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Balancing the Positives and Negatives:

The Challenge of Socio-economic Effects Assessment of the Port Hope Area Initiative

by:

Tomasz L. Wlodarczyk, M.E.S., *Principal, Gartner Lee Limited*

Brendan Flynn, *Property Value Protection Program Co-ordinator, Low-Level Radioactive Waste Management Office, AECL*

Abstract

The Port Hope Area Initiative (PHAI) is a community-based program directed at the development and implementation of a safe, long-term management solution for low-level radioactive waste (LLRW) that has existed in two communities in the Port Hope area for some seven decades. As part of the environmental assessment of the two projects (i.e., the Port Hope Project and the Port Granby Project) being undertaken as part of the PHAI, two separate socio-economic effects assessments were completed. The assessments were designed to be broad ranging assessments of the effects of the Projects on people and their communities. This paper discusses how the assessments identified and assessed the positive and negative effects of the two Projects, what those effects were, and draws conclusions on whether the positives outweigh the negatives.

Introduction

The Port Hope Area Initiative (PHAI) is a community-based program directed at the development and implementation of a safe, local long-term management solution for historic low-level radioactive waste (LLRW) that has existed in the Port Hope area for up to seven decades. The PHAI includes two distinct and separate undertakings. The Port Hope Project involves the remediation of sites containing LLRW, marginally contaminated soils (MCS) and specified industrial wastes located in the Municipality of Port Hope, including the Port Hope Harbour, and the management of the wastes in a local long-term low-level radioactive waste management facility (LTWMF) in Ward 2 of Port Hope. The Port Granby Project involves the management of the LLRW and MCS that are currently located at the existing Port Granby waste management facility (WMF) in a new long-term LTWMF within the Port Granby area.

Two Socio-economic Effects Assessments were prepared during 2004 in support of the environmental assessment (EA) of these Projects conducted under the *Canadian Environmental Assessment Act* (CEAA). The documentation prepared included two Baseline Characterization Study (BCS) reports and two Environmental Effects Assessment (EEA) reports. These reports were prepared by Gartner Lee Limited, utilizing and integrating specialist advice from Tennyson Consulting (i.e., sociology); Keir Corp. (i.e., land use planning); Marshall Macklin Monaghan (i.e., traffic and transportation); Advance Archaeology (i.e., heritage resources); and Bancroft-Wilson Associates (i.e., Aboriginal Interests). The assessment also integrated community knowledge gained through an extensive public consultation process lead by the Low-Level Radioactive Waste Management Office (LLRWMO).

Scope and Approach to the Socio-economic Effects Assessments

The socio-economic assessments were characterized by, and organized according to a number factors that defined those aspects of the socio-economic environment that have the potential to interact with the Port Hope and Port Granby Projects. These included:

- Population and Economic Base (including effects on population, employment, business activity and economic development, tourism and agriculture);
- Land Use and Visual Settings (including effects on existing and planned land uses, aggregate resource, agricultural resources, landscapes and visual settings);
- Community Infrastructure (including effects on housing and property values, municipal infrastructure and services);
- Community Services (including effects on community and recreational facilities and use, educational facilities, health and safety facilities and services);
- Traffic and Transportation (including effects on transportation system and infrastructure, traffic operations and safety);
- Municipal Finance and Administration (including effects on municipal revenues and expenditures);
- Residents and Communities (including effects on use and enjoyment of property, community character);
- Heritage Resources (including effects on prehistoric and historic resources); and
- Aboriginal Interests (including effects on traditional use of lands and resources, Aboriginal heritage and cultural resources, Aboriginal and Treaty Rights).

Socio-economic Assessment Methods and Data Sources

The purpose of the Socio-economic Effects Assessments was to identify, describe and assess the likely direct, indirect and cumulative effects (i.e., both positive and negative effects) that are likely to arise from the Projects during their respective Construction and Development Phases and Maintenance and Monitoring Phases. Depending upon the particular socio-economic issue or effect under consideration, the methodology that was applied incorporated a mix of quantitative and qualitative techniques or methods. Where possible, a process of 'triangulation' was employed, whereby at least three methods were used to verify predictions of one method by using another.

