions reflect that throughout the consultation process, the public including the community that reside in the vicinity of the Site have had a number of questions and concerns related to human health risks. Following receipt of the results of the Site Specific Human Health Risk Assessment (SSHHERA), both Councils have approved implementation of an environmental surveillance program that includes:

- Stack testing of chemical emissions that meet or exceed the more stringent of Ontario Guideline A-7 and EU Directive chemical emissions standards in accordance with the International Best Practices Review;
- That stack testing be supplemented by independent ambient air and soil testing for a minimum of three years at which time its effectiveness will be evaluated;
- That independent testing of flora and fauna be considered if in-stack, ambient air and soil test results regularly exceed levels predicted by the SSHHERA;
- That stack testing not be supplemented by human biomonitoring, and further that in the future human biomonitoring no be precluded as an option;
- Public reporting of the environmental surveillance results; and,
- Formation of an advisory group, appointed by and accountable to Durham Regional Council, be put in place to act as a forum for Clarington and Durham residents, representatives from Clarington, the Facility, the MOE and Region of Durham to assess, monitor, review and advise the Region on the effectiveness of the environmental surveillance program, testing, quality of public reporting and other related waste diversion and management issues.

The Host Community Agreement between Durham and Clarington, was brought before Committee and Council in Clarington, Durham and York in June, 2009 and has been approved by all parties. The report, supporting recommendations and the agreement itself were one of a number of items presented for approval to Durham and York Committee and Council in the spring/summer of 2009 as noted above. Many facets of the approved Host Community Agreement are essentially impact management measures that will address potential effects on the social environment. These include:

- Development and Operation of a Site Liaison Committee;
- Commitments related to emissions standards, emissions control technologies and monitoring of ambient air in the vicinity of the Facility for the first three years of operations;
- Inclusion of a cash allowance of up to \$9 million for the provision of architectural treatments and upgrades to the Facility;

- Investment in local infrastructure outside of the area of the CEBP, such as provision of a hazardous waste depot to serve the residents of Clarington, and commencing an EA to support provision of municipal services to the east Bowmanville Science Park; and,
- Investment in infrastructure related to the CEBP, including completion of the construction of Energy Drive, construction of a storm waste management facility.

6.0 SUMMARY AND CONCLUSION

This social/cultural assessment considered the compatibility of the Facility under both the 140,000 tpy and 400,000 tpy scenarios, with existing and proposed land uses with consideration of the following indicators:

- Potential for Disruption to Use and Enjoyment of Residential Properties;
- Potential for Changes in Community Character;
- Potential for Disruption to Use and Enjoyment of Public Facilities and Institutions;
- Potential for Disruption to Use and Enjoyment of Cultural and Recreational Resources; and,
- Compatibility with existing Land Use Designations and Proposed Land Use Changes.

The assessment of the compatibility of the Facility with existing and/or proposed land uses considered baseline conditions (land uses in the local area and the surrounding community) and the degree of potential impacts (e.g., traffic, odour, dust, litter, noise) associated with the Facility as documented in the other Technical Study Reports that have been undertaken to determine the effect of the Facility on the environment.

The review of baseline information and results of the Air, Acoustic, Traffic, Visual and Archaeological assessments indicated that:

- There are few occupied residences (2), communities (none), parks and recreational areas (2) public facilities or institutions (2) and cultural resources (none) within 1 km of the Site;
- The nearest residential area designated as future urban residential is 3.2 kilometres from the Site;
- The Site is surrounded by primarily commercial/industrial and agricultural land uses within the Clarington Energy Business Park;
- The Facility is expected to have a minimal effect on the landscape given the existing and proposed structures in the area;
- The haul route to the Site is generally able to accommodate traffic during construction and operations. In the long term, Site traffic may make up only 8 to 10 % of the total traffic to the Clarington Energy Business Park;
- Potential effects from odour, dust, litter and vectors/vermin from a 140,000 tpy or 400,000 tpy Facility would be mitigated through Facility design and operations;

- Predicted noise levels at all nearby Points of Reception are less than the applicable criteria for operation of the Facility at either 140,000 tpy or 400,000 tpy in this location, although some potential exists for noise and vibration impacts during construction; and,
- The visual effect of the Facility at either 140,000 tpy or 400,000 tpy in addition to other planned and disclosed future projects, given the presence of the other existing structures in the landscape, would have a minimal effect on the landscape, while having an overall medium level effect on some receptors within 1 km and the broader community.

