



Western Waste Management Facility – Independent Economic and Social Analysis

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Executive Summary

Low and intermediate level radioactive waste is produced at all of Ontario's nuclear generating stations. For more than 30 years, this waste has been safely transported to waste management facilities located on the Bruce Power site in the Municipality of Kincardine. The waste management facility, currently known as the Western Waste Management Facility, is owned and operated by Ontario Power Generation (OPG). The facility currently provides interim storage of the waste and OPG is seeking to find an acceptable long-term management solution.

In 2002, the Municipality of Kincardine and OPG signed a Memorandum of Understanding (MOU). The purpose of the MOU is to set out terms under which OPG, in consultation with the Municipality of Kincardine, will develop a plan for the long-term management of low and intermediate level radioactive waste at the Western Waste Management Facility (WWMF). As part of the MOU related activities, an independent assessment study (IAS) is being undertaken of three possible long-term management options which are presently under consideration by OPG. These options are: Enhanced Processing and Storage (EPS), Surface Concrete Vaults (SCV), and Deep Rock Vaults (DRV). In addition, the costs and benefits of the current low and intermediate level waste management operations at the WWMF, identified as the "Status Quo" are provided.

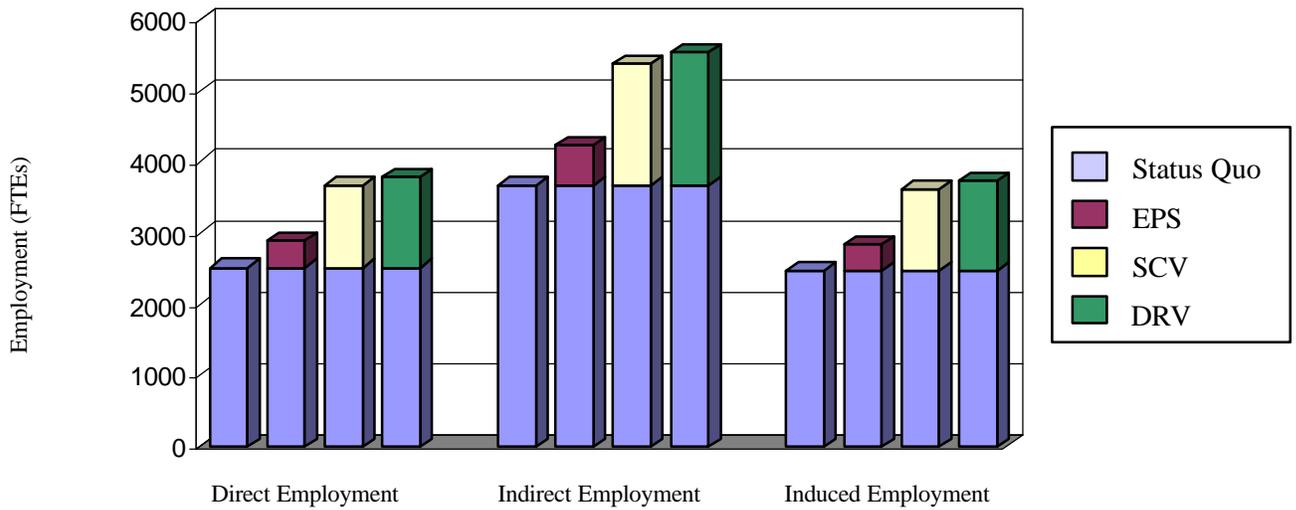
The IAS is being carried out to develop information regarding the costs and benefits of a short-list of possible long-term management options for the low and intermediate level wastes currently stored at the WWMF and planned to be received in future. The goal of the IAS is to provide decision makers with a clear and fact-based assessment of each of the options.

As part of the IAS, an economic and social analysis was undertaken. The purpose of the economic and social analysis was to identify, describe and quantify (where possible) the likely economic and social effects of the various options for the long term management of low and intermediate level radioactive wastes at OPG's WWMF. This study accomplishes the following:

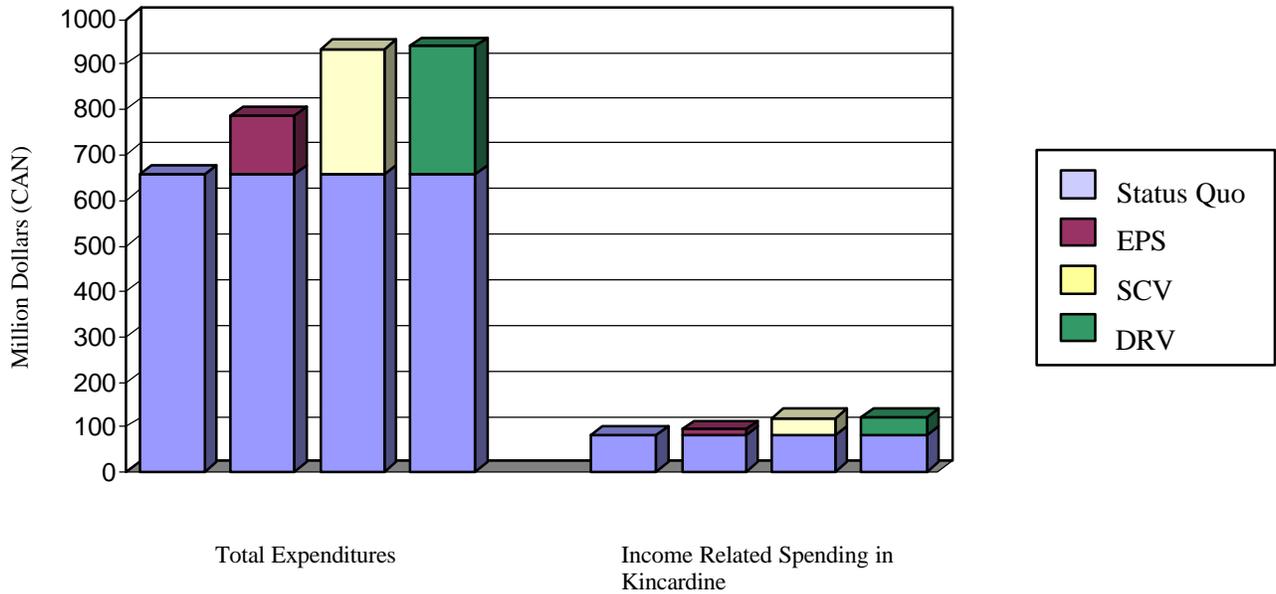
1. Describes the existing and foreseeable socio-economic conditions within defined Study Areas.
2. Characterizes the existing WWMF and available options for the long term management of Low and Intermediate Level Radioactive Waste.
3. Conducts economic modelling to quantify the economic effects of available options within defined time frames.
4. Estimates municipal tax implications for the available options.

5. Conducts public attitude research, interviews and a round table to identify and describe relevant potential for social effects.
6. Summarizes results in an “Independent Economic and Social Analysis” report (this report).

This economic analysis concluded that there are significant economic benefits to Kincardine and the Neighbouring Municipalities associated with all of the options. These benefits are greater than those currently occurring as a result of the operation of the WWMF. The economic analysis did not identify any negative economic effects associated with the options. The figure below provides a summary of the direct, indirect and induced employment associated with each of the options. The incremental employment above that for the Status Quo is generally similar for all the options although it is larger for the two vault options.



The following provides a summary of the expenditures and income-related spending in Kincardine for each of the options. The incremental dollar value above that of the Status Quo is generally similar for all the options although vault options are somewhat larger.



The social analysis component of this study concludes that, at the present time, there is little potential for significant social effects as a result of the implementation of long term waste management options at the WWMF. This conclusion was determined by examining the initial impressions of people to the idea of long term waste management at the WWMF; the potential for changes in public attitudes (i.e., feelings of personal security, community satisfaction and commitment to farming); potential for stigma (i.e., the attractiveness of the area as a place to live, establish a business or visit as a tourist); and the potential for changes in people’s behaviours (i.e., living in the community, fishing and boating activities near the Bruce Power site, and use of parks, beaches and trails near the Bruce Power site). No clear preference for any of the options was identified throughout the study.

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1. Background

Low and intermediate level radioactive waste is produced at all of Ontario's nuclear generating stations. For more than 30 years, this waste has been safely transported to waste management facilities located on the Bruce Power site in the Municipality of Kincardine. The waste management facility, currently known as the Western Waste Management Facility, is owned and operated by Ontario Power Generation (OPG). The facility currently provides interim storage of the waste and OPG is seeking to find an acceptable long-term management solution.

In 2002, the Municipality of Kincardine and OPG signed a Memorandum of Understanding (MOU). The purpose of the MOU is to set out terms under which OPG, in consultation with the Municipality of Kincardine, will develop a plan for the long-term management of low and intermediate level radioactive waste at the Western Waste Management Facility (WWMF). As part of the MOU related activities, an independent assessment study (IAS) is being undertaken of three possible long-term management options which are presently under consideration by OPG. In addition, the costs and benefits of the current low and intermediate level waste management operations at the WWMF, identified as the "Status Quo" are provided.

The IAS is being carried out to develop information regarding the costs and benefits of a short-list of possible long-term management options for the low and intermediate level waste currently stored at the WWMF and planned to be received in future. The goal of the IAS is to provide decision makers with a clear and fact-based assessment of each of the options. This report documents the results of the economic and social analysis components of the IAS.

2. Methodology

The purpose of this study is to identify, describe and quantify (where possible) the likely economic and social effects of the various options for the long-term management of Low and Intermediate Level Radioactive Waste at Ontario Power Generation's Western Waste Management Facility. This study accomplishes the following:

1. describes the existing and foreseeable socio-economic conditions within defined Study Areas;
2. characterizes the existing WWMF and available options for the long-term management of Low and Intermediate Level Radioactive Waste;

3. conducts economic modelling to quantify the economic effects of available options within defined time frames;
4. estimates municipal tax implications for the available options;
5. conducts public attitude research, interviews and a round table to identify and describe the potential for social effects; and
6. summarizes results in an “Independent Economic and Social Analysis” report (this report).

The approach adopted to this study differs from what might typically be considered a socio-economic impact assessment that is done in the context of an environmental assessment process. To this end, this study does not make recommendations for mitigation, compensation or other impact management measures to address potential adverse effects, identify residual effects nor assess their “significance” as is typically done in project specific environmental assessments. Rather, this study has been geared towards the identification and description of *potential* economic and social effects, at a level of detail commensurate with the early stages in project planning.

2.1 Spatial and Temporal Boundaries

Spatial boundaries define the geographical extent(s) within which likely or potential economic and social effects will be considered. As such, these boundaries become the Study Areas adopted for the economic and social analyses. Two Study Areas have been defined in order to capture the various types of economic and social effects that have a potential to occur. These Study Areas are described as follows:

1. The *Municipality of Kincardine Study Area*, includes areas within the municipal boundaries of the Municipality of Kincardine. This area represents the host community for the WWMF. The focus on the host community is consistent with socio-economic impact assessment professional practice and emphasizes the area that has the most direct relationship with the WWMF and is anticipated to be the receptor for the majority of the social and economic effects. Effects on other communities (e.g., Town of Saugeen Shores) are discussed where there are notable differences from those of the host community.
2. The *Neighbouring Municipalities Study Area*, includes areas within the municipal boundaries of the Bruce County with the exception of North Bruce Peninsula and South Bruce Peninsula. The following municipalities are included: the Municipality of Arran-Elderslie, Brockton, South Bruce; the Towns of Saugeen Shores and the Township of Huron-Kinloss. These areas contain the major residential areas nearest the WWMF and would likely be those from which

members of the public would become involved in the project or in which economic effects might occur. For some economic factors (i.e., tourism), the description of existing conditions within this Study Area will focus more on communities along the Lake Huron shoreline from Point Clarke, south of the WWMF site, to Sauble Beach, to the north and extending eastwards to include the communities of Paisley, Ripley and Lucknow. This is known as the Lake Huron Tourism Investment Area and includes a major portion of what is sometimes referred to locally as the south Bruce area.

The temporal boundaries define the time periods for which likely economic and social effects have been considered. The time frame for consideration of project specific effects is from 2005 through 2035. The baseline conditions are those existing in 2002 within the Municipality of Kincardine and Neighbouring Municipalities, for the existing WWMF employment and the average of 2002-2007 for WWMF expenditures. Where relevant, historical data has been used for previous years where 2002 data was not available. For the purposes of the assessment of effects on population, employment, business activity and housing stock the baseline conditions also include projections into the future in order to provide the future ‘baseline’ conditions against which effects of subsequent project phases can be assessed.

2.2 Economic and Social Analysis

2.2.1 Scope

The economic component of this study examines both the status quo scenario (i.e., the continued operation of the existing WWMF) and three different long-term management options for the following factors:

- a) Employment;
- b) Income Spending (i.e., as a measure of potential effects on business activity and economic development);
- c) Population;
- d) Housing and Property Values; and
- e) Municipal Taxes.

The social component of this study focus on the potential for changes in people’s attitudes towards their community, the Kincardine area in general and WWMF itself. Changes in peoples attitudes are not considered adverse effects in themselves, but rather they are considered to be the pathways through which socio-economic effects may occur. Socio-economic effects such as changes in population, housing and

property values, changes in the use and enjoyment of community / recreational facilities activities may occur if peoples attitudes towards their community or the WWMF are of sufficient magnitude to change behaviour. Therefore, the social component of this study examines not only the potential for changes in public attitudes, but also the potential for stigma, and the potential for changes in behaviours that may occur if long-term management options are implemented.

2.2.2 Methodology

2.2.2.1 Data Collection

Descriptions of the existing population and economic base for the Municipality of Kincardine and Neighbouring Municipalities are based on information derived from four major sources: OPG, Bruce County and six of its Municipalities (Kincardine, Arran-Elderslie, Brockton, Huron -Kinloss, Saugeen Shores, and South Bruce), Statistics Canada, and regional businesses and service providers that have direct and indirect relationships with OPG and the WWMF.

Public attitude research [18] was undertaken to assist in this analysis by examining the potential for effects of OPG's plans for long-term management of wastes at the WWMF on public attitudes and behaviours and various attributes of the local communities. This research was undertaken using a telephone survey among adult resident who is 18 years of age or older. The sample was split between men and women. Respondents who own a cottage and were interviewed at that residence are part of the sample. The area within which this research was undertaken included both the Municipality of Kincardine and its Neighbouring Municipalities. In all, 751 interviews were completed from June 9 – 14, 2003. The objectives of this research was to:

- a) identify people's attitudes towards and perceptions of their community including: major community issues, key attributes of the Municipality of Kincardine and the Neighbouring Municipalities, people's feelings of personal security, and their commitment to the community and/or farming;
- b) identify the activities and behaviours of the local residents that are conducted near the WWMF (e.g., park use, fishing activities);
- c) gauge awareness of the existing WWMF and the long-term waste management options under consideration; and
- d) examine the potential for effects on people's daily life and any likely changes in attitudes towards their community, or behavioural intentions that may be attributable to the long-term options for managing the low and intermediate level radioactive wastes at the WWMF.

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The social research also included briefing interviews with local businesses, surveys conducted with visiting tourists and a round table discussion conducted with local tourist business operators [26]. Telephone and/or personal interviews, including a round table discussion were conducted with several individuals and representatives of various local and regional organizations, including:

- a) tourism businesses such as hotel and motel operators, fishing charter/marina operators and park administrators (8);
- b) tourism and economic development officials (2);
- c) existing and potential suppliers of goods and services to the WWMF (17);
- d) agricultural organizations (2);
- e) local realtors (4); and
- f) health care facility administrator (1).

The tourist surveys were completed between July 3 – 6 and July 18 – 19, 2003 with 54 tourists being interviewed. The surveys were conducted at Inverhuron Provincial Park, Inverhuron Beach, Station Beach and Tiny Tots Park in Kincardine. The tourism round table [26] was conducted on October 7, 2003 at the Governor's Inn, Kincardine. Three local tourist business operators took part in the discussion. The round table was conducted to identify issues, character and activities in the community and local area that most effect tourism. The participants were asked to identify the current awareness and concerns that tourism operators and tourists may have regarding the operation of a nuclear generating station, radioactive waste management and the WWMF. The round table also included a discussion on potential effects on the tourist trade that may be attributable to the long-term management facility options.

In addition, the scientific literature was also consulted to identify relevant case studies and research related to the assessment of socio-economic effects of radioactive waste and other nuclear facilities. Much of this literature is related to nuclear facilities in the United States, and the proposed high level nuclear waste repository in the State of Nevada in particular [25].

2.2.2.2 Data Analysis and Evaluation

Economic Analysis

In order to carry out an analysis of how various options for long-term management of low and intermediate level wastes might affect the economy within the Municipality of Kincardine and Neighbouring Municipalities, an economic model was constructed. The key inputs to the model were employment, payroll, goods and services expenditure data provided by OPG for the existing WWMF (i.e., the status quo) and each of the long-term management options. Each of the options was considered to be

incremental to the existing WWMF. Municipal projections for employment, population and housing were also obtained. Data from Official Plans and the Ontario Population Projections were used in conjunction with the projected annual growth rates from the Statistics Canada 2001 census. For modelling purposes, an medium projection was used that combined the high (i.e., Bruce County Official Plan) and low (i.e., Ontario Population Projections) population, employment and housing forecasts. OPG data and municipal projections were obtained for the study period of 2005 to 2035.

The key outputs of the economic model are estimates of total employment and income spending by those associated with the WWMF within the Municipality of Kincardine and Neighbouring Municipalities, and their resultant effect on municipal population and housing. Effects on employment, population and housing were considered to be key indicators of potential effects on overall community stability. Total income spending was considered to be a key indicator of total economic activity.

In terms of employment, four types of employment are estimated:

1. *Employment (Direct On-site)* – Number of employees or full time equivalents working on-site at the facility;
2. *Employment (Other Direct)* – Number of employees or level of employment directly generated through facility related expenditures for goods and services;
3. *Employment (Indirect)* – Number of employees (or full time equivalents) or level of employment caused by a project or activity, not inside the project itself, but in other businesses directly associated with the project or activity; and
4. *Employment (Induced)* – Number of employees or level of employment generated through the spending of household income by households associated with a project or activity.

Essentially, OPG’s current and future payroll determines the number of direct on-site jobs that will be available to potential employees. The model utilizes current OPG employment multipliers to generate the number of on-site jobs associated with each option. The geographic distribution of the direct on-site jobs was assumed to be similar to the geographic distribution of existing WWMF employees, based on an analysis of employee postal codes.

OPG’s activities at the WWMF will also generate other direct and indirect jobs through their direct spending and spending on external contracts. The economic model utilizes Statistics Canada “*Other Engineering Construction*” multipliers updated from their 1999 base using the “*Electric Utility Construction Price Index*”. The geographic distribution of the other direct and indirect jobs was assumed to be similar to the geographic distribution of direct spending by OPG and that of its major contractor, based on an analysis of spending patterns by OPG and its major contractor.

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A portion of the income earned by those gaining employment through direct, other direct or indirect means will be spent on goods and services. This income spending will generate induced employment both within and outside of the Municipality of Kincardine and Neighbouring Municipalities. The economic model utilizes Statistics Canada household expenditure data to estimate the number of induced jobs created by income spending. The geographic distribution of the induced jobs was determined from the results of public attitude research undertaken as part of the IAS, which determined where residents tend to go shopping or spend their incomes.

Therefore, the economic model estimates the total number of jobs and the total income spending by persons associated with the existing WWMF and each of the future options through direct, other direct, indirect and induced means within and outside of the Municipality of Kincardine and Neighbouring Municipalities.

The amount of employment associated with the WWMF and each of the future options will have an effect on population and housing within the Municipality of Kincardine and Neighbouring Municipalities. The economic model utilizes the existing and projected ratios of employment to population, and population to housing to estimate the number of persons and dwellings that will be associated with the WWMF and each of the future options. These estimates are placed in the context of municipal projections for population and housing over the study period (i.e., 2005-2035). The model also places the amount of employment associated with the WWMF and each of the future options in the context of municipal projections for employment over the study period.

Property sales and property value data were collected and summarized. Trend analysis in local housing and property values was conducted. OPG staff housing postal codes will be provided by OPG and will be used to determine the distances that OPG staff travel to work and the areas where they have the largest economic inputs.

Data regarding the amount of taxes paid to the local municipality and those transferred to others was provided by OPG on the basis of projected ground floor space for all new buildings required for each long-term waste management option.

Social Analysis

Unlike economic effects, social effects cannot be predicted, measured and quantified with ease, nor can a firm and direct cause-effect relationship with a particular undertaking always be established. The key to an appropriate social analysis for a radioactive waste management facility was considered to be the development of an appropriate “source-pathway-receptor” model of how social effects may occur as a result of public attitudes towards risk. In terms of “sources”, the analysis begins with an investigation of whether the plans for long-term management of radioactive waste could be considered ‘risky’ and therefore whether there is some potential for it to cause or be a source of adverse social effects.

Understanding the “pathways” requires research on changes in people’s attitudes, and which ones might lead to changes in people’s behaviours. Predicting effects on “receptors” involves determining the implications of these changes in behaviour on the social conditions in the community.

As such, the social analysis component of this study was designed to identify whether there is potential for significant social effects as a result of the implementation of long-term waste management options at the WWMF. The potential for social effects was determined by examining the initial impressions of people to the idea long-term waste management at the Bruce Power site; the potential for changes in public attitudes (i.e., feelings of personal security, community satisfaction and commitment to farming); potential for changes in the attractiveness of the area as a place to live, establish a business or visit as a tourist; and the potential for changes in people’s behaviours (i.e., living in the community, fishing and boating activities near the Bruce Power site, and use of parks, beaches and trails near the Bruce Power site). The aim of this research was to ensure that any conclusions regarding social effects could be supported by at least three lines of inquiry or forms of data (i.e., the ‘triangulation’ of research results in support of a hypothesis).

3. The Existing Western Waste Management Facility

Low and intermediate level radioactive waste is currently being managed by OPG on a 7.6 ha parcel of land at the Bruce Power site, known as the Western Waste Management Facility (WWMF). The WWMF processes and stores low and intermediate level wastes that are produced in the normal operation of nuclear generating stations. OPG has more than 35 years experience with the management of low and intermediate level wastes and has developed a waste handling and classification system to ensure they are safely managed at nuclear stations and at the WWMF. Low and intermediate level waste management operations at the WWMF currently employ approximately 81 people. OPG spends approximately \$8.9 million on payroll in a typical year and approximately \$12 million on goods and services in a typical year.

Low level waste (LLW) consists of industrial items and materials such as mop heads, rags, paper towels, floor sweepings and protective clothing that have become slightly contaminated with radioactivity and are of no further use. Low level waste comprises about 95 per cent of the waste produced each year by Ontario’s nuclear generating stations. Approximately 60 per cent of the waste is comprised of paper, plastics metal rubber and cotton and it can be processed by incineration. Another 15 per cent can be processed by current compaction. The levels of radioactivity in low level waste are such that it may be safely handled by workers without any special radiation shielding using conventional industrial practices and equipment.

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Intermediate level waste (ILW) consists primarily of used nuclear reactor components and resins and filters used to purify reactor water systems. Intermediate level waste is more radioactive than low level waste and requires shielding to protect workers and may contain longer-lived radionuclides.

Approximately 75 percent of the waste received at the WWMF is processed in the Waste Volume Reduction Facility. Most of the low level waste is placed in above-ground secure Low Level Storage Buildings (LLSBs), while the intermediate level waste is primarily stored in in-ground containers. The in-ground containers are constructed within a thick deposit of native, low-permeability silt till. All wastes currently stored at the WWMF can be safely retrieved.

All low and intermediate level waste is delivered to the WWMF by truck. During transportation, the waste is packaged so that it meets Canadian Nuclear Safety Commission (CNSC) and Transportation of Dangerous Goods transportation packaging requirements. The level of packaging varies with the potential hazard of the waste. The most secure packages are designed to withstand severe accident conditions and must receive a packaging design certificate from the CNSC. In a typical year, OPG makes about 1,000 shipments of radioactive materials to the WWMF, most of which are from the Darlington and Pickering Nuclear Generating Stations. During the past 30 years, there have been over 25,000 shipments of radioactive material. During that time, there have been only 3 road accidents. In each case, only the transport truck was damaged and there was no release of radioactive materials to the environment.

The federal government is responsible for the regulation of producers and owners of waste management facilities through the *Nuclear Safety and Control Act* (NSCA). The NSCA, which is administered by the CNSC, provides the framework under which licences for site preparation, construction, operation, decommissioning and abandonment of radioactive waste facilities are obtained. The CNSC discharges its responsibilities under the NSCA by issuing an operating licence for the WWMF. The NSCA also empowers the CNSC to monitor and inspect operations at these facilities.

All of the radioactive waste stored at the WWMF is monitored to ensure the integrity of storage containers. Every aspect of OPG's management of radioactive waste, including low and intermediate level waste, is regulated and carefully monitored by the Canadian Nuclear Safety Commission (CNSC). The CNSC issues operating licences and monitors all nuclear facilities and related activities with skilled inspectors to ensure that the current operations pose no undue risks to people or the environment. The WWMF is subject to strict environmental radiological monitoring, as a condition of its licence to operate. Emissions to air and surface and groundwater are managed, routinely monitored and reported to the CNSC and compared with CNSC standards.

3.1 Public Attitudes Towards the Existing WWMF

From a social effects perspective, the WWMF may represent many things to many people. As such, understanding people’s attitudes towards the WWMF is important. Public attitudes towards the existing WWMF were examined in terms of people’s awareness of the facility, how often they think about the fact that they live near a radioactive waste management facility, and their overall confidence in the technology employed at the existing WWMF and their overall assessment of the effect of the WWMF on their daily lives.

Respondents in the public attitude research [18] were asked how often in their “day-to-day living” they “think about the fact that they live near the Bruce Power generating station site” and “near the Western Waste Management Facility”. Overall, results indicate that few people think about the Bruce Power station, and even fewer think about the existing WWMF on a daily basis. One-quarter of Kincardine respondents (25 percent) and slightly less than one-fifth of the Neighbouring Municipalities respondents (17 percent) think about the station “very often” and even fewer think about it “often”. A total of 18 percent of the Kincardine and 13 percent of the Neighbouring Municipalities respondents think about the WWMF “very often” or “often”.

Table 1. Frequency of Thinking about Bruce Power Generating Stations and WWMF

Bruce Power Generating Station	Kincardine		Neighbouring Municipalities		WWMF	Kincardine		Neighbouring Municipalities	
	%	n	%	n		%	n	%	n
Very Often	25	100	17	61	Very Often	9	36	5	18
Often	14	54	11	40	Often	9	35	8	27
Not Very Often	35	140	46	160	Not Very Often	42	167	42	145
Never	26	102	26	90	Never	40	160	44	152

Note: Cases may not sum to 351 for the total of Bruce County or 400 for Kincardine where ‘no opinion’ is excluded. Percentages may not sum to 100 percent due to rounding. Source [18] Q14,16

Because 45 percent of Kincardine respondents and 23 percent of the Neighbouring Municipalities respondents had some ties to the nuclear industry (i.e., they indicated that Bruce Power, OPG or AECL employs a member of their household) these respondents think about the Bruce Power generating station more frequently than others.

Public attitude research also indicated that 61 percent of Kincardine and 39 percent of the Neighbouring Municipalities respondents have heard at least “something” about the existing WWMF. Awareness of the WWMF is much greater in the Municipality of Kincardine than elsewhere, Kincardine being the host municipality.

Table 2. Awareness of the Existing WWMF

	Kincardine		Neighbouring Municipalities	
	%	n	%	n
A Great Deal	35	140	19	66
Something	26	104	20	70
Very little	26	105	38	132
Nothing	13	50	23	80

Note: Cases may not sum to 351 for the total of Bruce County or 400 for Kincardine where ‘no opinion’ is excluded. Percentages may not sum to 100 percent due to rounding. Source [18] Q15

Overall, the majority of survey respondents have confidence in the existing radioactive waste management technologies used at the WWMF. Approximately half of Kincardine respondents (53%) and Neighbouring Municipalities (43 percent) respondents state that they are “very confident” in the technologies. Most of the remaining respondents are somewhat confident.

Table 3. Confidence in Existing Technology

	Kincardine		Neighbouring Municipalities	
	%	n	%	n
Very Confident	53	203	43	134
Somewhat Confident	37	140	42	131
Not Very Confident	7	27	12	38
Not at All Confident	4	14	4	12

Note: Cases may not sum to 351 for the total of Bruce County or 400 for Kincardine where ‘no opinion’ is excluded. Percentages may not sum to 100 percent due to rounding. Source [18] Q17

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Respondents with a household member employed in the nuclear industry have a higher degree of confidence in the technologies. Within the Municipality of Kincardine, men and respondents with a higher household income have a higher level of confidence. Neighbouring Municipalities respondents who have lived in the community for a longer period of time also tend to have more confidence in the existing waste management technologies than the average. It is notable that in Kincardine and Neighbouring Municipalities, farmers express a lower level of confidence than the average.

Very few Kincardine (9 percent) or Neighbouring Municipality (6 percent) respondents indicate that the presence of the existing WWMF has had any effect on their daily life. Those that indicate that the facility has had an effect, identify more positive than negative effects:

- a) Positive effects of the existing WWMF (6 percent Kincardine and 3 percent Neighbouring Municipalities) – employment creation, improvements in the economy, population growth, feelings of safety or positive environment effects on ozone layer were noted.
- b) Negative effects of the existing WWMF (4 percent Kincardine and 3 percent Neighbouring Municipalities) – risk of illness/ high cancer rates, pollution, causes worry/ anxiety, and fear were noted.

Table 4. Effects of the WWMF on People’s Daily Life

	Kincardine		Neighbouring Municipalities	
	%	<i>n</i>	%	<i>n</i>
No	91	359	94	322
Yes – Effect				
Positive effect	6	22	3	11
Negative effect	4	15	3	9
Other	1	4		

Note: Cases may not sum to 351 for the total of Bruce County or 400 for Kincardine where ‘no opinion’ is excluded. Percentages sum to more than 100 percent since 2 ‘effect’ responses were accepted. Source [18] Q18, 19

4. Long-Term Management Options for Low and Intermediate Level Waste

In addition to the current ongoing WWMF operations, there are three long-term management options for low and intermediate level waste. These include enhancing the processing, treatment and storage of the existing facilities to allow storage for 100 years, or long-term repository options employing either earth-covered concrete vaults built at ground surface or a 425-750 m deep rock caverns. These options are described in greater detail below.