The data sources and assessment methods for the description of the existing socio-economic environment and for analysis of the effects included: secondary source data, interviews with community members and other stakeholders, meetings with First Nation Councils, field surveys, public attitude research, visual analyses, traffic and transportation studies, traditional use assessments, and archaeological assessment conducted in support of the Port Hope and Port Granby Project EAs.

Over 70 telephone and/or personal interviews were conducted to gain qualitative data and an understanding of the potential issues, concerns and anticipated effects of the Projects. Interviews were conducted with municipal officials; educational facilities administrators; community facility operators naturalist group representatives; ratepayer association representatives; local tourist business operators; potential suppliers of goods and services; in-moving business operators; potential dangerous goods carriers; developers and realtors; and other community groups and members of the public.

Tourism benchmarking surveys were undertaken to determine visitors' origins, motivations and reasons for visiting Port Hope, the most / least attractive aspects of Port Hope; activities engaged in and attractions visited; party sizes and expenditures; lengths of stay and types of accommodation used; and various behavioural intentions. A total of 210 interviews were completed (Forum Research, 2003). The importance of tourism to the Clarington economy was highlighted for the Port Granby Project EA.

Two different socio-economic field surveys were undertaken to obtain both quantitative and qualitative data. A field survey was completed by over 40 fishers / anglers along the Ganaraska River, Lake Ontario and Port Hope Harbour. In addition, over 100 questionnaires were completed by local residents and farmers living near the proposed LTWMFs, remediation sites and along the transportation routes.

Public attitude research provided some of the most critical data used as part of this socio-economic study. A telephone survey was carried out among the general public in Wards 1 and 2 of Port Hope and in Clarington Ward 4 during May 2004. A total of 350 interviews were completed in Port Hope and 250 interviews were completed in Clarington. (Haussmann Consulting Inc. and Gartner Lee Limited, 2004a and 2004b).

Viewshed analyses were undertaken using a digital elevation model of the area and field reconnaissance of the study areas. Traffic and transportation field surveys were undertaken to determine the nature of the transportation infrastructure, its use by various types of vehicles, pedestrians, bikers and others.

Within the context of a federal EA process, special emphasis was placed on providing politically and culturally appropriate forums for communication, information exchange and participation. To this end, an Aboriginal program was designed to compliment and supplement other LLRWMO consultation programs. In addition, the Aboriginal consultant and the LLRWMO offered to design and conduct a survey of First Nation community members to determine the type, frequency and general location of traditional and non-traditional land use activities practiced presently and historically. The two communities located closest to the Port Hope Project, Hiawatha and Alderville, decided to undertake a traditional land use survey.

Archaeological and Cultural Heritage Studies were also conducted. The studies undertaken included a combined Stage 1 and Stage 2 assessment, that involved an initial scoping activity carried out to evaluate if heritage resources do exist on the properties likely affected by the Projects. The assessment included intrusive field testing at the Port Granby LTWMF site.

Direct Socio-economic Effects

The Port Hope and Port Granby Projects will have both positive and negative direct effects on the Socio-economic Environment. Table 2 summarizes the positive and negative direct effects of the Projects. Because the Port Hope Project involves extensive remediation activities across the Municipality of Port Hope, both the negative and positive socio-economic effects tend to be of a greater magnitude than those associated with the Port Granby Project. It is noteworthy, that the positive employment and business activity effects are not likely to accrue solely to the host communities, but are more likely to be spread across south and eastern Ontario. The hosting fee revenues for the host municipalities, offered by the Government of Canada, will be a substantial direct benefit of the Projects, as they are intended for the municipality's own discretionary use.

