

OPG's DEEP GEOLOGIC

REPOSITORY

FOR LOW & INTERMEDIATE LEVEL WASTE

Socio-economic Environment Technical Support Document

March 2011

Prepared by: AECOM Canada Ltd.

NWMO DGR-TR-2011-08



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EXECUTIVE SUMMARY

ES.1 INTRODUCTION

Ontario Power Generation (OPG) is undergoing a multi-year planning and regulatory approvals process for a deep geologic repository (DGR) for the long-term management of low and intermediate level waste (L&ILW). Currently, the L&ILW produced as a result of the operation of OPG's nuclear reactors is stored centrally at OPG's Western Waste Management Facility (WWMF) located at the Bruce nuclear site. Although current storage practices are safe and could be continued safely for many decades, OPG's long-term plan is to manage these wastes in a long-term management facility. Throughout this report, OPG's proposal is referred to as the "DGR Project".

The DGR Project includes the site preparation and construction, operations, decommissioning, and abandonment and long-term performance of the DGR. The DGR will be constructed in competent sedimentary bedrock beneath the Bruce nuclear site near the existing WWMF. The underground facilities will include access-ways (shafts and tunnels), emplacement rooms and various underground service areas and installations. The surface facilities include the underground access and ventilation buildings, Waste Package Receiving Building (WPRB) and related infrastructure.

An environmental assessment (EA) of the proposed DGR Project is required under the provisions of the *Canadian Environmental Assessment Act* (CEAA) because the proponent (OPG) will be required to obtain a licence from the Canadian Nuclear Safety Commission (CNSC) to allow the project to proceed. The findings of the EA are presented in the Environmental Impact Statement (EIS) and Technical Support Documents (TSDs).

ES.2 APPROACH

The approach used for assessing effects of the DGR Project supports the philosophy of EA as a planning tool and decision-making process. The assessment characterizes and assesses the effects of the DGR Project in a thorough, traceable, step-wise manner. The approach used in the assessment includes the following steps:

- describe the project;
- describe the existing environment;
- screen potential project-environment interactions to focus the assessment;
- predict and assess effects, apply mitigation measures to reduce or eliminate the effects and identify residual adverse effects;
- determine significance of residual adverse effects; and
- propose a follow-up program to confirm mitigation measures are effective and the DGR Project effects are as predicted.

The assessment of effects considers direct and indirect effects of the DGR Project, effects of the environment on the project, climate change considerations, and effects of the project on renewable and non-renewable resources. An assessment of the cumulative effects associated with the DGR Project in association with existing and planned projects is addressed in Section 10 of the EIS. Effects are predicted in the context of temporal and spatial boundaries.

The temporal boundaries for the EIS establish the timeframes for which the effects are assessed. Four temporal phases were identified for the DGR Project:

- site preparation and construction phase;
- operations phase;
- decommissioning phase; and
- abandonment and long-term performance phase.

The assessment of the socio-economic environment focuses on the first three phases as there are no activities during the abandonment and long-term performance phase. The effects of the DGR Project during the abandonment and long-term performance phase are discussed in Section 9 of the EIS.

Spatial boundaries define the geographical extents within which environmental effects are considered. As such, these boundaries become the study areas adopted for the EA. Four study areas were selected for the assessment of the socio-economic environment: the Regional Study Area, Local Study Area, Site Study Area and Project Area. The Project Area, although not specified in the EIS Guidelines, was defined to help describe the potential site-specific effects of the DGR Project. In the socio-economic analysis, the Project Area is retained in the Project Area structure but is referenced only in relation to potential indirect effects; the Project Area is not otherwise utilized in the socio-economic analysis.

ES.3 VALUED ECOSYSTEM COMPONENTS

While all components of the environment are important, it is neither practicable nor necessary to assess every potential effect of a project on every component. The EA focuses on the components that have the greatest relevance in terms of value and sensitivity, and which are likely to be affected by the project. To achieve this focus, specific Valued Ecosystem Components (VECs) are identified. A VEC is considered to be the 'receptor' for both project-specific effects and cumulative effects. A VEC can be represented by a number of 'indicators', which are features of the VEC that may be affected by the DGR Project. Each indicator requires specific 'measures' that can be quantified and assessed. In essence, the nature and magnitude of the effects of the DGR Project on these VECs is studied and their significance determined.

The following VECs are used in assessing the effects of the DGR Project on the socio-economic environment:

- Human Assets:
 - **Population and Demographics;** and
 - Other Human Assets.
- Financial Assets:
 - **Employment;**
 - **Business Activity;**
 - **Tourism;**
 - **Residential Property Values;**
 - **Municipal Finance and Administration;** and
 - Other Financial Assets.

- Physical Assets:
 - **Housing;**
 - **Municipal Infrastructure and Services;** and
 - Other Physical Assets.
- Social Assets:
 - **Inverhuron Provincial Park;** and
 - Other Social Assets.

The VECs are comprehensive and consistent with the community assets framework used throughout the socio-economic analysis. The framework explicitly includes the VECs included in the EIS Guidelines, as highlighted in bold in the list, above.

ES.4 RESULTS

Based on the assessment documented in this TSD, one residual adverse effect is identified:

- Off-site noise levels will be increased by approximately 5 dBA during the site preparation and construction phase and during the decommissioning phase, which is a noticeable change. This change in noise levels may reduce the enjoyment of private property in the Baie du Doré area, in close proximity to the Bruce nuclear site. This effect is not significant.

Based on the assessment documented in this TSD, no other direct or indirect residual adverse effects to socio-economic environment VECs are expected as the result of the site preparation and construction, operations or decommissioning of the DGR Project.

The anticipated beneficial effects as a result of the DGR Project are as follows:

- Increased population associated with DGR Project related employment will occur in all Regional Study Area municipalities, with the greatest benefit anticipated in Kincardine.
- Increased educational opportunities for local students and others with an interest in nuclear technology.
- The DGR Project will create new direct, indirect and induced employment opportunities. A positive effect on business activity is anticipated during all DGR Project phases, which can be enhanced through policies to utilize local business services wherever practical and appropriate.
- The DGR Project may result in increased municipal revenue because of increases in property taxes and other revenues; as well as through one-time and annual payments agreed to in the 2004 Hosting Agreement.
- The DGR Project will increase the direct, indirect and induced labour income in the Local and Regional Study Areas.

No renewable resource use or effects were identified in the socio-economic assessment that have the potential to adversely affect the sustainability of associated resources. Climate change is not expected to have any effect on the conclusions reached regarding the effects of the DGR Project on socio-economic environment VECs.

Overall, the DGR Project is not expected to result in any significant adverse effects on the socio-economic environment. Beneficial effects will serve to enhance community well-being.

ES.5 PRELIMINARY FOLLOW-UP PROGRAM

A follow-up program may be required to determine that the environmental and cumulative effects of the DGR Project are consistent with predictions reported in the EIS. It can also be used to verify that mitigation measures are effective once implemented and determine whether there is a need for alternate mitigation measures.

Given the central role that public attitudes play in determining whether or not socio-economic effects occur, follow up monitoring of public attitudes toward the DGR Project is warranted and results of the follow-up studies should be communicated to the public. To this end, it is recommended that OPG continue to monitor public attitudes toward the DGR Project. Public attitude research (PAR) that provides directly comparable results to the 2009 PAR, in terms of questions and approach to sampling, will be undertaken as follows:

- one time during the site preparation and construction phase;
- one time during the decommissioning phase; and
- subsequent to any accidents or malfunctions involving the DGR Project that result in an unplanned release of radioactivity to the environment.

OPG will assess the need for PAR during the operations phase in conjunction with its ongoing programs.

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1. INTRODUCTION

Ontario Power Generation (OPG) is undergoing a multi-year planning and regulatory approvals process for a deep geologic repository (DGR) for the long-term management of low and intermediate level wastes (L&ILW). Currently, the L&ILW produced as a result of the operation of OPG-owned nuclear reactors is stored centrally at OPG's Western Waste Management Facility (WWMF) located at the Bruce nuclear site. Although current storage practices are safe and could be continued safely for many decades, OPG's long-term plan is to manage these wastes in a long-term management facility.

A key element of the regulatory approvals process is an environmental assessment (EA), the findings of which are presented in an Environmental Impact Statement (EIS). The EA considers the long-term management of L&ILW currently in interim storage at the WWMF, as well as that produced by OPG-owned or operated nuclear generating stations, in a DGR at the Bruce nuclear site in the Municipality of Kincardine, Ontario. The project location is shown on Figure 1-1. Throughout this report, OPG's proposal is referred to as the "DGR Project". The DGR Project includes the site preparation and construction, operations, decommissioning, and abandonment and long-term performance of the DGR.

The DGR will be constructed in competent sedimentary bedrock beneath the Bruce nuclear site near the existing WWMF. The underground facilities will include access-ways (shafts and tunnels), emplacement rooms and various underground service areas and installations. The surface facilities include the underground access and ventilation buildings, Waste Package Receiving Building (WPRB) and related infrastructure. All surface and underground facilities will be located within the boundaries of the OPG-retained lands near the WWMF at the Bruce nuclear site.

OPG is the proponent for the DGR Project. OPG will own, operate and be the licensee for the DGR. The regulatory approvals phase of the DGR Project, including the EA process and the site preparation and construction licensing, has been contracted to the Nuclear Waste Management Organization (NWMO). The NWMO is responsible, with support from OPG, for completing the EA, preparing the EIS and obtaining the site preparation and construction licences.

1.1 EA PROCESS AND REGULATORY CONTEXT

The EA process was initiated by the submission of a Project Description for the DGR by OPG to the Canadian Nuclear Safety Commission (CNSC) on December 2, 2005. The site preparation and construction licence application for the DGR was submitted by OPG to the CNSC on August 13, 2007. An EA of the proposed DGR Project is required under the provisions of the *Canadian Environmental Assessment Act* (CEAA) because the proponent (OPG) will require a licence from the CNSC to allow the project to proceed. Under the CEAA, the CNSC is identified as the Responsible Authority (RA); however, the Canadian Environmental Assessment Agency also has statutory responsibilities.

Under the CEAA, this type of project is identified in the Comprehensive Study List Regulations. The CNSC issued draft guidelines for a comprehensive study EA of the DGR Project, which were the subject of a public hearing held in Kincardine on October 23, 2006. Following the hearing, CNSC Commission members recommended to the Minister of the Environment that the DGR Project be referred to a review panel given the public concerns, possibility of adverse

environmental effects, the first-of-a-kind nature of the project and concerns regarding the comprehensive study's ability to address all the questions raised [1].

The Minister of the Environment referred the EA of the DGR Project to a joint review panel on June 29, 2007. Draft guidelines for the preparation of the EIS were issued by the Canadian Environmental Assessment Agency and the CNSC for public review on April 4, 2008. The guidelines, a copy of which is included in the EIS as Appendix A, were finalized on January 26, 2009. The scope of the EA for the DGR Project includes the site preparation, construction, operations and decommissioning of the above- and below-ground facilities for the long-term management of L&ILW. The EA also addresses the abandonment and long-term performance of the DGR Project.

An EA is a tool to provide an effective means of integrating environmental factors into the planning and decision-making processes in a manner that promotes sustainable development and minimizes the overall effect of a project. The methods used in the EA and presented in the EIS are consistent with the final EIS Guidelines, and are based on systematic and detailed consideration of the systems, works, activities and events comprising the DGR Project.

1.2 EA REPORTING STRUCTURE

The EA for the DGR Project is documented in an EIS, which is based on the final EIS Guidelines (included as Appendix A of the EIS) and the work detailed in a series of technical support documents (TSDs). In addition, there are parallel technical studies, information from which is also used in preparing the EIS and TSDs. Finally, the findings are summarized in the EIS Summary. Figure 1.2-1 illustrates the relationships between the EIS and summary reports, its supporting documents, and the independent technical studies for the DGR Project.

The EIS comprises the following volumes:

- **Volume 1** consolidates and summarizes all aspects of the EIS studies. It includes a description of the EA methods, a description of the DGR Project, a description of the existing environment, an assessment of likely environmental effects, including cumulative effects, a discussion of the proposed follow-up program, and a discussion of the communication and consultation program.
- **Volume 2** contains a series of appendices that support the material in Volume 1, including a copy of the EIS Guidelines and human health assessment. It also contains a summary of the community engagement and consultation program along with copies of supporting materials.

The TSDs present information on the existing environment and describe the process used to assess the direct and indirect effects of the DGR Project on the environment. The TSDs, on which the EIS is based, are as follows:

- Atmospheric Environment;
- Hydrology and Surface Water Quality;
- Geology;
- Aquatic Environment;
- Terrestrial Environment;

- Socio-economic Environment;
- Aboriginal Interests;
- Radiation and Radioactivity; and
- Malfunctions, Accidents and Malevolent Acts.

These TSDs are interconnected with one another. Each respective report focuses on the effects of the DGR Project on that particular environment, be it through a direct interaction with the DGR Project or through a change identified in another TSD (i.e., an indirect interaction). Cross-references are provided throughout the TSD where it relies on information predicted in another report.

The TSDs assess the direct and indirect effects of the DGR Project as a result of normal conditions, with the exception of the Malfunctions, Accidents and Malevolent Acts TSD. The EIS Guidelines require identification of credible malfunctions and accidents, and an evaluation of the effects of the DGR Project in the event that these accidents or malfunctions occur. All of these effects are discussed and assessed in the Malfunctions, Accidents and Malevolent Acts TSD regardless of the element of the environment that is affected. The reasoning for this is that a single accident is likely to affect multiple elements of the environment.

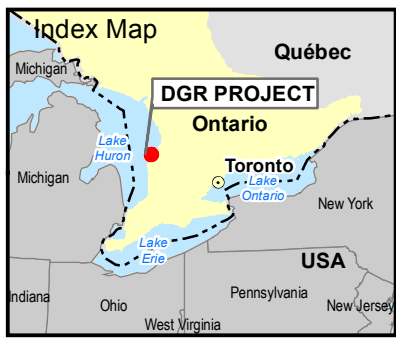
It is important to note that the assessment of potential radiation and radioactivity effects of the DGR Project are documented in the Radiation and Radioactivity TSD, regardless of the physical media through which they are transported (e.g., air or water). This was done because of the special importance placed on radiation and radioactivity, and the combined effects to the receiving environment regardless of the path of exposure.

The independent parallel technical study reports used in preparing the EIS include the following:

- Postclosure Safety Assessment [2];
- Geosynthesis [3]; and
- Preliminary Safety Report [4].

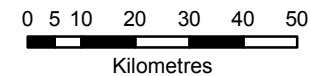
This Socio-economic Environment TSD evaluates the direct and indirect effects of the site preparation and construction, operations and decommissioning of the DGR Project on the socio-economic environment, which includes community assets that contribute to community well-being, namely, a community's human assets, financial assets, physical assets, social assets and natural assets. The abandonment and long-term performance phase is considered in Section 9 of the EIS. To facilitate this assessment, a description of the existing environmental features is also included.

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- LEGEND**
- City
 - Highway
 - Provincial Highway
 - Secondary Highway

REFERENCE
 Base Data - MNR NRVIS, obtained 2004, CANMAP v7.3 2003
 Produced by Golder Associates Ltd under licence from Ontario Ministry of Natural Resources, © Queens Printer 2005
 Datum: NAD 83 Projection: UTM Zone 17N



PROJECT
 SOCIO-ECONOMIC ENVIRONMENT
 TECHNICAL SUPPORT DOCUMENT

TITLE
LOCATION OF THE DGR PROJECT

PROJECT NO. 06-1112-037			SCALE: AS SHOWN	R000
DESIGN	ASB	17 Oct. 2007		
GIS	BC	14 Apr. 2010		
CHECK	BC	14 Apr. 2010		
REVIEW	MAR	14 Apr. 2010		



FIGURE 1-1

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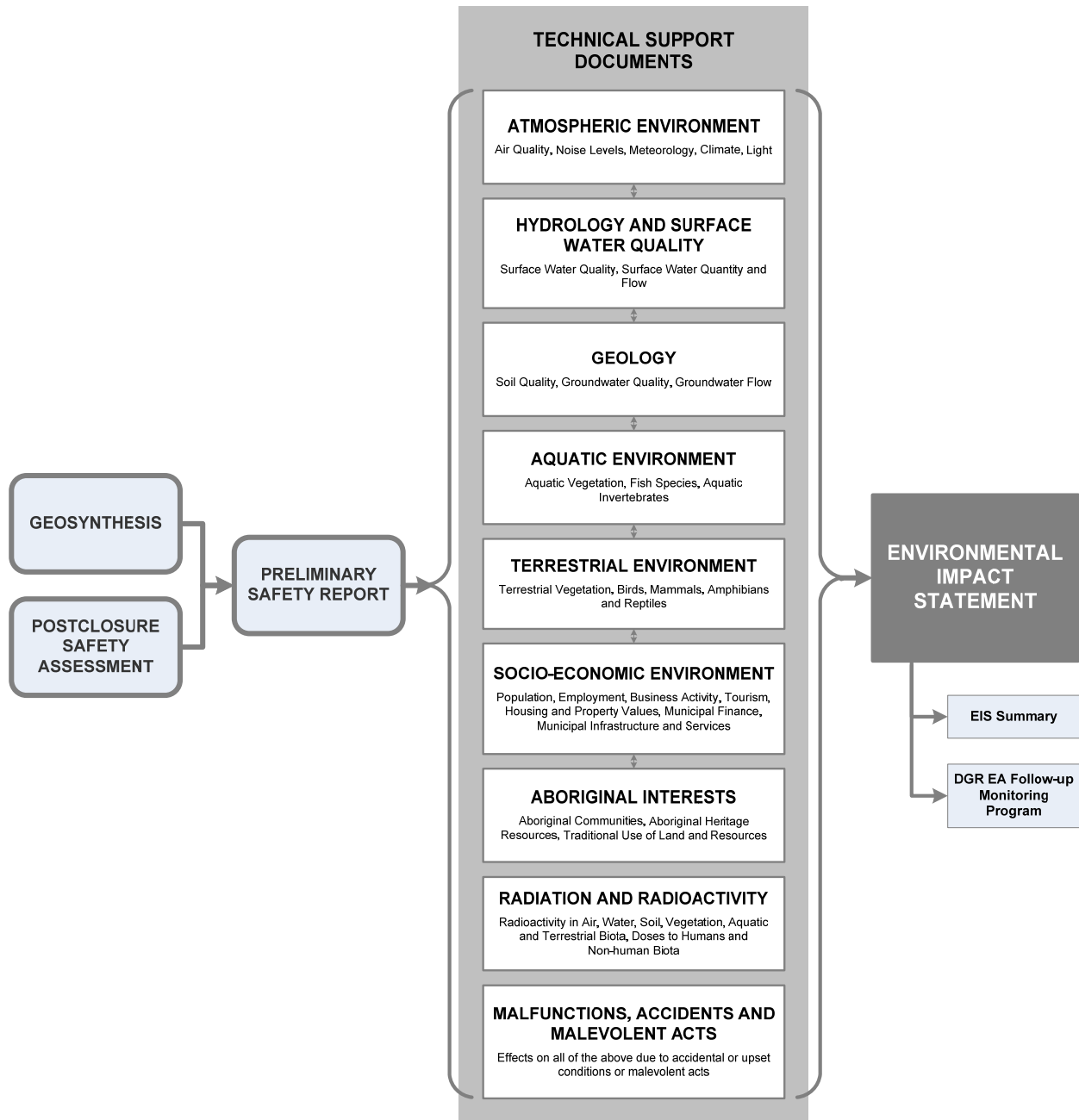


Figure 1.2-1: Organization of EA Documentation

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2. APPROACH

2.1 GENERAL SUMMARY OF EA APPROACH

The approach used for assessing the DGR Project, and documented in this TSD, supports the philosophy of EA as a planning and decision-making process. The assessment characterizes and assesses the effects of the DGR Project in a thorough, traceable, step-wise manner. The approach used in the assessment is illustrated on Figure 2.1-1, and includes the following steps:

- **Describe the Project.** As summarized in Section 3, the project is described as a number of works and activities that could affect the surrounding environment.
- **Describe the Existing Environment.** The existing environment is characterized using available information and field studies, as described in Section 5. The description of the existing environment reflects the cumulative effects of past and existing projects on the environment.
- **Screen to Focus the Assessment.** Two screening steps, first for potential interactions and secondly for measurable change, allow the assessment to focus on where effects are likely to occur. These steps are completed using professional judgement; if there is uncertainty, the interaction is advanced for assessment. The screening steps are completed in Sections 6 and 7.
- **Assess Effects.** Where there is likely to be a measurable change, the effects on the environment are predicted and assessed as to whether or not they are adverse, as described in Section 8. If adverse effects are predicted, mitigation measures to reduce or eliminate the effect are proposed, and residual adverse effects, if any, are identified. Any residual adverse effects are then assessed in Section 10 of the EIS to determine whether they are likely to combine with the effects of other past, present or reasonably foreseeable future projects and activities in the surrounding region to produce cumulative effects.
- **Determine Significance.** All residual adverse effects are then assessed in Section 11 to determine whether the effect is significant, or not, taking into account the magnitude, extent, duration, frequency and irreversibility of the effect. Beneficial effects are not assessed for significance.
- **Propose Follow-up Programs.** Finally, follow-up monitoring is proposed to confirm that mitigation measures are effective and the effects are as predicted. Monitoring activities are described in Section 13.