Overall, it was found that the Facility is compatible with existing and/or proposed land uses and would have minimal to no overall Net Effects on the Social/Cultural Environment as:

- a) The Facility is anticipated to have minimal overall Net Effects in regards to the potential for disruption to use and enjoyment of residential properties. There are only two occupied residential properties within 1 km of the Site and the closest built-up residential area is over 3 km away. The potential exposure of residents to minor nuisance effects will be minimal for most parameters such as odour, dust, litter and vermin based on the proposed design and operation of the Facility. There is some potential for short-term exposure to noise and vibration impacts to residential receptors during the construction phase of the Facility due to pile driving and peak construction traffic. The primary net effect of the Facility will likely be visual, as the two residential receptors have a clear line of sight to the Facility and are likely to experience a medium level of visual effects during both construction and operation.
- b) The Facility is anticipated to have minimal to no overall Net Effects in regards to the potential for changes in community character. The nearest residential area designated as future urban residential is 3.2 kilometres from the Site to the northwest on the outskirts of the built-up area of Courtice, and the Site is located approximately 5 km away from the outskirts of Oshawa and Bowmanville and 4 km away from the current outskirts of Courtice. The Clarington 01 Site is within an area designated for development in the Regional Official Plan as employment lands and is part of the Clarington Energy Business Park, and is situated well away from built up communities. Technical Study Reports indicate that there is limited to no potential for exposure of these communities to minor nuisance effects such as odour, dust, litter and vermin based on the proposed design and operation of the Facility and no potential for adverse effects related to traffic. There is some potential for short-term exposure to noise and vibration impacts to receptors in the Hamlet of Darlington just over 1 km to the north of the Site during the construction phase of the Facility due to pile driving and peak construction traffic.

During operation the closest residential communities may be able to view a portion of the stack, and are expected to experience a medium level visual effect, primarily due to the permanent nature of the change to the viewscape and the high number of viewers with a proprietary interest. Due to the built-up nature of the population centres that are further from the Site, the Facility would only be a moderate change to the landscape. Additionally, the greater distance of these communities and the intervening visual obstructions would interfere with the line of sight to the Facility. These factors would result in unremarkable/minimal changes in the components or character of the landscape.

In regards to the social relations and interactions of the Facility in the community, there continues to be good participation in consultation processes and the general community continues to express various concerns regarding the Facility. The results of the consultation process and responses received from the community regarding the Draft Interim Environmental Assessment and Site Specific Studies have been documented and addressed in the EA and have been considered in completion of this Social/Cultural Assessment.

Residents from the communities of Oshawa, Courtice and Bowmanville as well as from the broader Region participated in the consultation sessions held in May 2009, at which a total of 243 residents attended. The main themes of the comments received from the attendees were in regards to potential health effects, air emissions, cost of the Facility and the need to consider other waste management alternatives. The comments provided generally stressed these broader/global themes regarding health, safety and well-being, rather than being specific to the immediate physical effect of the Facility on the character of the community such as visual effects. Individual concerns regarding health, safety and well-being are regarded as general concerns that could affect a resident's perception regarding the character of their community.

Various impact management measures have been identified (as discussed in detail in Section 5) that could serve to provide a forum to discuss and address community concerns including the formation of the Facility Site Liaison Committee and the development of a Community Relations Plan (CRP) to establish a plan through which Durham, York, and Covanta staff would relate to the local community. The proposed environmental surveillance program will provide the public with information regarding stack, ambient air and soil monitoring test results, addressing concerns related to human health risks associated with the Facility.