Table 1. Direct Socio-economic Effects

Socio-economic Factor	Study Results	Port Hope	Port Granby
Displacement	Displacement of Residents	None	1 residence
	Displacement of Business Operations	2 tenant businesses	1 tenant farm business
Employment	Increased employment opportunities (Direct, indirect and induced Project-related employment)	178 Full-time equivalents / yr	91 Full-time equivalents / yr
Business Activity	Direct Project-related Expenditures (Construction and Development Phase)	$ 13.5 million / yr	$8.4 million / yr
	Total Income-spending (Construction and Development Phase)	$4.8 million / yr	$2.5 million / yr
Agricultural and Aggregate Resources	Loss of Agricultural Land	52 ha (< 2% of Class 1 and Class 2 farm lands)	60.5 ha (< 2% of Class 1 lands)
	Consumption of Aggregate Resources	650,000 m^3 (< 2% of Ontario's annual production)	237,000 m^3 (< 1% of Ontario's annual production)
Visual Setting	Direct views of LTWMF from residences, farms, businesses and community facilities	>50 important viewing locations, including views from Highway 401	10 important viewing locations, including views from Waterfront Trail
Traffic and Transportation	Improved transportation system and infrastructure resulting from pre-project upgrades and maintenance activities.	Major Pre-Project improvements to road network	Minor Pre-Project improvements to road network
Community Services	Direct effects on operations at Community, Recreational and Educational Facilities	6 facilities affected	None
Municipal Finance and Administration	Increased municipal revenues from hosting fees	$20 million	$10 million

Indirect Socio-economic Effects

Indirect socio-economic effects are the result of both changes in the biophysical environment due to, for example, noise, dust, traffic, water quality and water quantity, and those resulting from changes in public attitudes toward the Projects and communities. Of all the various sources of data used in the Socio-economic Effects Assessments; interviews; public attitude research; and field surveys played a pivotal role in the assessments as they provided the key data needed to apply our conceptual model for how socio-economic effects might occur through changes in public attitudes. Changes in people's attitudes and the association community members made between the Projects and their own feelings of health and well-being, feelings of personal security and community satisfaction were considered to be important intervening variables or the pathways by which social and economic effects might occur.

Apart from changes in public attitudes, the socio-economic effects assessment relied on the results of other EA studies. For example, socio-economic effects from changes in groundwater or surface water

quality and quantity were not anticipated because no significant effects were predicted on these environmental components. Interviews with local anglers confirmed that the predicted longer term improvements in surface water quality and aquatic habitat were likely to result in improved confidence in fisheries resources. However, negative socio-economic effects were hypothesized to occur as a result of Project-related noise and the presence of trucks on local roads. While truck volumes were not considered to be a problem in terms of traffic operations and safety, the presence of trucks on the roads was considered by most residents to be a nuisance and a source of disruption to some road users (e.g., school buses, municipal buses, farm vehicles, pedestrians and non-motorized modes of transportation).

Table 3 summarizes the key public attitude research and survey data that were used to determine whether or not positive or negative social and economic effects might occur as a result of the Projects.

Table 2. Current and Likely Project-related Changes in Attitudes

Attitudes	Study Results	Port Hope %	Port Granby %
Feelings of Personal Security	Currently feeling "Very or Somewhat" secure living in the community (2004)	94	94
	No Project-related change in attitude anticipated	71	75
	Positive change in attitudes	15	8
	Negative change in attitudes	7	8
Feelings of Health and Sense of Well-Being[1]	Currently feeling that health and sense of well-being are "Good or Very Good" (2004)	80	90
	No Project-related change in attitudes anticipated	64	58
	Positive change in attitudes	21	16
	Negative change in attitudes	12	17
Satisfaction with Community[2]	Currently "Very or Somewhat" satisfied with living in the community (2004)	94	98
	No Project-related change in attitudes anticipated /not sure	64	44
	Positive change in attitudes	22	31
	Negative change in attitudes	14	26
Image of the Community[3]	Proportion of respondents that identify LLRW / MCS as things that most negatively affect the community's image (2004)	39	~8%
	No Project-related change in image anticipated	10	26
	Positive change anticipated	79	57
	Negative change anticipated	13	19

Notes: 1. The development of LTWMF in Port Hope and excavation activities in Port Granby were considered to have the greatest potential of changes in public attitudes.

2. Results reported for changes in attitudes in Port Hope taken from Resident and Farmer Survey. Results reported for changes in attitudes in Port Granby taken from public attitude research.

3. Percentages sum to more than 100% since two responses were accepted.

Overall the analysis of these pathways allowed for several conclusions to be drawn with respect to whether or not social and economic effects were likely to occur as a result of the Port Hope and Port Granby Projects.