4.1 Enhanced Processing and Storage

Enhanced Processing and Storage is an adaptation and enhancement of the current low and intermediate level waste management operations at the WWMF. Specifically it involves:

- a) Improved waste processing through super-compaction and conditioning via cementation.
- b) Improved waste storage in controlled access storage buildings.

A 5000 tonne box super-compactor would be used to compact one cubic metre sacrificial containers filled with “compactable” waste. Several of these compacted sacrificial containers would then be placed into a larger steel container, known as an “overpack”, and the remaining air space in the container filled with special purpose cement. The overpack containing the compacted and cemented waste would be suitable for long-term storage. These waste processing operations would take place in a new processing and treatment building to be constructed immediately adjacent to the current buildings at the WWMF.

The filled overpacks would be transferred by forklift to modified Low Level Storage Buildings. The building enhancements involve the installation of airlocks and a climate control system.

Administrative support services, waste receiving operations, laboratory services, security and the like would continue to be provided from the WWMF. However, the processing and treatment facilities would be new construction.

A number of countries use the Enhanced Processing and Storage technology for the management of low level waste. For example, prior to being placed into long-term storage in the Netherlands and Belgium, the volume of low level waste is minimized through the use of super-compaction technology. Super-compaction technology is also used in the US and the UK, and is capable of reducing the waste volume to typically less than one tenth of its original volume. In addition, compacting the waste enhances the long-

term stability of the waste. The compacted drums are placed in specially designed metal containers or “overpacks” and filled with concrete grout to ensure their long-term safety and isolation from the environment. The overpacks are stored in a controlled environment inside a storage building.

4.2 Surface Concrete Vaults

This is a long-term repository option which would be constructed adjacent to the WWMF. This would allow the use of current WWMF infrastructure and services. Further, water, sewer, electrical power and other services would be provided to the repository facility from the WWMF. The facility would consist of two parallel bays of 24 vaults each. The total area of the new facility would be approximately 367 m by 260 m or about 9.6 hectares.

Processing of low level waste would continue to take place at the WWMF prior to and during the operating phase of the repository. Additional contractor support facilities would be constructed including a security kiosk, warehouse, equipment storage and maintenance building, roads, parking areas, laydown/stockpile areas and a concrete batch plant.

The vaults would have a total capacity of 130,000 m³ and are expected to handle 115,000 m³ of LLW comprising of 33,000 waste packages retrieved from the WWMF. While the option could accommodate some intermediate level waste, the current design and cost estimate do not include this waste.

There are several international examples of the use of Surface Concrete Vaults including facilities in France and Spain. The facility located at Centre de l’Aube in France, which began operations in 1992, has been designed to be Europe’s largest repository for low and intermediate level waste. This site was chosen based on its geology, consisting of an unsaturated layer of sand covering thick deposits of clay. Wastes are placed in concrete vaults constructed on the surface under a movable shelter that protects the wastes from the weather during transfer. Once a vault is full, a concrete cover is poured to completely isolate the waste from the environment. When the site is full, an earth cover will be placed over all of the concrete vaults.

4.3 Deep Rock Vaults

Two geotechnically feasible deep rock vault concepts were developed for the purposes of this IAS:

- a) Vaults constructed (excavated) in the Ordovician age, Queenston Formation shale at an assumed depth of 460 m below ground surface.
- b) Vaults constructed (excavated) in the Ordovician age, Lindsay Formation limestone at an assumed depth of 660 m below ground surface.

For the purpose of the IAS, these two concepts have been combined as a single Deep Rock Vaults option. The Deep Rock Vaults option is a long-term repository option which would be constructed in the bedrock underlying the WWMF.

The repository would consist of 20 individual excavated vaults, each of which is typically 10 m wide by 7 m high by 120 m long arranged in two parallel rows of 10 caverns each. The vaults would have concrete floors and the roofs would be spot-bolted and meshed as required to protect workers.

The typical repository would be accessed by two vertical shafts: a 4 m finished diameter, lined main shaft for excavation and waste placement operations; and a 2.5 m diameter, lined ventilation/emergency egress shaft. To facilitate positive ventilation of the vaults during mining and waste emplacement operations, it is assumed that a 5 m wide by 5 m high ventilation exhaust gallery is constructed around the perimeter of the cavern area as part of the initial development work.

Similar to the Surface Concrete Vaults option, the Deep Rock Vaults option would be located within the Bruce Power site adjacent to the WWMF. This would allow the use of current WWMF infrastructure and services. Additional support facilities would be constructed at the surface, including a security kiosk, warehouse, equipment storage and maintenance building, roads, parking areas, and a temporary waste rock storage area.

The vaults would have a total capacity of 130,000 m³ and are expected to handle 115,000 m³ of low level waste comprising of 33,000 waste packages retrieved from the WWMF. While the option would be intended to accommodate intermediate level waste, the current design and cost estimate do not include this waste.

Facilities at Loviisa in Finland and Forsmark in Sweden are examples of the use of the Deep Rock Vaults technology for the disposal of low and intermediate level waste. The Forsmark facility was commissioned in 1988 and is located adjacent to the Forsmark nuclear power station. The repository was excavated in rock situated one kilometre offshore below the bottom of the Baltic Sea. The Loviisa facility began operations in early 1997 and is located on the Hästholmen Island near the Loviisa nuclear power station. That repository is excavated in rock at a depth of 110 m below ground.

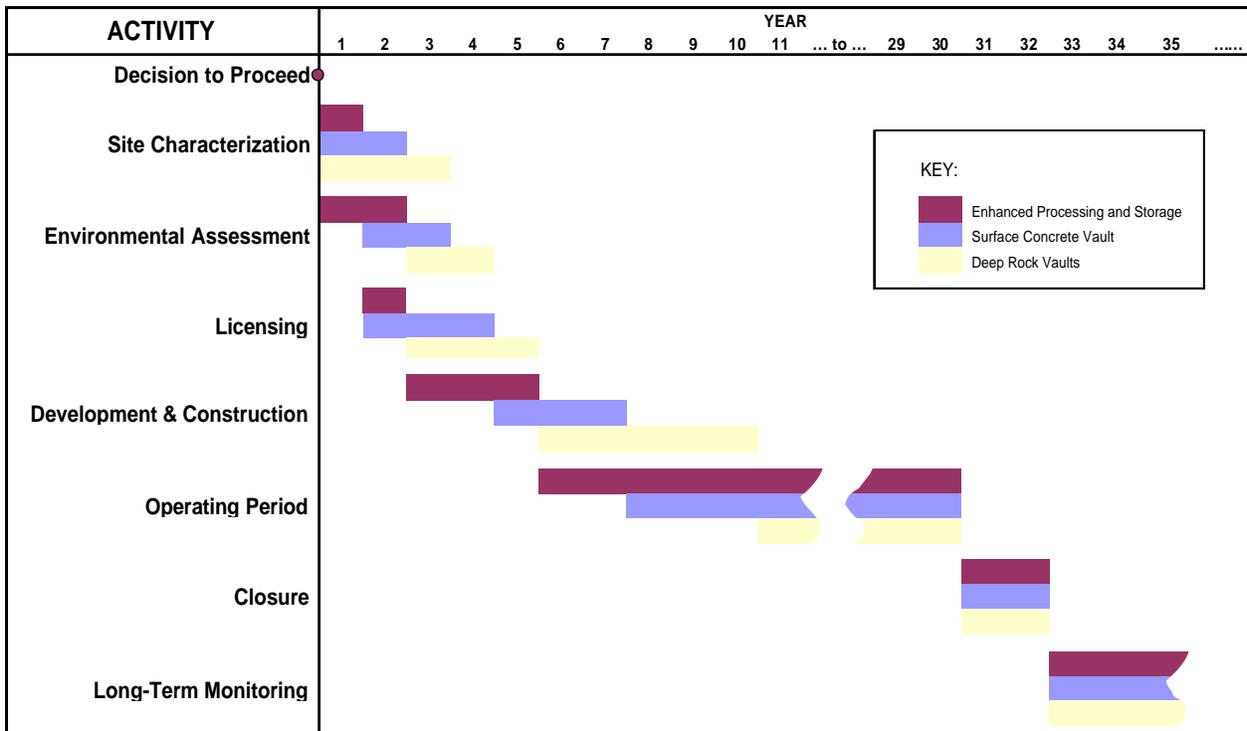
4.4 Conceptual Schedule

A conceptual schedule for the design, construction, operation and closure of the long-term management options was developed for the purposes of the IAS. The key activities leading to the establishment and operation of a facility are summarized in Figure 1 for each of the long-term management options. The schedule shows the duration of each of the activities following a decision to proceed assumed to occur in 2004. The schedule is based on a preliminary estimate of the duration of each of the activities and may be

expected to change as more specific and detailed information on the options is developed. It was also assumed that the continued management of low and intermediate level waste at the WWMF (the Status Quo) could safely continue over the same period.

Figure 1 shows that the options could be planned and constructed on slightly different schedules due to the different level of effort required in their design, approval and construction. For example, it is assumed that a longer time is required for site characterization for the Deep Rock Vaults option compared with the Enhanced Processing and Storage option because of the need to conduct an underground drilling and testing program. In addition, construction would occur on an incremental basis with the development of waste management storage capacity as it is required.

Figure 1. Schedule for Establishment and Operation of Long-Term Waste Management Options



The schedule for the Enhanced Processing and Storage option assumed that construction of buildings and installation of equipment for the would begin in 2006, with receipt of wastes beginning in 2010. The facility would receive waste through December 2034. This option has a design life of 100 years. At the end the 100 years, a decision would be required to continue storage or to transfer the wastes to a disposal facility.

Construction of the Surface Concrete Vaults option is assumed to begin in early 2009. The vaults would be constructed in eight blocks of six vaults each; operation of the first block would start in 2012. Operations would end in December 2034 following which the long-term repository would be closed. Following closure there would be an institutional control period of up to 300 years during which time the site would be controlled by a legally designated institution.

Construction of the Deep Rock Vaults option is assumed to begin in January 2010, with the excavation of the main shaft, central access gallery, perimeter ventilation exhaust gallery and ventilation shaft being completed by 2013. Construction of the first three vaults would occur through 2014, and waste placement would start in 2015. Mining of subsequent vaults and waste placement would occur alternately until 2034; at this point closure would begin.

5. Baseline Economic and Social Conditions

5.1 Economic Profile

5.1.1 Population

Population projections up until 2035 for both the Municipality of Kincardine and the Neighbouring Municipalities Study Areas are presented in Table 6. High population forecasts are based on the projections put forward in the Bruce County Official Plan (1997), while low values are based on the Ontario Population Projections for Bruce County (2000). As both the Official Plan and the Ontario Population Projections were developed before the 2001 census information was available, they both overestimated the population growth between 1996 and 2001.

Due to the fact that the population of Bruce County decreased from 1996 to 2001, population projections from both the Official Plan and Ontario Population Projections were modified to reflect the lower than expected base values.

Annual growth rates predicted from the Official Plan and Ontario Population Projections were modified to reflect the actual 2001 census values. For modelling purposes, both high (i.e., Bruce County Official Plan) and low (i.e., Ontario Population Projections) population forecasts have been used.

Projections of population growth based on the Official Plan estimates range from approximately 1.2 to 0.84 percent in annual growth, while Ontario Population Projections range from 0.25 to 0.16 percent in annual growth.

Table 5. Population Projections

Year	Municipality of Kincardine		Neighbouring Municipalities										Total	
			Arran-Elderslie		Brockton		Huron-Kinloss		Saugeen Shores		South Bruce			
	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
1996	11908	11908	6851	6851	10163	10163	6284	6284	12084	12084	6248	6248	53538	53538
1997	11732	11732	6796	6796	10062	10062	6272	6272	11945	11945	6211	6211	53018	53018
1998	11556	11556	6741	6741	9961	9961	6260	6260	11806	11806	6174	6174	52498	52498
1999	11381	11381	6687	6687	9860	9860	6248	6248	11666	11666	6137	6137	51979	51979
2000	11205	11205	6632	6632	9759	9759	6236	6236	11527	11527	6100	6100	51459	51459
2001	11029	11029	6577	6577	9658	9658	6224	6224	11388	11388	6063	6063	50939	50939
2002	11158	11057	6654	6594	9771	9683	6297	6240	11521	11417	6134	6078	51536	51069
2003	11287	11085	6731	6610	9884	9707	6370	6256	11655	11446	6205	6094	52132	51198
2004	11416	11113	6808	6627	9997	9732	6443	6272	11788	11475	6276	6109	52729	51328
2005	11546	11145	6885	6646	10110	9759	6516	6289	11921	11507	6347	6127	53325	51473
2006	11675	11178	6962	6666	10224	9788	6588	6308	12055	11541	6418	6145	53922	51625
2007	11804	11214	7039	6687	10337	9820	6661	6328	12188	11579	6489	6165	54518	51793
2008	11933	11253	7116	6711	10450	9855	6734	6351	12322	11620	6560	6186	55115	51976
2009	12062	11295	7193	6735	10563	9891	6807	6374	12455	11662	6631	6209	55711	52166
2010	12191	11341	7270	6763	10676	9931	6880	6400	12588	11710	6702	6234	56308	52380
2011	12321	11387	7347	6791	10789	9972	6953	6426	12722	11758	6773	6260	56904	52593
2012	12450	11437	7424	6820	10902	10015	7026	6454	12855	11809	6844	6287	57501	52822
2013	12579	11486	7501	6850	11015	10058	7099	6482	12988	11860	6915	6314	58097	53051
2014	12708	11537	7578	6880	11128	10103	7172	6511	13122	11913	6986	6342	58694	53287
2015	12837	11589	7655	6911	11241	10148	7244	6540	13255	11966	7057	6371	59291	53523
2016	12966	11638	7732	6940	11355	10191	7317	6568	13388	12017	7128	6398	59887	53752
2017	13096	11688	7809	6970	11468	10235	7390	6596	13522	12068	7199	6425	60484	53981
2018	13225	11737	7886	6999	11581	10278	7463	6624	13655	12119	7270	6452	61080	54209
2019	13354	11783	7963	7027	11694	10319	7536	6650	13789	12167	7341	6478	61677	54423
2020	13483	11826	8040	7052	11807	10356	7609	6674	13922	12211	7412	6501	62273	54621
2021	13612	11867	8117	7077	11920	10392	7682	6697	14055	12254	7483	6524	62870	54812
2022	13741	11905	8194	7100	12033	10425	7755	6719	14189	12293	7554	6545	63466	54987
2023	13870	11942	8271	7121	12146	10457	7828	6739	14322	12330	7625	6565	64063	55155
2024	14000	11973	8349	7140	12259	10485	7900	6757	14455	12363	7696	6582	64659	55300
2025	14129	12001	8426	7157	12372	10509	7973	6773	14589	12392	7767	6597	65256	55429
2026	14258	12026	8503	7172	12486	10531	8046	6787	14722	12417	7838	6611	65852	55543
2027	14387	12046	8580	7183	12599	10548	8119	6798	14855	12438	7909	6622	66449	55635
2028	14516	12066	8657	7195	12712	10566	8192	6809	14989	12458	7980	6633	67046	55726
2029	14645	12085	8734	7207	12825	10583	8265	6820	15122	12479	8051	6644	67642	55818
2030	14775	12105	8811	7219	12938	10600	8338	6831	15256	12499	8122	6655	68239	55909
2031	14904	12125	8888	7231	13051	10618	8411	6842	15389	12520	8193	6665	68835	56001
2032	15033	12145	8965	7242	13164	10635	8484	6854	15522	12540	8264	6676	69432	56092
2033	15162	12165	9042	7254	13277	10652	8556	6865	15656	12561	8335	6687	70028	56184
2034	15291	12184	9119	7266	13390	10670	8629	6876	15789	12581	8406	6698	70625	56275
2035	15420	12204	9196	7278	13504	10687	8702	6887	15922	12601	8477	6709	71221	56367

5.1.2 Employment

According to the most recent census data (2001), Bruce County had a resident employed labour force of 31,515 [1]. The unemployment rate was approximately 4.4 percent [1]. Experienced labour force was in order of 32,660 persons [1], of which 26,760 resided in the Municipality of Kincardine and Neighbouring Municipalities. Experienced labour force distribution is shown in Table 6 below.

Table 6. Experienced Labour Force Distribution (2001)

Municipalities	Employees	% of Total
Kincardine	5,675	21
Arran-Elderslie	3,420	13
Brockton	5,270	20
Huron-Kinloss	3,065	11
Saugeen Shores	5,905	22
South Bruce	3,425	13
Total	26,760	100

Source: [2-7]

Table 7 shows that over 60 percent of the labour force was located in three municipalities (Saugeen Shores, Kincardine and Brockton), with more than 20 percent of the total in the Municipality of Kincardine itself.

Four industrial categories accounted for over 60 percent of the labour force. Ranked in order of labour force association these categories included: agriculture and other resource-based industries, manufacturing and construction, wholesale and retail and health services.

Table 7. Labour Force Distribution by Industrial Category (2001)

Industrial Category	Municipality of Kincardine		Neighbouring Municipalities										Total	
			Arran-Elderslie		Brockton		Huron-Kinloss		Saugeen Shores		South Bruce			
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Agriculture and Other Resource-Based Industries	1,695	30	675	20	950	18	840	27	1,760	30	795	23	6,715	25
Manufacturing and Construction Industries	740	13	855	25	1,100	21	630	21	510	9	1,065	31	4,900	18
Wholesale and Retail Trade	685	12	560	16	675	13	360	12	855	14	450	13	3,585	13
Finance and Real Estate	140	2	75	2	220	4	65	2	190	3	55	2	745	3
Health and Education	655	12	535	16	925	18	430	14	925	16	355	10	3,825	14
Business Services	725	13	355	10	615	12	360	12	455	8	300	9	2,810	11
Other Services	1,035	18	370	11	790	15	380	12	1,210	20	405	12	4,190	16
Total	5,675	100	3,420	100	5,270	100	3,065	100	5,905	100	3,425	100	26,760	100

Source: [8]

The Bruce Power site is Bruce County’s largest single employer with over 3,100 staff. Approximately 54 percent of the staff reside within Bruce County, the remainder commute from surrounding municipalities.

Table 8. Bruce Site Work force Distribution by Place of Residence

Geographies	Work Force	% Distribution
Kincardine	1,072	34
Other Bruce County	628	20
Bruce County – subtotal	1,700	54
Outside of Bruce County	1,431	46
Total Work Force	3,131	100

Source: [17]

The WWMF located at the Bruce Power site employs approximately 147 staff that are involved in day-to-day operations and maintenance activities, of which 81 staff are associated with the low and intermediate level waste management. The remainder is associated with used fuel management and other miscellaneous activities on-site.

Projected employment growth is expected to reflect population growth trends. By the year 2035 the employment base in Kincardine and Neighbouring Municipalities is expected to fall into the range of 29,611 (low estimate) and 37,415 (high estimate). Corresponding employment base for Kincardine is expected to approach 6,280 and 7,935 respectively. The following table provides these employment projections.

Table 9. Employment Projects (2001-2035)

Year	Municipality of Kincardine		Neighbouring Municipalities										Total	
			Arran-Elderslie		Brockton		Huron-Kinloss		Saugeen Shores		South Bruce			
			High	Low	High	Low	High	Low	High	Low	High	Low		
2001	5,675	5,675	3,420	3,420	5,270	5,270	3,065	3,065	5,905	5,905	3,425	3,425	26,760	26,760
2002	5,741	5,689	3,460	3,429	5,332	5,283	3,101	3,073	5,974	5,920	3,465	3,434	27,073	26,828
2003	5,808	5,704	3,500	3,437	5,393	5,297	3,137	3,081	6,043	5,935	3,505	3,442	27,387	26,896
2004	5,874	5,718	3,540	3,446	5,455	5,310	3,173	3,088	6,112	5,950	3,545	3,451	27,700	26,964
2005	5,941	5,734	3,580	3,456	5,517	5,325	3,209	3,097	6,182	5,967	3,585	3,461	28,014	27,040
2006	6,007	5,751	3,620	3,466	5,579	5,341	3,244	3,106	6,251	5,985	3,626	3,471	28,327	27,120
2007	6,074	5,770	3,660	3,477	5,640	5,358	3,280	3,116	6,320	6,004	3,666	3,482	28,640	27,209
2008	6,140	5,791	3,700	3,490	5,702	5,377	3,316	3,127	6,389	6,025	3,706	3,495	28,954	27,305
2009	6,207	5,812	3,740	3,502	5,764	5,397	3,352	3,139	6,458	6,047	3,746	3,508	29,267	27,405
2010	6,273	5,836	3,780	3,517	5,825	5,419	3,388	3,152	6,527	6,072	3,786	3,522	29,580	27,517
2011	6,340	5,859	3,821	3,531	5,887	5,441	3,424	3,165	6,597	6,097	3,826	3,536	29,894	27,629
2012	6,406	5,885	3,861	3,546	5,949	5,465	3,460	3,178	6,666	6,123	3,866	3,552	30,207	27,749

Table 9. Employment Projects (2001-2035)

Year	Municipality of Kincardine		Neighbouring Municipalities										Total	
			Arran-Elderslie		Brockton		Huron-Kinloss		Saugeen Shores		South Bruce			
	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
2013	6,473	5,910	3,901	3,562	6,011	5,488	3,496	3,192	6,735	6,150	3,906	3,567	30,521	27,869
2014	6,539	5,937	3,941	3,578	6,072	5,513	3,532	3,206	6,804	6,177	3,946	3,583	30,834	27,993
2015	6,605	5,963	3,981	3,594	6,134	5,537	3,568	3,220	6,873	6,205	3,987	3,599	31,147	28,118
2016	6,672	5,988	4,021	3,609	6,196	5,561	3,603	3,234	6,942	6,231	4,027	3,614	31,461	28,238
2017	6,738	6,014	4,061	3,624	6,257	5,585	3,639	3,248	7,011	6,258	4,067	3,630	31,774	28,358
2018	6,805	6,039	4,101	3,640	6,319	5,608	3,675	3,262	7,081	6,284	4,107	3,645	32,087	28,478
2019	6,871	6,063	4,141	3,654	6,381	5,630	3,711	3,275	7,150	6,309	4,147	3,659	32,401	28,590
2020	6,938	6,085	4,181	3,667	6,443	5,651	3,747	3,287	7,219	6,332	4,187	3,673	32,714	28,694
2021	7,004	6,106	4,221	3,680	6,504	5,671	3,783	3,298	7,288	6,354	4,227	3,685	33,028	28,794
2022	7,071	6,126	4,261	3,692	6,566	5,689	3,819	3,309	7,357	6,374	4,267	3,697	33,341	28,887
2023	7,137	6,145	4,301	3,703	6,628	5,706	3,855	3,319	7,426	6,394	4,307	3,708	33,654	28,975
2024	7,204	6,161	4,341	3,713	6,689	5,721	3,891	3,327	7,496	6,410	4,348	3,718	33,968	29,051
2025	7,270	6,175	4,381	3,721	6,751	5,735	3,926	3,335	7,565	6,426	4,388	3,727	34,281	29,119
2026	7,336	6,188	4,421	3,729	6,813	5,746	3,962	3,342	7,634	6,439	4,428	3,735	34,595	29,179
2027	7,403	6,198	4,461	3,735	6,875	5,756	3,998	3,348	7,703	6,449	4,468	3,741	34,908	29,227
2028	7,469	6,208	4,501	3,741	6,936	5,765	4,034	3,353	7,772	6,460	4,508	3,747	35,221	29,275
2029	7,536	6,219	4,541	3,748	6,998	5,775	4,070	3,359	7,841	6,471	4,548	3,753	35,535	29,323
2030	7,602	6,229	4,581	3,754	7,060	5,784	4,106	3,364	7,910	6,481	4,588	3,759	35,848	29,371
2031	7,669	6,239	4,622	3,760	7,121	5,794	4,142	3,370	7,980	6,492	4,628	3,765	36,161	29,419
2032	7,735	6,249	4,662	3,766	7,183	5,803	4,178	3,375	8,049	6,502	4,668	3,771	36,475	29,467
2033	7,802	6,259	4,702	3,772	7,245	5,813	4,214	3,381	8,118	6,513	4,709	3,778	36,788	29,515
2034	7,868	6,270	4,742	3,778	7,307	5,822	4,249	3,386	8,187	6,524	4,749	3,784	37,102	29,563
2035	7,935	6,280	4,782	3,784	7,368	5,832	4,285	3,392	8,256	6,534	4,789	3,790	37,415	29,611

5.1.3 Business Activity

The primary components of the local and regional economies are agriculture, the Bruce Power site, industrial and commercial businesses and tourism.

Agriculture

Agriculture is an important component of Bruce County’s economy, especially in municipalities of Arran-Elderslie, South Bruce and Huron-Kinloss. The area has over 3,425 farm operators that generate over \$255 million in gross sales annually. Over 62 percent of the County’s area is dedicated to the agricultural industry. The County is ranked first in Ontario for total cattle production, with 51 percent of farms dedicated to the production of beef cattle. The County is ranked third in Ontario in sheep production, with \$1 million in sales annually. Bruce County is also the top producer of oats and the second largest producer of canola, barley and hay in Ontario [17]. With this agricultural activity also comes a wide variety of supporting and processing industries related to the production of food, animal breeding and horse boarding. The agricultural industry also plays an important role in the culture of Bruce County, as is evident in the large number of agricultural fairs held throughout the area [11].

Bruce Power Site

The Bruce Power site, located on the shore of Lake Huron in the Municipality of Kincardine, is one of the largest centres of energy production in the world. The use of the Bruce Power site (formerly known as the Bruce Nuclear Power Development) began in the late 1960s and major construction continued throughout the 1970s and early 1980s. During this period, a large work force migrated to and became residents of Bruce County. In 1983, the work force on-site was approximately 7,100 persons. Payroll spending and the direct purchases of equipment and supplies resulted in site operations dominating the local employment picture and business activity. Since then, major construction activity has declined and operational employment had varied over the years creating a boom and bust situation.

In 1998, OPG placed Bruce A into a temporary lay-up state, which resulted in the redeployment and relocation of many employees to other nuclear facilities on and off the Bruce Power site. The regional economy did not possess the economic base to absorb the job losses. In order to fight economic effects of historic loss of economic stability as a single-industry community, the County adopted an economic diversification plan for the south Bruce area and has worked hard over the past five years to diversify the economy of the surrounding communities. Since 1998, operational improvements at the four-reactor Bruce B generating station, recent work on rehabilitation of Unit 4 and 3 reactors at Generating Station A has led to increased employment at Bruce Power and brought strong economic growth to the Municipality of Kincardine and its Neighbouring Municipalities, particularly Saugeen Shores [10].

Near the end of 2002, Bruce County also became a home to power generation from renewable sources. A commercial wind farm with five new 1.8-megawatt wind turbines went into operation near the Bruce Power site. Another wind turbine went up on the Bruce peninsula. They are a source of economic hope for an area that wants to be an important part of Ontario's energy future [10].

Kincardine and its Neighbouring Municipalities do not have a well-developed nuclear service industry. A review of the 2001 Canadian Nuclear Association's annual Nuclear Canada Yearbook and Buyer's Guide indicates that most of the nuclear service industry in Canada is located outside of Bruce County (e.g., City of Toronto, Niagara Falls). In addition, OPG, Hydro One, and AECL have local offices in the area but operate mainly from their Toronto-area headquarters. Although these companies employ local residents, their headquarters are located elsewhere, consequently, a large proportion of revenues derived from the WWMF site tends leak out from Bruce County. Nevertheless, it is estimated that up to 24 percent of monies spent by OPG on construction or operations and maintenance contracts is spent locally within the Municipality of Kincardine and Neighbouring Municipalities. Interviews conducted with local suppliers to OPG indicate that local business operators' credit OPG as contributing positively to local economic stability and growth, largely in terms of employment and the spin-offs associated with employee spending.

Other Industrial and Commercial Businesses

The Municipality of Kincardine and Neighbouring Municipalities have a thriving retail and service industry. The majority of businesses are small manufacturing business with less than 10 employees. The largest manufacturing sector is the food industry. Overall, wages in the manufacturing sector are below those at the Bruce Power site, creating a competition for labour. The table below provides a summary of the top manufacturing sectors in the County.

Table 10. Top Manufacturing Sectors in Bruce County

Sector	Number of Firms	Number of Employees
Food Processing	20	364
Electrical & Electronic Products	3	257
Furniture & Fixture	14	190
Fabricated Metal Products	16	179
Wood Products	9	106
Printing & Publishing	26	100
Chemical & Chemical Products	6	72

Source: [17]

Since 2001, the Bruce County has been experiencing strong activity in the construction sector. Municipalities near Bruce Power site are witnessing significant new residential and commercial construction resulting from the resurgence of activity at the generating facility and the accompanying economic spin-off. In Saugeen Shores, construction numbers hit \$16,9 million in 2002, up \$1.5 million over a year ago and \$6.5 million higher than the two previous years. Residential construction accounted for \$15.9 million [10]. In Kincardine, 263 building permits were issued, with total construction value of \$15 million. The biggest jump was for single detached dwellings, which were more than double from 2001 [13]. Huron-Kinloss experienced a lot of construction activity in the agricultural sector [10].

One of the major industrial developments within Bruce County is Bruce Energy Centre (BEC). This is an 800 acre serviced industrial park located immediately southeast of the Bruce Power site. It was established in 1986 with the intent to develop an industrial ecopark where waste and by-products of one industry could become the feedstock for a neighbouring industry. Currently, six companies operate in the BEC. These companies produce polypropylene film, hydroponically grown tomatoes, processed foods, commercial alcohols, and nutrient-rich feed for livestock. One company is a privately funded applied research and development laboratory [17].

5.1.4 Tourism

The tourism industry is one of the most important business sectors of the economy in the Municipality of Kincardine and its Neighbouring Municipalities. The area is recognized for its diverse natural beauty with over 2,400 km of Great Lakes shoreline, the Saugeen River and many other inland lakes and rivers. The tourism industry generates approximately \$118 million annually and directly employs 1 in 7 persons [19]. Interviews with tourism officials also indicate that much of the tourism in the area is from across Ontario and from the United States.

Participants in the tourism round table described Kincardine and its Neighbouring Municipalities as an “undiscovered” area for tourism [26]. They stated that many tourists are first time visitors who will return. The long-term investment efforts to develop more activities and attractions for tourists over the past 10 years are now starting to pay off. More than ever, tourist operators, businesses and organizations are actively promoting tourism and are undertaking activities to expand tourism. There is now a more a co-ordinated regional approach to tourism.