The assessment of effects of the DGR Project focuses on Valued Ecosystem Components (VECs), which are elements of the environment considered to be important for social, cultural or scientific reasons. Socio-economic environment VECs are defined and described in detail in Section 4. Indirect effects (i.e., effects on other VECs from other components that could indirectly affect the socio-economic environment) are also considered in this TSD. Criteria for determining measurable changes and adverse effects are defined for each individual VEC. The detailed methods for each of these steps, including how they are applied to this particular TSD, are described at the beginning of each of the respective sections.

The screening and assessment steps described above follow a source-pathway-receptor approach. The DGR Project works and activities represent the source of a change, a measurable change to the environment represents a pathway and the VEC represents the receptor. In some cases, VECs may act as both pathways and receptors.

Effects from the DGR Project may occur either directly or indirectly. A direct interaction occurs when the VEC is affected by a change resulting from a project work and activity (e.g., workers, payroll and purchasing during operations can affect the employment VEC). An indirect interaction occurs when the VEC is affected by a change in another VEC (e.g., changes in noise levels [a VEC in the Atmospheric Environment TSD] could affect the tourism VEC, as an increase in noise levels could reduce the attractiveness of a tourist feature thereby affecting the frequency and/or enjoyment of visitation).

There are many linkages and connections between aspects of the physical, biophysical and human environments in an integrated EA. The linkages to this TSD are illustrated using an information flow diagram. Figure 2.1-2 presents the flow of information related to the socio-economic environment VECs. Some VECs are evaluated in other TSDs, and some multi-feature VECs are evaluated in Section 7 of the EIS (e.g., Lake Huron, human health). An assessment of the cumulative effects associated with the DGR Project is addressed in Section 10 of the EIS.

The assessment is completed within the framework of defined temporal and spatial boundaries, and takes into account a precautionary approach. These are described in further detail in the following sections.

2.2 PRECAUTIONARY APPROACH

The EA, as a forward-looking planning tool used in the early stages of project development, is based on a precautionary approach. This approach is guided by judgement, based on values and intended to address uncertainties in the assessment. This approach is consistent with Principle 15¹ of the 1992 Rio Declaration on Environment and Development and the Canadian government's framework for applying precaution in decision-making processes [5].

Throughout the EA, the DGR Project has been conservatively considered in a thorough and traceable manner. For example, at each of the screening stages, potential project-related effects are advanced if they cannot be systematically removed from consideration through application of rigorous, sound and credible scientific evidence. In addition, with the exception of malfunctions, accidents and malevolent acts, all identified residual adverse effects are assumed to occur (i.e., probability of occurrence is assumed to be 1.0), and are assessed for significance.

A further precautionary feature incorporated into the assessment method is that the evaluation of potential effects is based on changes to the existing environment and not solely on regulatory compliance. This captures and assesses changes to the existing environment that may fall outside or below applicable regulatory frameworks.

The precautionary approach adopted for the EA of the DGR Project is described further in Section 1 of the EIS, and a summary of how precaution has been taken into account in the assessment of the socio-economic environment is provided at the end of the assessment section (Section 8).

¹ Principle 15 of the 1992 Rio Declaration on Environment and Development states that "Where there are threats of serious or irreversible damage, lack of full scientific certainty must not be used as a reason for postponing cost-effective measures to prevent environmental degradation".

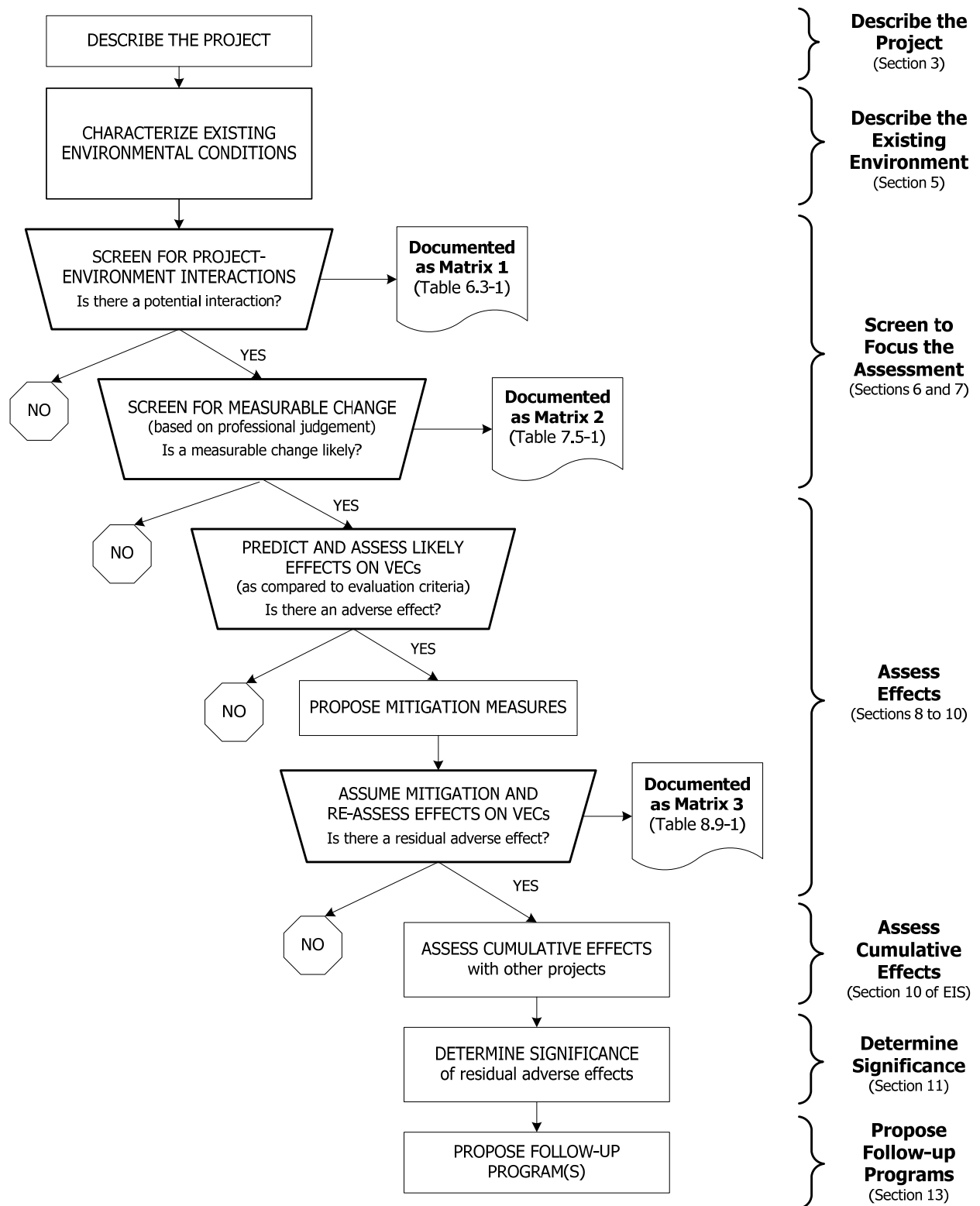


Figure 2.1-1: Methodology for Assessment of Effects

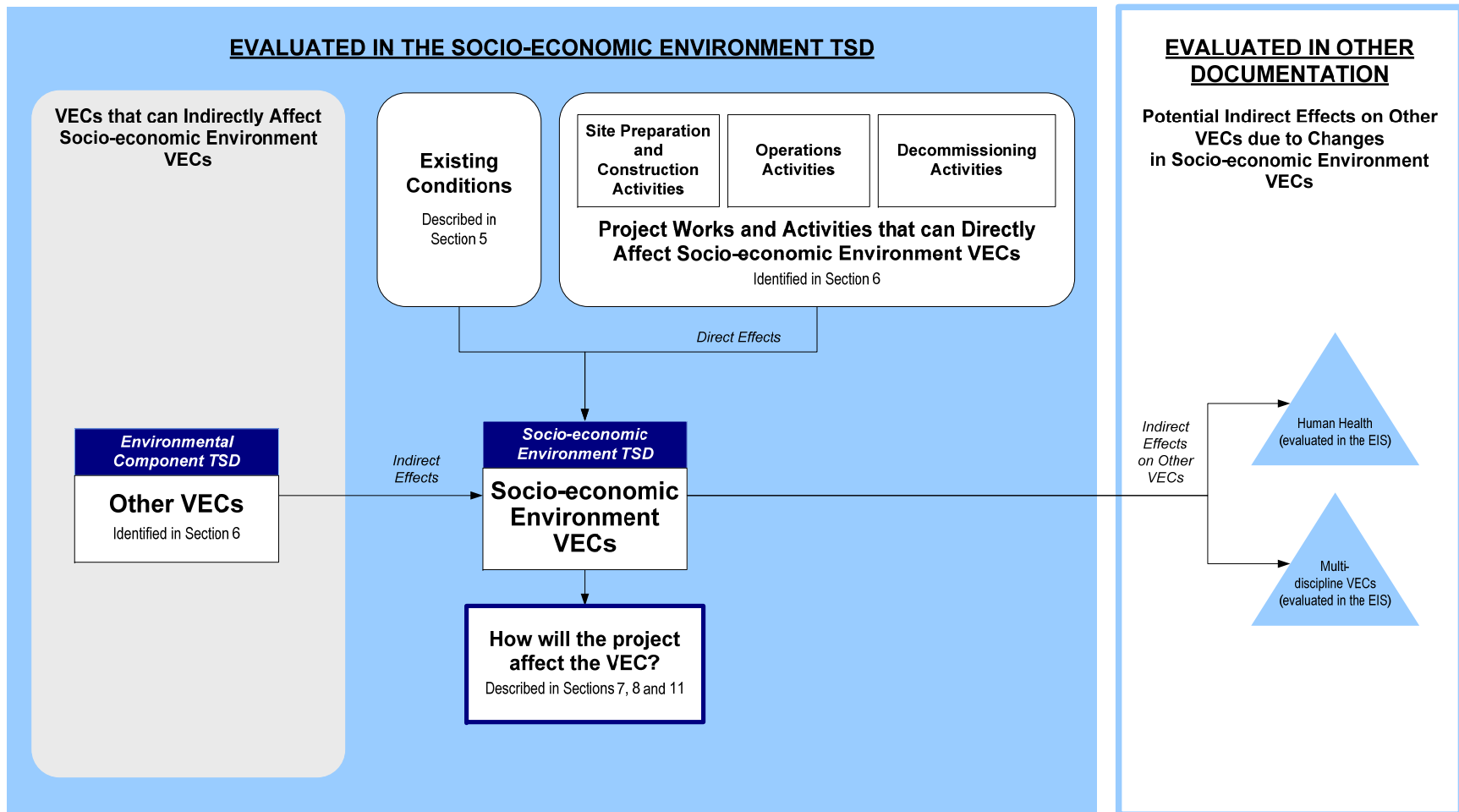


Figure 2.1-2: Information Flow Diagram for the Socio-economic Environment VECs

2.3 ABORIGINAL TRADITIONAL KNOWLEDGE

This EA considers both western science and traditional and local knowledge, where that information is available. Guidance provided by the Canadian Environmental Assessment Agency describes Aboriginal traditional knowledge [6] as knowledge that is held by and unique to Aboriginal peoples. Aboriginal traditional knowledge is a body of knowledge built up by a group of people through generations of living in close contact with nature. It is cumulative and dynamic and builds upon the historic experiences of a people and adapts to social, economic, environmental, spiritual and political change.

Traditional ecological knowledge is a subset of Aboriginal traditional knowledge. Traditional ecological knowledge *“refers specifically to all types of knowledge about the environment derived from the experience and traditions of a particular group of people”* [7]. There are four traditional ecological knowledge categories:

- knowledge about the environment;
- knowledge about the use of the environment;
- values about the environment; and
- the foundation of the knowledge system.

In this EA, specific traditional knowledge, where available, is incorporated through the characterization of the existing environment and assessment of effects. Issues of importance to Aboriginal communities were identified as part of the Aboriginal Interests TSD through examination of available information pertaining to the interests for Ojibway and Métis peoples in Ontario. This examination identified a range of interests raised by Aboriginal communities that can be used to focus this EA relative to potential effects on residents of the Aboriginal communities in the study areas. This examination included the following:

- interests raised by Aboriginal communities regarding previous studies;
- interests raised by Aboriginal communities in the context of dialogue for the DGR Project; and
- insight into traditional knowledge, and interests of general importance to Ojibway and Métis peoples.

The analysis undertaken and conclusions reached regarding adverse and beneficial effects are applicable to both Aboriginal and non-Aboriginal communities.

2.4 TEMPORAL AND SPATIAL BOUNDARIES

The assessment of the DGR Project works and activities on the environment is conducted within the framework of temporal and spatial boundaries that are common to all of the environmental components (with some modifications). The particular temporal and spatial boundaries used in the assessment of the socio-economic environment are described in the following sections.

2.4.1 Temporal Boundaries

The temporal boundaries for the EA establish the timeframes for which the direct, indirect and cumulative effects are assessed. Four temporal phases were identified for the DGR Project:

- **Site Preparation and Construction Phase**, which includes site preparation and all activities associated with the construction of the DGR Project, up until operations commence with the placement of waste. All of the construction activities at the DGR Project will occur during this phase. The site preparation and construction phase is expected to last approximately five to seven years.
- **Operations Phase**, which covers the period during which waste is emplaced in the DGR, as well as a period of monitoring prior to the start of decommissioning. Activities include receipt and on-site handling of waste packages, transfer underground and emplacement of L&ILW in rooms in the DGR, and activities necessary to support and monitor operations. The operations phase is expected to last approximately 40 to 45 years with waste being emplaced for the first 35 to 40 years. The length of the monitoring period would be decided at some future time in consultation with the regulator.
- **Decommissioning Phase**, which begins immediately after the operations phase for the DGR. Activities include preparation for decommissioning, decommissioning and may include monitoring following decommissioning. The decommissioning activities, including dismantling surface facilities and sealing the shaft, are expected to take five to six years.
- **Abandonment and Long-term Performance Phase**, which begins once decommissioning activities are completed. This period will include institutional controls for a period up to three hundred years.

These timeframes are intended to be sufficiently flexible to capture the effects of the DGR Project. The assessment of the socio-economic environment focuses on the first three phases as there are no activities during the abandonment and long-term performance phase that could interact with socio-economic environment VECs. The effects of the DGR Project during the abandonment and long-term performance phase are discussed in Section 9 of the EIS.

For the purpose of completing the socio-economic analysis and in particular for economic modelling and analysis, the DGR Project is assumed to begin in 2013 with decommissioning completed in 2062.

2.4.2 Spatial Boundaries

Spatial boundaries define the geographical extents within which environmental effects are considered. As such, these boundaries become the study areas adopted for the EA.

The DGR Project EIS Guidelines require that the study areas encompass the environment that can reasonably be expected to be affected by the DGR Project, or which may be relevant to the assessment of cumulative effects. Specific study areas are defined by boundaries to encompass all relevant components of the environment including the people, land, water, air and other aspects of the natural environment.

Four study areas were selected for the assessment of socio-economic effects: the Regional Study Area, Local Study Area, Site Study Area and Project Area. The Project Area, although not specified in the EIS Guidelines, was defined to help describe the potential site-specific effects of the DGR Project. These areas are described in the following sections.

2.4.2.1 Regional Study Area

The Regional Study Area (Figure 2.4.2-1) comprises all of Bruce County with the exception of the peninsula communities of the Town of South Bruce Peninsula and the Municipality of Northern Bruce Peninsula. The following municipalities are included: Arran-Elderslie, Brockton, South Bruce, Saugeen Shores and Huron-Kinloss.

These areas contain the major residential areas outside of Kincardine nearest the WWMF and would likely be those from which members of the public would become involved in the DGR Project or in which measurable economic changes might occur. For some factors (e.g., tourism), the description of existing conditions within this study area will focus more on communities along the Lake Huron shoreline from Point Clark, south of the DGR Project, to Sauble Beach, to the north and extending eastwards to include the communities of Paisley, Ripley and Lucknow. This area is sometimes referred to locally as the South Bruce area. Also within the Regional Study Area is the Visual Study Area, used in the Visual Impact Report [8]. The boundary of the Visual Study Area is a 20 km radius from the Bruce nuclear site.

Although geographically located in the Regional Study Area, the assessment of effects in the Regional Study Area does not include Kincardine. This is to highlight or make apparent the difference between Kincardine (i.e., the Local Study Area) and the neighbouring municipalities. Additionally, this approach is consistent with previous socio-economic analyses related to the Independent Economic and Social Analysis Study for the Western Waste Management Facility in 2004 [9] and the Public Attitude Research [10] conducted for that study. Maintaining the same study area structure allows comparison of public attitudes and other data over time.

2.4.2.2 Local Study Area

The Local Study Area (Figure 2.4.2-2) corresponds to the municipal boundary for the Municipality of Kincardine. This area represents the host community for the DGR Project. 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 current 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 (i.e., Municipality of Kincardine).

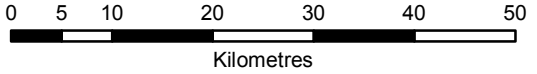
2.4.2.3 Site Study Area

The Site Study Area (Figure 2.4.2-3) corresponds to the property boundary of the Bruce nuclear site, including the existing licensed exclusion zone for the Bruce Power generating stations on land and within Lake Huron. This study area is particularly relevant to the socio-economic assessment as it is anticipated that the community responds to the site as a whole.

2.4.2.4 Project Area

The Project Area (also shown on Figure 2.4.2-3) corresponds to the boundary of the OPG-retained lands at the centre of the Bruce nuclear site where the DGR Project is being proposed. In the socio-economic analysis, the Project Area is retained in the study area structure but is referenced only in relation to potential indirect effects; the Project Area is not otherwise utilized in the socio-economic analysis.

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LEGEND

Site Study Area ¹	County Boundary
Local Study Area	First Nations' Lands
Regional Study Area	
Visual Study Area	

NOTES

1. Site Study Area is defined by EIS Guidelines as: "includes the facilities, buildings and infrastructure at the Bruce nuclear site, including the existing licensed exclusion zone for the site on land and within Lake Huron, and particularly the property where the Deep Geologic Repository is proposed."

REFERENCE

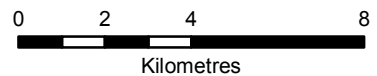
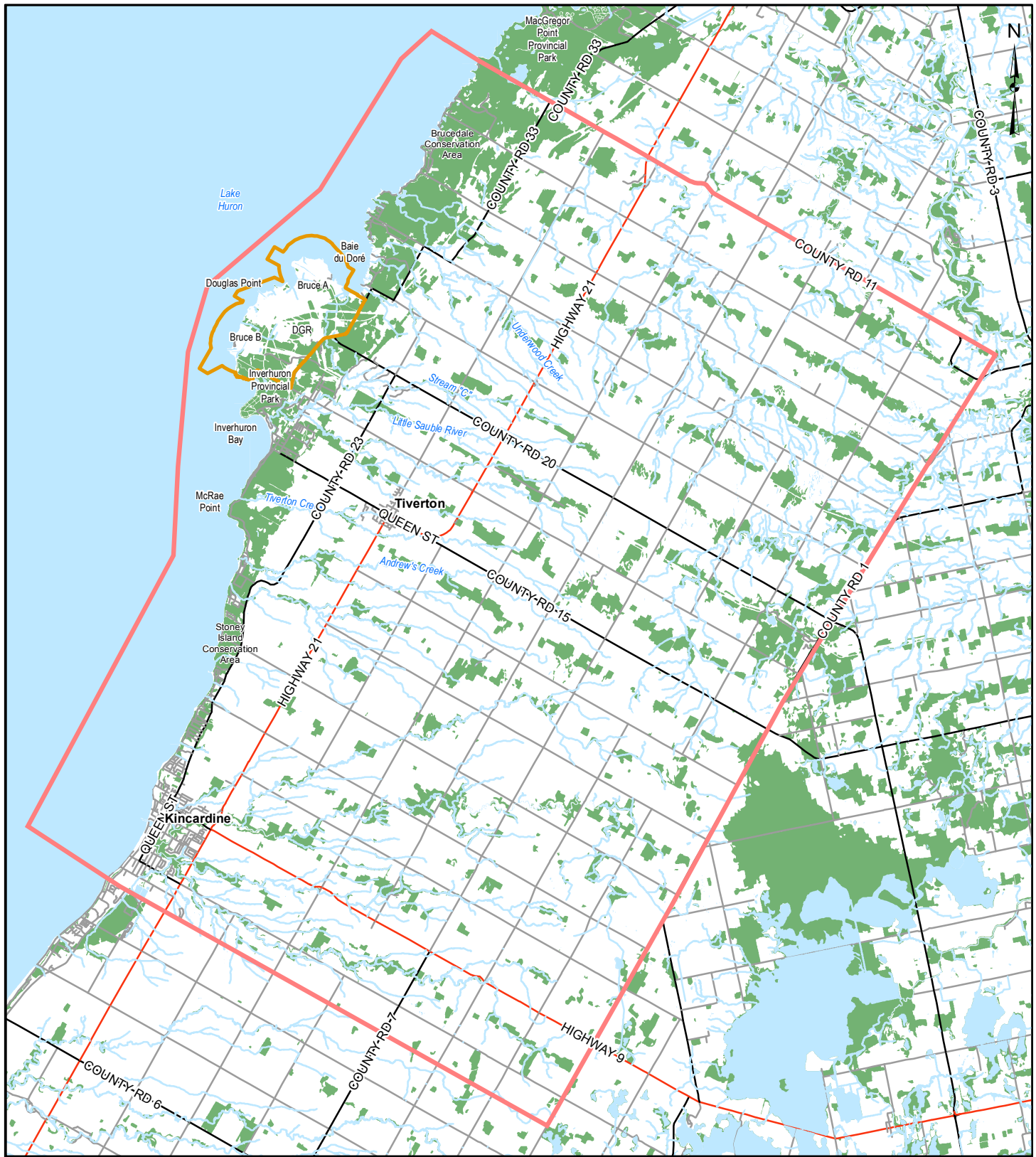
Base Data Provided by 4DM, November 2007.
 Imagery and Topo Collected and Processed by Terrapoint Canada Inc.,
 Acquisition Date: Nov. 12, 14, and 15, 2006, Ground Resolution: 0.25m,
 Datum: NAD 83 Projection: UTM Zone 17N

PROJECT: SOCIO-ECONOMIC ENVIRONMENT
 TECHNICAL SUPPORT DOCUMENT

TITLE: **REGIONAL STUDY AREA**

	PROJECT NO. 06-1112-037	SCALE: AS SHOWN	R000
	DESIGN ASB 17 Oct. 2007	FIGURE 2.4.2-1	
	GIS BC 31 May, 2010		
	CHECK AB 31 May, 2010		
REVIEW MAR 31 May, 2010			

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- LEGEND**
- Site Study Area ¹
 - Local Study Area

NOTES

1. Site Study Area is defined by EIS Guidelines as: "includes the facilities, buildings and infrastructure at the Bruce nuclear site, including the existing licensed exclusion zone for the site on land and within Lake Huron, and particularly the property where the Deep Geologic Repository is proposed."