- Widespread negative social and economic effects are not likely across the Municipality of Port Hope or the Municipality of Clarington. Changes in public attitudes are not likely to contribute to the "social amplification of risk" within communities, as conceptualized by Kasperson et al. (1988).
- Increased noise and the presence of trucks on local roads are likely to be a source of disruption in both communities. Changes in dust and odour levels were not likely to be noticeable to local residents.
- Negative effects resulting from changes in public attitudes, noise and the presence of trucks on local roads are likely to be very localized, in neighbourhoods nearest the LTWMF, remediation sites or along transportation routes.
- Positive social and economic effects are more likely to occur from the Port Hope Project than the Port Granby Project. A greater proportion of Port Hope residents than Port Granby residents anticipate positive changes in their attitudes than negative ones.
- There is a strong potential for the existing stigma associated with Port Hope from the presence of LLRW in the community to be diminished because of the Port Hope Project, while the presence of LLRW has not resulted in the attribution of a stigma to the Municipality of Clarington. As such, positive effects from diminished stigma are not likely to accrue to the Port Granby community.

Next, the conceptual model that was applied hypothesized that in addition to nuisance effects associated with the Projects (i.e., noise and the presence of trucks on local roads) people's behavioural responses to the Projects could also contribute to the nature, magnitude and significance of social and economic effects. Notwithstanding the fact that predicting people's behaviour is a difficult task, the socio-economic assessments considered a person's behavioural intention as the best predictor of their likely response to the Project and consequently the best predictor of the likely effects stemming from their behaviour (Ajzen and Fishbein, 1980; Wlodarczyk and Tennyson, 2004). By adopting this premise, the assessment allowed people to assess the risks of the Projects for themselves and articulate what they anticipated to be changes to their own behaviour. This conceptual model was first applied to socio-economic assessments of nuclear projects in Canada in 2000 (Gartner Lee Limited, 2000) and has been refined over the years on several nuclear waste management projects (Gartner Lee Limited, 2004). Table 3 summarizes the key data that were used to determine the magnitude of the behavioural changes that might occur as a result of the Projects.

Table 3. Current and Likely Project-related Changes in Behaviour

Behaviours	Study Results	Port Hope %	Port Granby %
Commitment / Decision to Live the Community	Currently "Very or Somewhat" committed to living in the community (2004)	90	91
	No Project-related change in behaviour anticipated	79	80
	Not likely to move out of community because of Project	5	2
	Likely to move out of the community because of the Project	13	15

Table 4. Current and Likely Project-related Changes in Behaviour (continued)

Behaviours	Study Results	Port Hope %	Port Granby %
Commitment to Running a Business in the Community	Currently "Very or Somewhat" committed to running a business in the community (2004)	96	89
	No Project-related change in behaviour anticipated	81	100
	Not likely to stop owning or operating a business	12	0
	Likely to stop owning or operating a business	4	0
Commitment to Continued Farming in the Community	Currently "Very or Somewhat" committed to continued farming in the community (2004)	93	87
	No Project-related change in behaviour anticipated	81	73
	Not likely to stop farming in the community	5	4
	Likely to stop farming in the community	4	16
Changes in Use and Enjoyment of Property[1]	No Project-related change in behaviour anticipated	83	88
	Increase in use and enjoyment of property anticipated	3	1
	Decrease in use and enjoyment of property anticipated	11	9
Changes in Use and Enjoyment of Parks, Beaches and Trails[2]	No Project-related change in behaviour anticipated	67	76
	Increase in use and enjoyment anticipated	13	7
	Decrease in use and enjoyment anticipated	16	18
Changes in Fishing and Boating Activities[3]	No Project-related change in behaviour anticipated	86	83
	Increase in fishing and boating activities anticipated	4	3
	Decrease in fishing and boating activities anticipated	7	10

Notes: 1. Transportation activities in Port Hope and Port Granby were considered to have the greatest potential for causing changes in use and enjoyment of property.

2. Excavation activities in Port Hope and Port Granby were considered to have the greatest potential for causing changes in use and enjoyment of parks, beaches and trails.

3. Excavation activities in Port Hope and Port Granby were considered to have the greatest potential for causing changes in fishing and boating activities.