Interviews with tourism business operators and discussions at the tourism round table indicated that because the areas near the Bruce Power site have a large cottage population and a large proportion of the population associated with Bruce Power and OPG employees, a substantial proportion of tourism is linked to friends and relatives of these employees [17]. A recent tourism study across Bruce and Grey Counties [20] confirmed this, and indicated that 62 percent of all overnight tourists to the area were for the purposes of visiting to friends and relatives. This is particularly true during the non-peak tourist season (i.e., October through December). Other popular activities conducted by overnight tourists include participation in sports and outdoor activities (particularly water-based activities); shopping; sightseeing; and visiting parks, historic sites and cultural events.

Due to the seasonality of the tourism sector and hence visitor demand, many of the roofed accommodation properties are seasonal. Many properties close for the winter season. May to September represents the tourist peak, with July and August experiences the most demand. There is not enough accommodation product to meet the demand during the peak seasons [19]. Interviews with local tourism officials indicate that in communities along the Lake Huron shoreline, the variety and quality of roofed accommodation is lacking [17]. Many of the existing properties are aging and in need of renovation. There is a lack of resort and upscale Bed and Breakfast product. In addition to roofed accommodation, there are many campgrounds and trailer parks [17].

There are a variety of tourist attractions located within the communities along the shoreline of Lake Huron, which can be categorized as heritage attractions, natural attractions, industrial attractions and amusements. The primary heritage attractions in the area are the Bruce County Museum, Kincardine Lighthouse Museum, Point Clark Lighthouse, the Chantry Lighthouse and Saugeen Amphitheatre in Southampton, and the Treasure Chest Museum in Paisley. The museums and lighthouses offer both self-guided and guided tours throughout the summer season [19].

The Lake Huron Shoreline is in itself a significant natural attraction. The Lake Huron shoreline offers some of the best beaches in Ontario. It is the shoreline that draws tourists to the area whether it is for the beaches, fishing, boating, hiking or biking. This was clearly evident in the tourist survey undertaken as part of this study where 68 percent of respondents identified Lake Huron and local beaches as the first thing or image that comes to mind when they think about the Kincardine area. Similarly, public attitude results also indicated that people within Kincardine and Neighbouring Municipalities associate the area with Lake Huron, its beaches, harbours, and lighthouses. These images were considered overwhelmingly positive. As a result, the lake, parks, beaches, and trails along the Lake Huron Shoreline are heavily used by tourists. When tourists were asked how often they use these amenities, 83 percent of respondents indicated that they “always” and 17 percent “occasionally” use these areas during their visits.

The WWMF has a very low profile among tourists and it is not a “thing or image” that comes to mind. While most tourists had heard about of the Bruce Power site, only 28 percent of the tourists surveyed were aware of the presence of the WWMF. Given such a low profile, the vast majority (91 percent) of tourists surveyed did not think that the presence of the WWMF had any effect on your tourism experience thus far. Discussions at the tourism round table confirmed that the Bruce Power site has a low profile among tourists, particularly as the existing nuclear generating stations are not visible from the nearest highway [26]. Round table participants believed most tourists learn about the site through local tourists guides, while tourists indicated that they learned about the WWMF from family, media or a previous visit.

The Bruce Power site and its Visitors’ Centre can be considered as an industrial tourist attraction. It is located along the main access road to the Bruce A and B stations from Highway 21 between Kincardine and Port Elgin. This attraction provides visitors with numerous exhibits, displays and pre-arranged guided tours that explain the production of nuclear electricity. Visitation to this attraction has been increasing over the past several years and is estimated to be approximately 10,000 persons per year [21]. In comparison to visitation to other attractions such as MacGregor Point Provincial Park (approximately 117,000 visitors in 2000 [17]), this level of visitation is considered to be low. Discussions at the tourism round table indicated that the Bruce Power site is placed on the ‘rainy day list’ as a tourist attraction [26]. Tourists do not differentiate between the nuclear stations and the waste management operations on the Bruce Power site. Indeed, round table participants thought that tourists were not fully aware of that a waste management facility already exists on the Bruce Power site [26].

However, since operation of the nuclear stations was taken over by Bruce Power, there are two main entities undertaking activities at the site (i.e., Bruce Power as nuclear station operator and OPG as the waste management facility operator). Round table participants indicated that OPG’s WWMF has been gaining a higher profile among local residents and tourists over the past several years.

The Lake Huron shoreline area also boasts several amusement facilities and a large artisan community, from theatre to visual arts. The majority of theatre, art and entertainment is centralized in Southampton. The Bluewater Summer Playhouse is also located in Kincardine and conducts professional performances for the public from June through September. Marinas and boat charters are also integral to the tourism product offered locally.

Telephone interviews with tourism business operators in the Municipality of Kincardine and Neighbouring Municipalities were conducted as part of the environmental assessment to Restart Bruce A Units 3 and 4 [17] and this IAS. These interviews investigated the potential influences of operations at the Bruce Power site and the WWMF in particular on their businesses. The main issues in the community that respondents identified as having the most effect on their business activities were special events in the community, weather, Bruce Power employees and water quality. In addition, local environmental quality and community image were both considered to be very important to local business activity in the tourism sector. The majority of business operators indicated that their business activity had generally increased over the past two years.

The presence and operation of nuclear operations at the Bruce Power site have a positive influence on local motels and hotels. They rely on corporate clientele, Bruce Power and OPG employees for a large portion of their business activity. In general however, none of those interviewed indicated that people tended to link their products or services with the Bruce Power site. Few concerns have been expressed by tourists over the operation of the nuclear generating stations or radioactive waste management. Tourist operators expressed the point of view that the limited visibility of the Bruce Power site “is a good thing” because they believed that tourists don’t want to be reminded of its presence or its proximity. Local residents have an understanding of the nuclear power stations because of the presence of employees and OPG/Bruce Power’s contributions to the community; hence local people have a better understanding of and appreciation for the industry. However, the tourism operators believed that tourists do not benefit from the presence of the stations and are more likely to ask about the safety of being close to a nuclear generating station. One tourism official stated that there is the occasional tourist who has chosen not to seek accommodations in the area because of the nuclear generating station.

Overall, Kincardine and its Neighbouring Municipalities within Bruce County can be described as a “homogeneous region” as far as tourists are concerned. Round table participants stressed that an event in one location, whether at a tourists attraction (e.g., the cancelled Watershed Festival) or a tragedy (e.g., Walkerton) tends to affect all tourism operators [26].

5.1.5 Housing

The inventory of housing stock in Bruce County was estimated in the 2001 Census to stand at 36,864 units [1], of which approximately 24,000 dwellings belonged in the Municipality of Kincardine and

Neighbouring Municipalities. Of these 24,000 units, 65 percent were found in three more populated municipalities (i.e., Saugeen Shores, Kincardine and Brockton), with more than 20 percent of the total in the municipality of Kincardine itself. The distribution of housing stock is shown in the table below.

Table 11. Housing Stock Distribution (2001)

Municipalities	Number of Dwellings	% of Total
Kincardine	5,257	22
Arran-Elderslie	2,705	11
Brockton	3,987	17
Huron-Kinloss	3,560	15
Saugeen Shores	6,215	26
South Bruce	2,278	9
Total	24,002	100

Source: [2-7]

Permanent private dwellings represent more than 80 percent of this housing stock (19,495 units). Of those, almost 85 percent are single detached houses. The majority of the rest are found in buildings with 2 to 4 units.

Home ownership is a reality for most people living in the Municipality of Kincardine and Neighbouring Municipalities. Seventy-eight per cent of households in Kincardine are owner-occupied and the remainder rent their home. Housing tenure data, indicates that much of the existing housing was built either before 1946 or during the 1970s in response to the construction of the Bruce nuclear generating stations. Since 1991 the housing stock inventory in the Municipality of Kincardine and Neighbouring Municipalities has grown at a modest pace.

Projecting forward to 2035, the growth in housing stock within the Municipality of Kincardine and Neighbouring Municipalities is expected to parallel population growth. The following table depicts the anticipated growth trends.

Table 12. Housing Projections (2001-2035)

Year	Municipality of Kincardine		Neighbouring Municipalities										Total	
			Arran-Elderslie		Brockton		Huron-Kinloss		Saugeen Shores		South Bruce			
	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
2001	5,257	5,257	2,705	2,705	3,987	3,987	3,560	3,560	6,215	6,215	2,278	2,278	24,002	24,002
2002	5,319	5,270	2,737	2,712	4,034	3,997	3,602	3,569	6,288	6,231	2,305	2,284	24,283	24,063
2003	5,380	5,284	2,768	2,719	4,080	4,007	3,643	3,578	6,361	6,247	2,331	2,290	24,564	24,124
2004	5,442	5,297	2,800	2,726	4,127	4,017	3,685	3,587	6,433	6,262	2,358	2,295	24,845	24,185
2005	5,503	5,312	2,832	2,733	4,174	4,029	3,727	3,597	6,506	6,280	2,385	2,302	25,126	24,253
2006	5,565	5,328	2,863	2,741	4,220	4,041	3,768	3,608	6,579	6,299	2,411	2,309	25,407	24,325
2007	5,626	5,345	2,895	2,750	4,267	4,054	3,810	3,620	6,652	6,319	2,438	2,316	25,689	24,404
2008	5,688	5,364	2,927	2,760	4,314	4,068	3,852	3,632	6,724	6,341	2,465	2,324	25,970	24,491
2009	5,750	5,384	2,958	2,770	4,361	4,083	3,894	3,646	6,797	6,365	2,491	2,333	26,251	24,580
2010	5,811	5,406	2,990	2,782	4,407	4,100	3,935	3,661	6,870	6,391	2,518	2,342	26,532	24,681
2011	5,873	5,428	3,022	2,793	4,454	4,116	3,977	3,676	6,943	6,417	2,545	2,352	26,813	24,781
2012	5,934	5,451	3,053	2,805	4,501	4,134	4,019	3,692	7,016	6,445	2,571	2,362	27,094	24,889
2013	5,996	5,475	3,085	2,817	4,547	4,152	4,060	3,708	7,088	6,473	2,598	2,372	27,375	24,997
2014	6,057	5,499	3,117	2,830	4,594	4,171	4,102	3,724	7,161	6,501	2,625	2,383	27,656	25,108
2015	6,119	5,524	3,148	2,842	4,641	4,189	4,144	3,741	7,234	6,530	2,651	2,394	27,937	25,220
2016	6,180	5,547	3,180	2,854	4,687	4,207	4,185	3,757	7,307	6,558	2,678	2,404	28,218	25,327
2017	6,242	5,571	3,212	2,867	4,734	4,225	4,227	3,773	7,380	6,586	2,705	2,414	28,499	25,435
2018	6,304	5,595	3,244	2,879	4,781	4,243	4,269	3,789	7,452	6,614	2,732	2,424	28,780	25,543
2019	6,365	5,617	3,275	2,890	4,827	4,260	4,310	3,803	7,525	6,640	2,758	2,434	29,062	25,644
2020	6,427	5,637	3,307	2,901	4,874	4,275	4,352	3,817	7,598	6,664	2,785	2,443	29,343	25,737
2021	6,488	5,657	3,339	2,911	4,921	4,290	4,394	3,831	7,671	6,687	2,812	2,451	29,624	25,827
2022	6,550	5,675	3,370	2,920	4,968	4,304	4,436	3,843	7,743	6,709	2,838	2,459	29,905	25,909
2023	6,611	5,692	3,402	2,929	5,014	4,317	4,477	3,855	7,816	6,729	2,865	2,467	30,186	25,988
2024	6,673	5,707	3,434	2,937	5,061	4,328	4,519	3,865	7,889	6,747	2,892	2,473	30,467	26,057
2025	6,735	5,720	3,465	2,943	5,108	4,338	4,561	3,874	7,962	6,763	2,918	2,479	30,748	26,118
2026	6,796	5,732	3,497	2,950	5,154	4,347	4,602	3,882	8,035	6,777	2,945	2,484	31,029	26,172
2027	6,858	5,742	3,529	2,954	5,201	4,355	4,644	3,888	8,107	6,788	2,972	2,488	31,310	26,215
2028	6,919	5,751	3,560	2,959	5,248	4,362	4,686	3,895	8,180	6,799	2,998	2,492	31,591	26,258
2029	6,981	5,761	3,592	2,964	5,294	4,369	4,727	3,901	8,253	6,810	3,025	2,496	31,872	26,301
2030	7,042	5,770	3,624	2,969	5,341	4,376	4,769	3,907	8,326	6,821	3,052	2,500	32,153	26,344
2031	7,104	5,779	3,655	2,974	5,388	4,383	4,811	3,914	8,398	6,833	3,078	2,504	32,435	26,387
2032	7,165	5,789	3,687	2,979	5,434	4,390	4,852	3,920	8,471	6,844	3,105	2,508	32,716	26,430
2033	7,227	5,798	3,719	2,984	5,481	4,398	4,894	3,927	8,544	6,855	3,132	2,513	32,997	26,473
2034	7,289	5,808	3,750	2,988	5,528	4,405	4,936	3,933	8,617	6,866	3,158	2,517	33,278	26,516
2035	7,350	5,817	3,782	2,993	5,574	4,412	4,977	3,939	8,690	6,877	3,185	2,521	33,559	26,560

5.1.6 Property Values

Data on number of sales of residential property and residential property values was obtained from the Bruce-Grey Owen Sound Real Estate Board.

The previous analysis of the data, carried out for the period of 1996-2000 as a part of the Environmental Assessment for the Restart of Bruce A Units 3 and 4 [17], indicated that the number of properties sold in the adjacent to the Bruce Power site municipalities was variable over the several years, peaking in 1999.

In terms of property values or residential housing prices, the data indicated that declines in property values were experienced in Kincardine, Tiverton and Port Elgin in 1998 and 1999. Average housing prices in Tiverton and Port Elgin had recovered and exceeded those prior to the lay-up, while average housing prices in Kincardine had remained low. In 2001, the announcement by Bruce Power that it intended to restart two units of the Bruce A had resulted in increased confidence in the local housing market. By May of 2001, average prices across the Municipality of Kincardine fully recovered and were at approximately \$103,000 per unit [15].

Data on the number of sales and residential property values for the period of 2000-2002 is provided in the table below. The data indicates a strong housing market, with almost a 20 percent increase in the average for the area housing prices during just two years. That was a result of operation expansion at Bruce Power site, as well as growing attractiveness of the area to retirees.

Table 13. Number of Sales and Average Residential Property Values (2000-2002)

Municipality	2000		2001		2002	
	Sales (#)	Average Value (\$)	Sales (#)	Average Value (\$)	Sales (#)	Average Value (\$)
Kincardine	180	88,772	173	117,047	184	127,914
Arran-Elderslie	67	83,168	73	85,695	94	97,379
Brockton	73	102,090	113	106,071	97	116,611
Huron-Kinloss	72	119,656	69	119,008	100	123,252
Saugeen Shores	195	121,042	202	122,881	201	136,171
South Bruce	225	98,312	154	102,159	217	120,600
Kincardine and Neighbouring Municipalities	812	102,638	784	111,297	893	123,031

Source: [14]

The number of rental units has grown in the past ten years. The present apartment vacancy rate is approximately 11 percent [12]. Rentals range from \$300 to \$1,000 per month [11].

5.1.7 Municipal Finance

In 2001, the Municipality of Kincardine’s gained revenue from a number of sources, the largest being taxation, which accounted for approximately 60 percent of total revenues in the order of \$18.8 million. Municipal taxes related to low and intermediate level radioactive waste management at the WWMF payable to the Municipality of Kincardine in 2002 were approximately \$102,000. This represented approximately 0.5 percent of total municipal revenues and approximately 1 percent of all tax revenues. Municipal taxes related to low and intermediate level waste management at the WWMF payable to the Municipality of Kincardine in the current taxation year are \$305,000.

Table 14. Municipality of Kincardine Revenue Base (2001)

Revenue Source	2001 Revenue (\$)	% of Total
Taxation	11,268,217	60
Fees and User Charges	2,666,390	14
Canada Grants	58,313	0.3
Ontario Grants	1,555,562	8.3
Municipal Grants	112,299	0.6
Net Income of Government Business Enterprise	862,740	4.6
Other Income	2,303,179	12.2
Reserve Fund Revenue	9,143	0
Total	18,835,843	100

Source: [22]

5.2 Social Profile

5.2.1 Community Character

Community character refers to the unique or distinctive qualities of a community. These qualities can be physical in nature (i.e., land uses, geographic/environmental features); economic (i.e., types of business activities), and socio-cultural (i.e., population characteristics, ways of life, etc.).

In order to gain insight into how people both inside and outside of Kincardine see the character of their community, public attitude research was undertaken as part of this IAS [18]. Respondents were asked to volunteer the “thing or image that comes to mind” about the Municipality of Kincardine and the Neighbouring Municipalities. A variety of image attributes are mentioned.

Approximately 12 percent of Kincardine and 19 percent of the Neighbouring Municipalities respondents name the nuclear generating station as the thing or image that comes to mind. Responses include mention of the Bruce Power nuclear station, the Ontario Hydro plant, and nuclear waste. Only 3 respondents in total named nuclear waste as a thing or image that comes to mind. Although nuclear related issues are not top-of-mind issues in either Kincardine or Neighbouring Municipalities, the nuclear station itself is a dominant feature of the community’s character.

The attribute that appears to contribute most to the image of the community is Lake Huron, and its beaches, the harbour and the lighthouse (38 percent in the Municipality of Kincardine and 28 percent in the Neighbouring Municipalities). Respondents within Kincardine who are more likely to volunteer this image attribute are those who themselves or someone in their household is employed in the nuclear industry, have children, or are women.

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The ambiance of the community (that is, a beautiful place to live, quiet and peaceful, the sunsets, small town, cottage country, and nice weather) is named by over one-in-ten respondents in Kincardine (18 percent) and (13 percent) Neighbouring Municipalities.

Fewer than 10 percent of Kincardine and Neighbouring Municipalities respondents name the remaining issues. Included in these response categories are:

- **Agriculture** – agriculture base, cattle and pig farms.
- **Local Community Issues** – amalgamation of the township, Scottish heritage / bag pipes, issues with current government/politicians, new roads needs / road construction needed, high rate of taxation, the downtown image.
- **Community Activities** – community events / community involvement, fishing, conducive to seniors living, Chantry Island, retirement area.
- **Personal Security and Health** – water safety / e-coli/ the Walkerton water scandal, safe / secure, healthcare issues- lack of quality care, alcohol and drug use, un-clean neighbourhoods.
- **Economic / Social Conditions** – standard of living, population growth, lack of shopping facilities, employment issues.

Table 15. Image of the Municipality of Kincardine and the Neighbouring Municipalities

	Kincardine		Neighbouring Municipalities	
	%	n	%	n
Lake Huron/ The Beach/ Harbour/ Lighthouse	38	152	28	98
Ambiance	18	73	13	46
Bruce Power Nuclear Generating Station	12	47	19	66
Tourist resort/ Tourism	9	35	7	25
Local Community Issues	6	24	4	14
Agriculture	4	15	8	28
Personal Security and Health	3	13	4	12
Community Activities	3	10	3	10
Friendly People	2	6	2	6
Economic / Social Conditions	2	8	1	4
Other	1	2	2	5
Nothing / No Opinion	4	15	11	37

Note: Cases may not sum to 351 for the total of Bruce County or 400 for Kincardine where 'no opinion' is excluded. Percentages may not sum to 100 percent due to rounding. Source: [18] Q6

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Over eight-in-ten respondents (89 percent Kincardine, 88 percent Neighbouring Municipalities) state that the image they named is a positive one, with most people stating that it is “very positive”. Kincardine respondents who themselves or someone in their family is employed in the nuclear industry, are older, or women are more likely to state that the image is positive. There are no segment differences in response within the Neighbouring Municipalities. It is notable that 81 percent of the respondents who name the Bruce Power nuclear generating station consider this to be a positive image. Ninety percent or more of the respondents state that community activities, the people, the lake, agriculture, the ambiance, and tourism are positive images.

Table 16. Positive or Negative Image

	Kincardine		Neighbouring Municipalities	
	%	<i>n</i>	%	<i>n</i>
Very Positive	67	261	60	194
Somewhat Positive	22	86	28	91
Somewhat Negative	6	23	7	24
Very Negative	5	21	5	17
	Positive		Negative	
Image	%	<i>n</i>	%	<i>n</i>
Community Activities	100	21		
The People	100	13		
Lake Huron / The Beach / Harbour / Lighthouse	98	221	2	5
Agriculture	93	49	8	4
Ambiance	93	99	7	7
Tourist Resort / Tourism	91	51	9	5
Nuclear Generating Station	81	100	19	23
Other	78	7	22	2
Nothing / No Opinion	76	25	24	8
Economic / Social Conditions	70	7	30	3
Personal Security and Health	60	15	40	10
Local Community Issues	41	13	59	19

Note that percentages for the Image by positive or negative response are for the total Bruce County and sum across to 100 percent. Source: [18] Q7.

Within the Municipality of Kincardine, there exist a number of smaller communities. Of these, the community of Inverhuron has the most distinctive character in comparison to the others. It is a cottage area with several hundred dwellings, which are not serviced by municipal water or sewage system. Some of these units are seasonal, while others have been converted to year-round use. There is also a mobile home park. Other local features include a parkette, boat launch and a local grocery and gas station nearby. Because of its proximity to Inverhuron Beach, this area is popular among local artisans, retirees and people from across Ontario and the United States. The closed out heavy water plant towers, a communication tower and a smokestack on the Bruce Power site are visible from Inverhuron Beach.

Respondent’s positive image of the Municipality of Kincardine and the Neighbouring Municipalities is further demonstrated in people’s assessments of the attractiveness of the area for tourism, as a place to live, and as a place to establish a business. As noted in Table 18, over 70 percent of the respondents state that the Municipality of Kincardine and the Neighbouring Municipalities is ‘very attractive’ as a place to visit as a tourist (79 percent Kincardine, 75 percent Neighbouring Municipalities) and as a place to live (78 percent Kincardine, 70 percent Neighbouring Municipalities). Significantly fewer respondents provide the same strong evaluation of Kincardine as a place to establish and operate a business (35 percent Kincardine, 41 percent Neighbouring Municipalities). Nonetheless, over 80 percent of the respondents state that the Municipality of Kincardine and the Neighbouring Municipalities are at least a ‘somewhat’ attractive area to establish a business.

Table 17. Attractiveness of the Municipality of Kincardine and the Neighbouring Municipalities

		Kincardine		Neighbouring Municipalities	
		%	N	%	n
Visit as a Tourist	Very attractive	79	312	75	255
	Somewhat attractive	19	77	24	80
	Somewhat unattractive	1	3	1	4
	Very unattractive	1	4	*	1
Place to Live	Very attractive	78	312	70	239
	Somewhat attractive	20	80	28	96
	Somewhat unattractive	1	5	2	6
	Very unattractive	1	3	*	1
Place to Establish and Operate a Business	Very attractive	35	134	41	132
	Somewhat attractive	50	189	47	150
	Somewhat unattractive	12	44	9	28
	Very unattractive	4	14	3	10

*Note: Cases may not sum to 351 for the total of Bruce County or 400 for Kincardine where ‘no opinion’ is excluded. Percentages may not sum to 100 percent due to rounding. * denotes less than 1 percent. Source: [18] Q8,9,10*

Within Kincardine, older respondents provide a stronger positive opinion on the attractiveness of the area as a place to live and to visit as a tourist, and women provide a stronger opinion on all three measures, as a place to live, to visit, and to establish a business. Within the Neighbouring Municipalities, older respondents provide a stronger positive opinion on the attractiveness of the area as a place to live and to visit as a tourist; respondents who live in Saugeen Shores are less likely to state that the area is an attractive place to establish a business. It is also noteworthy that overall attitudes towards Kincardine as a place to live, visit or conduct business are similar both within and outside of the municipality.

The length of residency is another useful indicators of community character. Experience indicates that the longer people have lived in their communities the more likely they are to express satisfaction with their property, homes and community. Data regarding the length of residency presented in Table 18 support the characterization of this area as a well established, stable and cohesive community. The local population is aging and over 62 percent of respondents have lived at their present address for 21 years or more.

Table 18. Length of Residency

	Kincardine		Neighbouring Municipalities	
	%	n	%	n
21 or more years	62	249	64	225
11 to 20 years	26	102	20	70
2 to 10 years	11	44	14	48
Less than 1 year	1	5	2	7

Note: Percentages may not sum across to 100 percent due to rounding.
Source: [18]

5.2.2 Community / Recreational Features and Activities

Community and recreational facilities (i.e., parks, trails, schools, places of worship, etc.) nearest the WWMF and the Bruce Power site play an important role in maintaining community cohesion and the satisfaction of residents with their community by providing space for individuals and groups to participate in and contribute to community life. Many of these features also play an important role in attracting tourists to the area and generate local business activity. Most community facilities serve local residents, but some also attract others from across southern Ontario. All of the facilities are used by the community for a variety of social and recreational activities throughout the year.

Although, marinas and fishing charter businesses and the proximity of Kincardine to Lake Huron offer recreational opportunities for local residents and tourists alike, the public attitude research results indicate that few residents tend to go fishing or boating near the Bruce Power site on a regular basis. The vast majority of residents either never go fishing or boating near the Bruce Power site or undertake this activity only occasionally. A recent tourism study also indicated that fishing is not a common activity among cottagers [19]. As such, these are not considered to be important recreational activities undertaken by local residents. Rather, these activities appear to be conducted more by outside tourists, particularly campers in the area.

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Two provincial parks are located near the Bruce Power site, Inverhuron and MacGregor Provincial Parks. Inverhuron Provincial Park is located immediately adjacent to the Bruce Power site along the shoreline of Lake Huron, and approximately 3.2 km south of the WWMF MacGregor Point Provincial Park is located along the shoreline of Lake Huron, approximately 15 km north the WWMF.

Inverhuron Provincial Park is 288 ha in size and has been in operation since 1959. Park visitation has varied from approximately 23,000 visitors per year in 1992 to approximately 44,000 visitors per year in 1994 [23]. Ontario Parks has proposed that Inverhuron Provincial Park be converted from a day-use only park to a facility based campground with a minimum of 250 camping sites. This plan will likely result in an increased visitation from between 27,000 and 34,00 visitors per year to 100,000 visitors [24].

MacGregor Provincial Park is a 1,204 ha Recreational Park, initially developed to replace the overnight campsites at the Inverhuron Park. It currently offers over 400 campsites. Park visitation has increased from approximately 69,000 visitors per year in 1992 to approximately 118,000 visitors per year in 2000, with peak visitation at 121,691 visitors in 1998. Occupancy rates and average party size in the park have grown steadily over the past several years [17].

There are a number of promoted and signed trail systems throughout the Municipality of Kincardine and Neighbouring Municipalities that are available to visitor and local residents, these include: canoe/kayak routes, cycling and hiking trails, snowmobiling and cross-country ski trails. For example, there are over 360 km of snowmobiling trails that connect the communities of Kincardine, Tiverton, Southampton/Port Elgin, Sauble Beach, and Paisley. The provincial parks and the Kincardine Boardwalk are used extensively for hiking [19].

These provincial parks and recreational trails are not only important tourist features, but also important recreational features for local residents offering good access to the Lake Huron shoreline. Table 19 provides the participation rates in various environmentally-related recreational activities for respondents in the Municipality of Kincardine and the Neighbouring Municipalities.

Approximately 91 percent of Kincardine respondents and 83 percent of the Neighbouring Municipalities respondents use the parks, beaches and trails at least “occasionally”. Kincardine respondents who have children, are younger, or have a higher household income have a higher participation rate, as do Neighbouring Municipalities respondents who have lived in the community for a short time period, have a higher household income, or reside in Saugeen Shores.

Approximately 42 percent of Kincardine respondents and 45 percent of the Neighbouring Municipalities respondents go fishing or boating on Lake Huron. Kincardine respondents who have children, are younger, or have a higher household income have a higher participation rate, as do Neighbouring Municipalities respondents who are themselves or someone in their household is employed in the nuclear industry, have children, are younger, have a higher household income, or reside in Saugeen Shores.

Table 19. Participation in Community / Recreational Activities

		Kincardine		Neighbouring Municipalities	
		%	n	%	n
Used Parks, Beaches, Trails along the Lake Huron Shoreline	Regularly	54	215	36	127
	Occasionally	37	148	47	164
	Never	9	37	17	59
Gone Fishing or Boating on Lake Huron	Regularly	14	55	14	50
	Occasionally	28	110	31	107
	Never	59	235	55	194

Note: Cases may not sum to 351 for the total of Bruce County or 400 for Kincardine where 'no opinion' is excluded. Percentages may not sum to 100 percent due to rounding for the first 2 questions. Source: [18] Q11-13

5.2.3 Public Attitudes

The Municipality of Kincardine and Neighbouring Municipalities were also characterized with respect to peoples attitudes towards their community (i.e., key issues and concerns, people’s feelings of personal security, satisfaction with community, and commitment to community).

Public attitude research respondents were asked to name the most important issue(s) facing their community today. As noted in Table 20, only 6 percent of the respondents in Kincardine identify the Bruce Power nuclear generating station or radioactive waste as important issues facing the community. Only 1 percent identified these issues in the Neighbouring Municipalities.

The most frequently mentioned issues are healthcare and the safety of the drinking water. One-quarter (27 percent) of the respondents in Kincardine name healthcare, and fewer (19 percent) name safe drinking water. The importance of these issues is reversed in the Neighbouring Municipalities, where 30 percent name the safety of the drinking water and 13 percent name healthcare.

Environmental issues (11 percent Kincardine and 10 percent Neighbouring Municipalities) and economic development (10 percent and 9 percent respectively) follow by healthcare and safe drinking water as volunteered issues. A wide variety of other issues are named, from education to the need for sidewalks by fewer than 10 percent of the respondents each. This suggests that nuclear related issues are not top-of-mind issues in either Kincardine respondents or those from Neighbouring Municipalities, but rather one of many.

It is notable that within Kincardine respondents who themselves or someone in their household is employed by OPG, Bruce Power or AECL are more likely to name economic development as the top issue in the community. Within both Kincardine and Neighbouring Municipalities, respondents involved

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in the agriculture industry are more likely to name mad cow disease. Within the Neighbouring Municipalities younger respondents are more likely to name education issues, and those who have lived in the community for fewer years to name environmental issues.