REFERENCE

Base Data Provided by 4DM, November 2007.
 Imagery and Topo Collected and Processed by Terrapoint Canada Inc.,
 Acquisition Date: Nov. 12, 14, and 15, 2006, Ground Resolution: 0.25m,
 Datum: NAD 83 Projection: UTM Zone 17N

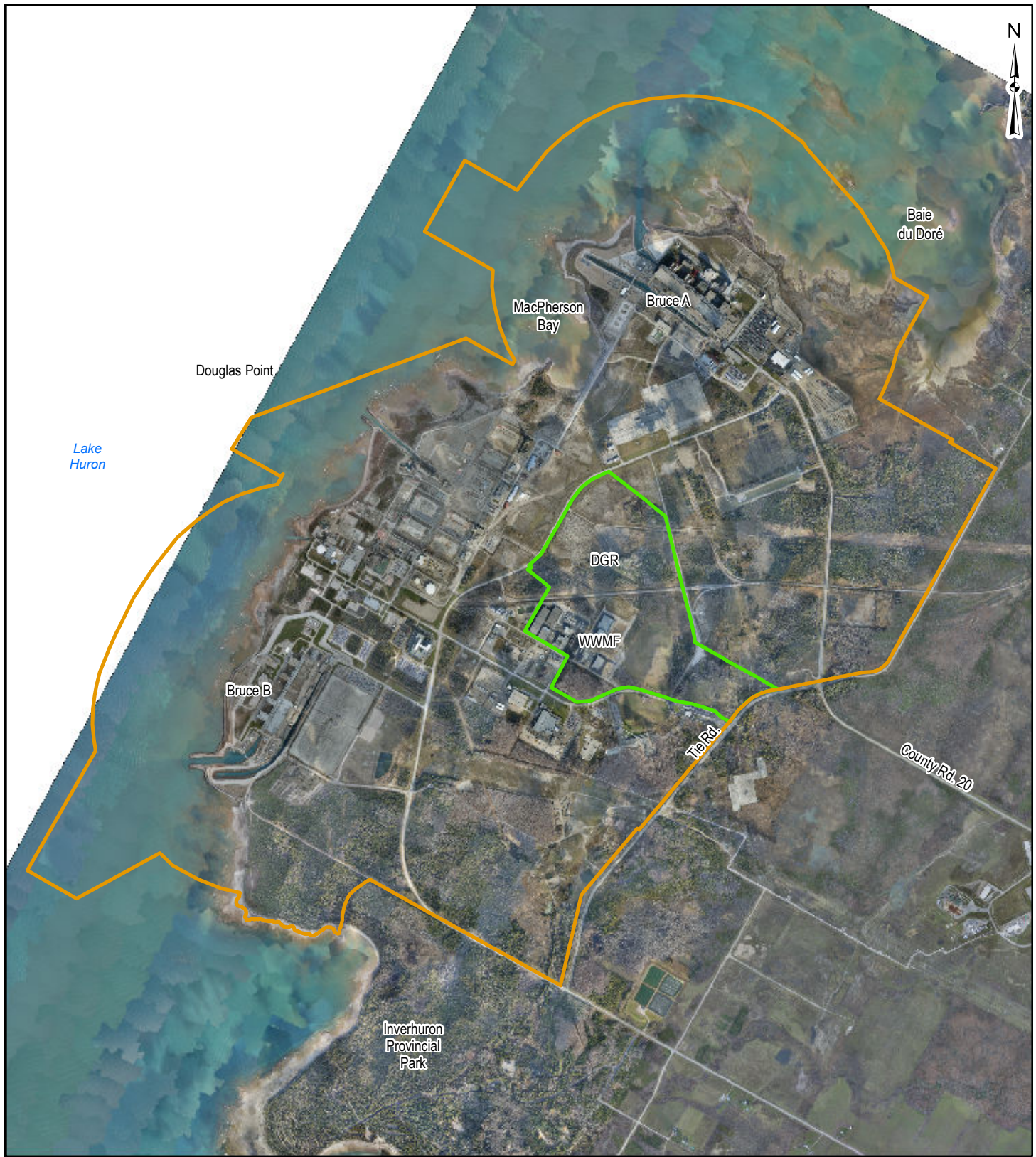
PROJECT: SOCIO-ECONOMIC ENVIRONMENT
 TECHNICAL SUPPORT DOCUMENT

TITLE: **LOCAL STUDY AREA**

PROJECT No. 06-1112-037			SCALE: AS SHOWN	R000
DESIGN	ASB	17 Oct 2007	FIGURE 2.4.2-2	
GIS	BC	31 May 2010		
CHECK	AB	31 May 2010		
REVIEW	MAR	31 May 2010		



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LEGEND

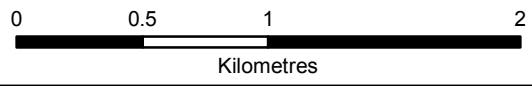
- ▭ Project Area (OPG-retained lands that encompass the DGR Project)
- ▭ Site Study Area ¹


NOTES

1. Site Study Area is defined by EIS Guidelines as: "includes the facilities, buildings and infrastructure at the Bruce nuclear site, including the existing licensed exclusion zone for the site on land and within Lake Huron, and particularly the property where the Deep Geologic Repository is proposed."

REFERENCE

Base Data Provided by 4DM, November 2007.
 Imagery and Topo Collected and Processed by Terrapoint Canada Inc.,
 Acquisition Date: Nov. 12, 14, and 15, 2006, Ground Resolution: 0.25m,
 Datum: NAD 83 Projection: UTM Zone 17N



PROJECT	SOCIO-ECONOMIC ENVIRONMENT TECHNICAL SUPPORT DOCUMENT			
TITLE	SITE STUDY AREA			
 Mississauga, Ontario	PROJECT No.	06-1112-037	SCALE:	AS SHOWN
	DESIGN	ASB	17 Oct. 2007	R000
	GIS	BC	31 May, 2010	FIGURE 2.4.2-3
	CHECK	AB	31 May, 2010	
REVIEW	MAR	31 May, 2010		

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3. PROJECT DESCRIPTION

The assessment of effects requires a detailed description of the DGR Project. The individual works and activities are the physical structures, buildings, systems, components, activities and events comprising the DGR Project. These are collectively referred to as the project works and activities. This section provides an overview of the DGR Project. The specific works and activities required for the DGR Project are summarized in the Basis for EA in Appendix B. Further details on the DGR Project design can be found in Section 4 of the EIS and in Chapter 6 of the Preliminary Safety Report [4].

3.1 OVERVIEW

The DGR Project will receive L&ILW currently stored in interim facilities at the WWMF, as well as that produced from OPG-owned or operated generating stations. Low level waste consists of industrial items and materials such as clothing, tools, equipment, and occasional large objects such as heat exchangers, which have become contaminated with low levels of radioactivity. Intermediate level waste consists primarily of used reactor components and resins and filters used to clean the reactor water circuits. The capacity of the DGR is a nominal 200,000 m³ of “as-disposed” waste.

The DGR Project comprises two shafts, a number of emplacement rooms, and support facilities for the long-term management of L&ILW (Figure 3.1-1). The DGR will be constructed over a period of five to seven years. The DGR Project design is the result of a thorough comparison and evaluation of different alternative methods of implementing the project. This includes considerations such as the layout of the DGR and construction methods. The evaluation compared each of the alternative means using technical, safety, environmental and economic factors to identify the preferred alternatives. This evaluation is presented in Section 3 of the EIS. This TSD assesses the effects of the preferred alternative means (i.e., the DGR Project) on the socio-economic environment.

3.2 SITE DESCRIPTION AND PROJECT LAYOUT

3.2.1 Surface Facilities

The surface DGR facilities will be located on vacant OPG-retained lands to the north of the existing WWMF. A new crossing will be constructed over the abandoned rail bed to provide access to the proposed DGR Project site from the WWMF (Figure 3.2.1-1). The surface structures will be grouped in relatively close proximity to facilitate operations and maintenance activities, and provide a compact footprint.

The Waste Package Receiving Building (WPRB) will receive all radioactive waste packages and transfer them to the main shaft cage for transfer underground. A maintenance workshop and stores for essential shaft-related spares and materials will be attached to the WPRB. An office, main control room and amenities building will also form part of the main shaft complex for administrative purposes, control and monitoring of the DGR, and receiving visitors to the DGR. An electrical sub-station will provide power to the entire facility, both surface and underground, and an emergency power supply system will maintain critical systems in the event of an outage.

Waste rock piles for the complete excavated volume of rock will be accommodated to the north-east of the two shafts. A stormwater management system of ditches and a pond will be provided to control the outflow of surface runoff and sump discharge water from the site before release into an existing network of ditches at the Bruce nuclear site, and ultimately Lake Huron (Figure 3.2.1-1). The discharge will also be monitored to confirm it meets certificate of approval water quality requirements.

3.2.2 Underground Facilities

The underground DGR facilities will be constructed in limestone bedrock (Cobourg Formation) at a nominal depth of 680 m beneath the OPG-retained lands in the centre of the Bruce nuclear site (Figure 3.1-1). The overall underground arrangement enables infrastructure to be kept in close proximity to the main shaft, while keeping the L&ILW emplacement areas away from normally occupied and high use areas.

The DGR will have two vertical shafts (main and ventilation shafts) in an islanded arrangement with a services area in which offices, a workshop, wash bay, refuge stations, lunch room and geotechnical laboratory will be provided. From this centralized area, the two panels of emplacement rooms are connected via access tunnels. A main access tunnel will be driven from the main shaft station to the east, passing the ventilation shaft and then proceeding towards the emplacement room panels. The main access tunnel will continue straight into the Panel 1 access tunnel, while a branch tunnel to the south will lead to the Panel 2 access tunnel. The length of the rooms is nominally 250 m. End walls may be erected once the rooms are filled.

The emplacement rooms will all be aligned with the assumed direction east-north-east of the major principal horizontal stresses of the rock mass to minimize the risks of any rock fall in the emplacement rooms.

A ventilation supply system will supply air at a controlled range of temperatures to ensure that freezing does not occur in the main shaft and the atmosphere is kept in a reasonably steady and dry state that is suitable for workers and limits corrosion of structures and waste packages.

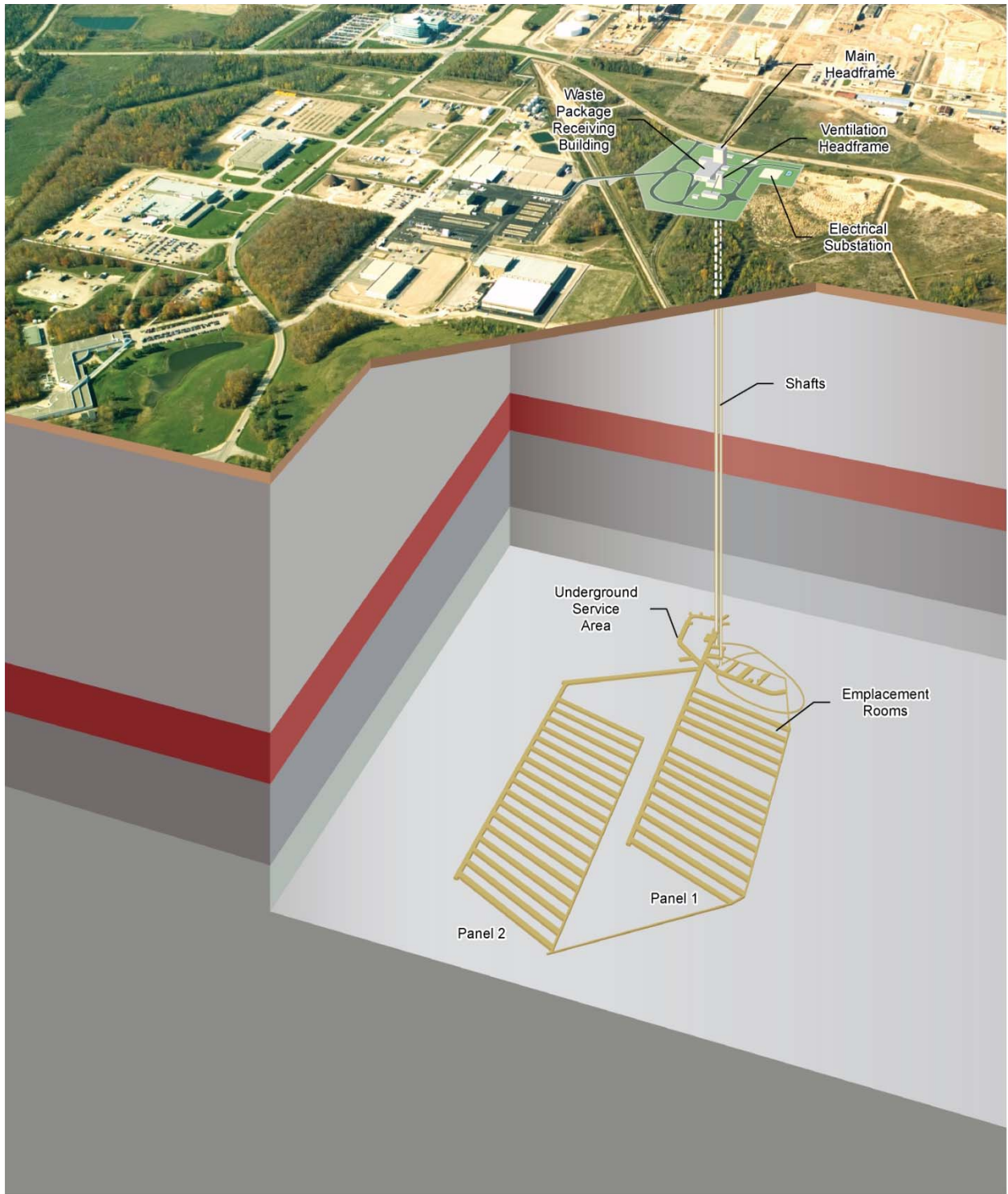
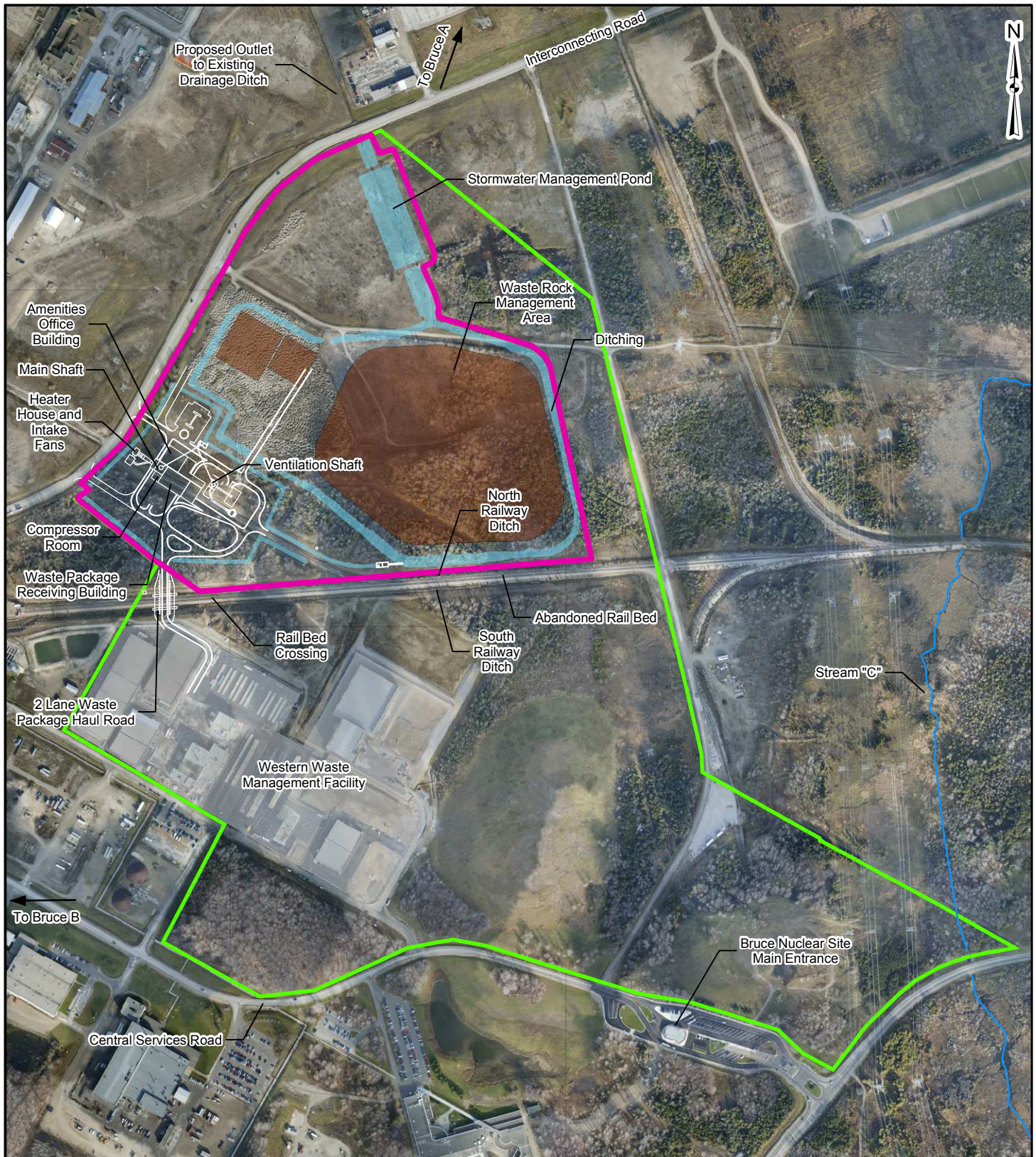


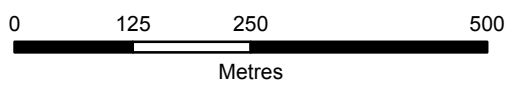
Figure 3.1-1: Schematic of DGR Project


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- LEGEND**
- █ DGR Project Site
 - █ Project Area (OPG-retained lands that encompass the DGR Project)
 - █ Soils and Rock Stockpile
 - █ Stormwater Management System

REFERENCE
 Base Data Provided by 4DM, Nov 2007.
 Imagery and Topo Collected and Processed by Terrapoint Canada Inc.,
 Acquisition Date: Nov. 12, 14, and 15, 2006, Ground Resolution: 0.25m,
 Datum: NAD 83 Projection: UTM Zone 17N



PROJECT	SOCIO-ECONOMIC ENVIRONMENT TECHNICAL SUPPORT DOCUMENT			
TITLE	LAYOUT OF DGR SURFACE INFRASTRUCTURE			
	PROJECT NO. 06-1112-037	SCALE: AS SHOWN	R000	
	DESIGN AB 16 Mar. 2010	FIGURE 3.2.1-1		
	GIS BC 25 Nov. 2010			
	CHECK KC 25 Nov. 2010			
	REVIEW AB 25 Nov. 2010			
 Golder Associates Mississauga, Ontario				

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4. SELECTION OF VECs

While all components of the environment are important, it is neither practicable nor necessary to assess every potential effect of a project on every component of the environment. The EA focuses on the components that have the greatest relevance in terms of value and sensitivity, and which are likely to be affected by the project. To achieve this focus, specific Valued Ecosystem Components (VECs) are identified. The Canadian Environmental Assessment Agency states that VECs are *“Any part of the environment that is considered important by the proponent, public, scientists and government involved in the assessment process”*. Importance may be determined on the basis of cultural values or scientific concerns.