Overall the analysis of the behavioural intentions of local residents allowed for the magnitude of social and economic effects that were likely to occur as a result of the Port Hope and Port Granby Projects to be determined. Clearly, the greatest potential for negative effects were on peoples use and enjoyment of property and the formal and informal social recreational activities conducted by community members. These likely effects combined with the resultant changes in people's satisfaction indicated that there is an increased potential for out-migration of residents from areas nearest the LTWMFs, along transportation routes and near major remediation sites.

Effects Management

For the purposes of these assessments, a socio-economic effects management program was recommended that would serve to avoid, reduce the severity or redress the negative socio-economic effects and enhance

the positive effects of the Port Granby and Port Hope Projects. The overall goal of socio-economic effects management is to ensure that people living in the vicinity of the LTWMFs and existing WMFs have the capacity to cope with change and that good relationships are fostered between them and the LLRWMO. The proposed socio-economic effects management program would be Project-specific and community-based aimed at implementing over 45 specific mitigation measures recommended for each of the Port Hope and Port Granby Project assessments. A set of 'guiding principles' that could serve as a basis for the further development of the effects management program was developed on the basis of consultation with residents and municipal officials during effects management workshops held in each community. The establishment of a community / neighbourhood project implementation committee or liaison group was also recommended.

The Balance Between the Positives and Negatives

To ensure that socio-economic effects are fully and completely assessed, a socio-economic assessment must be broad ranging in scope, considering all aspects of the Project that have a potential to affect the social and economic environment; that is, where and how people live, work and play. The assessment must consider all aspects of a community in a systematic and co-ordinated fashion, integrating all dimensions of community life, including its economic, psychological, sociological and physical dimensions.

In the case of the Port Hope and Port Granby Projects, the socio-economic assessment results indicated that both positive and negative effects on people and their communities are possible. The key traits of these two different communities, the different attitudes of the people affected and the differences in the nature of the Projects themselves determined to a large part what kinds of socio-economic effects are likely to occur, their nature and significance. Table 4 however provides a summary of both the likely positive and negative socio-economic effects and their significance, in terms of key significance criteria magnitude, duration / frequency, and permanence.

To this end, the Port Granby area will experience both negative and positive effects. Because the area is largely undeveloped, only a small number of people living closest to the LTWMF and transportation routes will likely be affected. Nevertheless, the Port Granby Project is likely to change these people's daily life during the six-year Construction and Development Phase. The industrial nature of the Project works and activities will be largely incompatible with the quiet, rural nature of this agricultural community. Moreover, because of these community traits and people's attitudes towards the Project, few tangible benefits are likely accrue to these residents over the short and longer terms. The real benefits of the Port Granby Project will accrue to the people of Clarington from securing the $10 million hosting fee from the Government of Canada. Future Clarington residents will gain from greater public access to, and enhanced environmental quality along the waterfront. The people of Ontario will gain from the short-term economic benefits of the Project and a positive legacy from the clean-up of wastes along the shoreline of Lake Ontario.

In contrast, the Municipality of Port Hope will tend to benefit substantially from the remediation and long-term storage of LLRW in their community. While numerous negative effects are likely during the Construction and Development Phase, they are typical of any construction project in an urban setting. In the long term however, the Port Hope Project is likely to contribute positively to the transformation of the waterfront and other neighbourhoods throughout Port Hope, diminishing to some extent the existing

"stigma" associated with LLRW in Port Hope. Taxpayers in the Municipality will gain from securing the $20 million hosting fee from the Government of Canada. The Port Hope Project will provide the opportunity for the Municipality to proceed more confidently with its economic development plans; realize its potential as a prime tourist destination and become a safer, more healthy and more attractive place to live, work and play. The people of Ontario will also gain from the short term economic benefits of the Project and a positive legacy from the clean-up of the wastes.