Table 20. Most Important Issues Facing the Community

	Kincardine		Neighbouring Municipalities	
	%	<i>n</i>	%	<i>n</i>
Healthcare – Lack of Facilities and Doctors / Cutbacks	27	99	13	42
Safety of Drinking Water	19	69	30	95
Environment / Pollution / Agricultural & Industrial Waste Management	11	39	10	31
Economic Development / Employment / Job Security	10	35	9	30
No Issues / None	8	30	9	29
Educational Issues / School Closures	7	25	6	19
Factory Farmers / Pig Farmers	6	21	4	14
Bruce Power Generating Station – Radioactive / Nuclear Waste	6	23	1	3
Mad Cow Disease – Effects on the Beef Industry	4	16	7	22
Agricultural Issues – General	4	13	5	17
Lack of Community Resources & Facilities for Adults & Kids	4	16	4	11
High Taxes	3	10	3	10
Issues with Current Council / Government	3	9	2	7
SARS	2	7	2	6
Anti-Amalgamation	2	7	2	5
Safety Issues/ Understaffed Police Services	2	6	2	6
Lack of Affordable Housing	2	7	1	3
Alcohol and Drug Use	2	6	1	3
Road Maintenance	2	7	1	4
Increases in Tourism	2	7	1	3
Use of Pesticides / Fertilizer	1	4	2	5
Treatment of Seniors	1	3	1	4
Hydro / Power Generation	1	4	1	4
Crime / Violence	1	5	1	4
Lack of Provincial & Federal Government Funding and Support	1	1	1	3
For Amalgamation	1	2		
West Nile Virus	1	4	1	4
Need a New Sewer System in the Community	*	1	2	5
Canada / U.S. Border Issues			1	2
Homosexual Marriage Laws Introduced by Government	*	1		
Influx in Population	*	1		
The Need for Sidewalks	*	1		
Anti-Abortion			1	2
Other	1	2	1	3

*Note: Cases may not sum to 351 for the total of Neighbouring Municipalities or 400 for Kincardine where 'no opinion' is excluded. Percentages may not sum to 100 percent due to rounding. * indicates less than .5 percent. For this and all tables the numbers in italics are the numbers of respondents providing that answer. Source: [18] Q1*

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Public attitude research respondents were also asked to identify “things or issues” in their community that affect their feelings of personal security the most. Of the issues named, a higher percentage of respondents in Kincardine (11 percent in total) than in the Neighbouring Municipalities (3 percent) name the Bruce Power generating station, hydro/power generation, or radioactive waste.

Across Bruce County the most frequent individual response is that people have no particular issue that affects their feelings of personal security (38 percent Kincardine, 44 percent Neighbouring Municipalities). Economic development / employment / job security is the most frequently named issue in Kincardine (13 percent) and Neighbouring Municipalities (11 percent).

Table 21. Things or Issues that Most Affect Feelings of Personal Security

	Kincardine		Neighbouring Municipalities	
	%	n	%	n
No Issues / None	38	130	44	133
Economic Development / Employment / Job Security	13	43	11	33
Safety Issues / Understaffed Police Services	9	32	9	28
Healthcare – Lack of Facilities and Doctors / Cutbacks	9	32	3	10
Bruce Power Generating Station	8	26	2	6
Crime / Violence	6	19	6	19
Environment / Pollution / Agricultural & Industrial Waste Management	4	15	4	12
Safety of Drinking Water	3	11	7	20
Lack of Community Resources & Facilities for Adults & Kids	3	10	3	9
Issues with Current Council / Government	3	9	2	7
Hydro / Power Generation	2	6	1	2
Factory Farmers / Pig Farmers	2	6	1	4
Agricultural Issues – General	1	4	2	7
Educational Issues / School Closures	1	4	2	5
Use of Pesticides / Fertilizer	1	3	2	5
Alcohol and Drug Use	1	2	1	4
High Taxes	1	3	1	3
Mad Cow Disease – Effects on the Beef Industry	1	2	1	4
Lack of Affordable Housing	1	3	*	1
Radioactive / Nuclear Waste	1	4		
Treatment of Seniors	1	4		
Anti-Amalgamation	1	4	*	1
West Nile Virus			1	2
Need a New Sewer System in the Community			*	1
Canada/ U.S. Border Issues	*	1	*	1
Road Maintenance	*	1	1	2
SARS	*	1	1	2
Increases in Tourism	*	1	1	2
Limited Public Transportation			*	1
Lack of Proper Armed Forces	*	1		
Legislation to Control Gun Ownership			*	1
Influx in Population	*	1	*	1
Other	1	4	1	2

Note: Cases may not sum to 351 for the total of Bruce County or 400 for Kincardine where ‘no opinion’ is excluded. Percentages do not sum to 100 percent since 2 responses were accepted. Source: [18] Q5

Survey respondents were also asked to indicate their current level of satisfaction with living in their community. Table 22 findings indicate that almost all respondents are satisfied with living in this area, and three-quarters of them (77 percent in Kincardine and Neighbouring Municipalities) are “very satisfied”. While satisfaction levels are high across all municipalities, respondents within Kincardine who are older and those within the Neighbouring Municipalities who have resided in their community for a longer time are more likely to be very satisfied.

Table 22. Satisfaction with Community

	Kincardine		Neighbouring Municipalities	
	%	n	%	n
Very Satisfied	77	310	77	267
Somewhat Satisfied	19	77	20	70
Not Very Satisfied	3	11	2	8
Not At All Satisfied	1	2	1	4

Note: Cases may not sum to 351 for Bruce County or 400 for Kincardine where ‘no opinion’ is excluded. Percentages may not sum to 100 percent due to rounding. Source: [18] Q2

The strong level of satisfaction with their community is reflected in respondents’ commitment to living and farming in the community. As noted in Table 23, three-quarters of the respondents (76 percent in Kincardine, 75 percent in Neighbouring Municipalities) state that they are “very committed” to living in their community. Two-thirds of the respondents (62 percent in Kincardine and Neighbouring Municipalities) who are farmers are committed to this activity in their community. These levels of commitment are consistent across all the municipalities, however respondents in Huron-Kinloss are more likely than the average to state that they are either very or somewhat committed to farming in their community.

Table 23. Commitment to Community

		Kincardine		Neighbouring Municipalities	
		%	N	%	n
Living in Your Community	Very Committed	76	305	75	260
	Somewhat Committed	18	72	19	65
	Not Very Committed	4	14	5	18
	Not At All Committed	2	9	2	6
Farming in Your Community	Very Committed	62	36	62	46
	Somewhat Committed	14	8	28	21
	Not Very Committed	16	9	5	4
	Not At All Committed	9	5	5	4

Note: Cases may not sum to 351 for the total of Bruce County or 400 for Kincardine where 'no opinion' is excluded. Percentages may not sum to 100 percent due to rounding. Source: [18] Q3,4

It is noteworthy that a higher level of commitment to living in their community is evident among Kincardine respondents who are not employed in the nuclear industry, are older, and among respondents who have lived in their community for a longer time, or are older.

6. Economic Analysis

6.1 Employment

To an individual, family or household employment generated by the existing WWMF provides a source of income and a sense of personal security which defines people’s lifestyle and quality of life. Employment associated with the options includes direct, other direct and indirect, and induced employment. All employment information is expressed as full time equivalents (FTE). One FTE is equal to one person working full time for one year (i.e., approximately hours of work).

6.1.1 Status Quo

Tables 24 to 27 provide estimates of the total direct, other direct, indirect and induced employment likely to be generated by the existing WWMF (i.e., Status Quo) from 2005 to 2035, and on average annual basis for each municipality.

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The economic modelling indicates that over 2,500 person-years of direct employment will be generated by the presence of the existing WWMF in the future. Based on existing place of residence data, the municipalities of Saugeen Shores (45 percent) and Kincardine (30 percent) are expected to capture the greatest number of employees gaining jobs at the WWMF.

Table 24. Direct On-Site Employment (Status Quo) 2005-2035

Municipality	Annual Average		Totals	
	#	% of Total	#	% of Total
Kincardine	24	30%	752	30%
Arran-Elderslie	7	8%	205	8%
Brockton	4	5%	120	5%
Huron-Kinloss	2	2%	51	2%
Saugeen Shores	36	45%	1,127	45%
South Bruce	1	1%	17	1%
Outside Bruce	8	10%	239	10%
Total	81	100%	2,511	100%

The economic modelling indicates that over 3,600 person-years of other direct and indirect employment will be generated by OPG spending for goods and services required for the operation of the existing WWMF in the future. Based on current OPG and contractor expenditure spending patterns, the Municipality of Kincardine (9 percent) is expected to capture the greatest amount of other direct and indirect employment.

Table 25. Other Direct and Indirect Employment (Status Quo) 2005-2035

Municipality	Annual Average		Totals	
	#	% of Total	#	% of Total
Kincardine	11	9%	330	9%
Arran-Elderslie	4	4%	138	4%
Brockton	4	4%	138	4%
Huron-Kinloss	3	2%	80	2%
Saugeen Shores	5	4%	154	4%
South Bruce	3	2%	89	2%
Outside Bruce	88	75%	2,742	75%
Total	118	100%	3,671	100%

The economic modelling indicates that approximately 2,500 person-years of induced employment will be generated by household spending on the part of those persons gaining direct, other direct and indirect employment associated with existing WWMF in the future. Based on local household spending patterns, the Municipality of Kincardine (24 percent) and Saugeen Shores (12 percent) are expected to capture the greatest amount of induced employment.

Table 26. Induced Employment (Status Quo) 2005-2035

Municipality	Annual Average		Totals	
	#	% of Total	#	% of Total
Kincardine	19	24%	600	24%
Arran-Elderslie	2	2%	52	2%
Brockton90	1	1%	30	1%
Huron-Kinloss	0	1%	13	1%
Saugeen Shores	9	12%	286	12%
South Bruce	0	0%	4	0%
Outside Study Area	48	60%	1,486	60%
Total	80	100%	2,472	100%

The following table presents a summary perspective of WWMF related employment (direct, other direct and indirect, and induced employment) created within the Municipality of Kincardine and Neighbouring Municipalities within the context of their overall employment projections. If WWMF associated employment for a typical year is projected forward over the study period, approximately 0.4 percent of municipal employment is associated with WWMF, with the greatest positive effect being in the municipalities of Kincardine (0.8 percent) and Saugeen Shores (0.7 percent). Overall, the employment associated with the presence of the WWMF is important within the local context but this employment does not dominate the local economy.

Table 27. WWMF Employment in the Context of Municipal Employment

Municipality	Municipal Average (2005-2035)	WWMF Average (2005-2035)	WWMF as % of Municipal Average
Kincardine	6,493	54	0.8 %
Arran-Elderslie	3,913	13	0.3%
Brockton	6,030	9	0.2%
Huron-Kinloss	3,507	5	0.1%
Saugeen Shores	6,756	51	0.7%
South Bruce	3,919	4	0.1%
Total	30,617	135	0.4%

6.1.2 Enhanced Processing and Storage

Tables 28 to 31 provide estimates of the total direct, other direct, indirect and induced employment likely to be generated by the Enhanced Processing and Storage Facility from 2005 to 2035, and on average annual basis.

The economic modelling indicates that approximately 2,900 person-years of direct employment will be generated by the presence of the Enhanced Processing and Storage facility in the future, for an average of approximately 93 jobs per year. The peak year for direct on-site employment is anticipated to be 2008 where approximately 229 persons would be employed on-site. Based on existing place of residence data, the municipalities of Saugeen Shores (45 percent) and Kincardine (30 percent) are expected to capture the greatest number of employees gaining jobs at the WWMF.

Table 28. Direct On-site Employment (Enhanced Processing and Storage Facility) 2005-2035

Municipality	Annual Average		Totals	
	#	% of Total	#	% of Total
Kincardine	28	30%	864	30%
Arran-Elderslie	8	8%	236	8%
Brockton	4	5%	138	5%
Huron-Kinloss	2	2%	59	2%
Saugeen Shores	42	45%	1,297	45%
South Bruce	1	1%	8	0%
Outside Bruce	9	10%	287	10%
Total	93	100%	2,888	100%

The economic modelling indicates that approximately 4,200 person-years of other direct and indirect employment will be generated by OPG spending for goods and services required for the operation of the Enhanced Processing and Storage Facility in the future. Based on current OPG and contractor expenditure spending patterns, the Municipality of Kincardine (12 percent) is expected to capture the greatest amount of other direct and indirect employment of all the municipalities examined. Because Bruce County does not have a well developed nuclear service industry, a substantial proportion (66 percent) of the other direct and indirect jobs “leak” outside to other municipalities outside of Bruce County.

Table 29. Other Direct and Indirect Employment (Enhanced Processing and Storage Facility) 2005-2035

Municipality	Annual Average		Totals	
	#	% of Total	#	% of Total
Kincardine	16	12%	504	12%
Arran-Elderslie	7	5%	210	5%
Brockton	7	5%	210	5%
Huron-Kinloss	4	3%	122	3%
Saugeen Shores	8	6%	235	6%
South Bruce	4	3%	136	3%
Outside Bruce	90	66%	2,804	66%
Total	136	100%	4,222	100%

The economic modelling indicates that approximately 2,850 person-years of induced employment will be generated by household spending on the part of those persons gaining direct, other direct and indirect employment associated with the Enhanced Processing and Storage Facility in the future. Based on local household spending patterns, the Municipality of Kincardine (24 percent) and Saugeen Shores (12 percent) are expected to capture the greatest amount of induced employment.

Table 30. Induced Employment (Enhanced Processing and Storage Facility) 2005-2035

Municipality	Annual Average		Totals	
	#	% of Total	#	% of Total
Kincardine	22	24%	690	24%
Arran-Elderslie	2	2%	60	2%
Brockton	1	1%	35	1%
Huron-Kinloss	0	1%	15	1%
Saugeen Shores	11	12%	329	12%
South Bruce	0	0%	2	0%
Outside Bruce	55	60%	1,712	60%
Total	92	100%	2,842	100%

Table 31 presents a summary perspective of Enhanced Processing and Storage Facility related employment (direct, other direct and indirect, and induced employment) created within the context of overall employment projections. If facility associated employment for a typical year is projected forward over the study period, approximately 0.5 percent of municipal employment is associated with the Enhanced Processing and Storage Facility, with the greatest positive effect being in the municipalities of Kincardine (1 percent) and Saugeen Shores (0.9 percent). Overall, the employment associated with the presence of the WWMF is important within the local context but this employment does not dominate the local labour force.

Table 31. Enhanced Processing and Storage Facility Employment in the Context of Municipal Employment (2005-2035)

Municipality	Municipal Average (2005-2035)	WWMF Average (2005-2035)	WWMF as % of Municipal Average
Kincardine	6,493	66	1.0%
Arran-Elderslie	3,913	16	0.4%
Brockton	6,030	12	0.2%
Huron-Kinloss	3,507	6	0.2%
Saugeen Shores	6,756	60	0.9%
South Bruce	3,919	5	0.1%
Total	30,617	167	0.5%

6.1.3 Surface Concrete Vaults

Tables 32 to 35 provide estimates of the total direct, other direct, indirect and induced employment likely to be generated by the Surface Concrete Vaults from 2005 to 2035, and on average annual basis for each municipality.

The economic modelling indicates that approximately 3,700 person-years of direct employment will be generated by the presence of the Surface Concrete Vaults in the future, for an average of approximately 120 jobs per year. The peak year for direct on-site employment is anticipated to be 2011 where approximately 192 persons would be employed on-site. Based on existing place of residence data, the municipalities of Saugeen Shores (45 percent) and Kincardine (30 percent) are expected to capture the greatest number of employees gaining jobs at the WWMF.

Table 32. Direct On-site Employment (Surface Concrete Vaults) 2005-2035

Municipality	Annual Average		Totals	
	#	% of Total	#	% of Total
Kincardine	35	30%	1,097	30%
Arran-Elderslie	10	8%	299	8%
Brockton	6	5%	175	5%
Huron-Kinloss	2	2%	75	2%
Saugeen Shores	53	45%	1,646	45%
South Bruce	1	1%	25	1%
Outside Bruce	11	10%	349	10%
Total	118	100%	3,666	100%

The economic modelling indicates that approximately 5,360 person-years of other direct and indirect employment will be generated by OPG spending for goods and services required for the operation of the Surface Concrete Vaults in the future. Based on current OPG and contractor expenditure spending patterns, the Municipality of Kincardine (9 percent) is expected to capture the greatest amount of other direct and indirect employment of all the municipalities examined.

Table 33. Other Direct and Indirect Employment (Surface Concrete Vaults) 2005-2035

Municipality	Annual Average		Totals	
	#	% of Total	#	% of Total
Kincardine	16	9%	482	9%
Arran-Elderslie	6	4%	201	4%
Brockton	6	4%	201	4%
Huron-Kinloss	4	2%	117	2%
Saugeen Shores	7	4%	225	4%
South Bruce	4	2%	131	2%
Outside Bruce	129	75%	4,003	75%
Total	173	100%	5,359	100%

The economic modelling indicates that approximately 3,600 person-years of induced employment will be generated by household spending on the part of those persons gaining direct, other direct and indirect employment associated with the Surface Concrete Vaults in the future. Based on local household spending patterns, the Municipality of Kincardine (24 percent) and Saugeen Shores (12 percent) are expected to capture the greatest amount of induced employment.

Table 34. Induced Employment (Surface Concrete Vaults) 2005-2035

Municipality	Annual Average		Totals	
	#	% of Total	#	% of Total
Kincardine	28	24%	875	24%
Arran-Elderslie	2	2%	76	2%
Brockton	1	1%	44	1%
Huron-Kinloss	1	1%	19	1%
Saugeen Shores	13	12%	417	12%
South Bruce	0	0%	6	0%
Outside Bruce	70	60%	2,170	60%
Total	116	100%	3,608	100%

The following table presents a summary perspective of the Surface Concrete Vaults related employment (direct, other direct and indirect, and induced employment) created within the context of overall employment projections. If facility associated employment for a typical year is projected forward over the study period, approximately 0.6 percent of municipal employment is associated with the Surface Concrete Vaults, with the greatest positive effect being in the municipalities of Kincardine (1.2 percent) and Saugeen Shores (1.1 percent). Overall, the employment associated with the presence of the WWMF is important within the local context but this employment does not dominate the local economy.

Table 35. Surface Concrete Vaults Employment in the Context of Municipal Employment (2005-2035)

Municipality	Municipal Average (2005-2035)	WWMF Average (2005-2035)	WWMF as % of Municipal Average
Kincardine	6,493	79	1.2%
Arran-Elderslie	3,913	19	0.5%
Brockton	6,030	14	0.2%
Huron-Kinloss	3,507	7	0.2%
Saugeen Shores	6,756	74	1.1%
South Bruce	3,919	5	0.1%
Total	30,617	197	0.6%

6.1.4 Deep Rock Vaults

Tables 36 to 39 provide estimates of the total direct, other direct, indirect and induced employment likely to be generated by the Deep Rock Vaults from 2005 to 2035, and on average annual basis for each municipality.

The economic modelling indicates that approximately 3,800 person-years of direct employment will be generated by the presence of the Deep Rock Vaults in the future, for an average of approximately 120 jobs per year. There are anticipated to be three peak years for direct on-site employment (i.e., 2011, 2029 and 2034) where between 170 to 172 persons would be employed on-site. Based on existing place of residence data, the municipalities of Saugeen Shores (45 percent) and Kincardine (30 percent) are expected to capture the greatest number of employees gaining jobs at the WWMF.

Table 36. Direct On-site Employment (Deep Rock Vaults) 2005-2035

Municipality	Annual Average		Totals	
	#	% of Total	#	% of Total
Kincardine	37	30%	1,133	30%
Arran-Elderslie	10	8%	309	8%
Brockton	6	5%	180	5%
Huron-Kinloss	2	2%	77	2%
Saugeen Shores	55	45%	1,700	45%
South Bruce	1	1%	26	1%
Outside Bruce	12	10%	361	10%
Total	122	100%	3,787	100%

The economic modelling indicates that approximately 5,540 person-years of other direct and indirect employment will be generated by OPG spending for goods and services required for the operation of the Deep Rock Vaults in the future. Based on current OPG and contractor expenditure spending patterns, the Municipality of Kincardine (9 percent) is expected to capture the greatest amount of other direct and indirect employment of all the municipalities in the examined.

Table 37. Other Direct and Indirect Employment (Deep Rock Vaults) 2005-2035

Municipality	Annual Average		Totals	
	#	% of Total	#	% of Total
Kincardine	16	9%	498	9%
Arran-Elderslie	7	4%	208	4%
Brockton	7	4%	208	4%
Huron-Kinloss	4	2%	121	2%
Saugeen Shores	8	4%	233	4%
South Bruce	4	2%	135	2%
Outside Bruce	133	75%	4,135	75%
Total	179	100%	5,537	100%

The economic modelling indicates that approximately 3,730 person-years of induced employment will be generated by household spending on the part of those persons gaining direct, other direct and indirect employment associated with the Deep Rock Vaults in the future. Based on local household spending patterns, the Municipality of Kincardine (24 percent) and Saugeen Shores (12 percent) are expected to capture the greatest amount of induced employment.

Table 38. Induced Employment (Deep Rock Vaults) 2005-2035

Municipality	Annual Average		Totals	
	#	% of Total	#	% of Total
Kincardine	29	24%	904	24%
Arran-Elderslie	3	2%	78	2%
Brockton	1	1%	46	1%
Huron-Kinloss	1	1%	20	1%
Saugeen Shores	14	12%	431	12%
South Bruce	0	0%	7	0%
Outside Bruce	72	61%	2,242	61%
Total	120	100%	3,727	100%

The following table presents a summary perspective of Deep Rock Vaults related employment (direct, other direct and indirect, and induced employment) created within the context of overall employment projections. If facility associated employment for a typical year is projected forward over the study period, approximately 0.7 percent of municipal employment is associated with the Deep Rock Vaults, with the greatest positive effect being in the municipalities of Kincardine (1.3 percent) and Saugeen Shores (1.1 percent). Overall, the employment associated with the presence of the WWMF is important within the local context but this employment does not dominate the local economy.

Table 39. Deep Rock Vaults Employment in the Context of Municipal Employment (2005-2035)

Municipality	Municipal Average (2005-2035)	WWMF Average (2005-2035)	WWMF as % of Municipal Average
Kincardine	6,493	82	1.3%
Arran-Elderslie	3,913	19	0.5%
Brockton	6,030	14	0.2%
Huron-Kinloss	3,507	7	0.2%
Saugeen Shores	6,756	76	1.1%
South Bruce	3,919	5	0.1%
Total	30,617	204	0.7%

6.1.5 Summary of Employment

The projected average annual direct, other direct and indirect, and induced employment was estimated for each of the long-term management options and the Status Quo. In addition, the total employment over the period 2005 through 2035 was estimated to provide the magnitude of the total employment associated with implementing the options in the Municipality of Kincardine and Neighbouring Municipalities.

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Direct employment is the number of OPG employees working directly at the facility. Currently there are 81 FTEs engaged in activities related to ILW and LLW management at the WWMF. Other direct and indirect employment is the number of employees of other businesses or contractors involved in activities directly related to the construction and operation of the facility. This includes, for example, contractors engaged in the maintenance or modification to existing facilities at the WWMF. Using data averaged over the past five years, the other direct and indirect employment related to ILW and LLW at the WWMF is 118 FTEs. Induced employment is the jobs generated in the community as a result of OPG and employee spending the community, including, for example, jobs in local stores and restaurants. Induced employment was estimated using standard Statistics Canada multipliers. It is estimated that the induced employment related to the existing ILW and LLW management activities at the WWMF is 80 FTEs. This annual employment information is used to project the total project employment for the Status Quo option over the period 2005 through 2035.

There will be some variation in employment levels from one year to the next over the life of the options. However, unlike many projects, the long-term management options do not involve a large short-term construction work force. Because a waste management facility is constructed in stages as the need for additional waste management space is required, construction activities occur over the life of the facility and construction-related jobs are generated over the life of the option. Consequently, the estimated variation in the number of employees associated with the facility from year to year is expected to be small.

Direct, other direct and indirect, and induced employment was estimated for the three long-term management options using the above information on the current operations at WWMF and cost information from the engineering feasibility study. Estimated average annual employment is provided in Table 40 and the total project employment is provided in Table 41.

Table 40. Estimated Average Annual Employment (FTEs) Associated with Options

Option	Direct Project Employment	Other Direct and Indirect Project Employment	Induced Employment
Status Quo	81	118	80
Enhanced Processing and Storage	93	136	92
Surface Concrete Vaults	118	173	116
Deep Rock Vaults	122	179	120

Table 41. Estimated Total Employment (FTEs) Associated with Options (2005-2035)

Option	Direct Employment	Other Direct and Indirect Project Employment	Induced Employment
Status Quo	2,511	3,671	2,472
Enhanced Processing and Storage	2,888	4,222	2,842
Surface Concrete Vaults	3,666	5,359	3,608
Deep Rock Vaults	3,787	5,537	3,727

6.2 Facility Expenditures and Income Spending

6.2.1 Status Quo

OPG spends money on employee payroll, goods and services. In a typical year, the existing WWMF has expenditures of approximately \$21 million. The existing WWMF spends approximately \$9 million on payroll in a typical year and can be expected to spend a total of approximately \$276 million over the entire study period. Based on employee residency data, approximately 45 percent of these monies will accrue to employee households residing in Saugeen Shores and 30 percent of these monies will accrue to employee households in Kincardine.

Table 42. OPG Payroll Expenditures (Status Quo) 2005-2035

Municipality	Annual Average		Totals	
	\$	% of Total	\$	% of Total
Kincardine	\$2,667,000	30%	\$82,677,000	30%
Arran-Elderslie	\$727,000	8%	\$22,537,000	8%
Brockton	\$424,000	5%	\$13,144,000	5%
Huron-Kinloss	\$182,000	2%	\$5,642,000	2%
Saugeen Shores	\$4,000,000	45%	\$124,000,000	45%
South Bruce	\$61,000	1%	\$1,891,000	1%
Outside Bruce	\$849,000	10%	\$26,319,000	10%
Total	\$8,910,000	100%	\$276,210,000	100%

The existing WWMF spends approximately \$12 million on goods and services in a typical year and can be expected to spend a total of approximately \$372 million over the entire study period. Suppliers to the existing WWMF provide a wide range of goods and services, including: aggregate materials;

paving/concrete services; lumber and general construction equipment; paint and painting services; conventional industrial equipment (e.g., motors, cutting tools, hand tools and maintenance products); electrical equipment; and office supplies.

Although an important source of revenue, most of the local suppliers to the WWMF are not dependent upon contracts issued by OPG for the majority of their annual revenues. The majority of business operators reported that contracts from the site account for less than 1 percent of their total annual revenues. None of the businesses interviewed indicated that revenues from OPG help to maintain their overall economic viability.

Looking into the future, assuming that the expenditure spending patterns by OPG and major contractors remain similar to today’s, approximately \$33.5 million of this spending (9 percent) will be captured within the Municipality of Kincardine. Between \$14 to \$15.5 million (4 percent) is likely to be spent in each of Saugeen Shores, Arran-Elderslie, and Brockton.

Table 43. OPG Goods and Services Expenditures (Status Quo) 2005-2035

Municipality	Annual Average		Totals	
	\$	% of Total	\$	% of Total
Kincardine	\$1,080,000	9%	\$33,480,000	9%
Arran-Elderslie	\$450,000	4%	\$13,950,000	4%
Brockton	\$450,000	4%	\$13,950,000	4%
Huron-Kinloss	\$262,000	2%	\$8,122,000	2%
Saugeen Shores	\$504,000	4%	\$15,624,000	4%
South Bruce	\$292,000	2%	\$9,052,000	2%
Outside Bruce	\$8,962,000	75%	\$277,822,000	75%
Total	\$12,000,000	100%	\$372,000,000	100%

Income spending of WWMF staff and others who gain or maintain employment (other direct, indirect and induced) as a result of the WWMF, purchasing of goods and services by OPG and others, will generate business activity and help maintain the economic base in Kincardine and its Neighbouring Municipalities. Based on the projected levels of employment likely to be associated with the WWMF (i.e., direct, other direct, indirect and induced employment) over the study period, and household spending patterns derived from public attitude research, it is anticipated that the existing WWMF will generate a total of \$378 million in income spending, or approximately \$12.2 million per year. The Municipality of Kincardine is anticipated to capture approximately 22 percent of this spending, and Saugeen Shores approximately 10 percent.

Table 44. Income Spending (Status Quo) 2005-2035

Municipality	Annual Average		Totals	
	\$	% of Total	\$	% of Total
Kincardine	\$2,645,000	22%	\$81,995,000	22%
Arran-Elderslie	\$211,000	2%	\$6,541,000	2%
Brockton	\$123,000	1%	\$3,813,000	1%
Huron-Kinloss	\$53,000	0%	\$1,643,000	0%
Saugeen Shores	\$1,204,000	10%	\$37,324,000	10%
South Bruce	\$17,000	0%	\$527,000	0%
Outside Bruce	\$7,945,000	65%	\$246,303,000	65%
Total	\$12,198,000	100%	\$378,146,000	100%

6.2.2 Enhanced Processing and Storage

OPG will need to spend money on employee payroll, goods and services to implement the Enhanced Processing and Storage option. In a typical year, the Enhanced Processing and Storage Facility will have expenditures of approximately \$25 million. It is anticipated that the Enhanced Processing and Storage Facility will spend approximately \$10.2 million on payroll in a typical year and can be expected to spend a total of approximately \$317.7 million over the entire study period. Based on employee residency data, approximately 45 percent of these monies will accrue to employee households residing in Saugeen Shores and 30 percent of these monies will accrue to employee households in Kincardine.