From an ecological perspective, VECs can represent features or elements of the natural environment (e.g., a local wetland or stream) considered to be culturally or scientifically important. Such features may be complex, comprising several ecological aspects, and affected by a range of pathways (i.e., routes of exposure or effect). From a socio-economic perspective, VECs could represent an aspect of the human environment (e.g., population) or an aspect of the socio-economic conditions (e.g., economy or property values) present in the study area(s).

A VEC is considered to be the ‘receptor’ for both project-specific effects and cumulative effects. A VEC can be represented by a number of ‘indicators’. Indicators are features of the VEC that may be affected by the DGR Project. Each indicator requires specific ‘measures’ that can be quantified and assessed.

VECs are identified using the expertise of the technical specialists with input from regulators and members of the public. The VECs for the DGR Project were available for discussion and comment at the open houses held in October of 2007, November 2008, November 2009 and summer/fall 2010. The public was encouraged to add VECs to the list and to identify the VECs that were most important to them. The public also had the opportunity to provide input regarding the list of VECs during the public review process of the draft guidelines.

The following socio-economic environment VECs are identified in the EIS Guidelines:

- human health;
- population;
- employment;
- business activity;
- tourism;
- Inverhuron Provincial Park;
- housing and property values; and
- municipal finance, infrastructure, services, and facilities/resources.

It should be noted that while human health is identified as a socio-economic environment VEC in the EIS Guidelines, the assessment of effects on human health is presented in the EIS, and is not reported in this Socio-economic Environment TSD.

This Socio-economic Environment TSD uses the concept of “community well-being” as its overall analytical framework. The concept of community well-being that forms the basis of this framework has been applied to sociological, economic and sustainable development planning

studies in Canada and internationally. Among other related concepts are: community quality-of-life, individual and community health, community capacity and the competent community [11;12;13;14;15].

There are many overlaps and linkages among these various concepts, including overlap in the social information and indicators associated with each concept and the use of similar participatory method and sociological tools to collect and examine quantitative and qualitative socio-economic information. Therefore, for the purposes of this Socio-economic Environment TSD, various aspects of these other concepts have been incorporated into the community well-being framework, where they are relevant to the assessment of the social and economic effects of the DGR Project.

Community well-being is a concept meant to recognize the social, cultural and psychological needs of people, their family, institutions and communities [12]. Other definitions focus on the quality of social relationships, the vitality of the economy, the abundance of resources and quality of the natural environment [16]. Overall, community well-being is considered as the ultimate goal of processes and strategies that endeavour to meet the needs of people living together in communities. It encapsulates the ideals of people living together harmoniously in vibrant and sustainable communities [12]. It has been further recognized that community well-being should relate to the multi-dimensionality of communities including individuals, organizations/institutions and communities [17]. Communities not only want assurances that their well-being is being maintained, but they also want to improve it.

Considering this background, this socio-economic assessment of the DGR Project defines community well-being as:

“a state of financial, physical, human, social and natural assets possessed or desired by a community which enables its residents, organizations and institutions to support each other in performing all the functions of life and in developing their maximum potential”.

Characterizations of community well-being point to the necessity to consider a combination of economic, social and environmental factors that change and evolve over time. Examples of factors include the availability and quality of municipal infrastructure and services such as water and sewage facilities; the availability and quality of community services such as health, education, and recreational facilities; opportunities for employment and income generation; and the quality of the natural environment. Other determinants of well-being that may be less tangible include residential property values, community cohesion, and community character.

On an individual project level, the concept of community well-being focuses on understanding the interaction of the project with, and its contribution to, components of a community that help maintain itself and fulfill the various needs of local residents [12]. It is necessary to consider a wide range of community components that determine community strengths, weaknesses, and vulnerability to the effects of the project. These components can be considered as community assets that must be created, maintained or enhanced in order to achieve community well-being and enable people to support each other in performing all the functions of life and developing their maximum potential [17].

The socio-economic assessment of the DGR Project is organized according to the five “community asset” domains as defined within the Sustainable Livelihoods Framework [18]². Organizing the assessment in this manner is a means for identifying, predicting, assessing, and managing adverse socio-economic effects (i.e., avoiding negative effects on community assets) and enhancing positive ones (i.e., strengthening community assets). This framework supports the notion at the core of the Sustainable Livelihoods Framework [18] that if the benefits of economic development are to be sustained over the long-term (i.e., long after a period of intense growth or following the decline or closure of a specific facility or industry), then it is critical that a portion of the wealth created during the development activity be invested in community assets that drive future growth, capabilities and expertise that will sustain the community over time. Comparable frameworks have been adopted for other studies in Canada [19] and internationally [20;18].

This framework is sufficiently flexible to address effects at various scales (i.e., the individual, families/households, organizations/institutions and communities) and the need to consider other environmental disciplines, as defined for this EA, in an integrated fashion. Overall, the community assets framework provides a holistic, integrated approach to addressing factors that affect long-term community well-being.

To confirm this approach, community members were asked to identify attributes of the community that are most important in supporting community well-being (see the DGR Community Leader Survey [Appendix C], Site Neighbour Survey [Appendix C], and Public Attitude Research [21] field surveys). Feedback from this community input supported maintaining all community asset categories for analysis.

The community assets framework, along with its specific parameters, is illustrated on Figure 4-1.

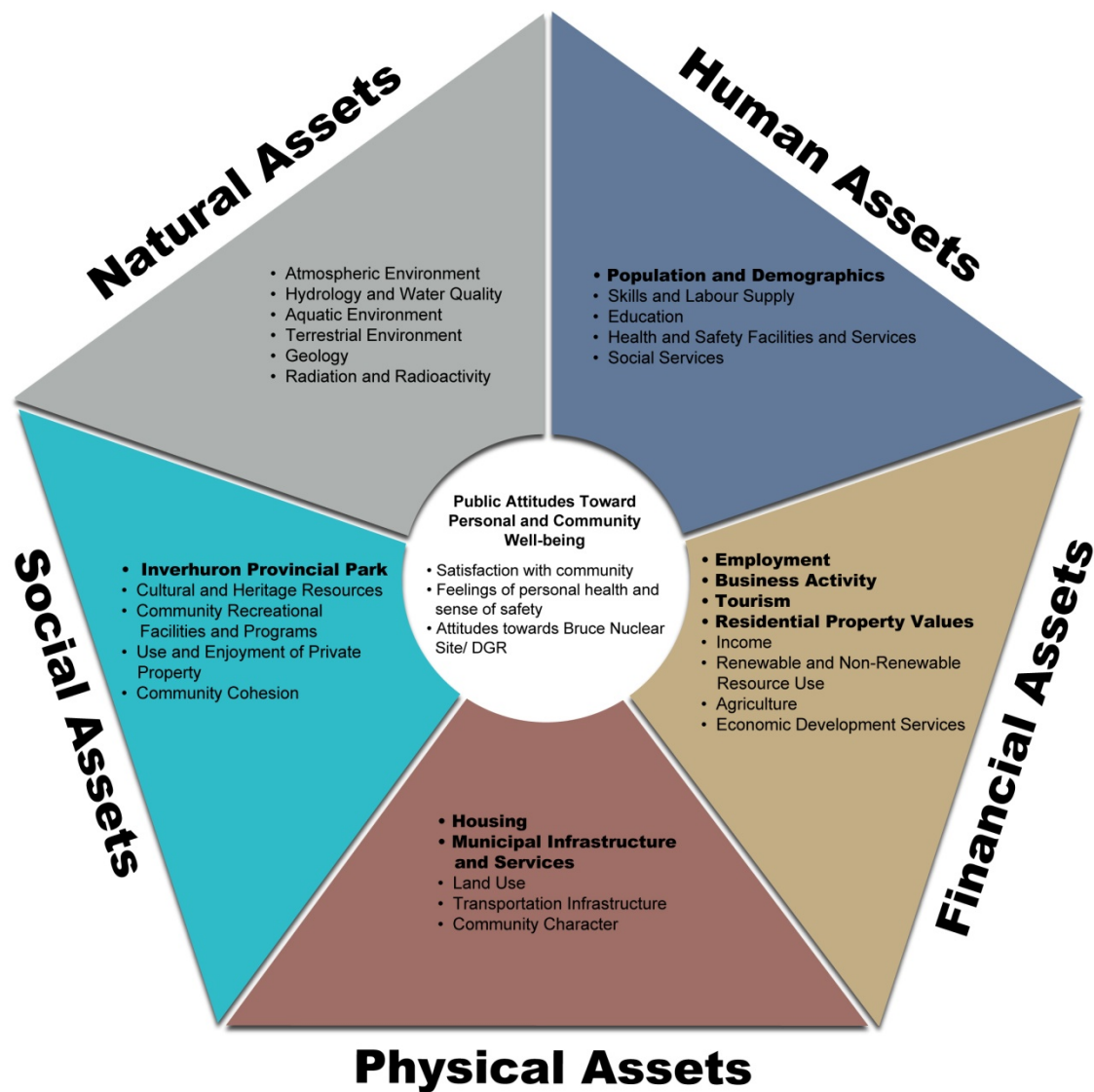
For clarity, the socio-economic environment VECs specified in the EIS Guidelines (see Appendix A of the EIS) are highlighted on Figure 4-1. Natural assets of a community are an important part of the community well-being framework; however, they are not a VEC for the socio-economic assessment. Project-related changes to natural assets may indirectly affect any of the socio-economic environment VECs, thus altering the socio-economic environment. Project-related changes to natural assets are assessed through the analysis of indirect effects to the socio-economic environment because of DGR Project-related changes in the natural environment.

The DGR Project-related effects on the natural environment are described and documented in the following TSDs:

- Atmospheric Environment;
- Hydrology and Surface Water Quality;
- Aquatic Environment;
- Terrestrial Environment;

² Only the five domains or “community assets” as defined within the Sustainable Livelihoods Framework [18] are used in this socio-economic assessment. The entire Sustainable Livelihoods Framework is not applied in this socio-economic assessment.

- Geology; and
- Radiation and Radioactivity.



Note: **Bold** highlights denote preliminary VECs identified in the EIS Guidelines

Figure 4-1: Community Assets Framework

4.1 VALUED ECOSYSTEM COMPONENTS

The following sections identify and justify the selection of the identified VECs for assessing the effects of the DGR Project on the socio-economic environment. Utilizing the asset categories of the community well-being framework as the basis for the socio-economic environment VECs provides a consistent and thorough approach to impact assessment. Overall, VECs are grouped by four community assets that relate to the community well-being framework and

provide the required range to consider interactions and subsequently to screen out potential but minute (un-measurable) effects of the DGR Project. VECs identified in the EIS Guidelines are examined separately (but grouped with the other indicators of each community asset) from the remaining indicators of each community asset. These VECs indicate the potential ways in which the project might directly affect the socio-economic environment. Changes to any of these assets (positive or negative) as a result of the project will alter the socio-economic environment.

Human assets consider the demographics of the population, skills and knowledge within the community, the ability of the community to provide opportunities for growth and learning, access to skills and knowledge, and access to services relating to people's feelings of health, sense of safety and community satisfaction. Specific VECs include:

- Population and Demographics; and
- Other Human Assets, including:
 - skills and labour supply;
 - education;
 - health and safety facilities and services; and
 - social services.

Financial assets consider the opportunities available to people for employment and participation in the economic life of the community(s), including the monetary, financial and physical resources and services that people and municipalities use to achieve their economic objectives, and the value of their physical resources. Financial assets are key determinants of a community's overall economic vitality. Specific VECs include:

- Employment;
- Business Activity;
- Tourism;
- Residential Property Values;
- Municipal Finance and Administration; and
- Other Financial Assets, including:
 - income;
 - renewable and non-renewable resource use;
 - agriculture; and
 - economic development services.

Physical assets consider the basic infrastructure that allows a community to function effectively. The availability and quality of physical assets such as housing and municipal infrastructure and services serve to attract and retain people and investment in a community; they influence personal health and satisfaction with community. Overall, these physical assets serve to maintain overall community well-being. The community character parameter is also included in this asset category. Although this is not a "hard" element of the community infrastructure, community character is observable, particularly when community character is closely tied to land use. Therefore, it is often an important parameter when considering community well-being. Specific VECs include:

- Housing;

- Municipal Infrastructure and Services; and
- Other Physical Assets, including:
 - land use;
 - transportation infrastructure; and
 - community character.

Social assets consider the social and community activities in which people participate and the facilities or amenities, such as parks and recreational programs that they draw upon in pursuit of their personal and community well-being objectives. This VEC also considers people's use and enjoyment of their private property for a variety of purposes (e.g., raising a family, at-home day-to-day activities, home-based businesses). The activities undertaken at people's homes and at community and recreational facilities serve to create networks within the community and among communities, increase connectivity among people, and generate relationships. To this end, the overall cohesiveness of a community is also considered as a social asset. Specific VECs include:

- Inverhuron Provincial Park; and
- Other Social Assets, including:
 - cultural and heritage resources;
 - community and recreational facilities and programs (including consideration of community and recreational resource use);
 - use and enjoyment of private property; and
 - community cohesion.

Indicators within each asset category have been identified specifically for the DGR Project assessment. Most of these indicators are well accepted as reliable measures of community well-being [11;17;22].

Table 4.1-1 presents the VECs for the socio-economic environment along with the rationale for selecting them and the specific indicators used in this assessment. Where necessary, some of the VECs identified in the EIS Guidelines have been listed in relation to the community assets framework.

Specifically, *Residential Property Values* and *Housing* were presented as one VEC (Housing and Property Values) in the EIS Guidelines but have been identified separately and arranged by community asset in this analysis. *Municipal Finance and Administration* and *Municipal Infrastructure and Services* were presented as one VEC (Municipal Finance, Infrastructure, Services/Resources) in the EIS Guidelines but have been identified separately and arranged by community asset in this analysis.

Table 4.1-1: VECs Selected for the Socio-economic Environment

VEC	Rationale	Key Indicators	Key Measures
Human Assets			
Population and Demographics	<ul style="list-style-type: none"> The DGR Project may cause changes to population and demographics due to in-migration related to the DGR employment opportunities or changes in public attitudes and behaviours in relation to the presence of the DGR Project 	<ul style="list-style-type: none"> Population levels Population mobility Demographic characteristics (i.e., family size, composition, age profile) 	<ul style="list-style-type: none"> DGR Project associated population levels and distribution Changes in public attitudes and behaviours attributable to the DGR Project
Other Human Assets	<ul style="list-style-type: none"> The DGR Project will require skills and labour from within and possibly from outside the Local/Regional Study Areas Increased population associated with the DGR Project may add to school enrolment The unique aspects of the DGR Project may offer educational opportunities Increased population associated with the DGR and potentially changed demographics may add to social service, health and safety service demands Special requirements of the DGR construction and/or operations may add to health and safety service demands or require changes to emergency preparedness plans 	<ul style="list-style-type: none"> Availability of skills and labour supply Capacity of schools and availability of educational opportunities Availability of social services Availability of health and safety facilities and services 	<ul style="list-style-type: none"> DGR Project skills and labour requirements DGR Project employment and distribution DGR Project associated school enrolment DGR Project associated population levels and distribution DGR Project associated average unit service demands Presence/absence of socio-economic features (e.g., schools, health and safety facilities, emergency preparedness plans) DGR Project-related effects on natural assets and/or other community assets. Changes in public attitudes and behaviours attributable to the DGR Project

Table 4.1-1: VECs Selected for the Socio-economic Environment (continued)

VEC	Rationale	Key Indicators	Key Measures
<i>Financial Assets</i>			
Employment	<ul style="list-style-type: none"> • The DGR Project may cause changes to the level of employment 	<ul style="list-style-type: none"> • Employment opportunities 	<ul style="list-style-type: none"> • DGR Project direct, indirect and induced employment • DGR Project employment distribution
Business Activity	<ul style="list-style-type: none"> • The DGR Project may directly and indirectly change business activity in local and regional economies 	<ul style="list-style-type: none"> • Business opportunities 	<ul style="list-style-type: none"> • DGR Project related requirements for goods and services • DGR Project employment and distribution • Presence/absence of socio-economic features (e.g., sensitive commercial business operations) • DGR Project-related effects on natural assets and/or other community assets
Tourism	<ul style="list-style-type: none"> • Tourism related businesses and attractions might be affected if the DGR Project adversely affects natural assets and/or other community assets that make them attractive to tourists • Tourist accommodation providers might benefit from an increase in DGR Project related employees • Tourist accommodation providers may be adversely affected if the DGR Project results in competition for temporary accommodation 	<ul style="list-style-type: none"> • Tourist visitation patterns 	<ul style="list-style-type: none"> • Presence/absence of socio-economic features (e.g., tourist attractions or features) • Trends in visitation to selected tourist attractions or features • DGR Project employment • DGR Project-related effects on natural assets and/or other community assets • Changes in public attitudes and behaviours attributable to the DGR Project

Table 4.1-1: VECs Selected for the Socio-economic Environment (continued)

VEC	Rationale	Key Indicators	Key Measures
Residential Property Values	<ul style="list-style-type: none"> Changes to residential property values may occur as a result of changes in noise, dust, traffic and/or a change in overall community character 	<ul style="list-style-type: none"> Likelihood of changes in residential property values attributable to the DGR Project 	<ul style="list-style-type: none"> DGR Project-related effects on natural assets and/or other community assets Changes in public attitudes and behaviours attributable to the DGR Project Presence/absence of a property value protection plan
Municipal Finance and Administration	<ul style="list-style-type: none"> Municipal finances may be directly influenced through DGR Project related revenues or changes in municipal expenditures Municipal finances may change indirectly due to a change in DGR Project associated population or changes in residential property values 	<ul style="list-style-type: none"> Municipal revenues Municipal expenditures 	<ul style="list-style-type: none"> DGR Project related sources of revenue Municipal expenditure requirements related to the DGR Project

Table 4.1-1: VECs Selected for the Socio-economic Environment (continued)

VEC	Rationale	Key Indicators	Key Measures
Other Financial Assets	<ul style="list-style-type: none"> • The DGR Project related employment may result in changes in labour income • Agricultural activities may be affected by a direct loss of agricultural and or disturbance to agricultural related activities • The DGR Project may affect or change the demand on renewable and non-renewable resources • Economic development services may need to respond to the presence of the DGR Project, to meet project requirements or to support change in economy resulting from the project 	<ul style="list-style-type: none"> • Income levels • Agricultural activities • Renewable and non-renewable resource use 	<ul style="list-style-type: none"> • DGR Project labour income and distribution • DGR Project related demand for renewable or non-renewable resources • DGR Project-related effects on natural assets and/or other community assets
Physical Assets			
Housing	<ul style="list-style-type: none"> • Population associated with the DGR Project may increase demand for housing 	<ul style="list-style-type: none"> • Availability of housing 	<ul style="list-style-type: none"> • DGR Project related housing demand and distribution • Size of available housing stock • Housing stock distribution
Municipal Infrastructure and Services	<ul style="list-style-type: none"> • The DGR Project may directly add to demands on municipal infrastructure and services • Population associated with the DGR Project may increase demand for municipal infrastructure and services 	<ul style="list-style-type: none"> • Availability of municipal water and sewer infrastructure and services • Availability of waste management facilities and services 	<ul style="list-style-type: none"> • DGR Project associated population levels and distribution • DGR Project municipal water, sewage and waste management service demands

Table 4.1-1: VECs Selected for the Socio-economic Environment (continued)

VEC	Rationale	Key Indicators	Key Measures
Other Physical Assets	<ul style="list-style-type: none"> • The DGR Project (i.e., its works, activities, buildings and structures) may be incompatible with existing or planned land uses on or in the vicinity of the Bruce nuclear site • The DGR Project may add to traffic using the existing road network • The DGR Project (i.e., the presence of a new or unfamiliar nuclear facility) and its environmental effects can affect the fundamental or unique characteristics of the host municipality and/or region 	<ul style="list-style-type: none"> • Compatibility with existing and planned land use • Traffic levels • Community character 	<ul style="list-style-type: none"> • DGR Project compatibility with existing and planned land uses • Changes in levels of service at key intersections along the road network • Visibility of DGR Project buildings and structures • Changes in public attitudes and behaviours attributable to the DGR Project
Social Assets			
Inverhuron Provincial Park	<ul style="list-style-type: none"> • Inverhuron Provincial Park might be affected if the DGR Project adversely affects natural assets and/or other community assets, which, in turn, affect the use and enjoyment of tourists and day users 	<ul style="list-style-type: none"> • Use and enjoyment of Inverhuron Provincial Park 	<ul style="list-style-type: none"> • DGR Project associated population levels and distribution • DGR Project-related effects on natural assets and/or other community assets • Changes in public attitudes and behaviours attributable to the DGR Project

Table 4.1-1: VECs Selected for the Socio-economic Environment (continued)

VEC	Rationale	Key Indicators	Key Measures
<p>Other Social Assets</p>	<ul style="list-style-type: none"> • The DGR Project’s construction activities may disturb cultural and heritage resources • A change in the population associated with the DGR Project or a change in population demographics may change the demand for community and recreational facilities and programs • People’s use and enjoyment of their private property might be affected if the DGR Project adversely affects natural assets and/or other community assets, which, in turn, affects their use and enjoyment of private property • A change in the population associated with the DGR Project or a change in population demographics may change community cohesion • The DGR Project may affect community assets that contribute to community cohesion 	<ul style="list-style-type: none"> • Archaeological or cultural heritage sites • Culturally-sensitive areas • Availability of community recreational facilities and programs • Use and enjoyment of private property • Community cohesion 	<ul style="list-style-type: none"> • Measurable Project-related effects on archaeological or cultural heritage sites • Potential for DGR Project-related effects on deeply buried artifacts in culturally-sensitive areas • DGR Project associated population levels and distribution • Visibility of DGR Project buildings and structures • DGR Project-related effects on natural assets and/or other community assets • Changes in public attitudes and behaviours attributable to the DGR Project • DGR Project related contribution to community cohesion

Notes:

- a Housing and Residential Property Values were presented as one VEC (Housing and Property Values) in the EIS Guidelines, but have been identified separately and arranged by community asset in this Socio-economic Environment TSD.
- b Municipal Finance and Administration and Municipal Infrastructure and Services were presented as one VEC (Municipal Finance, Infrastructure, Services/Resources) in the EIS Guidelines, but have been identified separately and arranged by community asset in this Socio-economic Environment TSD.