- c) The Facility is anticipated to have minimal overall Net Effects in regards to the potential for disruption to use and enjoyment of public facilities or institutions. There are two public facilities or institutions located within 1 km of the Site, including the Durham Regional Police Service unit to the north of Highway 401 and the Courtice Water Pollution Control Plant located to the southwest of the Site. There is limited to no potential for exposure of these public facilities to minor nuisance effects such as odour, dust, litter and vermin based on the proposed design and operation of the Facility and no potential for adverse effects related to traffic. There is some potential for short-term exposure to noise and vibration impacts during the construction phase of the Facility due to pile driving and peak construction traffic.

The two public facilities or institutions have a partially obscured line of sight to the Facility. In the case of the Courtice WPCP, the only structure visible is the stack. In regards to the Durham Regional Police Service unit, a portion of the stack could be seen from this location, but the majority of the facility will be obscured by existing vegetation and commercial buildings as well as vertical relief. During construction and decommissioning employees and users of these facilities might experience some short-term visual disturbance. During operation these public facilities or institutions are expected to experience a medium level visual effect. Some potential visual disturbance is already present as the landscape has already been influenced by human activities.

- d) The Facility is anticipated to have minimal overall Net Effects in regards to the potential for disruption to use and enjoyment of cultural and recreational resources. There are three recreational resources located within relatively close proximity to the Site, and no resources of any cultural significance. Potential effects on these resources would be considered to represent the 'worst case' potential effects to cultural and recreational resources given their proximity to the Site and that the primary use of all three facilities is out-of-doors. There is limited to no potential for users of these public facilities to be exposed to minor nuisance effects such as odour, dust, litter and vermin based on the proposed design and operation of the Facility and no potential for adverse effects related to traffic.

No net effects related to construction noise are anticipated given the separation distance of these recreational resources from the site, and given the transitory nature of the use of these facilities, and no net effects related to operational noise are anticipated. During construction and decommissioning these recreational receptors could experience short-term visual disturbance. During operation these recreational receptors are expected to experience a medium level visual effect. Some potential visual disturbance is already present as the landscape has already been influenced by human activities.

- e) The Facility is anticipated to have minimal overall Net Effects in regards to its compatibility with existing land use designations and proposed land use changes. The Clarington 01 Site and surrounding properties are designated as employment areas and are part of the Clarington Energy Business Park. The existing land use in the vicinity of the Site includes commercial properties, agricultural land and three residential properties (one of which is abandoned). There are park and recreation lands (the Darlington (Hydro) Sport Fields) one (1) kilometre east of the Site. There is minimal to no potential for existing and proposed land uses to be exposed to minor nuisance effects such as odour, dust, litter and vermin based on the proposed design and operation of the Facility.

Estimates of future traffic scenarios based on the full build out of the Clarington Energy Business Park and the expanded Facility (400,000 tpy) indicates that there would be some requirement for road network improvements (widening of Courtice Road, traffic signals) that would be driven by the needs of the CEBP.

The Facility will be visible to the majority of existing and proposed land uses within 1 km, and no mitigation is possible to completely reduce the visual effects of the Facility due to the minimal viewing distance from the adjacent roadways. The visual characteristics of the Facility and the adjacent industrial landscape type are considered to exhibit minimal scenic attributes with respect to landscape distinction. Some potential visual disturbance is already present as the landscape has already been influenced by human activities.

The inclusion of district heating and site works associated with the development of the Facility within the CEBP would be an attractive feature for enterprises looking to locate their businesses in the CEBP. This would essentially increase the compatibility of the Facility with the current and proposed land uses in the vicinity which are likely to include commercial and light industrial uses

that could benefit from the availability of district heating and potentially district cooling provided by the Facility.

7.0 CLOSURE

This Report has been prepared by Jacques Whitford Stantec Limited. The assessment represents the conditions at the subject property only at the time of the assessment, and is based on the information referenced and contained in the Report. The conclusions presented herein respecting current conditions, and potential future conditions represent the best judgment of the assessor based on current environmental standards. Jacques Whitford Stantec Limited attests that to the best of our knowledge, the information presented in this Report is accurate. The use of this Report for other projects without written permission of Durham Region, York Region and Jacques Whitford Stantec Limited is solely at the user's own risk.

8.0 REFERENCES

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