Table 45. OPG Payroll Expenditures (Enhanced Processing and Storage) 2005-2035

Municipality	Annual Average		Totals	
	\$	% of Total	\$	% of Total
Kincardine	\$3,067,000	30%	\$95,083,000	30%
Arran-Elderslie	\$836,000	8%	\$25,930,000	8%
Brockton	\$488,000	5%	\$15,125,000	5%
Huron-Kinloss	\$209,000	2%	\$6,485,000	2%
Saugeen Shores	\$4,601,000	45%	\$142,623,000	45%
South Bruce	\$28,000	0%	\$868,000	0%
Outside Bruce	\$1,018,000	10%	\$31,546,000	10%
Total	\$10,247,000	100%	\$317,660,000	100%

The Enhanced Processing and Storage Facility will need to spend approximately \$14.8 million on goods and services in a typical year and can be expected to spend a total of approximately \$458 million over the entire study period. Looking into the future, assuming that the expenditure spending patterns by OPG and

major contractors remain similar to today’s, approximately \$41 million of this spending (9 percent) will be captured within the Municipality of Kincardine. Between \$17 to \$19 million (4 percent) is likely to be spent in each of Saugeen Shores, Arran-Elderslie, and Brockton. Potential suppliers to the Enhanced Processing and Storage facility can be expected to be similar to those supplying goods and services to the existing WWMF. However, the nature of the new facility will provide additional opportunities for businesses in supplying lumber and general construction equipment; conventional industrial equipment (e.g., motors, cutting tools, hand tools and maintenance products); and electrical equipment.

Table 46. OPG Goods and Services Expenditures (Enhanced Processing and Storage) 2005-2035

Municipality	Annual Average		Totals	
	\$	% of Total	\$	% of Total
Kincardine	\$1,331,000	9%	\$41,252,000	9%
Arran-Elderslie	\$554,000	4%	\$17,185,000	4%
Brockton	\$554,000	4%	\$17,185,000	4%
Huron-Kinloss	\$322,000	2%	\$9,997,000	2%
Saugeen Shores	\$621,000	4%	\$19,253,000	4%
South Bruce	\$124,000	1%	\$3,852,000	1%
Outside Bruce	\$11,277,000	76%	\$349,599,000	76%
Total	\$14,785,000	100%	\$458,232,000	100%

Income spending of OPG staff and others who gain or maintain employment as a result of the Enhanced Processing and Storage Facility, purchasing of goods and services by OPG and others, will generate business activity and help maintain the economic base in Kincardine and its Neighbouring Municipalities. Based on the projected levels of employment likely to be associated with the Enhanced Processing and Storage (i.e., direct, other direct, indirect and induced employment) over the study period, and household spending patterns derived from public attitude research, it is anticipated that the Enhanced Processing and Storage Facility will generate a total of \$435 million in income spending, or approximately \$14 million per year. The Municipality of Kincardine is anticipated to capture approximately 21 percent of this spending, and Saugeen Shores approximately 10 percent.

Table 47. Income Spending (Enhanced Processing and Storage) 2005-2035

Municipality	Annual Average		Totals	
	\$	% of Total	\$	% of Total
Kincardine	\$3,008,000	21%	\$93,257,000	21%
Arran-Elderslie	\$243,000	2%	\$7,527,000	2%
Brockton	\$141,000	1%	\$4,374,000	1%
Huron-Kinloss	\$60,000	0%	\$1,872,000	0%
Saugeen Shores	\$1,377,000	10%	\$42,699,000	10%
South Bruce	\$8,000	0%	\$248,000	0%
Outside Bruce	\$9,191,000	66%	\$284,916,000	66%
Total	\$14,028,000	100%	\$434,893,000	100%

6.2.3 Surface Concrete Vaults

OPG will need to spend money on employee payroll, goods and services to implement the Surface Concrete Vaults option. In a typical year, the Surface Concrete Vaults will have expenditures of approximately \$30 million.

It is anticipated that the Surface Concrete Vaults will spend approximately \$13 million on payroll in a typical year and can be expected to spend a total of approximately \$403 million over the entire study period. Based on employee residency data, approximately 45 percent of these monies will accrue to employee households residing in Saugeen Shores and 30 percent of these monies will accrue to employee households in Kincardine.

Table 48. OPG Payroll Expenditures (Surface Concrete Vaults) 2005-2035

Municipality	Annual Average		Totals	
	\$	% of Total	\$	% of Total
Kincardine	\$3,893,000	30%	\$120,688,000	30%
Arran-Elderslie	\$1,062,000	8%	\$32,913,000	8%
Brockton	\$619,000	5%	\$19,202,000	5%
Huron-Kinloss	\$265,000	2%	\$8,229,000	2%
Saugeen Shores	\$5,840,000	45%	\$181,030,000	45%
South Bruce	\$89,000	1%	\$2,746,000	1%
Outside Bruce	\$31,239,000	10%	\$38,403,000	10%
Total	\$13,007,000	100%	\$403,211,000	100%

The Surface Concrete Vaults will need to spend approximately \$16.7 million on goods and services in a typical year and can be expected to spend a total of approximately \$518 million over the entire study period. Looking into the future, assuming that the expenditure spending patterns by OPG and major contractors remain similar to today’s, approximately 46.6 million of this spending (9 percent) will be captured within the Municipality of Kincardine. Between \$19 to \$22 million (4 percent) is likely to be spent in each of Saugeen Shores, Arran-Elderslie, and Brockton. Potential suppliers to the Surface Concrete Vaults can be expected to be similar to those supplying goods and services to the existing WWMF. However, the nature of the new facility will provide additional opportunities for businesses in supplying aggregate and general construction equipment; conventional industrial equipment (e.g., motors, cutting tools, hand tools and maintenance products); and electrical equipment. Opportunities will also be provided for businesses in the bulk transportation sector.

Table 49. OPG Goods and Services Expenditures (Surface Concrete Vaults) 2005-2035

Municipality	Annual Average		Totals	
	\$	% of Total	\$	% of Total
Kincardine	\$1,504,000	9%	\$46,636,000	9%
Arran-Elderslie	\$627,000	4%	\$19,430,000	4%
Brockton	\$627,000	4%	\$19,430,000	4%
Huron-Kinloss	\$365,000	2%	\$11,305,000	2%
Saugeen Shores	\$702,000	4%	\$21,770,000	4%
South Bruce	\$407,000	2%	\$12,617,000	2%
Outside Bruce	\$12,483,000	75%	\$386,988,000	75%
Total	\$16,715,000	100%	\$518,176,000	100%

Income spending of facility staff and others who gain or maintain employment as a result of the Surface Concrete Vaults, purchasing of goods and services by OPG and others, will generate business activity and help maintain the economic base in Kincardine and its Neighbouring Municipalities. Based on the projected levels of employment likely to be associated with the Surface Concrete Vaults (i.e., direct, other direct, indirect and induced employment) over the study period, and household spending patterns derived from public attitude research, it is anticipated that the Surface Concrete Vaults will generate a total of \$552 million in income spending, or approximately \$17.8 million per year. The Municipality of Kincardine is anticipated to capture approximately 21 percent of this spending, and Saugeen Shores approximately 10 percent.

Table 50. Income Spending (Surface Concrete Vaults) 2005-2035

Municipality	Annual Average		Totals	
	\$	% of Total	\$	% of Total
Kincardine	\$3,757,000	21%	\$116,477,000	21%
Arran-Elderslie	\$308,000	2%	\$9,539,000	2%
Brockton	\$179,000	1%	\$5,551,000	1%
Huron-Kinloss	\$77,000	0%	\$2,377,000	0%
Saugeen Shores	\$1,734,000	10%	\$53,769,000	10%
South Bruce	\$25,000	0%	\$789,000	0%
Outside Bruce	\$11,726,000	66%	\$363,516,000	66%
Total	\$17,806,000	100%	\$552,017,000	100%

6.2.4 Deep Rock Vaults

OPG will need to spend money on employee payroll and goods and services to implement the Deep Rock Vaults option. In a typical year, the Deep Rock Vaults will have expenditures of approximately \$30 million.

It is anticipated that the Surface Concrete Vaults will spend approximately \$13.4 million on payroll in a typical year and can be expected to spend a total of approximately \$416.5 million over the entire study period. Based on employee residency data, approximately 45 percent of these monies will accrue to employee households residing in Saugeen Shores and 30 percent of these monies will accrue to employee households in Kincardine.

Table 51. OPG Payroll Expenditures (Deep Rock Vaults) 2005-2035

Municipality	Annual Average		Totals	
	\$	% of Total	\$	% of Total
Kincardine	\$4,022,000	30%	\$124,683,000	30%
Arran-Elderslie	\$1,097,000	8%	\$34,002,000	8%
Brockton	\$640,000	5%	\$19,831,000	5%
Huron-Kinloss	\$274,000	2%	\$8,500,000	2%
Saugeen Shores	\$6,033,000	45%	\$187,023,000	45%
South Bruce	\$91,000	1%	\$2,834,000	1%
Outside Bruce	\$1,280,000	10%	\$39,682,000	10%
Total	\$13,437,000	100%	\$416,555,000	100%

The Deep Rock Vaults will need to spend approximately \$16.5 million on goods and services in a typical year and can be expected to spend a total of approximately \$510 million over the entire study period. Looking into the future, assuming that the expenditure spending patterns by OPG and major contractors remain similar to today’s, approximately \$46 million of this spending (9 percent) will be captured within the Municipality of Kincardine. Between \$19 to \$21 million (4 percent) is likely to be spent in each of Saugeen Shores, Arran-Elderslie, and Brockton. Potential suppliers to the Deep Rock Vaults can be expected to be similar to those supplying goods and services to the existing WWMF. However, the nature of the new facility will provide additional opportunities for businesses in supplying explosives, excavation services, aggregate and general construction equipment; conventional industrial equipment (e.g., motors, cutting tools, hand tools and maintenance products); and electrical equipment. Opportunities will also be provided for businesses in the bulk transportation sector.

Table 52. OPG Goods and Services Expenditures (Deep Rock Vaults) 2005-2035

Municipality	Annual Average		Totals	
	\$	% of Total	\$	% of Total
Kincardine	\$1,481,000	9%	\$45,914,000	9%
Arran-Elderslie	\$617,000	4%	\$19,128,000	4%
Brockton	\$617,000	4%	\$19,128,000	4%
Huron-Kinloss	\$359,000	2%	\$11,124,000	2%
Saugeen Shores	\$691,000	4%	\$21,433,000	4%
South Bruce	\$401,000	2%	\$12,425,000	2%
Outside Bruce	\$12,290,000	75%	\$380,989,000	75%
Total	\$16,456,000	100%	\$510,141,000	100%

Income spending of facility staff and others who gain or maintain employment as a result of the Deep Rock Vaults, purchasing of goods and services by OPG and others, will generate business activity and help maintain the economic base in Kincardine and its Neighbouring Municipalities. Based on the projected levels of employment likely to be associated with the Deep Rock Vaults (i.e., direct, other direct, indirect and induced employment) over the study period, and household spending patterns derived from public attitude research, it is anticipated that the Deep Rock Vaults will generate a total of \$570 million in income spending, or approximately \$18.4 million per year. The Municipality of Kincardine is anticipated to capture approximately 21 percent of this spending, and Saugeen Shores approximately 10 percent.

Table 53. Income Spending (Deep Rock Vaults) 2005-2035

Municipality	Annual Average		Totals	
	\$	% of Total	\$	% of Total
Kincardine	\$3,874,000	21%	\$120,096,000	21%
Arran-Elderslie	\$318,000	2%	\$9,846,000	2%
Brockton	\$185,000	1%	\$5,733,000	1%
Huron-Kinloss	\$79,000	0%	\$2,456,000	0%
Saugeen Shores	\$1,790,000	10%	\$55,490,000	10%
South Bruce	\$26,000	0%	\$813,000	0%
Outside Bruce	\$12,124,000	66%	\$375,851,000	66%
Total	\$18,396,000	100%	\$570,285,000	100%

6.2.5 Summary of Expenditures

OPG’s expenditures associated with the long-term management options include payroll, purchases of goods and services. These expenditures, which are incurred directly by OPG, are the source of all economic activity related to the options in Kincardine and the Neighbouring Municipalities.

Projected annual spending on payroll and purchasing was estimated for each of the options. In addition, the projected total spending on payroll and purchasing over the period 2005 through 2035 was estimated to provide the magnitude of the total expenditures associated with the options.

There will be some variation in expenditures from one year to the next over the life of the options. However, unlike many other projects, the long-term management options do not involve constructing the facility in a short period followed by a longer operating period. Rather, the waste management facility is constructed in stages as the need for additional waste management space is required. The estimated variation in the annual expenditures over the period 2005 through 2035 generally varies by less than 20 percent from one year to the next.

Projected payroll costs, expenditures on goods and services were developed for each of the options using the above information on the current operations at WWMF and cost information from the engineering feasibility study. Estimated annual expenditures are provided in Table 54 and the total life-time expenditures are provided in Table 55, following. As noted previously, the Deep Rock Vaults option, with its capacity to handle all intermediate level waste, could be expected to have additional post Construction Licence costs of up to \$200 million.

Table 54. Estimated Average Annual Expenditures Associated with Options

Option	Payroll Costs (\$CAN Million)	Purchases of Goods and Services (\$CAN Million)
Status Quo	8.9	12.0
Enhanced Processing and Storage	10.2	14.8
Surface Concrete Vaults	13.0	16.7
Deep Rock Vaults	13.4	16.4

Table 55. Estimated Total Expenditures Associated with Options (2005-2035)

Option	Payroll Costs (\$CAN Million)	Purchases of Goods and Services (\$CAN Million)	Total (\$CAN Million)
Status Quo	276	372	648
Enhanced Processing and Storage	318	458	776
Surface Concrete Vaults	403	519	923
Deep Rock Vaults	417	510	927

A portion of the income earned by those employed through direct and indirect means will be spent on goods and services. This spending will occur within and outside of Kincardine and the Neighbouring Municipalities and will generate induced employment. The geographic distribution of the induced jobs was determined from the results of public attitude research undertaken as part of the IAS, which determined where residents tend to go shopping or spend their incomes.

The estimated current income spending related to LLW and ILW management operations at the WWMF is \$12.2 million. It is estimated that 21 percent of this spending occurs within Kincardine, 14 percent in the Neighbouring Municipalities and 65 percent occurs outside of Bruce County.

Projected income-related spending on goods and services and municipal taxes was developed for each of the options using the above information on the current operations at WWMF and cost information from the engineering feasibility study. Estimated annual spending is provided in Table 56 and the projected total life-time spending is provided in Table 57.

Table 56. Projected Annual Income Related Spending for Options (2005-2035)

Option	Total Spending (\$CAN Million)	Kincardine (\$CAN Million)	Neighbouring Municipalities (\$CAN Million)	Outside Bruce County (\$CAN Million)
Status Quo	12.2	2.6	1.7	7.9
Enhanced Processing and Storage	14.0	3.0	1.8	9.2
Surface Concrete Vaults	17.8	3.8	2.3	11.7
Deep Rock Vaults	18.4	3.8	2.4	12.1

Table 57. Projected Total Income Related Spending for Options (2005-2035)

Option	Total Spending (\$CAN Million)	Kincardine (\$CAN Million)	Neighbouring Municipalities (\$CAN Million)	Outside Bruce County (\$CAN Million)
Status Quo	378	82	50	246
Enhanced Processing and Storage	435	93	57	285
Surface Concrete Vaults	552	116	73	363
Deep Rock Vaults	570	120	74	376

6.3 Population

Employees associated with the long-term management options may reside in Kincardine, the Neighbouring Municipalities or elsewhere in Ontario. One measure of the significance of the long-term management to the community is the percentage of the municipal population that is associated with the option, through direct, other direct and indirect or induced employment. This measure, termed “associated population”, provides an estimate of where people associated with the long-term management options might live. The “associated population” was determined by estimating where these workers might reside and applying projected population to employment ratios obtained from municipal growth projections.

6.3.1 Status Quo

The estimates of “associated population” are provided in Table 58 for the period 2005 through 2035 and show the percentage of the municipal population associated with the existing WWMF in each municipality. As described previously, the population of Kincardine and the other Neighbouring Municipalities is expected to increase through normal growth. The estimates of the average population associated with each of the options Table 59 includes the increase in the population through growth.

Table 58. Associated Population (Status Quo) 2005-2035

	Municipal Average	WWMF Average	WWMF as % of Municipal Population
Kincardine	12,615	105	0.8%
Arran-Elderslie	7,524	24	0.3%
Brockton	11,052	17	0.2%
Huron-Kinloss	7,123	9	0.1%
Saugeen Shores	13,037	98	0.7%
South Bruce	5,792	5	0.1%
Kincardine and Neighbouring Municipalities	58,281	257	0.4%

6.3.2 Enhanced Processing and Storage

The “associated population” estimates are provided in Table 59 for the period 2005 through 2035 and show the percentage of the municipal population associated with the Enhanced Processing and Storage option in each municipality. As described previously, the population of Kincardine and the other Neighbouring Municipalities is expected to increase through normal growth. The estimates of the average population associated with each of the options in Table 60 includes the increase in the population through growth. Overall, approximately 0.5 percent of the overall population will be associated with the Enhanced Processing and Storage Facility. The populations of the Municipality of Kincardine (1 percent) and Saugeen Shores (0.9 percent) will be most closely tied to the Enhanced Processing and Storage Facility.

Table 59. Associated Population (Enhanced Processing and Storage) 2005-2035

	Municipal Average	Facility Average	% of Municipal Population
Kincardine	12,615	129	1.0%
Arran-Elderslie	7,524	31	0.4%
Brockton	11,052	23	0.2%
Huron-Kinloss	7,123	13	0.2%
Saugeen Shores	13,037	116	0.9%
South Bruce	5,792	8	0.1%
Kincardine and Neighbouring Municipalities	58,281	317	0.5%

6.3.3 Surface Concrete Vaults

The “associated population” estimates are provided in Table 60 for the period 2005 through 2035 and show the percentage of the municipal population associated with the Surface Concrete Vaults option in each municipality. As described previously, the population of Kincardine and the other Neighbouring Municipalities is expected to increase through normal growth. The estimates of the average population associated with each of the options in Table 61 includes the increase in the population through growth. Overall, approximately 0.6 percent of the population will be associated with the Surface Concrete Vaults. The populations of the Municipality of Kincardine (1.1 percent) and Saugeen Shores (1.2 percent) will be most closely tied to the Surface Concrete Vaults.

Table 60. Associated Population (Surface Concrete Vaults) 2005-2035

	Municipal Average	Facility Average	% of Municipal Population
Kincardine	12,615	154	1.2%
Arran-Elderslie	7,524	36	0.5%
Brockton	11,052	25	0.2%
Huron-Kinloss	7,123	14	0.2%
Saugeen Shores	13,037	142	1.1%
South Bruce	5,792	8	0.1%
Kincardine and Neighbouring Municipalities	58,281	375	0.6%

6.3.4 Deep Rock Vaults

The “associated population” estimates are provided in Table 61 for the period 2005 through 2035 and show the percentage of the municipal population associated with the Deep Rock Vaults in each municipality. As described previously, the population of Kincardine and the other Neighbouring Municipalities is expected to increase through normal growth. The estimates of the average population associated with each of the options in Table 62 includes the increase in the population through growth. Overall, approximately 0.7 percent of the population will be associated with the Deep Rock Vaults. The populations of the Municipality of Kincardine (1.3 percent) and Saugeen Shores (1.1 percent) will be most closely tied to the Deep Rock Vaults.

Table 61. Associated Population (Deep Rock Vaults) 2005-2035

	Municipal Average	Facility Average	% of Municipal Population
Kincardine	12,615	159	1.3%
Arran-Elderslie	7,524	37	0.5%
Brockton	11,052	26	0.2%
Huron-Kinloss	7,123	14	0.2%
Saugeen Shores	13,037	147	1.1%
South Bruce	5,792	8	0.1%
Kincardine and Neighbouring Municipalities	58,281	388	0.7%

6.3.5 Summary of Population

Employees associated with the long-term management options may reside in Kincardine, the Neighbouring Municipalities or elsewhere in Ontario. One measure of the significance of the long-term management to the community is the percentage of the municipal population that is associated with the option, through direct, other direct and indirect or induced employment. This measure, termed “associated population”, provides an estimate of where people associated with the long-term management options might live.

Previous sections of this report determined that the direct, other direct and indirect and induced employment associated with the current ILW and LLW management operations at the WWMF is approximately 279 FTEs. The “associated population” was determined by estimating where these workers might reside and applying the projected population to employment ratios. This was estimated from three sources:

- a) the place of residence of direct employees was determined from the postal codes of OPG’s current employees at the WWMF;
- b) the place of residence of indirect employees was estimated by identifying the location of OPG’s expenditures, including how much of that spending occurs in the local community; and
- c) the place of residence of induced employment was determined from an analysis of household spending patterns of community residents determined by public attitude research.

The economic model was used to predict the place of residence of direct, indirect and induced employees for each of the options. The estimates are provided in Table 63 for the period 2005 through 2035 and show the percentage of the municipal population associated with each of the options. During this time the

population of Kincardine and the other Neighbouring Municipalities is expected to increase through normal growth. The estimates of the average population associated with each of the options in Table 62 includes the increase in the population through growth.

Table 62. Current and Estimated Associated Population (Average % of Municipal Population) 2005-2035

Option	Kincardine	Saugeen Shores	Other Neighbouring Communities
Status Quo	0.8	0.7	0.2
Enhanced Processing and Storage	1.0	0.9	0.2
Surface Concrete Vaults	1.2	1.1	0.3
Deep Rock Vaults	1.3	1.1	0.3

6.4 Housing

People associated with the long-term management options (associated population) may reside in Kincardine, the Neighbouring Municipalities or elsewhere in Ontario. A measure of the significance of the long-term management to the community is the percentage of the municipal housing stock that is associated with the option. This measure, termed “associated housing”, provides an indication of degree to which municipal infrastructure (e.g., waste, sewage, waste) is dependent on the long-term management options. The “associated housing” was determined by estimating where the “associated population” might reside and applying population to housing ratios obtained from municipal growth projections.

6.4.1 Status Quo

The “associated housing” estimates are provided in Table 63 for the period 2005 through 2035 and show the percentage of the municipal housing stock associated with the existing WWMF in each municipality. As described previously, the population and housing stock of Kincardine and the other Neighbouring Municipalities is expected to increase through normal growth. The estimates of the average housing stock associated with each of the options in Table 64 includes the increase in the population and housing stock through growth.

Overall, approximately 0.4 percent of the housing stock will be associated with the existing WWMF. The housing stock in the Municipality of Kincardine (0.8 percent) and Saugeen Shores (0.7 percent) will be most closely tied to the existing WWMF.

Table 63. Associated Housing (Status Quo) 2005-2035

	Municipal Average	WWMF Average	WWMF as % of Municipal Housing Stock
Kincardine	6,007	50	0.8%
Arran-Elderslie	3,136	10	0.3%
Brockton	4,606	7	0.2%
Huron-Kinloss	4,189	6	0.1%
Saugeen Shores	7,242	54	0.7%
South Bruce	2,145	2	0.1%
Total	27,753	122	0.4%

6.4.2 Enhanced Processing and Storage

The “associated housing” estimates are provided in Table 64 for the period 2005 through 2035 and show the percentage of the municipal housing stock associated with the Enhanced Processing and Storage option. Approximately 0.5 percent of the housing stock will be associated with the Enhanced Processing and Storage Facility. The housing stock in the Municipality of Kincardine (1.0 percent) and Saugeen Shores (0.9 percent) will be most closely tied to the Enhanced Processing and Storage Facility.

Table 64. Associated Housing (Enhanced Processing and Storage) 2005-2035

	Municipal Average	Facility Average	% of Municipal Housing Stock
Kincardine	6,007	61	1.0%
Arran-Elderslie	3,136	13	0.4%
Brockton	4,606	9	0.2%
Huron-Kinloss	4,189	8	0.2%
Saugeen Shores	7,242	64	0.9%
South Bruce	2,145	3	0.1%
Total	27,753	151	0.5%

6.4.3 Surface Concrete Vaults

The “associated housing” estimates are provided in Table 65 for the period 2005 through 2035 and show the percentage of the municipal housing stock associated with the Surface Concrete Vaults option. Approximately 0.6 percent of the housing stock will be associated with the Surface Concrete Vaults. The housing stock in the Municipality of Kincardine (1.2 percent) and Saugeen Shores (1.1 percent) will be most closely tied to the Surface Concrete Vaults.

Table 65. Associated Housing (Surface Concrete Vaults) 2005-2035

	Municipal Average	Facility Average	% of Municipal Housing Stock
Kincardine	6,007	73	1.2%
Arran-Elderslie	3,136	15	0.5%
Brockton	4,606	10	0.2%
Huron-Kinloss	4,189	8	0.2%
Saugeen Shores	7,242	79	1.1%
South Bruce	2,145	3	0.1%
Total	27,753	179	0.6%

6.4.4 Deep Rock Vaults

The “associated housing” estimates are provided in Table 66 for the period 2005 through 2035 and show the percentage of the municipal housing stock associated with the Deep Rock Vaults option. Approximately 0.7 percent of the housing stock will be associated with the Deep Rock Vaults. The housing stock of the Municipality of Kincardine (1.3 percent) and Saugeen Shores (1.1 percent) will be most closely tied to the Deep Rock Vaults.

Table 66. Associated Housing (Deep Rock Vaults) 2005-2035

	Municipal Average	Facility Average	% of Municipal Housing Stock
Kincardine	6,007	76	1.3%
Arran-Elderslie	3,136	15	0.5%
Brockton	4,606	11	0.2%
Huron-Kinloss	4,189	8	0.2%
Saugeen Shores	7,242	82	1.1%
South Bruce	2,145	3	0.1%
Total	27,753	185	0.7%

6.4.5 Summary of Housing

People associated with the long-term management options (associated population) may reside in Kincardine, the Neighbouring Municipalities or elsewhere in Ontario. A measure of the significance of the long-term management to the community is the percentage of the municipal housing stock that is associated with the option. This measure, termed “associated housing”, provides an indication of degree to which municipal infrastructure (e.g., waste, sewage, waste) is dependent on the long-term management

options. The “associated housing” was determined by estimating where the “associated population” might reside and applying the projected population to housing ratios. The estimates are provided in Table 67 for the period 2005 through 2035 and show the percentage of the municipal housing stock associated with the existing WWMF. As described previously, the population and housing stock of Kincardine and the other Neighbouring Municipalities is expected to increase through normal growth. The estimates of the average housing stock associated with each of the options in Table 67 includes the increase in the population through growth.

Table 67. Current and Estimated Associated Housing (Average % of Municipal Housing Stock) 2005-2035

Option	Kincardine	Saugeen Shores	Other Neighbouring Communities
Status Quo	0.8	0.7	0.2
Enhanced Processing and Storage	1.1	0.9	0.2
Surface Concrete Vaults	1.2	1.1	0.3
Deep Rock Vaults	1.3	1.1	0.3

6.5 Property Values

Effects of waste management facilities on property values is a typical public concern. An analysis of the potential for adverse effects on property values was undertaken based on a review of relevant published literature and the anticipated characteristics and environmental effects of the proposed long-term waste management options.

Firstly, decreased property values typically result from significant increases in nuisance effects such as noise, dust, and traffic associated with a facility. Property value decreases may also occur if residents or prospective homebuyers link the a facility such as the WWMF with such changes within their neighbourhoods, even though they may be caused by others [14]. Case study research conducted for a range of industrial facilities, including municipal waste landfills and nuclear generating stations, indicated that lower property values have invariably occurred in communities where waste management and other industrial facilities have performed poorly [14, 15]. The literature suggests that general visual nuisances (e.g., high visibility of structures, vapour plumes, etc.) have caused approximately up to a 6 percent drop in residential property values, general odour nuisances caused between 4 percent and 8 percent drop in value, and noise nuisances have caused approximately 0.6 percent drop in value per decibel increase in noise. Such decreases in property values are usually restricted to areas immediately surrounding the facility or access routes. Nevertheless, effects have tended to recover close to pre-effect levels within a few years regardless of whether or not a nuisance has been eliminated [14].

The potential for the WWMF to generate a measurable change in residential property values due to nuisance effects is considered to be low, given that no significant air quality or noise effects from current WWMF operations have been detected and that no significant changes are anticipated as a result of the implementation of any of the three future options. The existing WWMF and any new facilities will continue to be located well away from residential developments and as such, decreased property values attributable to nuisance effects the WWMF are not anticipated.

The literature also suggests that declines in property values may also result from a negative image of the community on the part of prospective homebuyers, particularly if these effects are directly related to their attitudes towards the presence of a particular type of industrial facility or activity. Studies conducted for proposed hazardous waste and low-level radioactive waste management facilities found that residential housing prices were negatively affected by their presence where a “stigma” had been attached to the community. Again, this has typically been the case where a facility has performed poorly (i.e., many accidents and malfunction, demonstrated environmental effects). Recent case studies of property values near nuclear facilities in the United States indicate that negative imagery surrounding nuclear plants or stored nuclear waste does not have a significant detrimental influence on residential home prices in the immediate vicinity of these facilities [16].

“The closest analogies we have to the proposed repository are low level waste facilities, Federal nuclear reservations (e.g., Hanford), the Waste Isolation Pilot Project, and nuclear power plants. There is little evidence of negative impacts on property values in the vicinity of nuclear facilities, even Three Mile Island, site of America’s most publicized nuclear accident. Impacts that have occurred (e.g., the area of Fernald weapons plant in Ohio) are linked to contamination, not merely the presence of nuclear facilities.” [25]

Other sections of this report discuss issues of stigma and the potential for changes in the attractiveness of the local area. There are no strong indications that the construction and operation of waste management facilities for low and intermediate radioactive wastes in the Municipality of Kincardine would have any significant effect on the image or character of their community nor any measurable adverse effect on property values as long as there were no problems at the facility and the profile of the activity is limited.

Finally, the literature indicates that decreased property values may also result from a decrease in demand for land or an oversupply of available land in a community as a consequence of a major change in population. Residential property values appear to be more susceptible to property value changes than farm, commercial or industrial properties. Previous research conducted in the vicinity of the Bruce Power site in the mid 1980’s indicated that residential properties, particularly low to middle income housing was most susceptible to the demand/supply changes caused by population fluctuations. Middle and upper income housing tended to increase in value even during work force decline periods [14].

In the context of municipal growth, the implementation of long-term waste management options at the WWMF is not likely to result in any substantial change in population. Because population growth projected in the future will likely increase demand for existing residential properties in Kincardine and Saugeen Shores, adverse effects due to changes in demand for land are not anticipated.

Because the value of agricultural property is largely determined by the quality of soils and farm infrastructure, and economic prospects in the agricultural sector, changes in the number of sales and value are not likely to be related to changes at the WWMF [17].

Finally, interviews with local realtors conducted as part of this study indicated that in the recent past, some local homebuyers have had questions about the safety of nuclear operations at the Bruce Power site and the WWMF, but that there has been no noticeable effect of these operations on property values to date. Local realtors did not anticipate that any of the long-term waste management options would have an influence on local property values.