5. DESCRIPTION OF THE EXISTING SOCIO-ECONOMIC ENVIRONMENT

The existing socio-economic environment is described in the following sections. Existing conditions for each community asset are generally described according to the Local Study Area (i.e., the Municipality of Kincardine) and the Regional Study Area, which includes the Municipalities of Arran-Elderslie, Brockton and South Bruce, the Town of Saugeen Shores and the Township of Huron-Kinloss. For comparative purposes, Kincardine data is often compared to the combined local and regional data. All of the study area municipalities are within Bruce County. Depending upon the community well-being asset being described, emphasis is placed on one or more of these study areas. The following provides a general description of the study areas as an introduction to the detailed description of the existing socio-economic environment that follows.

The Municipality of Kincardine, located on the eastern shoreline of Lake Huron, is composed of the town of Kincardine and several small villages and hamlets including Inverhuron and Tiverton. The municipality is home to the Bruce nuclear site. The municipality includes Inverhuron Provincial Park, located adjacent and to the south of the Bruce nuclear site. Kincardine, located south of the Bruce nuclear site, is the largest settlement in Bruce County and is characterized by its small shops, sandy beach, accessibility to Lake Huron for boating and recreational purposes, and its lighthouse. The town of Kincardine is host to many of the Local Study Area's businesses and retail outlets.

Within the Municipality of Kincardine, the community of Inverhuron has a distinctive character as a cottage area with several hundred dwellings. Some of these dwellings are seasonal, while others have been converted to year-round use. There is also a mobile home park located here. Other local features include a parkette, boat launch and a local grocery and gas station nearby. This area is popular among local artisans, retirees and people from across Ontario and the United States because of its proximity to Inverhuron Beach.

The Town of Saugeen Shores is located on the shoreline of Lake Huron, directly north of the Bruce nuclear site. The municipality is composed of the Towns of Southampton and Port Elgin, the Township of Saugeen and other small villages. Port Elgin is the largest settlement area in the Regional Study Area north of the Bruce nuclear site.

The Municipality of Brockton is landlocked in central Bruce County, and includes the Town of Walkerton, the Township of Brant and the Township of Greenock.

The Municipality of Arran-Elderslie is situated in the northern portion of Bruce County, along the eastern boundary separating Grey and Bruce Counties. The municipality comprises the communities of Chesley, Paisley and Tara.

The Township of Huron-Kinloss is situated on the Lake Huron shoreline in the south portion of Bruce County. The Township borders the Municipality of Kincardine.

The Municipality of South Bruce is located in the south-eastern corner of Bruce County adjoining the borders of Grey County and Huron County. It is approximately 20 km from the Lake Huron shore. Included in this municipality are the Village of Mildmay and the surrounding Township of Carrick, the Village of Teeswater and the surrounding Township of Culross, and several small hamlets.

Figure 5-1 presents the location of the municipalities in the Local and Regional Study Areas, and identifies some of the smaller settlement areas in each municipality.

5.1 EXISTING ENVIRONMENT METHODS

The description of the existing environment focuses on the VECs identified in Section 4. Information is presented for the study areas with emphasis placed on the areal extents most likely to be affected by the DGR Project. The description of the existing environment for the socio-economic environment presents:

- a compilation and review of existing information; and
- details and results of the field programs undertaken to obtain data to update existing information and fill information gaps.

Multiple sources of information, both quantitative and qualitative, are used to describe existing conditions. The methods used to gather information and the sources for the description of the socio-economic environment are described in the following sections.

5.1.1 Secondary Source Data

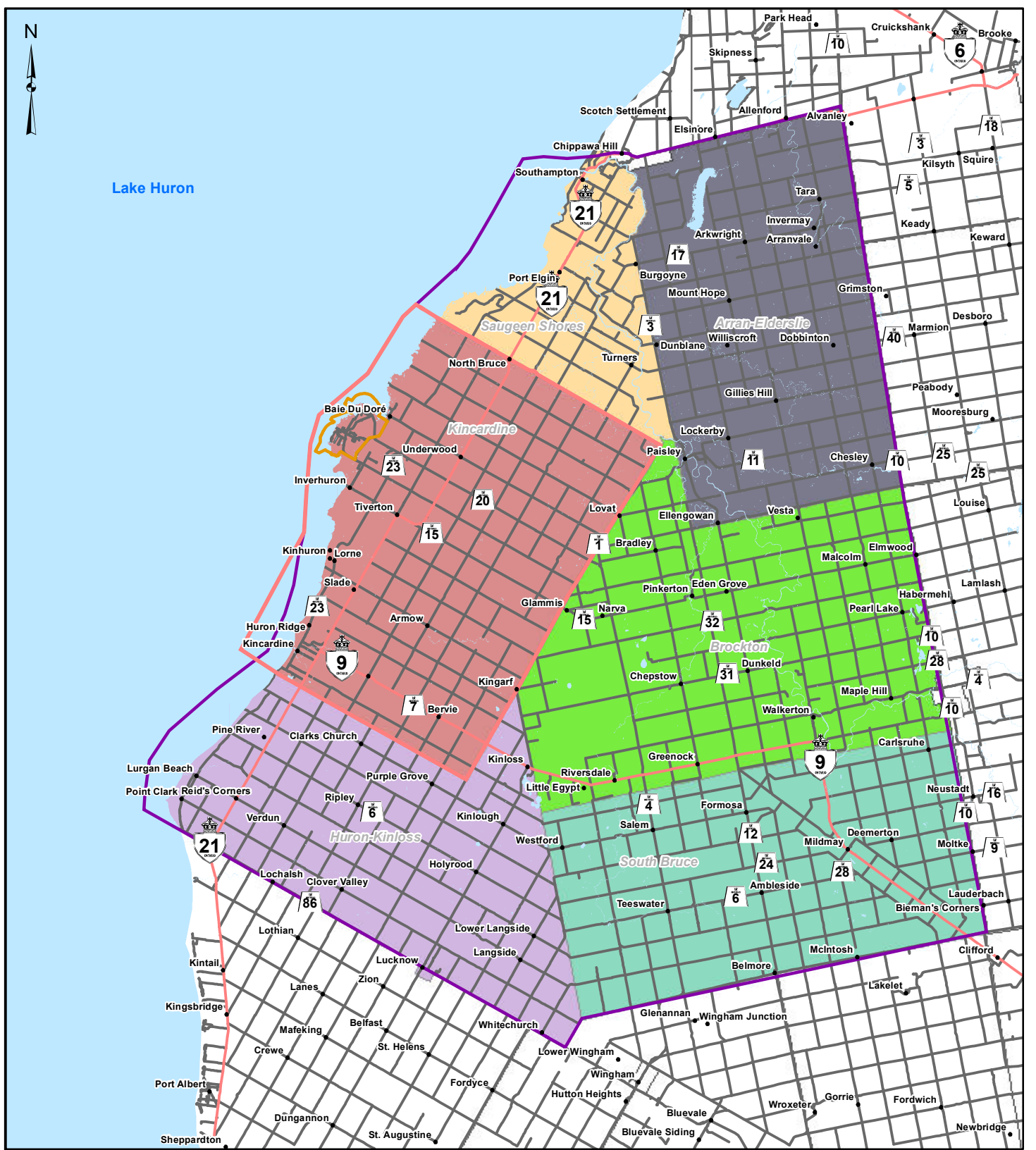
For the purposes of this socio-economic assessment, the objectives of the secondary source data collection and literature review program were:

- to identify and collect relevant socio-economic information from a variety of sources external to AECOM and NWMO that would assist in the characterization of existing conditions and in the assessment of effects of the DGR Project (e.g., population, employment, housing projections, labour supply projections);
- to establish and/or test hypotheses regarding the effects of the DGR Project; and
- to provide further evidence that supported the conclusion of the effects assessment.

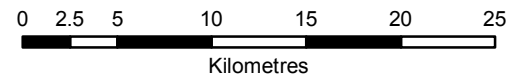
This information is contained in published reports, documents and available data sets from the municipalities in the Local and Regional Study Areas, various government agencies and non-governmental organizations. Data collection was undertaken primarily through Internet searches and downloading of required information available online, telephone requests for information, and requests for information during interviews with stakeholders in the Local and Regional Study Areas.

For the purposes of characterizing the socio-economic environment, the following key secondary source data and relevant literature were collected in the compilation and review of existing information:

- Statistics Canada 1996, 2001 and 2006 Census Community Profiles [23;24;25;26;27;28;29;30;31;32;33;34;35];
- Bruce County, Municipality of Kincardine and Town of Saugeen Shores - Official Plans [36;37;38];
- population projections for Bruce County from Bruce County Housing Study 2009 Update [39];
- 2008 Municipal Financial Information Returns [40;41;42;43;44;45;46];



Lake Huron



LEGEND

- Site Study Area ¹
- Local Study Area
- Regional Study Area

NOTES

1. Site Study Area is defined by EIS Guidelines as: "includes the facilities, buildings and infrastructure at the Bruce nuclear site, including the existing licensed exclusion zone for the site on land and within Lake Huron, and particularly the property where the Deep Geologic Repository is proposed."

REFERENCE

Base Data Provided by Ontario Ministry of Natural Resources.

Datum: NAD 83 Projection: UTM Zone 17N

PROJECT: SOCIO-ECONOMIC ENVIRONMENT
TECHNICAL SUPPORT DOCUMENT

TITLE
LOCAL AND REGIONAL STUDY AREA
MUNICIPALITIES AND SETTLEMENT AREAS

<p>Golder Associates Mississauga, Ontario</p>	PROJECT NO. 06-1112-037	SCALE: AS SHOWN	R000
	DESIGN ASB 17 Oct. 2007	<p>FIGURE 5-1</p>	
	GIS BC 31 May, 2010		
	CHECK KC 31 May, 2010		
REVIEW AB 31 May, 2010			

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- relevant reports, documents and information from municipal websites;
- Ontario Ministry of Tourism statistics for Bruce County 2007 and 2008 [47;48];
- Ontario Parks visitation statistics 2001 to 2009 [49;50;51;52]; and
- Public Attitude Research (PAR) conducted in 2003 regarding the long term management of low and intermediate level radioactive wastes at the WWMF [10].

In addition to external sources, relevant data and documents were collected through NWMO regarding the Bruce nuclear site and through other DGR consultant team members, including TSDs from other disciplines, DGR Traffic Impact Study Report [53], Stage 1 and 2 Archaeological Assessment Reports [54] and DGR Public Attitude Research [21].

5.1.1.1 Field Studies

The following summarizes the field studies completed to support the description of the existing conditions:

- Public Attitude Research via telephone surveys (conducted randomly in the study areas);
- Stakeholder Interviews;
- Community Leader Survey;
- Inverhuron and MacGregor Point Provincial Parks Tourist/Day User Survey;
- Bruce Dale and Stoney Island Conservation Areas Tourist/Day User Survey;
- Site Neighbour Survey;
- field study component of the archaeological assessment [54];
- field study component of the traffic impact analysis [53]; and
- field study and visual characterization, as part of the visual impact analysis [8].

Public Attitude Research

The 2009 Public Attitude Research (PAR) was conducted regarding the DGR Project via a telephone survey of residents in the Local and Regional Study Areas to gain data regarding:

- existing attitudes towards feelings of personal health and sense of personal safety, community satisfaction, community cohesion and character, and likely changes that may be attributable to the DGR Project;
- current activities and likely changes in activities and behavioural intentions that may be attributable to the DGR Project, including use and enjoyment of property, participation in community and recreational activities, and decisions to live in their community;
- anticipated benefits attributable to the DGR Project; and
- anticipated changes to overall community well-being attributable to the DGR Project.

A quantitative research instrument was designed to achieve a target level of confidence in the information collected from within the defined study areas. A questionnaire was developed for telephone administration. The survey was conducted among residents of the Local and Regional Study Areas.

One of the research goals was to have sufficient sample size across the Local and Regional Study Areas in order to allow for comparison across groups. Sufficient sample sizes were defined to ensure a confidence interval target of $\pm 5\%$, 19 out of 20 times.

The telephone survey was administered under the direct supervision of IntelliPulse Inc. and AECOM. Interviewing dates were November 4 to 14, 2009. The survey's average length was 15 minutes. A total of 809 respondents were interviewed, including 401 interviews in Kincardine and 408 interviews in the neighbouring Regional Study Area municipalities. Survey respondents were 18 years of age and older, with a split between men and women. A detailed description of the sample design, sample size and weighting is included in the PAR study report [21].

Stakeholder Interviews

Interviews with stakeholders in the Local and Regional Study Areas were conducted to gain knowledge about study area services, resources and community well-being, and to collect information (through stakeholder self-assessment) on potential concerns and anticipated effects of the DGR Project relevant to the area of interest or expertise of the stakeholder. A wide variety of stakeholders in the Local and Regional Study Areas were interviewed to ensure that a range of perspectives was obtained regarding potential effects of the DGR Project.

Representatives from the following stakeholder groups were interviewed:

- agricultural service providers;
- boating and fishing businesses;
- community facilities;
- cottage rental agencies;
- emergency management co-ordinators;
- fishing licence holders;
- health and safety providers;
- Power Workers' Union and the Society of Energy Professionals;
- recreational and community facilities;
- regional construction and training boards;
- school boards and nearest schools;
- tourist accommodation providers; and
- major tourist attractions.

Stakeholder interviews were undertaken via telephone by AECOM staff. All interviews were undertaken in accordance with a structured interview guide and protocol (see Appendix C). Interviews were documented and stored in electronic and hard copy format. In total, 34 Local Study Area and 42 Regional Study Area stakeholder interviews were completed during October and November, 2009. All interviews were documented at the time of the interview in point form, question by question (if possible).

Community Leader Survey

A Community Leader Survey was completed to gain information from key community leaders knowledgeable about the study area regarding community well-being, and to collect information regarding community attitudes, potential concerns and anticipated effects of the DGR Project relevant to the area of interest or expertise of the community leader.

As with the stakeholder interviews, a variety of community leaders were interviewed to ensure that a range of perspectives was obtained regarding the potential effects of the DGR Project.

The community leaders were local and regional figures, including Mayors and Councillors, Provincial and Federal politicians representing the areas, municipal administrators, local business owners and representatives of business associations, representatives of community service organizations (e.g., health and tourism), media representatives, and community events co-ordinators.

Community Leader Surveys were undertaken via telephone by senior AECOM staff. All interviews were undertaken in accordance with a structured interview guide and protocol (see Appendix C). In total, 23 community leader interviews were completed in October 2009. All interviews were documented at the time of the interview in point form, question by question and stored in electronic and hard copy formats.

Inverhuron and MacGregor Point Provincial Parks and Bruce and Stoney Island Conservation Areas Tourist/Day User Surveys

Tourist and Day User Surveys at Inverhuron and MacGregor Point Provincial Parks were conducted, as were surveys at Bruce and Stoney Island Conservation Areas. The objectives of the surveys were to identify and/or quantify:

- the ways in which tourists and day users use and enjoy the recreational and/or natural resources/amenities of the facilities;
- visitation rates and average spending by visitors;
- factors that currently affect people's use and enjoyment of these recreational and/or natural resources/amenities;
- current issues and concerns regarding the WWMF or Bruce nuclear site;
- potential concerns regarding the DGR Project; and
- likely changes in people's use and enjoyment of the facilities as a result of the DGR Project.

These field surveys were undertaken as a "one season" survey during the 2009 late summer use season by AECOM staff. All surveys were undertaken in accordance with a structured interview guide and protocol (see Appendix C). The survey was implemented during weekdays, weeknights and during weekends to capture a variety of recreational users. It was an objective that approximately 50 to 75 people per facility be interviewed.

The field survey was undertaken as a 'roving survey', where the surveyor moved from location to location within the boundaries of the respective Provincial park or conservation area and approached people who were using the recreational resources. Park/conservation area superintendents provided recommendations on the best locations for surveying users.

The MacGregor Point Provincial Park survey was undertaken during a visit on September 24, 2009. A total of 52 tourists and day users were interviewed. The Inverhuron Provincial Park survey was also undertaken during a visit on September 24, 2009. A total of 51 tourists and day users were interviewed.

The Bruce Conservation Area survey was undertaken during two visits, one on September 26, 2009 and the second on October 10, 2009. A total of 18 tourist and day users were interviewed. The Stoney Island Conservation Area survey was undertaken during two

visits, one on September 26, 2009 and the second on October 10, 2009. No surveys were completed at this conservation area as no visitors/day users were present at the time of survey.

All survey data collected were compiled for data analysis. For “open ended” questions the responses were grouped into broad but similar categories for coding purposes.

Site Neighbour Survey

A Site Neighbour Survey, including property owners, residents and businesses, in proximity to the Bruce nuclear site was conducted to gain:

- an understanding of how the existing Bruce nuclear site and ongoing operations affect site neighbours’ use and enjoyment of property; and
- a self-assessment of anticipated effects of the DGR Project on-site neighbours’ use and enjoyment of property and overall community satisfaction.

The approach to the Site Neighbour Survey involved the design and administration of a structured questionnaire delivered to 13 residential households and commercial buildings within the site neighbour survey boundary (see Appendix C). Properties included in the survey were chosen because of their proximity to the existing Bruce nuclear site. More specifically, all properties adjacent to the Bruce nuclear site and the “next row” of adjacent properties were included. The survey area was also extended where necessary to include the four closest noise, human health and nuisance receptors identified for the purposes of this EA. All properties were located within the Local Study Area (i.e., the Municipality of Kincardine).

Potential interviewees were contacted the week prior to field work to confirm the status of the land and to confirm interest in participation. A meeting time for the site visit was predetermined where possible. AECOM staff visited all site neighbours to drop off a print copy of the survey (see Appendix C). If the resident was home, help completing the survey was offered and AECOM staff spent 20 to 30 minutes with individuals who requested assistance. Follow-up phone calls were placed to site neighbours to encourage participation.

The Site Neighbour Survey was undertaken between November 2009 and January 2010. A total of eight surveys were completed, representing a 57% response rate.

Archaeological Assessments

To support this socio-economic assessment and the analysis contained in the Aboriginal Interests TSD, an archaeology assessment including Stage 1 and Stage 2 investigations of the Bruce nuclear site [54;55] was completed. The results from the Stage 1 and Stage 2 investigations were also used in the Aboriginal Interests TSD.

The Stage 1 Archaeological Assessment [55] included an overview of the study areas’ 19th century Euro-Canadian history derived from Crown and Provincial land surveyors’ field notes and maps, census records, township papers, voters’ lists, collector’s rolls, county directories and land registry records.

The Stage 2 Archaeological Assessment [54] — conducted in areas of the Bruce nuclear site not previously disturbed — included field investigations based on the landscape conditions, and current First Nations cultural considerations. The Stage 2 field work was conducted between July 16 and 20, 2007, on September 21 and 27, 2007, on October 15, 19, 22 and 25, 2007, and on April 2, 2008.

Traffic Analysis

For the purposes of this socio-economic assessment, the objectives of the traffic analysis were to gather data regarding the existing road network, the contribution of current Bruce nuclear site traffic to traffic flow and to assess likely effects of the DGR Project on traffic infrastructure service levels. The traffic analysis for the DGR Project was undertaken by McCormick Rankin Corporation [53]. Traffic data collected for five intersections within the Local Study Area as part of the Bruce Power New Nuclear Power Plant Project Traffic Impact Study [53] were used in this study. Additional turning movement counts were undertaken at the intersections of County Road 23/County Road 20 and Highway 21/Bruce Concession 2 on May 22, 2008. Interviews with the local municipality were also undertaken to understand the current status of road improvement plans.

The existing traffic volumes, including both Bruce A refurbishment workers and permanent Bruce nuclear site employees, were reviewed to identify existing traffic constraints. Intersections were analyzed using Synchro analysis software, a traffic operations simulation software package.

Visual Analysis

For the purposes of this assessment, the objectives of the visual analysis were to describe existing viewshed conditions in the study area and assess potential effects of the DGR Project [8]. The visual analysis included the following:

- digital terrain model and viewshed analysis;
- landscape characterization;
- influence maps;
- landscape sensitivity matrix and map;
- ranked impact areas map; and
- visualizations from key observation points.