Table 4. Summary of Positive and Negative Effects

Residual Effects	Who / What is Affected	Port Hope	Port Granby	Negative Effect	Positive Effect	Low Magnitude	Medium or High Magnitude	Temporary/Infrequent and/or Reversible	Longer Term/Frequent or Permanent
Displacement of one tenant residence	• General Public	✓		✓		✓		✓	
Displacement of two tenant business operations	• Business Operators	✓		✓			✓		✓
Displacement of tenant farming operation	• Farm Business Operator		✓			✓		✓	
Increased potential for out-migration of residents	• General Public	✓		✓		✓		✓	
Increased potential for out-migration of farmers	• Farmers • Agricultural Community		✓	✓		✓		✓	
Disruption to business activities at commercial operations	• Business Operators	✓		✓		✓		✓	
Increased direct, indirect and induced employment opportunities	• General Public	✓	✓		✓	✓		✓	
Increased business activity from Project-related spending	• Business Operators	✓	✓		✓	✓		✓	
Disruption to activities at tourism-related businesses and events	• Tourists and Facility Operators	✓		✓		✓		✓	
Increased attractiveness of the waterfront and enhancement of tourism and economic development opportunities	• Tourists and Facility Operators • Municipality	✓	✓		✓		✓		✓
Visual and aesthetic improvements at sites where temporary storage facilities or unnecessary buildings have been removed.	• Local Residents and Visitors	✓			✓		✓		✓
Reduced property values	• Property owners	✓	✓	✓			✓	✓	
Increased turnover of residential properties and difficulties marketing	• Property owners	✓	✓	✓		✓		✓	
Enhanced potential for increased property values in the vicinity of the waterfront and specific neighbourhoods where remediation activities have been successfully completed.	• Local Residents	✓	✓		✓	✓ (1)	✓(2)		✓
Changes in the quality of existing views near LTWMF	• Local Residents	✓	✓	✓			✓	✓	
Disruption of user activities at community and recreational facilities	• Facility Users	✓		✓		✓		✓	
Reduced attractiveness of areas used for fishing during the Construction and Development Phase	• Resource Users	✓		✓		✓		✓	
Enhanced attractiveness of areas used for fishing following the successful completion of remediation activities.	• Resource Users	✓			✓	✓			✓
Restricted public access to natural areas and trails during the Construction and Development Phase	• Resource Users	✓		✓		✓		✓	

Table 4. Summary of Positive and Negative Effects *(continued)*

Residual Effects	Who / What is Affected	Port Hope	Port Granby	Negative Effect	Positive Effect	Low Magnitude	Medium or High Magnitude	Temporary/Infrequent and/or Reversible	Longer Term/Frequent or Permanent
Enhanced public access to natural areas and trails in the immediate vicinity of remediation sites where temporary storage sites for LLRW have been removed.	• Resource Users	✓	✓		✓	✓			✓
Disruption of operations at the Port Hope Harbour, Port Hope yacht club, Lions Park Recreation Centre and Canadian Fire Fighters Museum.	• Facility Users and Operators	✓		✓			✓	✓	
Increased potential for disruption of operations at the Jack Burger Sports Complex.	• Facility Users and Operator	✓		✓		✓		✓	
Increase in the open space inventory in Port Hope available to residents for outdoor recreational uses.	• Facility and Resource Users	✓			✓		✓		✓
Disruption of outdoor use activities at educations facilities	• Facility Users and Operators	✓		✓		✓		✓	
Disruption to some road users, pedestrians and non-motorized traffic	• Road Users	✓	✓	✓		✓		✓	
Improved transportation system and infrastructure resulting from pre-Project upgrades and maintenance activities.	• Road Users	✓	✓		✓	✓			✓
Improved municipal financial status	• Municipality • Taxpayers	✓	✓		✓		✓	✓	
Disruption of community and recreational activities during the Construction and Development Phase.	• Resource Users		✓	✓		✓		✓	
Changes in the use of property and reduced enjoyment of property	• Local Residents	✓	✓	✓			✓	✓	
Negative changes to community character or image of local neighbourhoods during Construction and Development Phase	• Community Character	✓	✓	✓			✓	✓	
Enhanced community character or image of neighbourhoods nearest the LTWMF in the Maintenance and Monitoring Phase	• Community Character	✓			✓	✓(1)	✓(2)		✓
Port Hope Project Totals and Percent (%) of Totals		28	0	17 (61%)	11 (39%)	16 (57%)	12 (43%)	19 (69%)	9 (31%)
Port Granby Project Totals and Percent (%) of Totals		0	16	8 (50%)	8 (50%)	11 (69%)	5 (31%)	12 (75%)	4 (25%)

Note: (1) Port Granby
(2) Port Hope

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