6.6 Municipal Taxes

OPG is required to pay full property, corporate and other taxes. The amount of taxes to be paid by OPG is governed by the *Assessment Act*. The *Assessment Act* indicates that the assessed value of buildings is to be determined on the basis of inside ground floor area for the actual building or structure housing equipment and machinery. Under the *Assessment Act*, facilities such as Deep Rock Vaults may be considered mining facilities and could be exempt from taxation. Similarly, there are few benchmarks to assess the value of Surface Concrete Vaults. Therefore, municipal taxes for Surface Concrete Vaults and Deep Rock Vaults options will require further analysis. Estimates of municipal taxes to be paid to the Municipality of Kincardine were provided by Ontario Power Generation as reported in the main IAS report [27]. These estimates are shown in Table 68. It is noteworthy that based on the settlement of property tax appeals with the Municipality of Kincardine, the buildings and structures associated with each of the options would not be considered to be part of the generating buildings at the site. This means that all property taxes would be paid to the Municipality of Kincardine.

Table 68. Estimated Average Annual Municipal Taxes Associated with Options

Option	Estimated Annual Municipal Taxes (\$CAN Million)
Status Quo	0.25
Enhanced Processing and Storage	0.305
Surface Concrete Vaults	0.305+
Deep Rock Vaults	0.305+

6.7 Tourism

For the purposes of this study, it was hypothesized that adverse effects on the tourism industry may occur if tourists link the Kincardine area, or local product and services with the WWMF and take steps to avoid the area, its products and services because of their attitudes towards the facility. As such, it was hypothesized that it was necessary for a “stigma” to be attributed to the area for adverse effects on tourism to occur. Stigma refers to the negative images attached to a community, area and its residents, or local products or services.

Research regarding public attitudes towards radioactive waste facilities indicates that several things must happen before a community becomes “stigmatized” and adverse effects begin to emerge. First, stigma requires a trigger such a major accident to bring about behaviour changes and adverse effects. The facility itself would have to become a salient issue among tourists and the local population. People (whether local residents, people living outside of the Municipality of Kincardine and Neighbouring Municipalities, or tourists) would have to have a very high level of awareness of the facility and feel threatened to the extent that they would seek out and accept information about a facility. Second, the information about the waste facility would have to confirm their beliefs that the facility threatens them. Thirdly, before any noticeable effect on tourism occurs, tourists would have change their behaviours in response to their belief that they would be threatened should they visit an area [25].

At the present time, the existing WWMF does not have a high profile among tourists and radioactive waste management does not appear to be a salient issue for local residents or tourists. One indicator of this is the public attitude research result that only 6 percent of the respondents in Kincardine identify the Bruce Power nuclear generating station or radioactive waste as important issues facing the community. Only 1 percent identified these issues in the Neighbouring Municipalities. A second indicator comes from the tourist survey which showed that the WWMF is not a “thing or image” that comes to mind first when thinking about the area. Interviews indicate that the existing WWMF is not seen as a negative influence on tourism due to its isolation, lack of visibility from the major population centres of Kincardine and Port Elgin and from most beaches frequented by tourists. The existing WWMF and the each of the future options will be located approximately 1 km inland and will not occupy or be highly visible from the Lake Huron shoreline and are not likely to change the shoreline experience of cottagers, visitors or boaters who use local beaches and tend to cruise long distances along the shoreline of Lake Huron.

Thirdly, round table participants also stated that tourists do not link tourism businesses and the area with the presence of nuclear facilities in the Municipality of Kincardine or elsewhere. At present, the WWMF has a low enough profile that it is not an issue for tourism operators. Tourists have not tended to express any concerns about radioactive waste management because they are largely unaware of this activity at the present time. Round table participants also indicated that tourists do not necessarily distinguish between the nuclear stations and the WWMF [26].

In addition, over 70 percent, of public attitude research respondents did not anticipate any change in the attractiveness of the Kincardine and its neighbouring municipalities as a place to visit as a tourist because of long-term waste management at the WWMF. Only 7 percent of respondents indicated that long-term management of low and intermediate level wastes would decrease the attractiveness of the area “a great deal”. Moreover, about 80 percent of tourists interviewed indicated that implementing any of these long-term waste management options would have no effect on their tourism experience in Kincardine and the South Bruce area in the future. Their reasons included trust in OPG, nuclear safety commission & government, the fact that the wastes are currently on the Bruce Power site and because they would not see it so it would not affect them. Finally, 89 percent of tourists surveyed did not foresee themselves changing their visits to the area. About 94 percent indicated that their use of parks, beaches and trails and fishing and boating activities would not change because of the presence of a new type of waste storage or long-term management facility at the Bruce Power site

Interviews with tourism business operators support the conclusion that there is little potential for stigma. The majority of business operators and realtors interviewed also do not anticipate any changes as a result of the implementation of long-term waste management at the WWMF. For example, almost all of the business operators indicated that the WWMF has no direct influence on their business activities, and that customers or clients do not tend to link their operations with the Bruce Power site or the WWMF. Consequently, most of the business operators interviewed did not expect any adverse effects on their businesses because of a ‘stigma’ from long-term waste management at the WWMF.

Those tourists that indicated that they might change their behaviours, indicated that they would still come to area but not necessarily to Inverhuron Provincial Park; that they may not use lake; or that they might find a beach further away from the Bruce Power site such as Sauble Beach. Round table participants on the other hand felt that some tourists would “stop coming” rather than choosing other locations or activities in the area. They were of the opinion that that there was little the tourists could change. “Beach lover’s would not change to some other activity. They would go elsewhere.” They stated that the tourism industry would need to identify other benefits of the area in ways not advertised in the past to attract tourists and make up the difference [26].

Interviews with tourism accommodation business operators and the discussions held during the tourism round table also suggested that workers at the WWMF may compete with tourists for temporary accommodations during the peak tourist season. Round table participants thought that a long term management facility might result in high levels of employment for their construction and were concerned that this would contribute to the problem tourism operators have in accommodating both contract employees and tourists during peak season [26]. However, due to that fact that development of each long-term waste management option would take place over a longer period time (rather than just a few years of construction) and would be more akin to full-time positions, such effects on tourism operators would be minimal.

Nevertheless, the increased number of workers on-site and increased number corporate clients using local hotels and motels, will serve to maintain the economic viability of these businesses and may generate re-investment into these facilities by their owners. The social analysis indicates that local residents are not likely to change their decision to live in the area, and that the WWMF will serve to maintain population levels in Kincardine and Neighbouring Municipalities. Because much of the tourism in the area is linked to friends and family, the maintenance of the population in the local communities that will result from the project is anticipated to bring some stability to the tourism industry and maintain revenues year-round to tourism businesses (e.g., service businesses, hotels, motels, etc.). However, this effect is not anticipated to be large in the context of overall tourist spending in Kincardine and Neighbouring Municipalities.

The tourism survey suggests that no one long-term management option is clearly preferred or viewed as having the most adverse effect on the tourism experience. Round table participants confirmed that tourists are not likely see a difference between ongoing storage of the waste and its long-term management. Round table participants indicated that the Deep Rock Vaults option was the preferred option, assuming the area is suitable for safety reasons, because it provided a greater sense of “out of sight out of mind.”, hence it would have the least effect on the community’s image and tourism [26]. However, participants were concerned that if the caverns were under the lake it could affect tourism. When informed that a disposal facility would likely be about 1 km from the lake, participants were reassured and continued to believe that deep underground was the preferred option.

Overall, there are no strong indications that the construction and operation of waste management facilities for low and intermediate radioactive wastes in the Municipality of Kincardine would have any significant effect on the image or character of their community nor any measurable adverse effect on tourism as long as there were no problems at the facility and the profile of the activity is limited. Studies regarding high level nuclear waste disposal in the United States reach similar conclusions. For example, these studies have concluded that “the mere presence of radioactive waste does not necessarily discourage tourism” and “even if there is a serious accident, stigmatization might not happen” [25].

It is anticipated that any perceptions or images attached to the community or its residents are more likely to be associated with the Bruce Power site as a whole, rather than any single operation of the site. Any negative associations between the community and the WWMF are not expected be distinguishable from those related to the Bruce Power site as a whole; are expected to diminish over time after the media attention from the proposed referendum wanes; and as the facility achieves a positive environmental and safety record that is well communicated to the public, both within and outside the Municipality of Kincardine.

Therefore, the research conducted as part of this study indicates that the existing WWMF or long-term waste management at the WWMF offer little potential to stigmatize the Municipality of Kincardine and its Neighbouring Municipalities, but that one cannot totally rule out negative effects. Tourism officials were adamant in their opinion that a waste management facility was “not an attractive thing for tourists”

and that any “bad experience” at the facility would have a long-term negative effect on their business. Using their experience with the Walkerton water tragedy as an indicator, round table participants speculated that it would take “year and years” to regain the trust and business of tourists [26].

Round table participants also noted that since operation of the nuclear stations was taken over by Bruce Power, there are two separate activities being undertaken at the site (i.e., Bruce Power as nuclear station operator and OPG as the waste management facility operator). Round table participants indicated that OPG’s WWMF has been gaining a higher profile among local residents and tourists over the past several years. Round table participants were uneasy with a higher profile, fearing that this would lead to the reputation of Kincardine as a “nuclear waste dump”. Such a reputation or “stigma” is likely to have a negative effect on tourism [26].

They cautioned that area residents and tourists have seen OPG trucks transporting waste to the site for many years. However, OPG’s presence was as part of the larger activity of generating electricity. Participants stated that they have confidence in the transportation of the radioactive waste, but it is “highly visible.” Their suggestions for addressing this concern were for OPG to remove their logo from the trucks, hire a contractor with a different name on the trucks, not use the radioactive symbol on the trucks, or drive trucks at night when they would be less noticeable.

7. Social Analysis

The social analysis component of this study was designed to identify whether there is potential for significant social effects as a result of the implementation of any of the long-term waste management options at the WWMF. The potential for social effects was determined by examining the initial impressions of people to the idea long-term waste management at the Bruce Power site; the potential for changes in public attitudes (i.e., feelings of personal security, community satisfaction and commitment to farming); potential for changes in the attractiveness of the area as a place to live, establish a business or visit as a tourist; and the potential for changes in people’s behaviours (i.e., living in the community, fishing and boating activities near the Bruce Power site, and use of parks, beaches and trails near the Bruce Power site).

7.1 Initial Impressions of the Long-Term Waste Management Initiative

As a first indicator of the potential for social effects, public attitude research was used to gain insight into the initial impressions of the long-term waste management initiative among residents in the Municipality of Kincardine and Neighbouring Municipalities. People who remembered receiving a newsletter regarding the plans for long-term management and the IAS were asked to provide their initial impressions of OPG’s plans for long-term management of low and intermediate level radioactive wastes.

Approximately 47 percent of Kincardine and 40 percent of the Neighbouring Municipalities respondents could not provide a specific response but tended to endorse the long-term plans or express a lack of concern regarding the proposal. In the Neighbouring Municipalities respondents who have lived in the community for a longer time are more likely than the average to agree with or support OPG’s plans.

Other initial impressions tend to focus on health and safety concerns (14 percent Kincardine, 10 percent Neighbouring Municipalities), or community involvement aspects of the current Independent Assessment Study (13 percent Kincardine, 11 percent Neighbouring Municipalities).

Table 69. Initial Impressions of the Plans for Long-term Management

	Kincardine		Neighbouring Municipalities	
	%	<i>N</i>	%	<i>n</i>
I am not concerned/ I support their policies	47	60	40	28
Community Concerns / Safety / Health Concerns	14	18	10	7
A proposal / Public Education & Community Involvement	13	17	11	8
I can not remember/ I did not read it	9	12	13	9
It is Necessary	3	4	4	3
All Options Should be Explored	3	4		
Nothing	2	3	7	5
Good for the Community	2	2	1	1
Helps the Economy / Job Creation	2	2	1	1
Involvement of Government Representatives	1	1		
Prefers Temporary to Long-term Storage	1	1	3	2
I need more information	1	1	2	1
Expenses Incurred	1	1	1	1
I prefer above ground storage	1	1	1	1
Types of Storage Facilities / Goals for Long-term Storage			1	1
Other			3	2

Note: Asked of respondents who remember receiving a newsletter. Percentages may not sum to 100 percent due to rounding. Source: [18] Q22

Round table participants identified another issue related to the long-term waste management initiative [26]. Kincardine through signing the MOU has “the controlling ball” on what happens to the waste. Yet the potential impact of the decision will affect the whole area. Participants expressed the opinion that the surrounding municipalities should have input into the decision reached by the Municipality of Kincardine and OPG because the repercussions from the decision affect them.

7.2 Potential for Changes in Public Attitudes

Public attitude research was also used to determine if any of the three long-term options will have any effect on people’s feelings of personal security, community satisfaction or commitment to farming, and if the degree to which their attitudes might change.

A majority of respondents do not expect that long-term management of low and intermediate level radioactive wastes at the WWMF will change their commitment to farming (90 percent Kincardine, 88 percent Neighbouring Municipalities), their satisfaction with their community (75 percent and 73 percent respectively) or their feelings of personal security (65 percent and 60 percent respectively).

Whether a respondent indicated “a great deal” or “somewhat” of a change would occur (either positively and adversely) is an indication of how strongly their views or behavioural intentions are held. The percent of respondents who indicated that their attitudes would change “a great deal” are:

- **Feeling of Personal Security** – 5 percent of Kincardine respondents and 10 percent of Neighbouring Municipalities respondents state that their feelings of personal security would be affected adversely “a great deal”. About 2 percent and 2 percent respectively indicate that long-term management of low and intermediate level radioactive wastes would improve their feelings of personal security “a great deal”.
- **Satisfaction with Their Community** – 3 percent of Kincardine respondents believe their satisfaction will decrease “a great deal” as a result of long-term management of low and intermediate level radioactive wastes at the WWMF. About 3 percent indicate that this plan would result in a greater level of satisfaction with their community. . The comparable percentages for Neighbouring Municipalities respondents are 7 percent decrease and 2 percent increase.
- **Commitment to Farming** – 1 percent of Kincardine and 3 percent of the Neighbouring Municipalities respondents anticipate that commitment to farming would decrease “a great deal” and 1 percent indicate a potential positive effect.

Table 70. Potential Effects on Attitudes

			No Change	Not Sure	Change in Behaviour			
					Decrease		Increase	
					Great Deal	Somewhat	Somewhat	Great Deal
Commitment to Farming	<i>Kincardine</i>	Percent	90	2	1	5		1
		<i>n</i>	54	1	1	3		1
	<i>Neighbouring Municipalities</i>	Percent	88	7	3			1
		<i>n</i>	67	6	2			1
Satisfaction with Your Community	<i>Kincardine</i>	Percent	75	9	3	5	6	3
		<i>n</i>	299	37	10	18	24	12
	<i>Neighbouring Municipalities</i>	Percent	73	10	7	4	5	2
		<i>n</i>	256	35	23	15	16	6
Feeling of Personal Security	<i>Kincardine</i>	Percent	65	11	5	11	6	2
		<i>n</i>	259	42	21	45	24	9
	<i>Neighbouring Municipalities</i>	Percent	60	14	10	8	7	2
		<i>n</i>	210	49	33	29	23	7

Note: Percentages may not sum across to 100 percent due to rounding. Five point answer codes are anchored with: great deal less/more satisfied, great deal less/more attractive for farming, great deal less/more secure. Source: [18] Q27/29, 39/41, Q24/26

Kincardine respondents who think more frequently about living near the Bruce Power site or the existing WWMF, and have less confidence in the existing technologies are more likely to state that their feeling of personal security, and satisfaction with the community will change. The direction of their change in attitudes is correlated only with living near the Bruce Power site; those who think more frequently about it are more likely to state that their feeling of personal security or satisfaction with the community will decrease.

Neighbouring Municipalities respondents who think more frequently about living near the Bruce Power generating station are more likely to state that their feeling of personal security, and satisfaction with the community will change. Respondents who think more frequently about the Bruce Power site or the WWMF, or have lower confidence in the technologies are more likely to state that their satisfaction with the community will be affected adversely. Those who have less confidence in the technologies are also more likely to state that their feeling of personal security will be affected adversely.

The respondents who believe that their attitudes may change (either positively or negatively) were asked to state which of the three long-term options will have the greatest effect on them. It should be noted that the number of respondents to this question was small and hence results should be interpreted with caution.

It is important to emphasize that because so few people indicate that their attitudes would change (either positively or negatively) there is considerable amount of uncertainty regarding the conclusions regarding which option would have the greatest effect. As such these data should be considered as a preliminary indicator only.

Findings suggest that within Kincardine the Deep Rock Vaults option is the one that is most likely to generate a change in peoples’ satisfaction with living in their community and feeling of personal security. Both the Deep Rock Vaults and the Surface Concrete Vaults are likely to have a similar effect on people’s commitment to farming. The Enhanced Treatment, Processing and Long-term Storage option is the least likely to generate a change in people’s attitudes. Neighbouring Municipalities findings indicate a similar view that Deep Rock Vaults is the option that is most likely to generate a change in peoples’ commitment to farming and feeling of personal security, but there is no consensus of which option is most likely to generate a change in satisfaction with their community.

There is no clear relationship between a positive or adverse effect and specific options for low and intermediate level radioactive waste management. Whether respondents’ attitude on personal security or satisfaction with their community changes positively or adversely they tend towards naming Deep Rock Vaults.

Table 71. Options with the Most Potential for Effect on Attitudes

		Kincardine		Neighbouring Municipalities	
		%	N	%	n
Satisfaction with Your Community	Enhanced Processing and Storage	17	13	17	12
	Surface Concrete Vaults	24	18	24	17
	Deep Rock Vaults	41	31	28	20
	Don’t know	17	13	32	23
Commitment to Farming	Enhanced Processing and Storage	20	1	26	1
	Surface Concrete Vaults	40	2	26	1
	Deep Rock Vaults	40	2	49	2
Feeling of Personal Security	Enhanced Processing and Storage	20	24	21	22
	Surface Concrete Vaults	20	24	19	20
	Deep Rock Vaults	47	55	40	42
	Don’t know	13	15	19	20

Note: Bases of response are respondents who state that there would be an effect. Percentages may not sum to 100 percent due to rounding. Source: [18] Q25, 28, 40

7.3 Potential for Changes in the Attractiveness of the Area

A clear majority of respondents believe that the three long-term options will not have any effect on the attractiveness of the Municipality of Kincardine as a place to visit as a tourist (77 percent Kincardine, 73 percent Neighbouring Municipalities), to establish and operate a business (67 percent and 63 percent respectively), or to live (67 percent Kincardine, 65 percent Neighbouring Municipalities).

A higher percentage of respondents believe that the attractiveness of the municipality will be affected adversely than positively; however the degree to which people’s image of Kincardine would change is not likely to be great. The results indicate that more respondents indicate that their attitudes would change “somewhat” rather than “a great deal”.

- **Place to Live** – 8 percent of people in Kincardine and 7 percent in the Neighbouring Municipalities indicate that an adverse effect on their image would occur to a great extent; while 2 percent and 2 percent respectively state that their image of Kincardine as a place to live would improve “a great deal”.
- **Place to Establish and Operate a Business** – 6 percent of people in Kincardine and 7 percent of Neighbouring Municipalities indicate that an adverse effect on their image would occur to a great extent; while 3 percent and 1 percent respectively state that their image of Kincardine as a place to establish and operate a business would improve “a great deal”.
- **Place to Visit as a Tourist** – 4 percent of people in Kincardine and 7 percent in the Neighbouring Municipalities indicate that an adverse effect on their image would occur to a great extent; while 2 percent and 1 percent respectively state that their image of Kincardine as a place to visit as a tourist would improve “a great deal”.

Table 72. Potential Effects on Attractiveness of the Municipality of Kincardine

			No Change	Not Sure	Change in Attractiveness			
					Decrease		Increase	
					Great Deal	Somewhat	Somewhat	Great Deal
As a Place to Visit as a Tourist	Kincardine	%	77	5	4	10	3	2
		N	306	20	17	38	13	6
	Neighbouring Municipalities	%	73	12	7	5	2	1
		N	256	41	25	19	6	4
As a Place to Establish and Operate a Business	Kincardine	%	67	8	6	9	7	3
		N	269	33	24	37	27	10
	Neighbouring Municipalities	%	63	15	7	10	5	1
		N	221	51	23	36	16	4
As a Place to Live	Kincardine	%	67	9	8	11	4	2
		N	266	36	31	44	15	8
	Neighbouring Municipalities	%	65	12	7	11	3	2
		N	229	42	25	37	12	6

Note: Percentages may not sum to 100 percent due to rounding. Five point answer codes are anchored with: great deal less / more attractive. Source: [18] Q36/38, Q30/32, 33/35

Kincardine and Neighbouring Municipalities respondents who think more frequently about living near the Bruce Power site or the WWMF, and have less confidence in the technologies are more likely to state that the attractiveness of the Municipality of Kincardine as a place to establish a business, visit, or live will change. For Kincardine respondents who think more frequently about living near Bruce are more likely to state that there will be an adverse effect on tourism, establishing a business, and as a place to live. Neighbouring Municipalities respondents who think more frequently about living near the Bruce Power generating station or the existing WWMF, and have less confidence in the technologies are more likely to state that the attractiveness of the Municipality of Kincardine will be affected adversely.

The respondents who believe that the attractiveness of Kincardine may change were asked to state which of the three long-term options will have the greatest effect. As mentioned previously, because so few people indicate that their attitudes would change (either positively and negatively) there is considerable amount of uncertainty regarding the conclusions regarding which option would have the greatest effect. As such these data should be considered as a preliminary indicator only. Findings in Table 73 indicate there is no consensus on which option will have the most potential effect on attractiveness.

Table 73. Options with the Most Potential for Effect on Attractiveness

		Kincardine		Neighbouring Municipalities	
		%	N	%	n
As a Place to Visit as a Tourist	Enhanced Processing and Storage	24	19	22	14
	Surface Concrete Vaults	28	22	32	20
	Deep Rock Vaults	34	27	21	13
	Don't know	15	12	26	16
As a Place to Establish and Operate a Business	Enhanced Processing and Storage	20	22	15	14
	Surface Concrete Vaults	30	32	27	26
	Deep Rock Vaults	25	27	26	25
	Don't know	25	27	33	32
As a Place to Live	Enhanced Processing and Storage	19	21	22	21
	Surface Concrete Vaults	32	36	31	30
	Deep Rock Vaults	26	29	20	20
	Don't know	23	25	28	27

Note: Bases of response are respondents who state that there would be an effect. Percentages may not sum to 100 percent due to rounding. Source: [18] Q31, 34, 37

There are, however, differences in naming an option depending on whether respondents thought that the effect would be positive or adverse. Respondents who indicate that the Municipality will become more attractive as a place to visit or establish a business are more likely to name Enhanced Processing and Storage or Deep Rock Vaults. Those believe it will become more attractive as a place to live are more

likely to name Enhanced Processing and Storage. Respondents who indicate that the Municipality will become less attractive as a place to visit, establish a business, or live are more likely to name Surface Concrete Vaults. However, results must be interpreted with caution given the small sample sizes.

Overall, the research conducted as part of this study indicates that the WWMF offers little potential to stigmatize the Municipality of Kincardine and its Neighbouring Municipalities, but that one cannot totally rule out negative effects. There is little evidence to suggest that the area would be seen as being less attractive as a place to visit, a place to live or establish a business by a large proportion of the population. Those people that have strongly held views that the attractiveness of the area would change “a great deal” range from approximately 4 percent to 8 percent of respondents.

This conclusion is supported by socio-economic studies undertaken in the United States regarding a proposed high level nuclear waste facility. These studies have concluded that

“If the repository would be such a powerful disincentive to investors, businesses considering to relocate in southern Nevada, retirees and others considering to relocate in area, some effects of those perceptions should already be apparent...we would see a decline in population in southern Nevada as businesses and people decide to settle elsewhere in anticipation of future risks and stigma. There is no evidence of this behaviour” [25].

7.4 Potential for Changes in Behaviours

Respondents were also asked whether the three long-term options would change their behaviour. Results indicate that the vast majority of respondents (i.e., well over eight-in-ten respondents) do not express any intention to move from their community, change their fishing or boating activities, or change their use of parks, beaches, trails near the Bruce Power site or WWMF.

The few respondents who might change their activities are more likely to anticipate an adverse change than a positive one.

- **Moving from Their Community** – 5 percent of people in Kincardine and 5 percent in the Neighbouring Municipalities indicate a greater intention to move from their community as a result of long-term management of low and intermediate level radioactive wastes at the WWMF, but only 1 percent indicated that their behaviour might change “a great deal”.

- **Fishing and Boating on Lake Huron Near the Bruce Power Site** – 2 percent of people in Kincardine and 3 percent in the Neighbouring Municipalities indicate that an adverse effect on their fishing and boating activities might result to a “great” extent from long-term management of low and intermediate level radioactive wastes at the WWMF.
- **Use of Parks, Beaches, Trails Near the Bruce Power Site** – 2 percent of people in Kincardine and 4 percent in the Neighbouring Municipalities indicate that an adverse effect on their use of parks, beaches and trails might result to a “great” extent from long-term management of low and intermediate level radioactive wastes at the WWMF.

Table 74. Potential Effects on Behaviour / Activities

			No Change	Not Sure	Change Behaviour			
					Decrease		Increase	
					Great Deal	Somewhat	Somewhat	Great Deal
Move from Your Community	<i>Kincardine</i>	%	92	3		*	4	1
		N	368	11		1	16	4
	<i>Neighbouring Municipalities</i>	%	90	4	*	1	3	2
		N	317	13	1	3	10	7
Fishing and Boating on Lake Huron Near the Bruce Site	<i>Kincardine</i>	%	92	5	2	1		1
		N	367	18	7	5		3
	<i>Neighbouring Municipalities</i>	%	89	6	3	2		
		N	312	21	11	7		
Use of Parks, Beaches, Trails Near the Bruce Site	<i>Kincardine</i>	%	89	6	2	2	1	2
		N	357	22	8	7	3	7
	<i>Neighbouring Municipalities</i>	%	87	5	4	3	*	*
		N	305	18	15	11	1	1

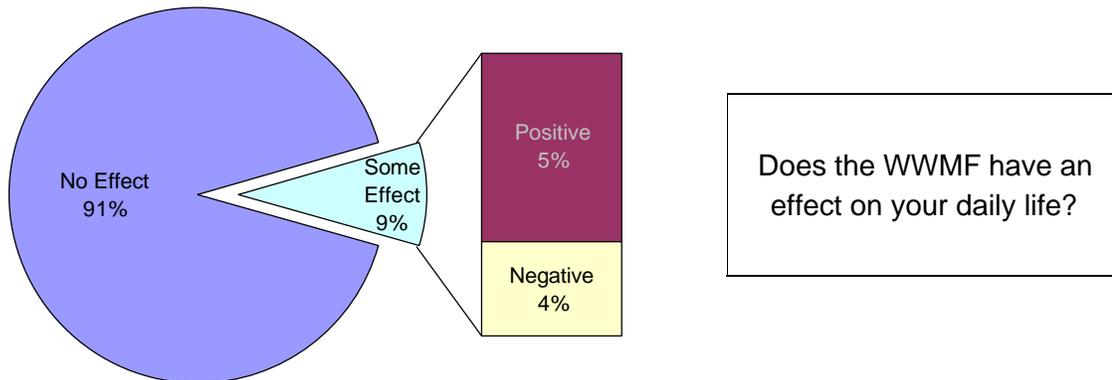
Note: Percentages may not sum across to 100 percent due to rounding. Five point answer codes are anchored with: decrease / increase a great deal for use of parks / fishing, not at all likely/ very likely to move. Source: [18] Q46/47, 42/43, 44/45

7.5 Summary of the Social Analysis

Public attitude research suggests that major current issues of concern in Kincardine and the Neighbouring Municipalities relate to the level of healthcare and drinking water. Bruce Power and nuclear waste was identified as a concern by a small minority (approximately 5 percent) of the respondents in Kincardine, and by even fewer respondents in the Neighbouring Municipalities.

Nearly half of the survey respondents indicated that they are very or somewhat aware of the WWMF. However, Figure 2 shows only a few of the Kincardine respondents (approximately 9 percent) indicated that the presence of the WWMF has had any effect on their daily lives. Those that identified the facility as having an effect indicated that the effect was more often positive than negative.

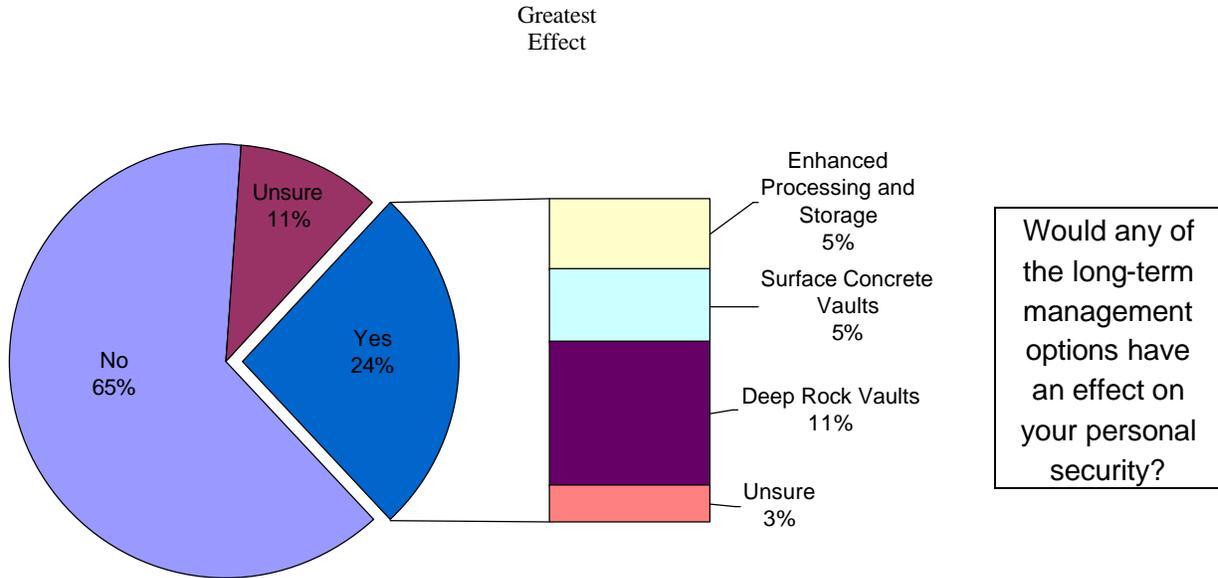
Figure 2. Effects on People’s Daily Lives



In addition, over 75 percent of the Kincardine respondents were very or somewhat confident in the existing technologies for processing and treatment of low and intermediate level waste. Survey results of the Neighbouring Municipalities are very similar to those from Kincardine.