5.2 TRADITIONAL ABORIGINAL KNOWLEDGE

This EA considers both western science and traditional and local knowledge, where that information is available. Aboriginal traditional knowledge is a body of knowledge built up by a group of people through generations of living in close contact with nature. It is cumulative and dynamic and builds upon the historic experiences of a people and adapts to social, economic, environmental, spiritual and political change.

Traditional knowledge is not directly reflected in this TSD. Information regarding baseline conditions that reflects traditional knowledge, specifically “use of traditional territory for harvesting, hunting and fishing”, is included in the Aboriginal Interests TSD. Other socio-

economic baseline conditions and effects that are relevant to Aboriginal peoples in the study area are considered in this TSD. For example, during the course of the Aboriginal engagement activities undertaken by OPG and NWMO over the past several years, the Saugeen Ojibway Nation (SON) expressed their interest regarding opportunities for economic development, including jobs opportunities for First Nations people. Because Aboriginal people, including members of First Nations living off-reserve and Métis people, are for the most part reflected in population statistics, this TSD is considered to be equally applicable to Aboriginal and non-Aboriginal peoples.

5.3 DGR HOSTING AGREEMENT

In 2001, the Municipality of Kincardine approached OPG seeking to enter into an agreement to study options for the long-term management of L&ILW at the existing WWMF. In 2002 the Municipality of Kincardine and OPG signed a Memorandum of Understanding (MOU), which set out the terms under which OPG, in co-operation with the municipality, assessed the feasibility of the long-term management of L&ILW at the WWMF. In addition to studies to assess the geotechnical feasibility, engineering concepts and safety, the MOU activities included an independent assessment of the possible long-term management options. This was documented in the Independent Assessment Study (IAS) Report [56], which describes the options, and compares the ability of each to meet the appropriate engineering, geotechnical safety, socio-economic and environmental criteria. The report also describes the results of broad consultations with stakeholders and members of the public on the possible options and the proposal to locate a long-term waste management facility at the WWMF.

A DGR Hosting Agreement Between OPG and the Municipality of Kincardine [57] was signed on October 13, 2004. This host community agreement with the municipality was recognition of their willingness to host the DGR. In January 2005, this was followed by a polling of residents, both permanent and seasonal, to determine the level of support for the DGR Project. The hosting agreement specifically benefits Kincardine and its four neighbouring municipalities, although all eight Bruce County municipalities have signed a letter of support for the proposed DGR Project.

In addition to the Municipality of Kincardine being a willing host and having signed a Hosting Agreement with OPG, the geology of the Bruce nuclear site is considered technically suitable for a long-term management facility for L&ILW. The geology of the Bruce nuclear site at the repository horizon (a nominal depth of 680 m below surface) is composed of low permeability limestone. It is overlain by approximately 200 m of low permeability shale, effectively isolating the waste. A DGR is consistent with international best practice, provides the greatest margin of safety of the alternatives assessed and can manage all of the low and intermediate level waste.

5.4 HUMAN ASSETS

Human assets consider the skills and knowledge inherent in the community(s) and the ability of various organizations and institutions that operate in a community(s) to provide people with opportunities for growth and learning; access to skills and knowledge; and access to essential services that are fundamental in maintaining people's feelings of health, sense of personal safety and their overall satisfaction with community.

Each of these parameters is defined and discussed in terms of its contribution to community well-being. Conditions in the Regional Study Area and/or the Local Study Area are described, as appropriate.

5.4.1 Population and Demographics

The population of a community is one of the most important human assets and a determinant of community well-being. Any project that involves a change in workforce has the potential to result in changes in population and the demographic characteristics of communities, and consequently their well-being. Should population levels, including population density and demographic characteristics of the population, change substantially as a result of a project, several other community assets may be affected. For example, population levels determine the availability and quality of other human assets in a community (i.e., education, health and safety facilities and services, and social services) and the availability and quality of a community's physical and social assets (i.e., housing, municipal infrastructure, transportation infrastructure, and community and recreation facilities). Generally, as the population of an area grows, more infrastructure and services are needed. For example, population growth will increase demands on road infrastructure and growth in families with school age children will increase requirements for education services. In some cases, increased population density may result in more efficient use of existing infrastructure and services (for example, water treatment facilities may have sufficient capacity, recreation facilities may be able to operate at a more optimal cost/participant level with increased population). In other cases, growth may challenge the effective provision of such services, such as extending wait lists for services. Communities with larger populations can typically provide a wider range and a higher quality of infrastructure and services because of the larger tax base their populations provide or through their role as regional centres. Sufficient population density may bring, for example, opportunity for health care centres of specialization or post secondary education institutions.

Current and historic population levels within the Local and Regional Study Areas are presented in Table 5.4.1-1. According to the most recent available Census (2006) [30], the total population of the Municipality of Kincardine is 11,173, or 21.6% of the combined Local and Regional Study Areas population. Of the neighbouring municipalities, Saugeen Shores has the largest population base at 11,720, or 22.7% of the combined study areas' population. The Municipality of Brockton makes up 18.6% of the combined study areas population and the smaller populations of Arran-Elderslie, Huron-Kinloss and South Bruce account for 13.0, 12.6 and 11.5%, respectively, of the combined study areas' population base.

The level and distribution of population across the combined study areas has not changed substantially since 1996. From 1996 to 2001, the population of Kincardine decreased by 7.4% but rebounded somewhat over the next five years, with an increase of 1.3% from 2001 to 2006. Similarly, during the period of 1996 to 2001, the neighbouring municipalities experienced a decline in population ranging from 1.0% in Huron-Kinloss to 5.8% in Saugeen Shores. During the following five years, population levels in Brockton and South Bruce continued to decline (0.2 and 2.0% reduction, respectively), while Arran-Elderslie, Huron-Kinloss and Saugeen Shores all experienced increases in population. Huron-Kinloss experienced the strongest population growth during that period, with a 4.7% increase from 2001 to 2006. Overall, the combined study areas' population declined by 4.9% from 1996 to 2001 but recovered from 2001 to 2006 with an overall increase of 1.6%.

Tables 5.4.1-2 to 5.4.1-5 provide Census statistics on age profile, family size, household size, and selected household characteristics for the Local and Regional Study Areas. The age profile of the Municipality of Kincardine population is similar to the age profile of the population in the combined study areas, with the largest proportions in the 25 to 44, 45 to 54 and 65 and over age categories. The Municipalities of Arran-Elderslie and South Bruce have relatively higher percentages of younger people. Table 5.4.1-4 shows that across the study areas, over 60% of private households are one and two-person households, except for the Municipality of South Bruce with 55%. Similarly, Table 5.4.1-5 indicates that the average number of people per household across the study areas is 2.48, with Saugeen Shores having the lowest value in the range at 2.34 and South Bruce the highest, at 2.75.

Table 5.4.1-1: Population– Local and Regional Study Areas (1996 to 2006)

Year	Municipality of Kincardine		Regional Study Area Municipalities										Total	
			Arran-Elderslie		Brockton		Huron-Kinloss		Saugeen Shores		South Bruce			
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
1996	11,908	22.2	6,851	12.8	10,163	19.0	6,284	11.7	12,084	22.6	6,248	11.7	53,538	100
2001	11,029	21.7	6,577	12.9	9,658	19.0	6,224	12.2	11,388	22.4	6,063	11.9	50,939	100
2006	11,170	21.6	6,745	13.0	9,640	18.6	6,515	12.6	11,720	22.7	5,940	11.5	51,730	100
1996-2001 Change (%)	-7.4		-4.0		-5.0		-1.0		-5.8		-3.0		-4.9	
2001-2006 Change (%)	1.3		2.6		-0.2		4.7		2.9		-2.0		1.6	

Source: [23;24;25;26;27;28;29;30;31;32;33;34;35]

Table 5.4.1-2: Age Profiles (2006)

Category	Municipality of Kincardine		Regional Study Area Municipalities										Total	
			Arran-Elderslie		Brockton		Huron-Kinloss		Saugeen Shores		South Bruce			
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
0-4 years	435	3.9	365	5.4	480	5.0	325	5.0	410	3.5	355	6.0	2,370	4.6
5-14 years	1,200	10.7	890	13.2	1,215	12.6	810	12.4	1,190	10.1	870	14.6	6,175	11.9
15-19 years	825	7.4	525	7.8	740	7.7	520	8.0	825	7.0	520	8.8	3,955	7.6
20-24 years	690	6.2	395	5.9	635	6.6	400	6.1	725	6.2	415	7.0	3,260	6.3
25-44 years	2,215	19.8	1,590	23.6	2,185	22.6	1,255	19.3	2,215	18.9	1,375	23.2	10,835	20.9
45-54 years	2,095	18.8	1,030	15.3	1,510	15.7	1,060	16.3	2,150	18.3	935	15.7	8,780	17.0

Table 5.4.1-2: Age Profiles (2006) (continued)

Category	Municipality of Kincardine		Regional Study Area Municipalities										Total	
			Arran-Elderslie		Brockton		Huron-Kinloss		Saugeen Shores		South Bruce			
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
55-64 years	1,770	15.8	915	13.6	1,310	13.6	985	15.1	1,940	16.6	655	11.0	7,575	14.6
65+ years	1,940	17.4	1,040	15.4	1,575	16.3	1,160	17.8	2,280	19.5	810	13.6	8,805	17.0
Total	11,170	100	6,745	100	9,640	100	6,515	100	11,720	100	5,940	100	51,730	100

Note: Numbers may not appear to add up to totals due to rounding of numbers that Statistics Canada applied to the data to protect the confidentiality of individual respondents.

Source: [30;31;32;33;34;35]

Table 5.4.1-3: Family by Size (2006)

Category	Municipality of Kincardine		Regional Study Area Municipalities										Total	
			Arran-Elderslie		Brockton		Huron-Kinloss		Saugeen Shores		South Bruce			
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
2 people	1,900	56.6	985	50.3	1,370	49.5	1,005	53.7	2,045	57.2	720	43.4	8,025	52.8
3 people	570	17.0	390	19.9	520	18.8	295	15.8	605	16.9	305	18.4	2,685	17.7
4-5 people	600	17.9	345	17.6	550	19.9	330	17.6	645	18	335	20.2	2,805	18.5
6 or more people	280	8.3	240	12.2	320	11.6	245	13.1	270	7.6	295	17.8	1,650	10.9
Total	3,355	100	1,960	100	2,765	100	1,870	100	3,575	100	1,660	100	15,185	100

Note: Numbers may not appear to add up to totals because of rounding.

Source: [58]

Table 5.4.1-4: Private Household by Size (2006)

Category	Municipality of Kincardine		Regional Study Area Municipalities										Total	
			Arran-Elderslie		Brockton		Huron-Kinloss		Saugeen Shores		South Bruce			
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
1 person	1,160	25.3	605	23.2	925	24.7	560	22.7	1,285	26.1	450	20.9	4,985	24.3
2 people	1,870	40.8	985	37.7	1,360	36.4	1015	41.1	2,035	41.3	755	35	8,020	39.2
3 people	615	13.4	410	15.7	540	14.4	305	12.3	655	13.3	300	13.9	2,825	13.8
4-5 people	850	18.5	515	19.7	830	22.2	485	19.6	885	18	545	25.3	4,110	20.1
6 or more people	95	2.1	95	3.6	90	2.4	110	4.5	70	1.4	105	4.9	565	2.8
Total	4,585	100	2,610	100	3,740	100	2,470	100	4,925	100	2,155	100	20,485	100

Note: Numbers may not appear to add up to totals because of rounding.

Source: [58]

Table 5.4.1-5: Selected Household Characteristics (2006)

Category	Municipality of Kincardine		Regional Study Area Municipalities					Total
			Arran-Elderslie	Brockton	Huron-Kinloss	Saugeen Shores	South Bruce	
	#	#	#	#	#	#	#	
Population in Private Households	10,990	6,655	9,420	6,365	11,505	5,930	50,865	
Total Private Households	4,585	2,610	3,740	2,470	4,925	2,155	20,485	
Average Number of People per Households	2.40	2.55	2.52	2.58	2.34	2.75	2.48	

Source: [58]

5.4.2 Other Human Assets

5.4.2.1 Skills and Labour Supply

The skills and labour force available in a community (i.e., labour supply) are considered to be human assets and important determinants of community well-being. Skills and labour supply directly affect the financial assets of a community as they influence the proportion of the project's and overall community's labour needs that can be met locally and hence the potential for individuals and households to realize employment and income benefits. The amount of a project's labour requirements that can be met locally determines the potential for in-migration. In-migration can affect some of the physical assets in a community (i.e., housing, transportation infrastructure). The amount of in-migration may also indirectly influence the availability and/or the quality of other human assets in a community (i.e., education, health and safety facilities and services and social services). In-migration may increase the demand on a recreational facility, for example, limiting access for others in the community given a limited capacity for the facility. On the other hand, the increase in numbers may be sufficient to warrant a greater variety of opportunities at the facility thereby increasing the quality of recreation opportunities.

According to the 2006 Census data [30;31;32;33;34;35], an experienced labour force of 27,845 individuals resided in the Municipality of Kincardine and neighbouring municipalities. The experienced labour force distribution within the study areas is presented in Table 5.4.2-1.

Table 5.4.2-1 shows that 62.4% of the experienced labour force in the Local and Regional Study Areas was located in three municipalities (Saugeen Shores, Kincardine and Brockton), with 21.3% of the total in the Municipality of Kincardine itself. Across all study area municipalities, five industrial categories accounted for over 70% of the labour force (Table 5.4.2-2). The labour force distribution by industrial category indicates that the top categories are: manufacturing and construction; utilities; wholesale and retail; health care and education; and business services.

Table 5.4.2-1: Experienced Labour Force Distribution (2006)

Municipalities	Employees	% of Total
Kincardine	5,935	21.3
Arran-Elderslie	3,490	12.5
Brockton	5,300	19.0
Huron-Kinloss	3,385	12.2
Saugeen Shores	6,150	22.1
South Bruce	3,585	12.9
Total	27,845	100

Source: [30;31;32;33;34;35]

Selected occupational categories particularly relevant to the DGR Project skills and labour requirements are noted in Table 5.4.2-3.

Table 5.4.2-2: Labour Force Distribution by Industrial Category (2006)

Industrial Category	Municipality of Kincardine		Regional Study Area Municipalities										Total	
			Arran-Elderslie		Brockton		Huron-Kinloss		Saugeen Shores		South Bruce			
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Agriculture, forestry, fishing and hunting, mining and oil and gas extraction	465	8	515	15	580	11	555	16	135	2	630	18	2,880	10
Utilities	1,515	26	270	8	305	6	425	13	1,605	26	95	3	4,215	15
Manufacturing and Construction Industries	485	8	720	21	1,190	22	545	16	550	9	1,010	28	4,500	16
Wholesale and Retail Trade	845	14	475	14	890	17	435	13	880	14	525	15	4,050	15
Finance and Real Estate	130	2	85	2	160	3	60	2	175	3	110	3	720	3
Business Services	700	12	345	10	535	10	345	10	710	12	305	9	2,940	11
Health Care and Education	700	12	530	15	850	16	480	14	990	16	465	13	4,015	14
Accommodation and Food Services	525	9	175	5	240	5	240	7	530	9	235	7	1,945	7
Other Services	570	10	375	11	550	10	300	9	575	9	210	6	2,580	9
Total	5,935	100	3,490	100	5,300	100	3,385	100	6,150	100	3,585	100	27,845	100

Note: The numbers in the above table are correct; however, may not appear to add up to 100 due to rounding.

Source: [30;31;32;33;34;35]

Table 5.4.2-3: Labour Force Distribution by Selected Occupation Category (2006)

Category	Municipality of Kincardine		Regional Study Area Municipalities										Total	
			Arran-Elderslie		Brockton		Huron-Kinloss		Saugeen Shores		South Bruce			
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Total labour force 15 years and over by occupation	5,930	100	3,490	100	5,300	100	3,385	100	6,150	100	3,580	100	13,415	100
<i>H. Trades, transport and equipment operators and related occupations</i>														
H0. Contractors and supervisors in trades and transportation	45	0.8	30	0.9	75	1.4	35	1.0	30	0.5	30	0.8	97	0.7
H1. Construction trades	120	2.0	95	2.7	175	3.3	140	4.1	160	2.6	120	3.4	430	3.2
H2. Stationary engineers, power station operators and electrical trades and telecommunications occupations	350	5.9	115	3.3	120	2.3	120	3.5	385	6.3	45	1.3	561	4.2
H3. Machinists, metal forming, shaping and erecting occupations	65	1.1	45	1.3	25	0.5	75	2.2	80	1.3	55	1.5	215	1.6
H4 Mechanics	190	3.2	155	4.4	165	3.1	70	2.1	90	1.5	140	3.9	307	2.3
H5. Other trades, not elsewhere classified	55	0.9	30	0.9	35	0.7	0	0.0	45	0.7	50	1.4	97	0.7
H6. Heavy equipment and crane operators, including drillers	35	0.6	50	1.4	55	1.0	25	0.7	40	0.7	45	1.3	113	0.8
H7. Transportation equipment operators and related workers, excluding labourers	220	3.7	180	5.2	195	3.7	110	3.2	200	3.3	160	4.5	481	3.6
H8. Trades helpers, construction and transportation labourers and related occupations	120	2.0	85	2.4	210	4.0	70	2.1	150	2.4	110	3.1	338	2.5

Table 5.4.2-3: Labour Force Distribution by Selected Occupation Category (2006) (continued)

Category	Municipality of Kincardine		Regional Study Area Municipalities										Total	
			Arran-Elderslie		Brockton		Huron-Kinloss		Saugeen Shores		South Bruce			
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
<i>J. Occupations unique to processing, manufacturing and utilities</i>														
J0. Supervisors in manufacturing	105	1.8	20	0.6	25	0.5	10	0.3	75	1.2	30	0.8	117	0.9
J1. Machine operators in manufacturing	65	1.1	75	2.1	120	2.3	50	1.5	75	1.2	120	3.4	251	1.9
J2. Assemblers in manufacturing	40	0.7	85	2.4	215	4.1	35	1.0	35	0.6	135	3.8	210	1.6
J3. Labourers in processing, manufacturing and utilities	30	0.5	40	1.1	170	3.2	90	2.7	20	0.3	140	3.9	257	1.9
Selected Occupations (Groups H & J) Total	1,440	24.3	1,005	28.8	1,585	29.9	830	24.5	1,385	22.5	1,180	33.0	3,475	25.9

Note: The numbers in the above table are correct; however, they may not appear to add up due to rounding.

Source: [30;31;32;33;34;35]

5.4.2.2 Education

Education may be defined as the transmission of knowledge by either formal or informal means. Education directly affects a community's well-being by determining the skills and knowledge inherent in a community. To an individual, family or household, education provides the academic or vocational requirements for self-development and potential employment.

The Local and Regional Study Areas are served by two school boards that provide services across Bruce and Grey Counties. The boards provide both elementary and secondary school services.

The Bluewater District School Board is the Public School Board, and it operates 15 elementary and four secondary schools in the Local and Regional Study Areas [59;60]. The Bruce-Grey Catholic District School Board is the Separate School Board, and it operates seven elementary schools in the Local and Regional Study Areas and one secondary school in the Regional Study Area [61;62].

Area schools in closest proximity to the Bruce nuclear site are located in Kincardine and Port Elgin (see Figure 5.4.2-1) with the Kincardine Township Tiverton Public School being in closest proximity to the Bruce nuclear site, at 15 km. Details regarding enrolment, programs offered and school capacities for these schools are shown in Table 5.4.2-4.

Table 5.4.2-4: Student Enrolment and School Capacity for Kincardine and Port Elgin Area Schools (2010)

School Name	Location	School Board	Program Offered	# of Students	Capacity of School
Elgin Market Public School	Kincardine	Bluewater District	JK-Grade 3 FI	212	225
G.C. Huston Public School	Southampton	Bluewater District	JK-Grade 8 NSL	135	420
Huron Heights Public School	Kincardine	Bluewater District	Grades 4-8	244	402
Kincardine District Secondary School	Kincardine	Bluewater District	Grades 9-12 NSL	674	714
Kincardine Township Tiverton Public School	Kincardine	Bluewater District	JK-Grade 8	197	317
École Saugeen District Secondary School	Port Elgin	Bluewater District	Grades 9-12	659	954
Northport Elementary School	Port Elgin	Bluewater District	JK-Grade 8	299	372
Port Elgin–Saugeen Central School	Port Elgin	Bluewater District	JK-Grade 8 FI	527	647

Table 5.4.2-4: Student Enrolment and School Capacity for Kincardine and Port Elgin Area Schools (2010) (continued)

School Name	Location	School Board	Program Offered	# of Students	Capacity of School
St. Anthony's School	Kincardine	Bruce-Grey Catholic	JK-Grade 8 FI	268	325
St. Joseph's School	Port Elgin	Bruce-Grey Catholic	JK-Grade 8 FI, NSL	219	250

Note: FI = French Immersion

NSL = Native Second Language

Source: [63;64]

The data presented in Table 5.4.2-4 and interviews with officials from the Grey-Bruce Catholic and Bluewater District School Boards indicate that there is adequate school capacity in the Local Study Area to accommodate population growth in the community [63;64].

Interviews with individual schools in the Local Study Area indicate that local schools play an important role in the community. School facilities (e.g., pools, sports fields, gyms) are used for co-curricular and extra-curricular activities, including outdoor education and first aid classes, night school, driver's education, blood donor clinics and community group meetings such as sports clubs and cadets.