The majority of both Kincardine and neighbouring municipality respondents indicated that none of the management options would have an adverse effect on their feelings of personal security or satisfaction with the community. Figure 3 below shows that 65 percent of Kincardine respondents indicated that there would be no effect on their feelings of personal security. A further 11 percent were unsure of whether or not there would be an effect. Of the remaining 24 percent who believed there would be an effect, approximately one third thought the effect would be positive and two thirds thought it would be negative. These latter respondents indicated that the Deep Rock Vaults option would have the greatest negative effect of the three long-term management options.

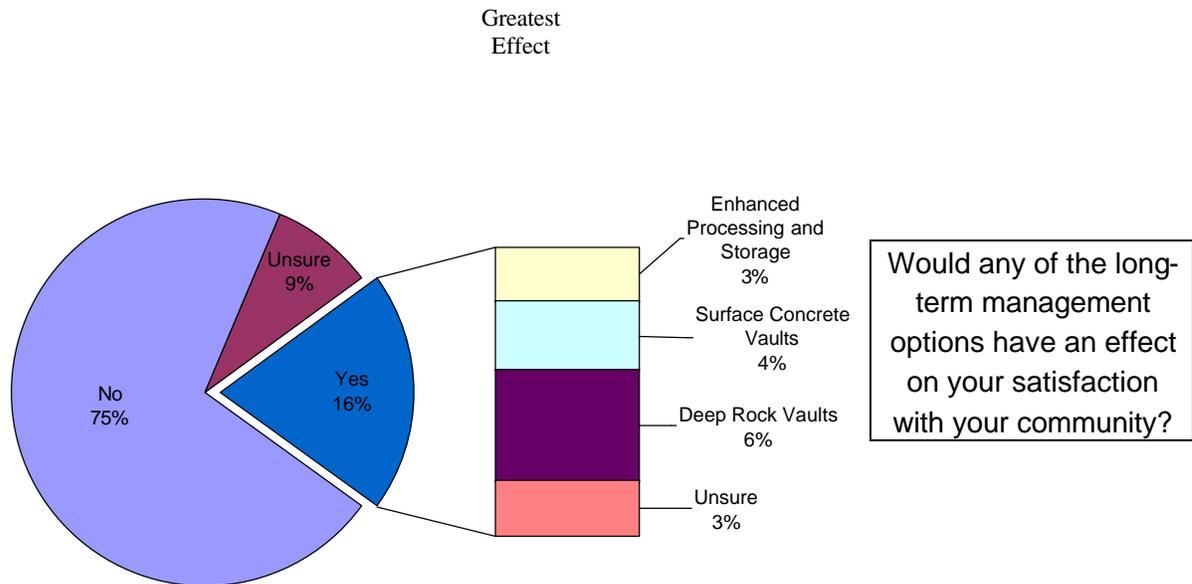
Figure 3. Effect of Long-Term Management Options on Personal Security



Note: Totals do not add up to 100 percent because of multiple responses. Source: [18]

Approximately 75 percent of Kincardine respondents indicated that a long-term management facility would not have any effect on their satisfaction with their community. Figure 4 below shows that the 17 percent of respondents who believes that a facility may have an effect felt the Deep Rock Vaults option would have the overall largest effect. However, over half of the respondents felt that the effect would be a positive one. The responses provided by residents of the Neighbouring Municipalities were similar to those of the Kincardine respondents.

Figure 4. Effect of Long-Term Management Options on People’s Satisfaction with Community

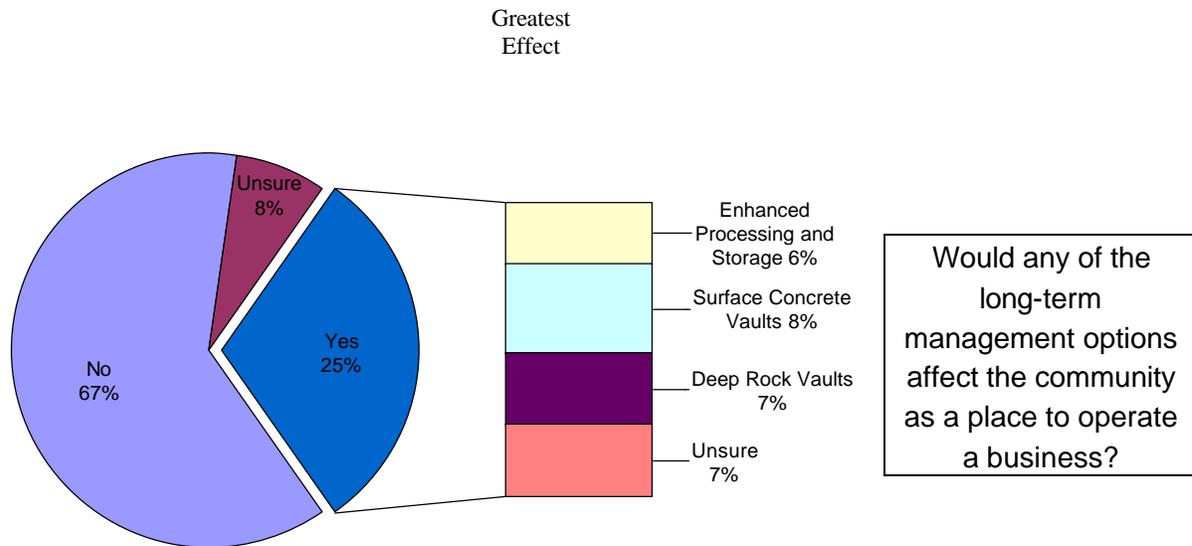


Note: Totals do not add up to 100 percent because of multiple responses. Source: [18]

A majority of respondents also indicated that a long-term management facility would not have any effects on the attractiveness of the Kincardine area as a place to visit, operate a business or live. For those who believed there may be an effect, it was generally felt that the Deep Rock Vaults would have the largest effect on the community as a place to visit as a tourist but the Surface Concrete Vaults would have the largest effect on the community as a place to live and operate a business.

Figure 5 shows that the majority of Kincardine respondents, approximately 67 percent, did not believe there would be an effect on their community as a place to operate a business. Approximately one quarter of respondents indicated that a long-term management facility may have an effect on the community as a place to operate a business, in particular the Surface Concrete Vaults option.

Figure 5. Effect of Long-Term Management Options on Business Operations



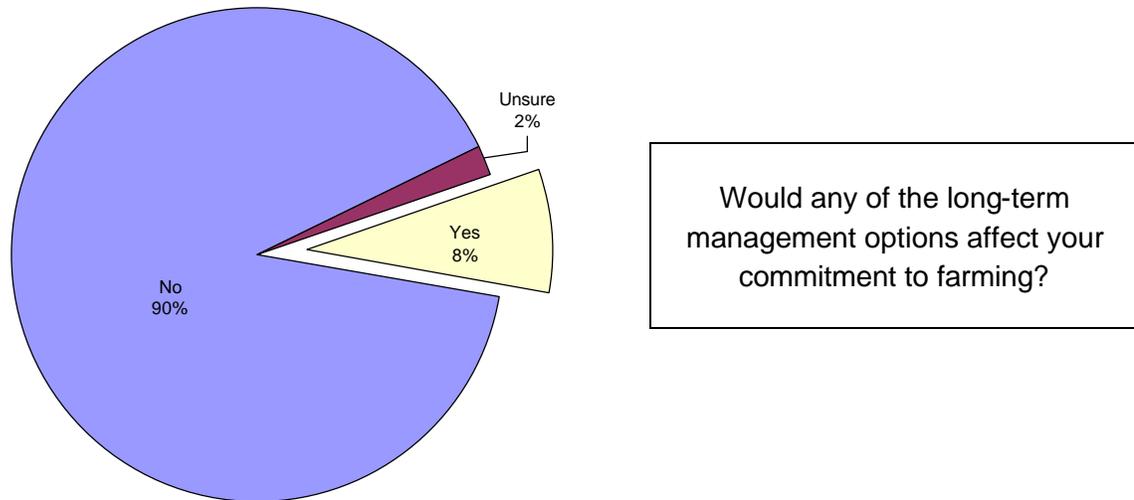
Note: Totals do not add up to 100 percent because of multiple responses. Source: [18]

The results for the Neighbouring Municipalities was very similar although there was a larger percentage of respondents who were unsure whether or not a long-term management facility would have any effect.

Over 85 percent of respondents for both Kincardine and Neighbouring Municipalities indicated that a long-term management facility would not cause them to move from the community or change their behaviours with respect to their use of beaches, trails or parks or reduce fishing or boating activities.

Sixty respondents in Kincardine identified themselves as farmers. Figure 6 shows that 90 percent of the farm respondents indicated that a long-term management facility would not have any effect on their commitment to farming. For the 5 respondents (8 percent) that indicated there may be an effect, 4 believed that effect would be negative. Because of the small number of respondents, there was no clear indication of which of the long-term management options was least likely to cause an effect.

Figure 6. Effect of Long-Term Management Options on Commitment to Farming



Source: [18]

Seventy-six of the 351 respondents in the Neighbouring Municipalities identified themselves as farmers. Over 88 percent of these farm respondents indicated that a long-term management facility would not have an effect on their commitment to farming. Only four respondents (5 percent) indicated that there may be an effect on their commitment to farming, the majority believing the effect could be positive.

Round table participants identified another issue related to the long-term waste management initiative [26]. Kincardine through signing the MOU has “the controlling ball” on what happens to the waste. Yet the potential impact of the decision will affect the whole area. Participants expressed the opinion that the surrounding municipalities should have input into the decision reached by the Municipality of Kincardine and OPG because the repercussions from the decision affect them.

Overall, the social analysis component of this study has concludes that, at the present time, there is little potential for significant social effects as a result of the implementation of long-term waste management options at the WWMF. This conclusion was determined by examining the initial impressions of people to the idea long-term waste management at the WWMF; the potential for changes in public attitudes (i.e., feelings of personal security, community satisfaction and commitment to farming); potential for stigma (i.e., the attractiveness of the area as a place to live, establish a business or visit as a tourist); and the potential for changes in people’s behaviours (i.e., living in the community, fishing and boating activities near the Bruce Power site, and use of parks, beaches and trails near the Bruce Power site). Moreover, this conclusion is supported by the conclusions of other research regarding socio-economic effects of

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radioactive waste management facilities in the United States, for example, the following summarizes the lesson learned from research into the likelihood of adverse socio-economic effects from public perception of the Yucca Mountain Repository.

“Studies show few indications of adverse socio-economic effects (and many positive socio-economic effects) in places that currently safely store or dispose of radioactive waste” [25].

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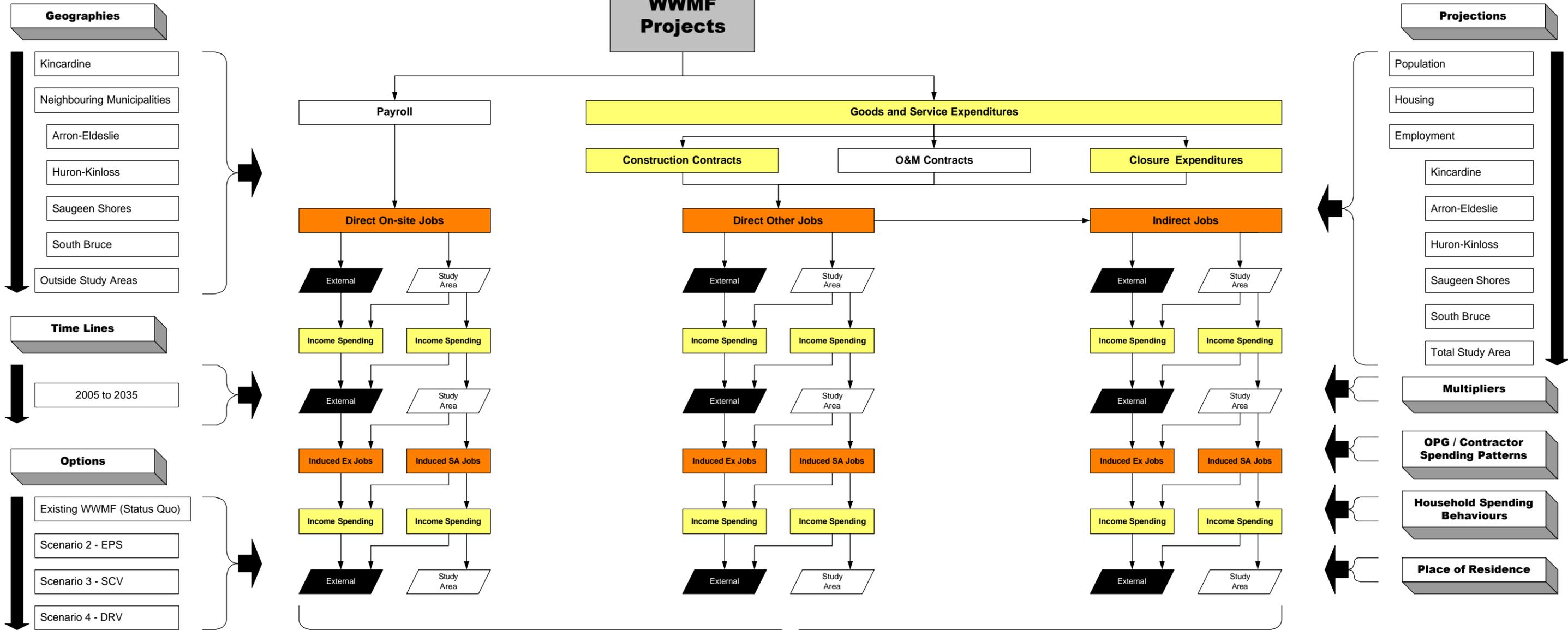
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Appendices

Appendix A

Economic Model Framework

Economic Model Framework - Independent Economic and Social Analysis



Model Outputs - Average Annual and Totals

	Status Quo	Direct On Site Jobs	Other Direct & Indirect Jobs	Induced Jobs	Payroll	Goods & Service Spending	Income Spending
Status Quo		Direct On Site Jobs	Other Direct & Indirect Jobs	Induced Jobs	Payroll	Goods & Service Spending	Income Spending
EPS		Direct On Site Jobs	Other Direct & Indirect Jobs	Induced Jobs	Payroll	Goods & Service Spending	Income Spending
SCV		Direct On Site Jobs	Other Direct & Indirect Jobs	Induced Jobs	Payroll	Goods & Service Spending	Income Spending
DRV		Direct On Site Jobs	Other Direct & Indirect Jobs	Induced Jobs	Payroll	Goods & Service Spending	Income Spending

Appendix B

Public Attitude Research Questionnaire

Appendix B

Public Attitude Research Questionnaire

Hello, I'm _____ of IntelliPulse a Canadian survey research company. We're talking to people today about issues in your community on behalf of Golder Associates Ltd. We are not selling anything, and your responses are confidential to IntelliPulse.

A) Are you 18 years of age or older and an Ontario resident?

Yes (SKIP TO C)..... 1
No.....2

WATCH FOR GENDER QUOTAS 50/50

B) IF NO ASK: May I please speak to someone in the household who is?

Yes REPEAT INTRODUCTION 1
No, not available, ASK; What would be a good time to call back? RECORD2

Date _____ Time _____

IF NECESSARY: This survey is registered with the Canadian Survey Research Council who can confirm that it is a legitimate public attitude research survey. Their number is 1-800-xxxxx and the identification number of the study is _____.

C) Have I reached you at your home telephone number or your family-owned cottage telephone number, that is (READ TELEPHONE NUMBER)? **Record codes as a question**

NEITHER (THANK AND TERMINATE, RECORD INCIDENCE)..... A
Home (CONTINUE) 1
Cottage2

D) Are you currently involved in the agricultural industry in anyway? **Record codes as a question**

No (CONTINUE)..... 1
Yes (CONTINUE)2

1. In your opinion, what is the most important issue facing your community today? (PROBE)
Is there a second major issue? (ACCEPT UP TO TWO RESPONSES)

- 1. _____
- 2. _____

2. Generally speaking, how satisfied are you with living in your community? Are you very satisfied, somewhat satisfied, not very satisfied, or not at all satisfied?

- Not at all satisfied 1
- Not very satisfied 2
- Somewhat satisfied 3
- Very satisfied 4

3. Thinking about how satisfied you are with living in your community, how committed are you to living in this community well into the future? Are you very committed, somewhat committed, not very committed, or not at all committed?

- Not at all committed 1
- Not very committed 2
- Somewhat committed 3
- Very committed 4

4. If you are a farmer, how committed are you to continued farming in your community? Are you very committed, somewhat committed, not very committed, or not at all committed?

- Not at all committed 1
- Not very committed 2
- Somewhat committed 3
- Very committed 4
- Not a farmer 5

5. In your opinion, what things or issues in your community affect your feelings of personal security the most? (PROBE) Is there a second thing or issue? (ACCEPT UP TO TWO RESPONSES)

- 1. _____
- 2. _____

6. Think about the Municipality of Kincardine and the South Bruce Area. What is the first thing or image that comes to mind? (ACCEPT ONLY ONE RESPONSE)

1. _____

7. Do you consider this image to be very positive, somewhat positive, somewhat negative or very negative?

- Very negative..... 1
- Somewhat negative..... 2
- Somewhat positive..... 3
- Very positive..... 4

8. Do you consider the Municipality of Kincardine and the South Bruce Area as a very attractive, somewhat attractive, somewhat unattractive or a very unattractive place to live? (ACCEPT ONLY ONE RESPONSE)

- Very unattractive..... 1
- Somewhat unattractive..... 2
- Somewhat attractive..... 3
- Very attractive..... 4

9. Do you consider the Municipality of Kincardine and the South Bruce Area as an very attractive, somewhat attractive, somewhat unattractive or a very unattractive place to visit as a tourist? (ACCEPT ONLY ONE RESPONSE)

- Very unattractive..... 1
- Somewhat unattractive..... 2
- Somewhat attractive..... 3
- Very attractive..... 4

10. Do you consider the Municipality of Kincardine and the South Bruce Area as a very attractive, somewhat attractive, somewhat unattractive or a very unattractive place to establish or conduct business? (ACCEPT ONLY ONE RESPONSE)

- Very unattractive..... 1
- Somewhat unattractive..... 2
- Somewhat attractive..... 3
- Very attractive..... 4

In the past year how often have you or members of your household done the following ... never, occasionally, regularly? (ROTATE)

	Never	Occasionally	Regularly
1. Used the parks, beaches and trails along the Lake Huron Shoreline	1	2	3
2. Gone fishing or boating on Lake Huron	1	2	3
3. In which municipality would you say that you and members of your household tend to go shopping for household or personal items on a regular basis? (ACCEPT UP TO 3 RESPONSES)			
1. _____			
2. _____			
3. _____			

USE LIST AS PRELIMINARY PRE-CODE. NOT TO APPEAR ON THE QUESTIONNAIRE.

Kincardine	1
Saugeen Shores (Port Elgin).....	2
Arran-Elderslie	3
Brockton.....	4
Northern Bruce Peninsula.....	5
South Bruce	6
South Bruce Peninsula	7
Huron-Kinloss.....	8
Other Outside of Bruce County	9

I would like to read you a brief description of the Western Waste Management Facility. **READ SLOWLY ... REPEAT IF NEEDED**

The Western Waste Management Facility currently stores low and intermediate level radioactive wastes produced by all of Ontario’s nuclear generating stations. Low and intermediate level waste management is essential for the ongoing operation of the nuclear generation stations, including Bruce Power. The waste management facility is located on the Bruce nuclear generating station site in the Municipality of Kincardine. The facility is regulated by the Canadian Nuclear Safety Commission and has been operated by Ontario Power Generation since the early 1970’s. Wastes are stored in above-ground buildings and structures, and also within in-ground structures.

4. In your day-to-day living, how often do you think about the fact that you live near the Bruce Nuclear Generating Station site... very often, often, not very often, or never?

- Never 1
- Not very often 2
- Often 3
- Very often..... 4
- Does not consider themselves living near the facility (VOLUNTEERED) 5**

5. Have you heard a great deal, something, very little, or nothing about the Western Waste Management Facility?

- Nothing..... 1
- Very little..... 2
- Something..... 3
- A great deal..... 4

6. In your day-to-day living, how often do you think about the fact that you live near the Western Waste Management Facility... very often, often, not very often, or never?

- Never 1
- Not very often 2
- Often 3
- Very often..... 4
- Does not consider themselves living near the facility (VOLUNTEERED) 5**

7. How confident are you in the radioactive waste management technologies used at the Western Waste Management Facility... very confident, somewhat confident, not very confident, or not at all confident?

- Not at all confident 1
- Not very confident 2
- Somewhat confident..... 3
- Very confident..... 4

8. Would you say that the presence of the Western Waste Management Facility has had any affect on your daily life?

- No (SKIP TO INTRODUCTION BEFORE Q20) 1
- Yes 2

9. If YES: What affect do you feel that it has had? (PROBE) Is there a second thing or affect? (ACCEPT UP TO TWO RESPONSES)

- 1. _____
- 2. _____

A number of future options for the management of low and intermediate level radioactive waste at the Western Waste Management Facility are being examined. They could keep operating the Western Waste Management Facility for the purposes of interim waste storage, or they could convert it to a long-term waste management operation, that would include a long-term waste storage facility or a long-term waste management facility.

10. Do you remember receiving a newsletter recently about the initiative to assess options for the long-term management of low and intermediate level radioactive waste?

No (SKIP TO INTRODUCTION BEFORE Q24) 1
Yes 2

11. What do you remember about the initiative? (ACCEPT ONE RESPONSE)

- 1. _____

12. What do you think about it? (ACCEPT ONE RESPONSE)

- 1. _____

13. What do you see as the major difference between an interim storage facility and a long-term management facility (PROBE)? Is there a second major difference? (ACCEPT UP TO TWO RESPONSES)

- 1. _____
- 2. _____

There are three options currently being considered for long-term waste management. They are: (1) Enhanced Processing, Treatment and Long-Term Storage; (2) a long-term management facility using Covered Above-Ground Concrete Vault technology; and (3) a long-term management facility using Deep Rock Cavern Vault technology. All three can be safely constructed and operated at the Western Waste Management Facility.

Option (1) involves minimizing waste volumes through the use of an enhanced super-compactor and the long-term storage of that waste in enhanced warehouse-like storage buildings. Option (2) involves emplacement of the waste in earth-covered concrete vaults at the surface. Option (3) involves emplacement of the wastes in a sealed rock cavern some 400-700 metres underground.

14. Do you think that implementing any of these three long-term options will have an effect on your feelings of personal security?

No (SKIP TO Q27) 1
 Yes 2

15. If YES: Which one would affect your feelings of personal security the most? READ LIST IF NECESSARY

Enhanced Treatment Processing and Long-Term Storage 1
 Covered Above-Ground Concrete Vault 2
 Deep Rock Cavern Vault 3

16. Would such a facility make you feel a great deal more secure, somewhat more secure, somewhat less secure, a great deal less secure or have no impact?

A great deal less secure 1
 Somewhat less secure 2
 Not sure (Volunteered) 3
 Somewhat more secure 4
 A great deal more secure 5
 Have no impact 6

17. Do you think that implementing any of these three options will have an effect on your satisfaction with your community?

No (SKIP TO Q30) 1
 Yes 2

18. If YES: Which one would affect your satisfaction with your community the most? READ LIST IF NECESSARY

Enhanced Treatment Processing and Long-Term Storage	1
Covered Above-Ground Concrete Vault	2
Deep Rock Cavern Vault.....	3

19. Would such a facility make you feel a great deal more satisfied, somewhat more satisfied, somewhat less satisfied, a great deal less satisfied or have no impact?

A great deal less satisfied	1
Somewhat less satisfied.....	2
Not sure (Volunteered).....	3
Somewhat more satisfied.....	4
A great deal more satisfied	5
Have no impact	6

20. Do you think that implementing any of these three options will have an effect on the attractiveness of The Municipality of Kincardine as a place to establish and operate a business?

No (SKIP TO Q33)	1
Yes	2

21. If YES: Which one would affect the attractiveness of the Municipality of Kincardine as a place to establish and operate a business the most? READ LIST IF NECESSARY

Enhanced Treatment Processing and Long-Term Storage	1
Covered Above-Ground Concrete Vault	2
Deep Rock Cavern Vault.....	3

22. Would such a facility make the Municipality of Kincardine a great deal more attractive, somewhat more attractive, somewhat less attractive, a great deal less attractive or have no impact?

A great deal less attractive.....	1
Somewhat less attractive	2
Not sure (Volunteered).....	3
Somewhat more attractive	4
A great deal more attractive.....	5
Have no impact	6

23. Do you think that implementing any of these three options will have an effect on the attractiveness of the Municipality of Kincardine as a place to live?

No (SKIP TO Q36) 1
Yes 2

24. If YES: Which one would affect the attractiveness of the Municipality of Kincardine as a place to live the most? READ LIST IF NECESSARY

Enhanced Treatment Processing and Long-Term Storage 1
Covered Above-Ground Concrete Vault 2
Deep Rock Cavern Vault..... 3

25. Would such a facility make the Municipality of Kincardine, a great deal more attractive, somewhat more attractive, somewhat less attractive, a great deal less attractive or have no impact?

A great deal less attractive..... 1
Somewhat less attractive 2
Not sure (Volunteered)..... 3
Somewhat more attractive 4
A great deal more attractive..... 5
Have no impact 6

26. Do you think that implementing any of these three options will have an effect on the attractiveness of the Municipality of Kincardine as a place to visit as a tourist?

No (SKIP TO Q40) 1
Yes 2

27. If YES: Which one would affect the attractiveness of the Municipality of Kincardine as a place to visit as a tourist the most? READ LIST IF NECESSARY

Enhanced Treatment Processing and Long-Term Storage 1
Covered Above-Ground Concrete Vault 2
Deep Rock Cavern Vault..... 3

28. Would such a facility make the Municipality of Kincardine, a great deal more attractive, somewhat more attractive, somewhat less attractive, a great deal less attractive or have no impact?

- A great deal less attractive..... 1
- Somewhat less attractive 2
- Not sure (Volunteered)..... 3
- Somewhat more attractive 4
- A great deal more attractive..... 5
- Have no impact 6

29. (IF Q4 CODE 5 SKIP TO Q 42) AS a farmer, do you think that implementing any of these three options will have an effect on your commitment to farming?

- No (SKIP TO Q42) 1
- Yes 2

30. If YES: Which one would affect your commitment to farming the most? READ LIST IF NECESSARY

- Enhanced Treatment Processing and Long-Term Storage 1
- Covered Above-Ground Concrete Vault 2
- Deep Rock Cavern Vault..... 3

31. Would such a facility have a major positive, somewhat positive, somewhat negative, a major negative, or have no impact on your commitment to farming?

- A great deal less attractive..... 1
- Somewhat less attractive 2
- Not sure (Volunteered)..... 3
- Somewhat more attractive 4
- A great deal more attractive..... 5
- Have no impact 6

32. With respect to your current use of parks, beaches and trails near the Bruce site, do you foresee yourself doing anything differently in the future because of the presence of a new type of long-term storage or long-term management facility on the Bruce site?

- No (SKIP TO Q44) 1
- Not sure (Volunteered) (SKIP TO Q44) 2
- Yes 3

33. IF YES: Are you likely to increase your use of parks, beaches, trails near the Bruce site a great deal, increase it somewhat, decrease your activities somewhat, decrease it a great deal or have no impact?

- Decrease a great deal 1
- Decrease somewhat..... 2
- Not sure (Volunteered)..... 3
- Increase somewhat 4
- Increase a great deal 5
- Have no impact 6

34. With respect to your fishing and boating activities on Lake Huron near the Bruce site, do you foresee yourself doing anything differently in the future because of the presence of a new type of long-term storage or long-term management facility on the Bruce site?

- No (SKIP TO Q46) 1
- Not sure (Volunteered) (SKIP TO Q46) 2
- Yes 3

35. IF YES: Are you likely to increase your fishing and boating activities near the Bruce site a great deal, increase it somewhat, decrease your activities somewhat, decrease it a great deal or have no impact?

- Decrease a great deal 1
- Decrease somewhat..... 2
- Not sure (Volunteered)..... 3
- Increase somewhat 4
- Increase a great deal 5
- Have no impact 6

36. Do you foresee yourself deciding to move from your community because of the presence of a new type of long-term storage or long-term management facility on the Bruce site?

- No (SKIP TO Q49) 1
- Not sure (Volunteered) (SKIP TO Q49) 2
- Yes 3

37. IF YES: Are you very likely to decide to move from your community, somewhat likely, not very likely, or not at all likely?

- Very likely 1
- Somewhat likely 2
- Not sure (Volunteered)..... 3
- Not very likely 4
- Not at all likely 5

Now I have a few final questions for statistical purposes. Your responses are confidential and will be grouped with those of other people.

38. Are you or any other member of your immediate household employed by Ontario Power Generation, Bruce Power or Atomic Energy of Canada Limited?

- No..... 1
- Yes 2

39. How many years have you Q C ...lived / owned a cottage ... in this community?

- Less than 1 year 1
- 2 to 10 years..... 2
- 11 to 20 years..... 3
- 21 or more years 4

40. Do you have any children 18 years of age or younger living at home with you?

- No..... 1
- Yes 2

41. What is your age please? Are you?

- Under 25 year of age 1
- 25 - 34 2
- 35 - 44 3
- 45 to 54 4
- 55 to 64..... 5
- 65 years of age or older 6

42. What is your total household income, before taxes from all sources for all members of your household? Is it ...

Under \$20,000	1
\$21,000 - \$39,999	2
\$40,000 - \$59,999	3
\$60,000 - \$79,999	4
\$80,000 - \$99,999	5
\$100,000 or more	6

43. Gender (By Observation)

Male	1
Female	2

44. In which municipality do you ... Q C live/own your cottage?

Kincardine	1
Saugeen Shores.....	2
Arran-Elderslie	3
Brockton.....	4
South Bruce	6
Huron-Kinloss.....	8

45. Date of interview (RECORD)

Verify telephone number and first name
Thank respondent for their participation.