Stakeholder interviews with representatives of local schools and school boards also indicated they have highly valued and mutually beneficial relationships with the various companies operating at the Bruce nuclear site. Schools also participate in programs delivered at the Bruce nuclear site, such as co-operative student work placements, the Discover Energized Environmental Resources (DEER) program and various sponsored activities and events. An individual from a school located in Kincardine offered an opinion that many students at that school have one parent or more working at the Bruce nuclear site, illustrating the close relationship between the nuclear site's operations and local schools.

Post-secondary education for residents in the Local and Regional Study Areas is provided by a number of post-secondary institutions located outside the study areas within a 1 to 2.5-hour drive of communities in Bruce County [65]. The closest facility, Georgian College of Applied Arts and Technology Owen Sound campus, offers a wide selection of educational options including full and part-time studies, course upgrading, and a Continuous Learning Program, which offers night courses in a variety of disciplines.

The Bruce Power Learning Centre, located at the Bruce nuclear site, offers training to Bruce Power staff in the operation, maintenance and safety aspects of CANDU[®] reactors. It is one of two nuclear training facilities in Ontario. This centre is staffed by 150 training experts and support personnel. The facility has two full-size nuclear power plant simulators and a safety and fire training complex, which provides safety and emergency response training [65]. The nearby Bruce Technology Skills Training Centre in Tiverton, which is owned, managed and operated by the Power Workers' Union, provides training facilities to Bruce Power for skills training of new employees. Programs include training for operators and an apprenticeship program for trades personnel. The apprenticeship program is approved by the Ontario Ministry of Trades, Colleges and Universities [66;67].

The Canadian Auto Workers (CAW) Family Education Centre is located near Port Elgin. The centre hosts CAW education and conference events and its facilities are also available to non-CAW groups and associations [68].

5.4.2.3 Health and Safety Facilities and Services

The key health and safety assets of a community include health care services, policing, fire services and emergency preparedness services. To an individual, family or household, these services play a crucial role in maintaining feelings of health and a sense of safety on a daily basis and during crisis situations, thus affecting satisfaction with the community.

Health Care Services

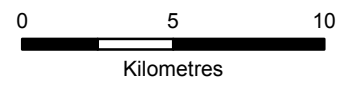
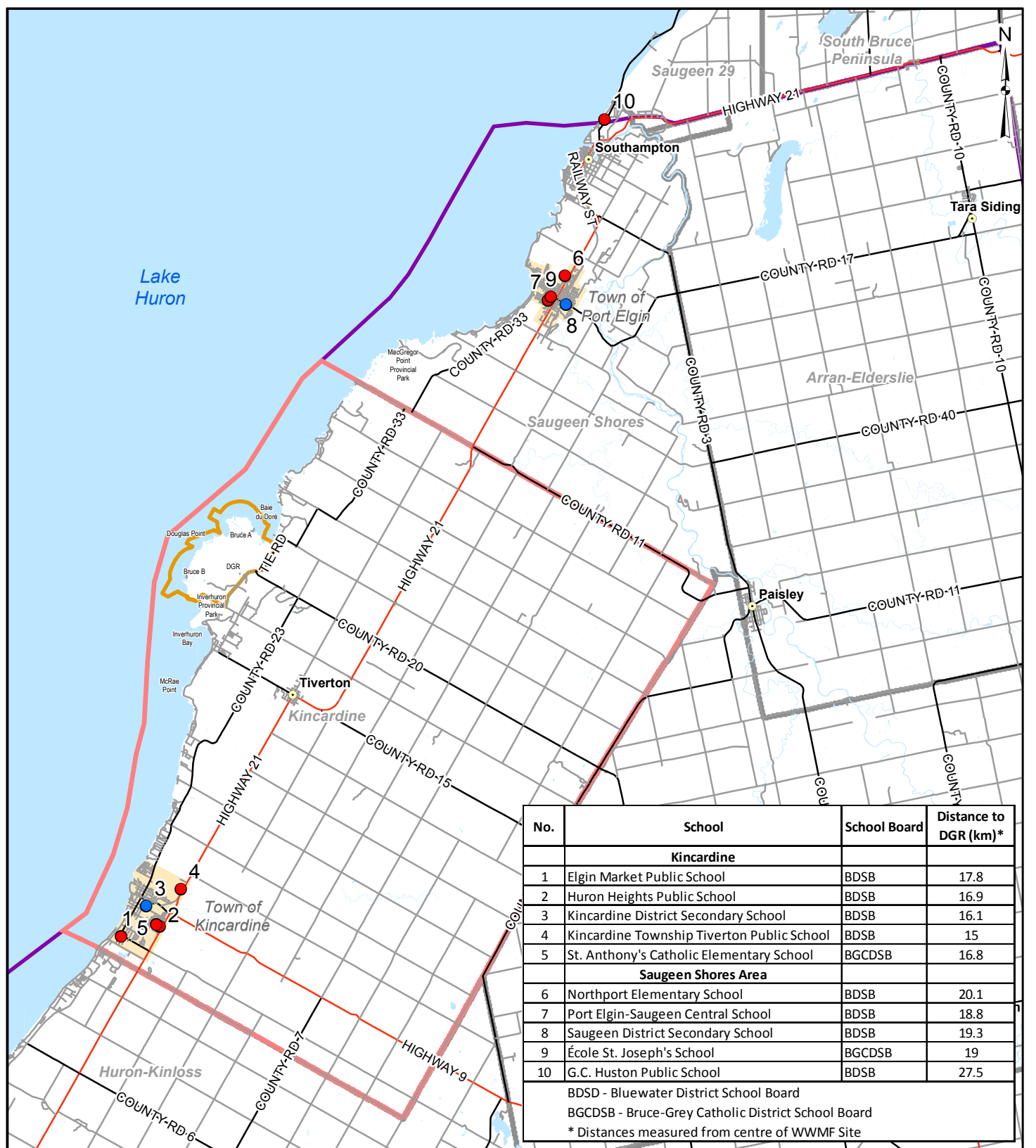
Across Ontario, there are 14 Local Health Integration Networks (LHINs). LHINs were created by the Province to provide efficient and effective health care services to Ontarians on a regional basis [69]. Residents in the Local and Regional Study Areas are served by the Southwest LHIN, which includes 227 service providers. Services include Community Care Access Centres, community support services, hospitals, long term care homes, mental health services and addiction services [70].

Within the Southwest LHIN, the Local and Regional Study Areas are served by Grey Bruce Health Services (GBHS) and South Bruce Grey Health Centre (SBGHC). The SBGHC has two hospitals located in Walkerton and Chesley and one located in Kincardine [71]. The GBHS network has one rural hospital located in Southampton.

The Kincardine Hospital provides in-patient and out-patient services with a 36-bed capacity [72]. The facility includes an operating room, an intensive/coronary-care unit, a 24-hour emergency department, a comprehensive specialist clinic and a range of diagnostic imaging services. The Kincardine Hospital also provides palliative and pastoral care as well as a range of preventive and rehabilitative educational services. The GBHS-Southampton site provides health care services to Saugeen Shores and surrounding area. The hospital employs 105 GBHS staff and accommodates 16 in-patient beds with many other out-patient services including a women's health clinic [73]. These hospitals experience a large increase in demand for its emergency services each summer because of the influx of visitors to the Lake Huron shoreline. Interviews with representatives of both the Kincardine and Southampton Hospitals indicate that a lack of human resources is one of the key issues facing each organization.

In 2003, a report by the District Health Council concluded that the Counties of Grey and Bruce required another 94 doctors in order to meet the Ontario average doctor to patient ratio [74]. Also in 2003, the Municipality of Kincardine built a medical clinic adjacent to the Kincardine hospital for local doctors [75]. The clinic houses family practices, a retail pharmacy and a blood services and diagnostic laboratory and has been instrumental in attracting new physicians to the area. Currently, nine family doctors work from this location [76]. In addition to this clinic, Kincardine has a holistic health clinic, dental offices, optometrists and an ambulance service.

There are two community-based medical clinics in Saugeen Shores (located in the Regional Study Area). The Saugeen Shores Medical Building in Southampton houses six doctors and one nurse practitioner, and the Dr. Earl Health Centre in Port Elgin has six family physicians on-site [77].



LEGEND

- Site Study Area ¹
- Local Study Area
- Regional Study Area
- Municipal Boundary
- Local Schools - Elementary
- Local Schools - Secondary

NOTES

1. Site Study Area is defined by EIS Guidelines as: "includes the facilities, buildings and infrastructure at the Bruce nuclear site, including the existing licensed exclusion zone for the site on land and within Lake Huron, and particularly the property where the Deep Geologic Repository is proposed."

REFERENCE

Base Data Provided by 4DM, November 2007.
 Imagery and Topo Collected and Processed by Terrapoint Canada Inc.,
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PROJECT: SOCIO-ECONOMIC ENVIRONMENT TECHNICAL SUPPORT DOCUMENT

TITLE: **SCHOOLS IN CLOSE PROXIMITY TO BRUCE NUCLEAR SITE**

PROJECT NO. 06-1112-037 SCALE: AS SHOWN R000

DESIGN ASB 17 Oct 2007

GIS BC 26 May, 2010

CHECK AB 26 May, 2010

REVIEW MAR 26 May, 2010

FIGURE 5.4.2-1

Goldier Associates
 Mississauga, Ontario

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Bruce County Emergency Medical Services (EMS) delivers emergency and pre-hospital care to citizens of the Regional and Local Study Areas. Bruce County EMS manages six stations, including Walkerton, Chesley, Kincardine and Port Elgin stations situated in the Local and Regional Study Areas. The Bruce County EMS operates with a staff of 100 paramedics, a fleet of 12 ambulances and a supervisor unit [78].

Police Services

The South Bruce Detachment of the Ontario Provincial Police (OPP) provides policing service across most of Bruce County. This Detachment contributes to the overall well-being of the communities they serve by providing frontline emergency services, education, public safety and community awareness programs. Through their partnership with the Bruce nuclear site, they have created formal measures for security and emergency management.

The Detachment has two stations: one in Walkerton and one in Kincardine. The Walkerton station is located in the Regional Study Area, serving the municipalities of Brockton and South Bruce. The Kincardine Station is located in the Local Study Area and serves the municipalities of Arran-Elderslie, Kincardine and the Township of Huron-Kinloss. A new building was opened in Kincardine in 2008.

The Detachment employs 55 constables, seven sergeants, one staff sergeant, one inspector, as well as seven part-time court security officers and an administrative staff of five. The South Bruce Detachment services approximately 35,000 people in the winter and 60,000 people in the summer months. The Detachment's Marine Unit has six trained launch operators and the unit is responsible for patrolling Lake Huron from Goderich to Tobermory. The unit responds to boaters in distress as well as enforcing liquor laws, the Criminal Code and the Small Vessel Regulations of the *Canada Shipping Act*. In 2008, the South Bruce detachment investigated a total of 829 motor vehicle collisions and 639 property crimes [79].

The Town of Saugeen Shores is served by the Saugeen Shores Police Service. The Service has 21 full-time officers, three part time officers, three auxiliary officers and three fulltime civilians [80]. Interviews with police services representatives did not reveal any current capacity or service issues.

The OPP has a liaison officer who participates in the development and maintenance of emergency preparedness plans. Bruce Power has on-site resources that are responsible for access control and security at the Bruce nuclear site, and the OPP supports Bruce Power security staff when requested. Bruce Power, OPG and the Saugeen Shores Police Department co-operate regarding security training and occasionally share equipment and other resources.

Fire Protection Services

Fire protection services in the Local and Regional Study Areas are provided by nine Fire Departments. The locations of fire stations in the Regional and Local Study Areas are listed in Table 5.4.2-5.

Within the Local Study Area, the Kincardine Fire Department operates two fire stations, one in Kincardine and the other in Tiverton. The Kincardine location is staffed by 26 firefighters, including 24 volunteer firefighters and two full-time staff. Tiverton is staffed by 22 volunteer

firefighters and one full-time staff [81]. The department is responsible for fire rescue and response, search and rescue, structural rescue, car accidents, industrial accidents, confined space entrapment, high angle rescue, wind turbine assistance, ice water rescue, aerial fire response, medical first response, public education, hall tours, fire prevention and 911 responses. The department is also responsible for co-ordinating the implementation of the Emergency Management Plan, which is described further in the following section on emergency preparedness.

Table 5.4.2-5: Location of Fire Stations in the Local and Regional Study Areas

Municipality	Name of Fire Department	Location of Fire Stations
Kincardine	Kincardine Fire Department	Kincardine Tiverton
Arran-Elderslie	Chesley & Area Fire Department Paisley & Area Fire Department Tara-Arran Fire Department	Chesley Paisley Tara
Brockton	Walkerton Fire Department	Walkerton
Huron-Kinloss	Lucknow & District Fire Department Ripley-Huron Fire Department	Lucknow Ripley
Saugeen Shores	Saugeen Shores Fire Department	Southampton Port Elgin
South Bruce	South Bruce Fire Department	Mildmay Teeswater

Source: [82;83;84;85;86;87].

Bruce Power's on-site emergency response includes fire response resources. Interviews with fire department representatives indicated that Bruce Power and OPG work co-operatively with the departments through shared fire/emergency drills, mutual aid, public education and the supply of equipment and other resources. Bruce Power also provides program training to local fire departments as they are first responders off-site. A large proportion of the community volunteer firefighters (estimated at about 75%) also work at the Bruce nuclear site, where many are career firefighters.

Emergency Preparedness

Emergency preparedness in Ontario is governed by the *Emergency Management and Civil Protection Act*. The Act sets out clear roles and responsibilities for all federal and Provincial ministers across the full spectrum of emergency management, including prevention/mitigation, preparedness, response and recovery, and critical infrastructure protection [88]. In accordance with this Act, all upper and lower tier municipalities in Ontario must have approved plans in place to deal with large-scale emergencies.

Kincardine has a detailed Emergency Response Plan in place. Emergency response plans exist for Bruce County and the following municipalities in the Regional Study Area: Brockton, Huron-Kinross, Saugeen Shores and South Bruce.

Emergency response planning for the unlikely event of an accident at the DGR Project that could affect people outside the Bruce nuclear site is the responsibility of a Provincial government agency, Emergency Management Ontario. Bruce Power and OPG work with Emergency Management Ontario and other local emergency responders to assist in the development and testing of emergency response plans [89].

It is the responsibility of all levels of government and the nuclear facility operators to respond to nuclear emergencies; however, in any nuclear emergency the Province will take the lead and issue direction for all off-site responses. The Province of Ontario, Provincial Nuclear Emergency Response Plan – Part I Master Plan [90] and Provincial Nuclear Emergency Response Plan – Part III Bruce Power Specific Emergency Plan [91] are the guiding documents that provide emergency orders to manage all off-site responses to nuclear incidences at the Bruce nuclear site. The Municipality of Kincardine’s Emergency Response Plan describes how the municipality will react to a nuclear emergency at the Bruce nuclear site at the municipal level, and how it will implement the Provincial directives [92].

Several facilities in the Local Study Area have emergency procedures as a result of the presence of the Bruce nuclear site. The Bluewater District School Board has a nuclear response plan that identifies all schools under its jurisdiction as short-term emergency response locations [93]. Kincardine District Secondary School, one school in this school board, has specialized details in their emergency plan and the staff attend emergency measures meetings.

The facilities noted in Table 5.4.2-6 have been identified for their short-term use in the event of a nuclear emergency at the Bruce nuclear site.

Table 5.4.2-6: Community Emergency Response Facilities

Facility Name	Location	Purpose/Use
Bluewater District School Board schools	All schools located in the Regional and Local Study Areas	Temporary evacuation sheltering
Davidson Centre	Kincardine	Primary Reception Centre
Port Elgin Arena	Port Elgin	Primary Reception Centre
Underwood Community Centre	Underwood	Field headquarters for monitoring
Tiverton Community Centre	Tiverton	Field headquarters for monitoring
Port Elgin Curling Club	Port Elgin	Field headquarters for monitoring
South Bruce Grey Health Centre – Kincardine Hospital	Kincardine	Decontamination Room

Source: [90;94;95]

5.4.2.4 Social Services

Social services are designed to assist families and individuals in the community to address social/family or individual needs such as unemployment, housing assistance and child care.

These services play an important role in the community by helping to maintain personal well-being. Within the Local and Regional Study Areas, private, not-for-profit and government providers supply many accessible social services. Social services available in Bruce County include long-term care facilities, social housing, affordable housing, child care services and the Ontario Works program.

Long-term Care Facilities

The Community Care Access Centres are connectors to home care, nursing, long-term care destinations and other services in the community [96]. Within the Regional Study Area, the Southwest Community Care Access Centre provides a listing of five long-term care facilities (Table 5.4.2-7).

Table 5.4.2-7: Long-term Care Facilities in the Regional Study Area

Facility Name	Location	Approximate Distance from Bruce Nuclear Site (km)	Capacity (# of beds)	Services Provided
Brucelea Haven Home for the Aged	Walkerton	51	144	Full range of personal care services; palliative and pastoral care
Elgin Abbey Nursing and Retirement Home	Chesley	50	27 long-term care 14 retirement beds	Nursing care 24 hour staff; personal care; medication administration; emergency response system; meals; housekeeping; social/recreation programs and basic foot care
Parkview Manor	Chesley	50	34	Light to heavy levels of long-term care
Pinecrest Manor Nursing Home	Lucknow	60	61	Light to heavy levels of long-term care
Southampton Care Centre	Southampton	26	88	24 hour nursing services; medical care; restorative care; physiotherapy

Source: [97;98;99]

Two other retirement facilities were identified in the Local Study Area. Trillium Court Seniors Community (approximately 22 km from the Bruce nuclear site) is a private retirement community located in Kincardine. It is licensed for 40 long-term care beds and 35 retirement beds and 26 seniors apartments [100]. Tiverton Park Manor (approximately 5 km from the Bruce nuclear site) is a full care 50 bed retirement home located in Tiverton [101].

Social Housing

Bruce County operates the Social Housing division, which is responsible for the funding and administration of the social housing programs [102]. The Bruce County Housing Corporation owns and manages approximately 605 units throughout the county and aims to provide safe, affordable and well maintained homes for residents.

Housing and support for adults with serious mental illness is provided by the Grey-Bruce Community Health Corporation, which is a non-profit charitable organization. Accommodation for up to 16 adults is available as well as rent subsidies to enable up to 49 individuals who are at risk for homelessness in the community [103].

Affordable Housing

To address local affordable housing needs, Bruce County has actively participated in a number of initiatives in recent years to plan for and develop new affordable rental and ownership housing. The Bruce County Long Term Housing Strategy [104] was approved on September 16, 2010. This current strategy sets affordable housing targets for the next 10 years. Several strategic actions are identified to create 335 new affordable housing units in Kincardine and Saugeen Shores, and 25 units in the remaining four municipalities of the Regional Study Area.

Initiatives to increase the stock are ongoing. In particular, under the Canada-Ontario Affordable Housing Program, a total of 35 additional affordable rental housing units were to have been available in municipalities of Bruce County by the end of 2010 [105].

Child Care Services

Bruce County provides several child services programs to provide assistance for families in need. Children First for Bruce County, a division of Bruce County Social Services, is responsible for a range of programs [106].

Licensed child care services are available in the Regional Study Area for Arran-Elderslie, Brockton, South Bruce, Huron-Kinloss and Saugeen Shores. Types of services range from general child and early care services, nursery and pre-schools, and before and after school programs [107]. Within the Local Study Area, there are a total of four licensed child care service providers, within a range of capacity from 16 to 64 children [107].

Ontario Works Program

Ontario Works is an initiative that the Ontario Government designed to help social assistance recipients become job ready and re-enter the workforce. Bruce County Ontario Works provides access to programs through two resource centres located in the Regional Study Area (Walkerton and Port Elgin) and one in Kincardine [108].

5.5 FINANCIAL ASSETS

Financial assets consider opportunities for employment and participation in the economic life of the community, including the monetary or financial resources that people and municipalities use to achieve their economic objectives. Financial assets are key determinants of a community's overall economic vitality. For the purposes of this socio-economic assessment, the VECs that are considered within the financial assets component of the framework include:

- Employment;
- Business Activity;
- Tourism;
- Residential Property Values;
- Municipal Finance and Administration; and
- Other Financial Assets, including:
 - income;
 - renewable and non-renewable resource use;
 - agriculture; and
 - economic development services.

5.5.1 Employment

Employment is a key financial asset of any community as it determines the participation of residents in its economic life. As such, employment is a major determinant of overall community well-being. To individuals, families or households, employment provides quality of life, a sense of personal security and has a symbolic value which contributes to a person's self-image and status within a community. To the municipality, community or region, employment influences its human, physical and social assets. For example, employment opportunities influence the way a community, municipality or region is perceived, that is, its attractiveness as a place to live. As such, the availability of employment opportunities ultimately affects population levels (human assets), housing, community infrastructure and community services (physical assets), which are major determinants of community character and cohesion (social assets).

Current and historic employment levels within the Local and Regional Study Areas are presented in Table 5.5.1-1. From 2001 to 2006, employment in Kincardine increased by 4.9%. Across the combined Local and Regional Study Areas the increase in employment was 3.4% over this period. The highest increase in employment was in the Township of Huron-Kinloss, at 9.5%.