Appendix C

Interview Guides

Appendix C

Interview Guides

The following interview guides provide the basis for conducting a telephone or personal interview for the purpose of the economic and social analyses as part of the Independent Assessment Study on Long-Term Waste Management options for Low and Intermediate Level Waste at Ontario Power Generation's Western Waste Management Facility. The interviewer will direct any respondent who has specific questions about the Ontario Power Generation's activities at the Western Waste Management Facility to Ontario Power Generation's Public Affairs Staff at the Western Waste Management Facility. Specific questions about Bruce Power Inc. activities at the Bruce Power site will be directed to Bruce Power.

Some questions may be modified slightly or deleted, while others may require "probes" during the course of the interview. These questions are to be used as a guide to improve consistency of the interviews and of the data that is obtained.

Introduction

Hello, my name is _____ and I am calling as a representative of Golder Associates Ltd. to conduct an interview for an economic and social analysis of options for possible future low and intermediate level radioactive waste management at the Western Waste Management Facility in the Municipality of Kincardine.

As a part of the study, we are contacting selected individuals, companies, and community and recreational facility operators within our study area. Our discussion today will only take approximately 20 minutes of your time. Are you willing to participate in a short interview?

Background

In April 2002, Ontario Power Generation and the Municipality of Kincardine signed a Memorandum of Understanding to examine options for the long-term management of low and intermediate level radioactive waste at the Western Waste Management Facility. Long-term management of low and intermediate level waste is needed for the continued operation of Ontario's nuclear generating facilities, including Bruce Power.

At present, the Western Waste Management Facility provides processing and interim storage facilities for all of the low and intermediate level wastes produced at the nuclear generating stations within the Municipality of Kincardine, the City of Pickering and the Municipality of Clarington. (It does not accept waste from other Nuclear industries such as AECL). The Western Waste Management Facility is located 15 km north of Kincardine on the Bruce nuclear generating station site. The facility is regulated by the

Canadian Nuclear Safety Commission and has been operated by Ontario Power Generation since the early 1970's. Currently, wastes are processed by compaction or incineration and stored in above-ground buildings and structures or in-ground containers.

There are three options currently being considered for long-term waste management at the Western Waste Management Facility. They are: (1) Enhanced Processing, Treatment and Long-Term Storage; (2) a long-term management facility using Covered Above-Ground Concrete Vault technology; and (3) a long-term management facility using Deep Rock Cavern Vault technology. All three can be safely constructed and operated at the Western Waste Management Facility.

Option (1) involves minimizing waste volumes through the use of an enhanced super-compactor and the long-term storage of that waste in enhanced warehouse-like storage buildings. Option (2) involves emplacement of the wastes in earth-covered concrete vaults at the surface. Option (3) involves emplacement of the wastes in a sealed rock cavern some 400-700 m underground.

We have contacted you to provide us with your insight and opinions regarding these options and how they might affect your community. We would appreciate it if you could answer the following questions.

Tourism Facility Operators

Organization Name: _____

Contact Name: _____ **Telephone:** _____

Date of Interview: _____ **Interviewer:** _____

1. Please briefly describe your business in terms of the full range of products and services you provide and the facilities you have.
 - For hotels/motels determine the number of rooms and the annual average occupancy rate, what is the peak season and the seasonal occupancy rate?
 - For fishing charter businesses determine whether they frequent to areas near the Bruce site, and how many charters they run annually.
 - For mobile home parks determine the number of sites, source of water supply, annual average occupancy rate, what is the peak season and the seasonal occupancy rate?
2. What kinds of clients or customers does your business primarily serve? How much business can be attributed to Bruce Power and Ontario Power Generation employees/visitors?

3. From what geographic area do your clients come from?
4. In your opinion, what things or issues in your community have the most affect on your business?
5. How important is the quality of the environment (i.e., the quality of the land, water and air) in the local area to the success of your business? Please explain.
6. How important is a positive community image of your community to the success of your business (please explain)?
7. Do you think your clients or customers associate your business with the presence of nuclear facilities in the Municipality of Kincardine? If yes, why?
8. Have you or have any of your customers/members expressed concerns about the operation of the nuclear generating stations? What concerns? When?
9. Have you or have any of your customers/members expressed concerns about radioactive waste management? What concerns? When?
10. In what ways, if any, has the presence of the Western Waste Management Facility in The Municipality of Kincardine affected your business?
11. In what ways, if any, does the presence of the existing Western Waste Management Facility affect your community's image or character?
12. Would the construction and operation of new types of waste management facilities for low and intermediate radioactive wastes in The Municipality of Kincardine affect the image or character of your community?
13. If yes, in what ways do you think that your community's image or character might be affected?
14. In your opinion, what do you see as the main differences between storage of low and intermediate level waste and its long-term management?
15. In your opinion, what do you see as the main differences between long-term management above ground or deep underground?
16. Which option for future management of low and intermediate level waste do you think would have the least affect on your community's image or character? Which would have the greatest effect? Would it be any different than with the current interim storage facility?

Selected Realtors and Real Estate Board

Organization Name: _____

Contact Name: _____ **Telephone:** _____

Date of Interview: _____ **Interviewer:** _____

Residential Property Values

1. What are the main issues or factors that determine residential property values in your area?
2. Do you feel that the nuclear generating stations have influenced the number of sales in your area?
3. In your experience, how do housing prices in areas nearest the nuclear station compare with those elsewhere in Bruce County?
4. Have you or have any prospective homebuyers expressed concern about the operation of the nuclear generating stations? What concerns? When?
5. Have you or have any prospective homebuyers expressed concern about radioactive waste management? What concerns? When?
6. In what ways, if any, has the presence of the Western Waste Management Facility in the Municipality of Kincardine affected residential property values?
7. Would the construction and operation of new types of waste management facilities for low and intermediate radioactive wastes in the Municipality of Kincardine affect residential property values?
8. If yes, in what ways do you think that residential property values might be affected?
9. In your opinion, what do you see as the main differences between interim storage of low and intermediate level waste and its long-term management?
10. In your opinion, what do you see as the main differences between long-term management above ground or deep underground?
11. Which option for future management of low and intermediate level waste do you think would have the least affect on residential property values? Which would have the greatest effect? Would it be any different than with the current interim storage facility?

12. If Ontario Power Generation is allowed to proceed with long term storage or long-term management of its low and intermediate radioactive wastes in the Municipality of Kincardine, how could they best address the concerns you may have?

Agricultural Property Values

1. What are the main issues or factors that determine agricultural property values in your area?
2. Do you feel that the nuclear generating stations have influenced agricultural property values in your area?
3. In your experience, how do agricultural land prices in areas nearest the nuclear station compare with those elsewhere in Bruce County?
4. Have you or have any prospective buyer expressed concern about the operation of the nuclear generating stations? What concerns? When?
5. Have you or have any prospective buyers expressed concern about radioactive waste management? What concerns? When?
6. In what ways, if any, has the presence of the Western Waste Management Facility in the Municipality of Kincardine affected agricultural property values?
7. Would the construction and operation of new types of waste management facilities for low and intermediate radioactive wastes in the Municipality of Kincardine affect agricultural property values?
8. If yes, in what ways do you think that agricultural property values might be affected?
9. In your opinion, what do you see as the main differences between interim storage of low and intermediate level waste and its long-term management?
10. In your opinion, what do you see as the main differences between long-term management above ground or deep underground?
11. Which option for future management of low and intermediate level waste do you think would have the least affect on agricultural property values? Which would have the greatest effect? Would it be any different than with the current interim storage facility?
12. If Ontario Power Generation is allowed to proceed with long term storage or long-term management of its low and intermediate radioactive wastes within its current waste management site, how could they best address the concerns you may have?

Agricultural and Farm Organizations

1. Could you please describe your organization? (PROBE: mandate, founding date, membership, geographic area served)
2. In your opinion, what are the key issues or challenges facing the agricultural community today ?
3. In what ways, if any, is the agricultural community affected by the current operations at the nuclear facilities at this site ?
4. Have you or have any of your members expressed concerns about the operation of the nuclear generating stations? What concerns? When?
5. Have you or have any of your members expressed concerns about radioactive waste management? What concerns? When?
6. In what ways, if any, has the presence of the Western Waste Management Facility in the Municipality of Kincardine affected agricultural activities ?
7. Would the construction and operation of new types of waste management facilities for low and intermediate radioactive wastes in the Municipality of Kincardine affect agricultural activities in the Kincardine area?
8. If yes, in what ways do you think that agricultural activities might be affected?
9. In your opinion, what do you see as the main differences between interim storage of low and intermediate level waste and its long-term management?
10. In your opinion, what do you see as the main differences between long-term management above ground or deep underground?
11. Which option for future management of low and intermediate level waste do you think would have the least affect on agricultural activities in the Municipality of Kincardine? Which would have the greatest effect? Would it be any different than with the current interim storage facility?
12. If Ontario Power Generation is allowed to proceed with long term storage or long-term management of its low and intermediate radioactive wastes within its current waste management site, how could they best address the concerns you may have?

Cottage Rental Companies

Organization Name: _____

Contact Name: _____ **Telephone:** _____

Date of Interview: _____ **Interviewer:** _____

1. Where are the main cottage areas in Bruce County? How many cottages are typically for rent in the Kincardine area ? Are these available all year round?
2. From what geographic area do most people who rent cottages in the Municipality of Kincardine area come?
3. Are these renters repeat customers, that is, do they come back year after year?
4. What are the main issues or factors that determine the demand for cottages in the Kincardine area?
5. How important is the quality of the environment (i.e., the quality of the land, water and air) in the local area to the success of the cottage rental business? Please explain.
6. How important is a positive community image to the success of the cottage rental business (please explain)?
7. Do you think that people who rent cottages in the Kincardine area are aware of the presence of nuclear facilities in the vicinity?
8. Do you think that the presence of nuclear facilities in the Municipality of Kincardine is a factor in people's decision to rent a cottage in the Kincardine area? If yes, why?
9. Have you or have any of your customers/members expressed concerns about the operation of the nuclear generating stations? What concerns? When?
10. Have you or have any of your customers/members expressed concerns about radioactive waste management? What concerns? When?
11. In what ways, if any, has the presence of the Western Waste Management Facility in the Municipality of Kincardine affected the cottage rental business?
12. Would the construction and operation of new types of waste management facilities for low and intermediate radioactive wastes in the Municipality of Kincardine affect the image or character of your community?
13. If yes, in what ways do you think that your community's image or character might be affected?

14. In your opinion, what do you see as the main differences between interim storage of low and intermediate level waste and its long-term management?
15. In your opinion, what do you see as the main differences between long-term management above ground or deep underground?
16. Which option for future management of low and intermediate level waste do you think would have the least affect on your community's image or character? Which would have the greatest effect? Would it be any different than with the current interim storage facility?
17. Which option for future management of low and intermediate level waste do you think would have the least affect on your business? Which would have the greatest effect?
18. If Ontario Power Generation is allowed to proceed with long term storage or long-term management of its low and intermediate radioactive wastes within its current waste management site, how could they best address the concerns you may have?

Economic Development Officers / Chambers of Commerce

Organization Name: _____

Contact Name: _____ **Telephone:** _____

Date of Interview: _____ **Interviewer:** _____

1. What are the most important economic development issues facing your community today?
2. What are the things that give the Municipality of Kincardine a positive image as a place to visit or do business?
3. What are the things that give the Municipality of Kincardine a negative image as a place to visit or do business?
4. Do you feel that the Western Waste Management Facility in the Municipality of Kincardine has had a positive economic effect on your community? Please explain
5. Do you feel that the Western Waste Management Facility in the Municipality of Kincardine has had adverse or positive economic impacts on your community? (e.g. attracting residential development, maintaining bond ratings, insurance premiums or municipal assets). Please explain.

6. In what ways has the presence of the Western Waste Management Facility affected your economic development plans?
7. Are there other large contributors to the economic well being of Bruce County?
8. Do you know of other industries that will likely be expanding or developing in the next few years?
9. In your opinion, is long term management of low and intermediate level waste an economic development issue? In what ways?
10. In your opinion, what do you see as the main differences between interim storage of low and intermediate level waste and long-term management of low and intermediate level waste?
11. In your opinion, what do you see as the main differences between long-term management above ground or deep underground?
12. Which option for future management of low and intermediate level waste do you think would have the least affect on economic development in your area? Which would have the greatest effect? Would it be any different than with the current interim storage facility?
13. If Ontario Power Generation is allowed to proceed with long term storage or long-term management of its low and intermediate radioactive wastes within its current waste management site, how could they best address the concerns you may have?

Existing Suppliers to the WWMF

Organization Name: _____

Contact Name: _____ **Telephone:** _____

Date of Interview: _____ **Interviewer:** _____

1. Please describe your business in terms of the full range of products or services you provide and the geographic area you serve.
2. How long have you been a supplier to the Western Waste Management Facility?
3. Do you feel that the Western Waste Management Facility in the Municipality of Kincardine have had a positive economic impact on the community of the Municipality of Kincardine? What about your community? Please explain.

4. Do you feel that the presence of the Western Waste Management Facility has had any adverse economic impacts on the community of the Municipality of Kincardine? What about your community? Please explain.
5. What kinds of products or services have you provided to Ontario Power Generation over the past two years?
6. What proportion of your annual revenues is generated by contracts with Ontario Power Generation?
7. Do you foresee any business opportunities stemming from Ontario Power Generation's future plans for low and intermediate level waste management at the Western Waste Management Facility?
8. If yes, what kinds of opportunities do you foresee?
9. In your opinion, what do you see as the main differences in the potential for business opportunities between storage and long-term management of low and intermediate level waste?
10. In your opinion, what do you see as the main differences in the potential for business opportunities between long-term management above ground or deep underground?
11. Which option for future management of low and intermediate level waste do you think would provide the fewest business opportunities? Which would provide the most business opportunities?
12. If Ontario Power Generation is allowed to proceed with long term storage or long-term management of its low and intermediate radioactive wastes within its current waste management site, how could they best address the concerns you may have?

Potential Suppliers to an Expanded WWMF

Organization Name: _____

Contact Name: _____ **Telephone:** _____

Date of Interview: _____ **Interviewer:** _____

1. Please describe your business in terms of the full range of products or services you provide and the geographic area you serve.
2. Do you feel that the Western Waste Management Facility in the Municipality of Kincardine have had a positive economic impact on your community? Please explain.

3. Do you feel that the presence of the Western Waste Management Facility has had any adverse economic impacts on your community? Please explain.
4. Do you foresee any business opportunities stemming from Ontario Power Generation's future plans for low and intermediate level waste management at the Western Waste Management Facility?
5. If yes, what kinds of products or services do you think that you could provide to the Western Waste Management Facility?
6. Do you have any plans to expand your business in the next few years?
7. In your opinion, what do you see as the main differences in the potential for business opportunities between storage and long-term management of low and intermediate level waste?
8. In your opinion, what do you see as the main differences in the potential for business opportunities between long-term management above ground or deep underground?
9. Which option for future management of low and intermediate level waste do you think would provide the fewest business opportunities? Which would provide the most business opportunities?
10. Which of these options would likely motivate you to expand your business in the next few years?
11. If Ontario Power Generation is allowed to proceed with long term storage or long-term management of its low and intermediate radioactive wastes within its current waste management site, how could they best address the concerns you may have?

Provincial Park and Conservation Authority Representatives

1. Please briefly describe your park in terms of the full range of products and services you provide and the facilities you have.
2. From what geographic area do your clients come from?
3. In your opinion, what things or issues in your community have the most affect on visitation?
4. To what extent, if any does the quality of the environment (i.e., the quality of the land, water and air) in the local area affect visitation to your parks? Please explain.
5. To what extent, if any, does a positive image of your community affect visitation to your parks (please explain)?
6. Do you think your visitors link your parks with the presence of nuclear facilities in the Municipality of Kincardine? If yes, why?

7. Have you or have any of your visitors expressed concerns about the operation of the nuclear generating stations? What concerns? When?
8. Have you or have any of your visitors expressed concerns about radioactive waste management? What concerns? When?
9. In what ways, if any, has the presence of the Western Waste Management Facility in the Municipality of Kincardine affected this park?
10. In what ways, if any, does the presence of the existing Western Waste Management Facility affect your park's image or character?
11. Would the construction and operation of new types of waste management facilities for low and intermediate radioactive wastes in the Municipality of Kincardine affect your parks?
12. If yes, in what ways do you think that your parks might be affected?
13. In your opinion, what do you see as the main differences between interim storage of low and intermediate level waste and its long-term management?
14. Which option for future management of low and intermediate level waste do you think would have the least affect on your park? Which would have the greatest effect? Would it be any different than with the current interim storage facility?
15. If Ontario Power Generation is allowed to proceed with long term storage or long-term management of its low and intermediate radioactive wastes within its current waste management site, how could they best address the concerns you may have?

Marina Operators

Marina Name: _____

Contact Name: _____ **Telephone:** _____

Date of Interview: _____ **Interviewer:** _____

1. Could you please describe your marina's location and its major facilities?
2. Who or what groups use your marina (PROBE: residents, tourists, local, regional international, etc.)?

3. What are the future plans for your facility? (PROBE: do you plan any major expansions, different programs/services etc.)?
4. In what ways, if any, does your operation depend on the quality of the local environment (i.e., the quality of the land, water and air)?
5. In what ways, if any does your operation depend on a positive image or community character?
6. Have you or have any of your customers/members expressed concerns about the operation of the nuclear generating stations? What concerns? When?
7. Have you or have any of your customers/members expressed concerns about radioactive waste management? What concerns? When?
8. In what ways, if any, has the presence of the Western Waste Management Facility in the Municipality of Kincardine affected your marina?
9. In what ways, if any, does the presence of the existing Western Waste Management Facility affect your community's image or character?
10. Would the construction and operation of new types of waste management facilities for low and intermediate radioactive wastes in the Municipality of Kincardine affect the image or character of your community?
11. If yes, in what ways do you think that your community's image or character might be affected?
12. In your opinion, what do you see as the main differences between interim storage of low and intermediate level waste and its long-term management?
13. In your opinion, what do you see as the main differences between long-term management above ground or deep underground?
14. Which option for future management of low and intermediate level waste do you think would have the least affect on your community's image or character? Which would have the greatest effect? Would it be any different than with the current interim storage facility?
15. Which option for future management of low and intermediate level waste do you think would have the least affect on your business? Which would have the greatest effect?
16. If Ontario Power Generation is allowed to proceed with long term storage or long-term management of its low and intermediate radioactive wastes within its current waste management site, how could they best address the concerns you may have?

Outdoor Recreational, Naturalist and Fishing Clubs

Organization Name: _____

Contact Name: _____ **Telephone:** _____

Date of Interview: _____ **Interviewer:** _____

1. Could you please describe your organization? (i.e., number of members, where they generally reside).
2. How often, if at all do your members use the natural areas (i.e. lands, water, and shoreline) in the vicinity of the Bruce nuclear generating stations and the Western Waste Management Facility?
3. What outdoor recreational activities does your group undertake in the vicinity of this site? Is there any special reason why you undertake these activities at this location?
4. In what ways, if any, do the current operations at the nuclear facilities at this site affect your members' enjoyment and/or use of the natural areas?
5. Have you or have any of your members expressed concerns about the operation of the nuclear generating stations? What concerns? When?
6. Have you or have any of your members expressed concerns about radioactive waste management? What concerns? When?
7. In what ways, if any, has the presence of the Western Waste Management Facility in the Municipality of Kincardine affected your member's activities?
8. In what ways, if any, does the presence of the existing Western Waste Management Facility affect outdoor recreational activities in the Municipality of Kincardine?
9. Would the construction and operation of new types of waste management facilities for low and intermediate radioactive wastes in the Municipality of Kincardine affect outdoor recreational activities in the Municipality of Kincardine?
10. If yes, in what ways do you think that outdoor recreational activities might be affected?
11. In your opinion, what do you see as the main differences between interim storage of low and intermediate level waste and its long-term management?

12. In your opinion, what do you see as the main differences between long-term management above ground or deep underground?
13. Which option for future management of low and intermediate level waste do you think would have the least affect on outdoor recreational activities in the Municipality of Kincardine? Which would have the greatest effect? Would it be any different than with the current interim storage facility?
14. If Ontario Power Generation is allowed to proceed with long term storage or long-term management of its low and intermediate radioactive wastes within its current waste management site, how could they best address the concerns you may have?

Health Service Representatives

1. In your opinion what are the major public health issues for the residents of Kincardine area?
2. Have you or have any of your colleagues in the health profession expressed concern about the operation of the nuclear generating stations? What concerns? When?
3. Have you or have any of your colleagues in the health profession expressed concern about radioactive waste management? What concerns? When?
4. Have you or have any of your colleagues in the health profession expressed concern about the presence of the Western Waste Management Facility in the Municipality of Kincardine?
5. Do you foresee the long term management of low and intermediate level waste in the Municipality of Kincardine to be a health concern for local residents?
6. If yes, what would people be most concerned about?
7. From a health and safety perspective, what do you see as the main differences between interim storage of low and intermediate level waste and its long-term management?
8. From a health and safety perspective, what do you see as the main differences between long-term management above ground or deep underground?
9. Which option for future management of low and intermediate level waste do you think would have the least affect on public health and safety? Which would have the greatest effect? Would it be any different than with the current interim storage facility?
10. If Ontario Power Generation is allowed to proceed with long term storage or long-term management of its low and intermediate radioactive wastes within its current waste management site, how could they best address any public health and safety concerns?

Appendix D

Tourist Field Survey

I would like to read you a brief description of the Western Waste Management Facility.

READ SLOWLY ... REPEAT IF NEEDED

The Western Waste Management Facility currently stores low and intermediate level radioactive wastes produced by all of Ontario's nuclear generating stations. This facility is located on the Bruce Nuclear Generating Station site in the Municipality of Kincardine. The facility is regulated by the Canadian Nuclear Safety Commission and has been operated by OPG since the early 1970's. Wastes are stored in above-ground buildings, and also within in-ground structures. This facility is essential for the ongoing operation of Ontario's nuclear generating stations.

17. Prior to hearing this description, were you aware of the presence of the Bruce Nuclear Generating Station?

Yes No

If YES, when and how did you first become aware of it?

18. Prior to this conversation, were you aware of the presence of the Western Waste Management Facility?

Yes No

19. If YES, when and how did first you become aware about it?

20. Would you say that the presence of the Western Waste Management Facility has had any affect on your tourism experience in Kincardine or the South Bruce Area?

Yes No

21. If YES, what kind of an affect do you feel it has had?

The Municipality of Kincardine and Ontario Power Generation, the company that produces approximately 70 per cent of Ontario’s electricity, is examining a number of options for the long-term management of low and intermediate level radioactive waste at the Western Waste Management Facility.

22. Do you see any difference between an interim storage facility and a long-term repository?

- Yes No

23. If YES, what do you see as the key difference(s)?

Ontario Power Generation could continue to store this waste as they presently do (the status quo), whereby the waste would continue to be processed and stored within the Western Waste Management Facility until a long-term repository is available elsewhere. Alternatively, Ontario Power Generation could develop a long-term waste management facility at the Bruce site. There are three (3) options being considered for long-term waste management: (1) Enhanced Processing, Treatment and Storage, where the waste processing and storage practices would be enhanced, (2) Covered Above-Ground Concrete Vault facility whereby the wastes would be placed in earth-covered concrete vaults at the surface, or (3) Deep Rock Cavern Vault facility whereby wastes would be placed in vaults deep in the bedrock. The above-ground or underground vaults would eventually be sealed and monitored well into the future (*Show diagrams*).

24. Do you think that implementing any of these long-term waste management options would have an affect on your tourism experience in Kincardine and the South Bruce Area in the future?

- Yes No

25. If NO, why do you think that they would have no effect?

26. If YES, which option(s) do you think might have an adverse effect?

27. If YES, which option(s) do you think might have a positive effect?

28. Please explain your reasons.

29. With respect your future visits to Kincardine and the South Bruce Area, do you foresee yourself doing anything differently because of the presence of a new type of waste storage or long-term management facility?

Yes No

30. If YES, what will you do differently?

31. With respect to your use of parks, beaches and trails, do you foresee yourself doing anything differently in the future because of the presence of a new type of waste storage or long-term management facility?

Yes No

32. If YES, what will you do differently?

33. With respect to your fishing and boating activities on Lake Huron, do you foresee yourself doing anything differently in the future because of the presence of a new type of waste storage or long-term management facility?

Yes No

34. If YES, what will you do differently?

35. Do you have any other concerns or opinions you wish to express?

**THANK YOU FOR YOUR GENEROUS TIME AND
ENJOY THE REMAINDER OF YOUR VISIT HERE !!!**

Appendix E

Round Table Discussion Agenda

Appendix E

Round Table Discussion Agenda

The purpose of today's round table discussion is to get your input into the Independent Assessment Study on Long-Term Management Options for Low and Intermediate Level Waste at Ontario Power Generation's Western Waste Management Facility. We want to hear your thoughts about the implications of various options for long term management of these wastes on local tourism businesses and tourism in general.

I would like to introduce a few people who are here to observe the discussion and who can answer specific questions about the Independent Assessment Study or the Western Waste Management Facility. However, they won't be engaged in the discussion other than to provide some factual information. Dr. Duncan Moffett is from Golder Associates and is coordinating the Independent Assessment Study on behalf of OPG and the Municipality of Kincardine. Mr. Tom Włodarczyk is from Gartner Lee Limited and he is conducting the social and economic analysis component of the Independent Assessment Study.

I am tape recording the discussion because after I will listen to the tape and write a report on what you say. However, your participation is confidential and I will not be attributing any comments to individuals.

Before we start the discussion I would like to go around the room and ask each of you to introduce yourself. Please introduce yourself with your name and the type of business you have or organization you are with. FOR EACH PERSON ASK:

1. How long have you been involved in the tourism industry in the Kincardine area?
2. What are the things or issues in your community today that have the most affect on tourism?
3. What elements of the environment (i.e., the land, water and air) in the local area have the most impact on the success of tourism businesses? Please explain.
4. What characteristics of the community's image have the most impact to the success of tourism businesses? Please explain
5. What types of things do tourists do or which places do they tend to go during their visit? Any particular attractions, places or activities?
 - Specifically do many of them visit the Bruce Power nuclear station?
 - Are they aware of the presence of a nuclear generating station in the vicinity? (A brief tourist survey indicated that over 90% are aware of the station. Does that accord with what your have heard from customers?)
 - Are they aware of the presence of a radioactive waste management facility?

6. Do you think tourists link local businesses/your area with the presence of nuclear facilities in the Municipality of Kincardine? *If yes, why?*
 - Have the nuclear facilities (i.e. stations and/or waste management facilities) had an influence on your business? *If yes: In what way?*
7. Have any of your customers expressed concerns about the operation of the nuclear generating stations? What concerns do they mention?
8. Have you or have any of your customers expressed concerns about radioactive waste management? What concerns? When?
9. In what ways, if any, has the presence of the Western Waste Management Facility in The Municipality of Kincardine affected your business/tourism business? Does it have any more or less impact on you business than the Bruce Power nuclear station alone?
 - A small tourist survey indicated that about a quarter of them are aware of the presence of the WWMF. Does that accord with what your have heard from customers?
10. In what ways, if any, does the presence of the existing Western Waste Management Facility affect your community's image or character?

In April 2002, Ontario Power Generation and the Municipality of Kincardine signed a Memorandum of Understanding to examine options for the long-term management of low and intermediate level radioactive waste at the Western Waste Management Facility. Long-term management of low and intermediate level waste is needed for the continued operation of Ontario's nuclear generating facilities, including Bruce Power.

At present, the Western Waste Management Facility provides processing and interim storage facilities for all of the low and intermediate level wastes produced at the nuclear generating stations within the Municipality of Kincardine, the City of Pickering and the Municipality of Clarington. (It does not accept waste from other Nuclear industries such as AECL). Currently, wastes are processed by compaction or incineration and stored in above-ground buildings and structures or in-ground containers.

There are three options currently being considered for long-term waste management at the Western Waste Management Facility. They are: (1) Enhanced Processing, Treatment and Long-Term Storage; (2) a long-term management facility using Covered Above-Ground Concrete Vault technology; and (3) a long-term management facility using Deep Rock Cavern Vault technology. All three can be safely constructed and operated at the Western Waste Management Facility.

Option (1) involves minimizing waste volumes through the use of an enhanced super-compactor and the long-term storage of that waste in enhanced warehouse-like storage buildings. Option (2) involves emplacement of the wastes in earth-covered concrete vaults at the surface. Option (3) involves emplacement of the wastes in a sealed rock cavern some 400-700 m underground.

1. Would the construction and operation of long term waste management facilities for low and intermediate radioactive wastes in The Municipality of Kincardine affect the image or character of your **community**?
 - If yes: In what ways do you think that your community's image or character might be affected?
2. What about in terms of tourism? Would the construction and operation of long term waste management facilities for low and intermediate radioactive wastes in The Municipality of Kincardine affect **tourism** in general and your business in particular?
 - If yes: In what ways would tourism be affected?
 - The brief tourism study indicated that only 20% of the respondents thought that these long-term waste management options would have any effect on their tourism experience. What does that say to you, if anything, about the potential for an impact on tourism?
 - Public attitude research indicated that about 14% of the people of Kincardine said that attractiveness as a place to visit as a tourist would be adversely affected. What does that say to you, if anything, about the potential for an impact on tourism?
3. In your opinion, what do you see as the main differences between storage of low and intermediate level waste and its long-term management?
4. In your opinion, what do you see as the main differences between long-term management above ground or deep underground?
5. Which option for future management of low and intermediate level waste do you think would have the least affect on your community's image or character? Why?
 - Which would have the greatest effect? Why?
 - Would it be any different than with the current interim storage facility?
6. Which option for future management of low and intermediate level waste do you think would have the least affect on the tourism industry and your business? Why?
 - Which would have the greatest effect? Why?

7. Do you think that tourists would do anything differently because of the presence of a new type of waste storage or long-term management facility? (IF state “would stop coming” say: About 20% said the options would affect their tourism experience, and roughly 10% or less said they foresee doing something differently.) What do you think they might do differently?
8. As someone in the tourism business, what concerns, if any, do you have if Ontario Power Generation is allowed to proceed with long term storage or long-term management of its low and intermediate radioactive wastes within its current waste management site?
 - How could OPG best address these concerns?
9. Is there anything else you would like to add to the discussion about the long-term management options for Low and Intermediate Level Waste for the WWMF that we haven’t discussed?

Thanks participants for coming