In 2009, employment at the Bruce nuclear site included approximately 4,000 Bruce Power employees, 400 refurbishment contractors (Units 1 & 2), 183 OPG employees at the WWMF and 123 AECL employees.

It is expected that the place of residence for these employees will be similar to that of Bruce Power employees. Based on information from a 2005 analysis of worker residence locations, it is expected that most of the Bruce Power workforce (90%) resides within Bruce County. Within Bruce County, more than 75% of Bruce Power employees reside either in the Municipality of Kincardine or Saugeen Shores. The Municipality of Kincardine accounts for 40% of all Bruce Power employees and Saugeen Shores for 35% [89].

Table 5.5.1-1: Employment – Local and Regional Study Area (2001 to 2006)

Year	Municipality of Kincardine		Regional Study Area Municipalities										Total	
			Arran-Elderslie		Brockton		Huron-Kinloss		Saugeen Shores		South Bruce			
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
2001	5,460	21.1	3,260	12.6	5,070	19.6	3,000	11.6	5,720	22.1	3,370	13.0	25,880	100
2006	5,725	21.4	3,350	12.5	5,105	19.1	3,285	12.3	5,820	21.7	3,475	13.0	26,760	100
2001-2006 Change (%)	4.9		2.8		0.7		9.5		1.7		3.1		3.4	

Source: [24;25;26;27;28;29;30;31;32;33;34;35]

5.5.2 Business Activity

Business activity is an important financial asset of any community. To individuals, families or households, business activity generates the employment opportunities and income that people use to achieve their personal financial objectives, which define their style and quality of life. To the municipality, community or region, the level of business activity also influences human, physical and social assets. For example, the level of business activity (including the availability of places to conduct business or to go shopping) influences the way a municipality, community or region is perceived, that is, its attractiveness as a place to live or conduct business.

The primary components of the Local and Regional Study Areas' economies include agriculture, tourism, the Bruce nuclear site and industrial and commercial businesses, including retail and service activity, businesses associated with the Bruce ECO-Industrial Park and wind energy developments. The tourism and agriculture sectors are discussed in detail in Sections 5.5.3 and 5.5.6.3, respectively. Bruce County has a thriving retail and service industry. Its small manufacturing sector, located in the southern portion of the County, is far less developed than in other counties in southwest Ontario, where there is a greater concentration of manufacturers.

Based on information provided by the Economic Development Office in Kincardine, the largest non-nuclear industry employers in the Local Study Area are outlined in Table 5.5.2-1.

Table 5.5.2-1: Largest Non-nuclear Industry Employers in the Local Study Area (2010)

Employer	# of Employees
Municipality of Kincardine	164
Kincardine Hospital ^a	130
Sobey's	125
Brucetelecom	105
Trillium Court	80
Superheat Industries	75

Note:

a 2009 data.

Source: [109]

5.5.2.1 Nuclear Industry

The Bruce nuclear site (formerly known as the Bruce Nuclear Power Development) is one of the largest centres of energy production in the world. Currently, several companies have operations on the site:

- Bruce Power operates the Bruce A and Bruce B generating stations and several support facilities;
- OPG operates the WWMF;
- AECL maintains the Douglas Point Nuclear Generating Station (DPNGS); and
- Hydro One operates transmission facilities on the site.

Bruce Power sells the power generated at the site as a product of their operations. AECL, Hydro One and OPG do not generate any revenue from their operations on-site.

The use of the Bruce nuclear site began in the late 1960s with the DPNGS, which is now in a safe storage state prior to decommissioning. Construction of the Bruce A and Bruce B generating stations occurred throughout the 1970s and early 1980s. During this period, a large workforce migrated to, and became residents of Bruce County. In 1983, at the height of construction, the on-site workforce was approximately 7,100 people. Payroll spending and the direct purchases of equipment and supplies resulted in site operations dominating local employment and business activity. Since then, major construction activity has declined and operational employment has varied over the years. Although the Bruce nuclear site's dominance of the local economy has also declined, the operations at the Bruce nuclear site remain the major economic influence in the area.

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 nuclear site. In 2001, Bruce Power leased the Bruce A and Bruce B nuclear generating stations from OPG and continued their operation. At the time of writing, four units (Units 5-8) are operating at Bruce B and two units at Bruce A (Units 1&2) are undergoing refurbishment. The other two units at Bruce A (Units 3&4) are operating and approval is in place for future refurbishment.

OPG currently operates the WWMF at the Bruce nuclear site. The WWMF stores all the low and intermediate level nuclear waste from the operation of OPG's 20 nuclear reactors, including those leased to Bruce Power. In addition, the facility provides dry used fuel storage for the Bruce nuclear site reactors.

Bruce Power and OPG issue contracts to businesses across Canada and internationally for a wide variety of goods and services for the Bruce nuclear site facilities. During stakeholder interviews conducted for this assessment, a majority of local business operators credited the operations undertaken at the Bruce nuclear site for contributing positively to local economic stability and growth, largely in terms of employment and the spin-offs associated with employee spending. A few indicated that adverse effects on the local economy were evident after the Bruce A station was laid-up in 1998 and some indicated that the "boom and bust" cycle associated with the Bruce nuclear site has made it difficult to plan for the future. Others indicated a need for the economy to be more diversified to avoid complete dependency on the jobs generated by the presence of the Bruce nuclear site.

Despite the presence of Bruce Power, OPG and AECL, Bruce County does not have a well developed nuclear service industry. Historically, most of the nuclear service industry in Canada has been located outside of Bruce County (e.g., City of Toronto, Niagara Falls, Cambridge and London). In addition, while OPG, Hydro One and AECL have local offices in the area and employ local residents, each of these operate mainly from their Toronto-area headquarters. Consequently, a large proportion of revenues derived from the Bruce nuclear site benefits employers who are located outside the County.

5.5.2.2 Other Industry

One of the major industrial developments within Bruce County is the Bruce ECO-Industrial Park. This is a 485 ha serviced industrial park located immediately southeast of the Bruce nuclear

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. At the time of writing, there is one established business at the Bruce ECO-Industrial Park — a dehydration plant. The Bruce Technology Skills Training Centre is also located at the Park.

The wind energy industry has grown substantially in the Local and Regional Study Areas. The Municipality of Kincardine Official Plan supports the development of wind energy facilities as a source of renewable energy. Large local projects include Enbridge Ontario Wind Farm in Kincardine (182 MW) and Ripley Wind (76 MW). A third large local project is the Knightsbridge Wind I & II (39.6 MW) in Goderich, just outside the Regional Study Area. Each of these large projects employed 70 to 150 people during construction [110].

5.5.3 Tourism

Tourism can be an important financial asset of a community. Unlike production endeavours, tourism requires that non-local people use local resources for the purposes of recreation or leisure. Tourism is highly dependent on the character or image of an area to attract and retain visitors and generate tourist spending. To residents, the tourism industry can provide employment and a source of income. To the communities and municipalities in the Local and Regional Study Areas, tourism plays a major role in their well-being by providing a source of permanent and seasonal employment, contributing to local and regional business activity and the tax base. Tourism can affect the social assets of a community, often being a source of pride for a community, shaping its self-image. The tourism industry is one of the most important sectors of the economy in the Local and Regional Study Areas. The Lake Huron shoreline area is recognized for its diverse natural beauty with over 2,400 km of Canadian mainland shoreline. The Saugeen River and many other inland lakes and rivers also provide natural attractions that support tourism.

In 2008, Bruce County attracted over 1.2 million visitors from Canada, United States and overseas, who spent over \$145.1 Million in Bruce County on tourism-related expenditures including food and beverages, accommodation, transportation, retail and entertainment [48]. This activity is down somewhat from 2007 levels where visits to the County reached 1.3 million and spending during the year was over \$187.8 Million [47].

Latest available data (2007) indicates that visitors' spending in 2007 generated approximately \$120.5 Million in direct, indirect and induced contributions to Gross Domestic Product (GDP) in Bruce County, approximately \$72.8 Million in labour income and salaries, and supported 2,161 part-time, full-time and seasonal jobs that year [47]. With the decline in visits and visitors' spending from 2007 to 2008, it is anticipated that the tourism contribution to the County in 2008 also declined from the previous year.

Overall, the tourism industry directly employs one in seven people [111]. Taxes generated for all levels of government from tourism activity in 2007 (the latest available data) amounted to approximately \$69.8 Million, including \$5.5 Million in municipal taxes that accrued to Bruce County [47].

Participants in a "tourism round table" conducted in 2003 described Kincardine and vicinity as an "undiscovered" area for tourism [112]. 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.

Work is underway in Bruce County to develop its capacity to further meet the potential market needs and opportunities such that tourism is central to the economic development strategy of the Bruce County economy. This project is guided by a vision of success where tourism growth in Bruce County will grow based on building community capacity for sustainable, environmentally responsible and enriched experiences for visitors and residents [113].

As shown in Table 5.5.3-1, the major types of tourist establishments in Bruce County include retail stores (42%), food and beverage establishments (16%) and accommodation (12%). The Lake Huron shoreline area also includes several arts, entertainment and recreation facilities (8%) and a large artisan community, from theatre to visual arts. The majority of theatre, art and entertainment opportunities are centralized in Southampton. The Bluewater Summer Playhouse located in Kincardine presents professional performances for the public from June through September.

Table 5.5.3-1: Bruce County Tourism Establishments by Major Categories (2008)

Type of Establishment	Number	% of Total
Accommodation	114	12%
Arts, Entertainment & Recreation	79	8%
Food & Beverage	153	16%
Transportation	25	3%
Travel Services	8	1%
Retail	396	42%
Other Services	161	17%
Total	936	100%

Note: Numbers may not appear to add up to 100% because of rounding

Source: [48]

Table 5.5.3-2 identifies the stock of tourism accommodation in Bruce County by type of establishment as documented in the 2008 Ontario Tourism Bruce County Profile [48]. In terms of accommodation, the existing stock consists largely of RV parks and campgrounds (29%), motels (29%), and hotels (9%). Bed and Breakfast establishments and housekeeping cottages and cabins are also important contributors at 9% and 11%, respectively.

While the Ontario Tourism Bruce County Profile provides tourism accommodation data that has been collected in a consistent manner for several years, it is noteworthy that other tourism data sources indicate that there are likely to be more tourism establishments in Bruce County than what is reflected in the profile. For example, Tourism Kincardine indicated that eight Bed and Breakfast establishments are located in or near the community [114] and a 2010 guide to Bed and Breakfast accommodation in Ontario lists 13 Bed and Breakfast establishments in this area [115]. This is an indication of the dynamic nature of the tourism industry in the Local and Regional Study Areas, and the data presented in Table 5.5.3-2 should be viewed in this context.

Table 5.5.3-2: Bruce County Tourism Accommodation Establishments (2008)

Type of Establishment	Number	% of Total
Hotels	10	9%
Motor Hotels	7	6%
Resorts	4	4%
Motels	33	29%
Bed and Breakfast	10	9%
Housekeeping Cottages and Cabins	12	11%
All Other Traveller Accommodation	1	1%
RV (Recreational Vehicle) Parks and Campgrounds	33	29%
Hunting and Fishing Camps	1	1%
Recreational (except Hunting and Fishing) and Vacation Camps	3	3%
Total Accommodation Establishments	114	100%

Note: Numbers may not appear to add up to 100% because of rounding.

Source: [48]

In 2008, 40% of all visits were same day visits in Bruce County compared to the Provincial trend of about 58% of visits being same-day stay [48;116].

About 91% of person-visits to Bruce County originate from Canadian markets, with an additional 7% coming from the United States and the rest from overseas. The overwhelming majority of the Canadian visitors come from the Province of Ontario. The key Ontario markets include South-Central, Central and Southwestern Ontario and Toronto and area, with top five municipalities being the Region of Waterloo, Wellington County, Halton Region, Grey County and Toronto Metropolitan Municipality. The field survey of tourists and day users conducted as part of the socio-economic assessment yielded similar results, where visitors to Inverhuron and MacGregor Point Provincial Parks and Regional Study Area conservation areas primarily came from the Kitchener, Waterloo, Cambridge, Wellington and London areas.

International visitors make up a relatively small proportion of all visitors. The main international tourism origin market for Bruce County is the United States, with the majority of visits coming from the border states such as Michigan, Ohio and New York. The main overseas tourism origin market is Europe, with the majority of visits coming from the United Kingdom, Germany and the Netherlands.

Overall, the party size per trip to Bruce County is about 1.4 people per trip, with an average age being 45 years. On a typical trip, the spending per person per night averaged \$169 per visit in 2008. Visitor spending was found to be largely on food and beverages (39.4%), vehicle operations and fuel (22.2%), accommodation (16.5%), and retail purchases (12.7%) [48].

In 2008, approximately 61% of all visits were for pleasure purposes and 27% were visits to friends and family (Table 5.5.3-3). The remainder (i.e., approximately 4%) of visits to Bruce

County were for business and personal purposes. Interviews with tourism business operators and discussions at the tourism round table in 2003 also indicated that because the areas near the Bruce nuclear 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 cottagers and these employees [112].

Table 5.5.3-3: Person-Visits to Bruce County by Main Purpose of Trip (2008)

Category	Number (In '000s)	% of Total
Pleasure	750	61%
Visiting Friends and Relatives	427	35%
Business	29	2%
Personal	22	2%
Total	1,228	100%

Note: Numbers may not appear to add up to 100% because of rounding.

Source: [48]

Data on the type of accommodation used by tourists in 2008 are presented in Table 5.5.3-4. Sixty-five percent of all overnight tourists to the area were housed in private accommodation, including cottages or private homes, while 17% stayed at roofed commercial accommodations. In comparison, in 2007, these numbers were 42% and 32%, respectively³. Tourism related to visiting friends and relatives is particularly important during the non-peak tourist season (i.e., October through December). Interviews with tourist accommodation providers in the Local and Regional Study Areas undertaken as part of this socio-economic assessment support a general positive trend in business activity over the last five years.

Table 5.5.3-4: Person-Nights Spent In Bruce County by Type of Accommodation (2007 and 2008)

Type of Establishment	2007		2008	
	Number (In '000s)	% of Total	Number (In '000s)	% of Total
Roofed Commercial	943	32%	402	17%
Camping/Private Trailer	613	21%	317	14%
Private Home/Cottage/Cabin	1,238	42%	1,521	65%
Other Accommodation	173	6%	84	4%
Total	2,967	100%	2,324	100%

Note: Numbers may not appear to add up to 100% because of rounding.

Source: [48;47]

³ The increase in the reported number of nights spent in private cottages and the corresponding decrease in nights spent in commercial roofed accommodation has been recognized by Statistics Canada as a data issue and at the time of writing was under review [116].

In 2008, the most popular activities on a trip to Bruce County tended to be outdoor or sporting activities (45%), visiting National and Provincial parks (11%), and boating (10%) (Table 5.5.3-5). The Lake Huron shoreline is in itself an important natural attraction, offering some of the best beaches in Ontario. It is primarily the shoreline that draws tourists to the area whether it is for the beaches, fishing, boating, hiking or biking.

Table 5.5.3-5: Activities on a Trip in Bruce County (2008)

Type of Activity	Number (in '000s)	% of Total
Festivals/Fairs	72	5%
Cultural Performances	40	3%
Museums/Art Galleries	63	4%
Zoos/Aquariums/Botanical Gardens	12	<1%
Sports Events	26	2%
Casinos	9	<1%
Theme Parks	12	<1%
National and Provincial Parks	163	11%
Historic Sites	81	6%
Any Outdoor/Sports Activity	653	45%
Boating	139	10%
Golfing	61	4%
Fishing	106	7%
Hunting	6	<1%
Downhill Skiing/Snowboarding	16	1%
Total	1,459	100%

Note: Numbers may not appear to add up to 100% because of rounding.

Source: [48]

Parks, beaches and trails along the Lake Huron shoreline are heavily used by tourists. Surveys of visitors at Inverhuron Provincial Park, MacGregor Point Provincial Park and Bruce Dale Conservation Area carried out in 2009, indicated that their park activities included camping (20%), hiking (18%) and wildlife viewing or bird watching (12%).

Discussions at the tourism roundtable in 2003 confirmed that the Bruce nuclear site has a low profile among tourists, particularly as the existing nuclear generating stations are not visible from the nearest highway [112]. Roundtable participants believed most tourists learn about the site through local tourist guides, while tourists indicated that they learned about the WWMF from family, media or a previous visit.

The Bruce nuclear site and the Bruce Power Visitors' Centre can be considered an industrial tourist attraction. The Visitors' Centre is located along the main access road to the Bruce

nuclear site from Highway 21 between Kincardine and Port Elgin. This attraction provides visitors with numerous exhibits and displays that explain the production of nuclear electricity. Guided tours of the Bruce nuclear site are available but in recent years have occurred infrequently.

Visitation to the Bruce Power Visitors' Centre remained relatively steady from 2002 to 2009 as shown in Table 5.5.3-6. The peak in visitation in 2003 is likely attributed to the decision to restart Bruce A Units 3 & 4. In comparison to visitation at Inverhuron Provincial Park, another nearby "day-use" attraction (on average 48,700 visitors annually over this period, with 2009 reaching 65,383 visits), visitation to the Bruce Visitors' Centre is considered to be substantial. Discussions at a tourism roundtable in 2003 indicated that the Bruce Visitors' Centre is placed on the 'rainy day list' as a tourist attraction.

Table 5.5.3-6: Visitation to Bruce Power Visitors' Centre (2002 to 2010)

Activity	2002	2003	2004	2005	2006	2007	2008	2009	2010 (January-August)
<i>Bruce Nuclear Site Tours</i>									
Number of Tours	47	79	45	68	55	86	57	56	23
Number of Tour Participants	351	791	380	492	478	620	487	399	140
<i>Come & See Program Presentations</i>									
Number of Presentations	20	47	51	40	43	51	35	39	8
Number of Participants	1,111	1,700	1,702	1,475	1,620	1,736	1,274	1,239	207
<i>DEER Programs^a</i>									
Number of Programs	40	42	42	42	37	17	28	16	14
Number of participants	1,250	1,453	1,404	1,520	1,350	569	929	569	486
<i>Casual visitors^b</i>	3,314	7,024	5,914	6,058	6,045	7,473	8,156	9,967	2,933
<i>Conference Room Use</i>									
Number of Users	12,199	17,873	14,036	7,811	7,440	4,626	3,681	4,294	3,638
Total Visitors	18,225	28,841	23,436	17,356	16,933	15,024	14,527	16,468	7,404

Notes:

a DEER (Discover Energized Environmental Resources) Programs are delivered by the Saugeen Valley Conservation Authority with some assistance by Bruce Power Visitors' Centre staff.

b "Casual Visitors" come to view the exhibits and/or to see what is available. Visitors' Centre staff makes contact with casual visitors as required to provide greeting and to respond to questions.

Source: [117;118;119;120;121;122;123]

Interviews were conducted as part of this socio-economic assessment with motel, inn, bed and breakfast, cabin, cottage and campground operators in the Municipalities of Kincardine, Saugeen Shores and surrounding areas. Of the 22 accommodation providers interviewed, 91% attributed some of their business activity to the presence of the Bruce nuclear site, its employees or activities. These respondents indicated that their operations provide long term (i.e., six months to four years) and short term accommodation to workers employed at the Bruce nuclear site. Some estimated that up to 70% of their business activity can be attributed to Bruce nuclear site employment. Most stated that the presence and operation of the Bruce nuclear site has had a positive effect on their business activity by bringing more people to the area and extending their business season because of contractors renting on weekdays and during the off-season for tourists. Some of these businesses have renovated and expanded, while others grew and offered new services because of ongoing activities at the Bruce nuclear site (e.g., refurbishment). On the other hand, for those whose business closely follows the pattern of activity at the Bruce nuclear site, periods of slower or no contractor activity at the Bruce nuclear site meant a decrease in business activity during these times. Few of those interviewed indicated that people tended to link their products or services with the Bruce nuclear site. The majority of tourism operators believed that tourists do not associate the accommodation provider with the presence of the Bruce nuclear site. Overall, the tourist accommodation businesses that are most influenced by the Bruce nuclear site are, for the most part, located in Kincardine, Port Elgin and Tiverton.

Marinas and recreational fishing are also integral to local tourism. To investigate the influence of the Bruce nuclear site on these local businesses, interviews were conducted in October and November, 2009. The issues that respondents identified as having the greatest effect on their business activities were the economy, weather, gas prices and the abundance of fish in Lake Huron. All of the marinas/recreational fishing business owners interviewed indicated that the Bruce nuclear site has had a positive influence on their business activity. The Bruce A and Bruce B outfalls warm the water around the nearshore area adjacent to the Bruce nuclear site and attract different species of fish. This makes the areas near the Bruce nuclear site an attractive and popular fishing destination.

Another major aspect of local tourism is Inverhuron Provincial Park. Over the period from 2001 to 2009, this park attracted an average of 48,719 visitors annually (see Table 5.7.1-1 in Section 5.7.1). More detailed discussion of park use is provided in Section 5.7.1.

Finally, there are a variety of festivals and events held within the Local and Regional Study Areas that attract tourists. Examples of some of the larger events are listed in Table 5.5.3-7.

OPG is a participant and sponsor of many festivals and events that draws tourists to the area. OPG also supports operations at the Bruce County Museum and Cultural Centre. The Museum holds many events such as exhibits, lecture series, summer camps and actively supports the thriving local art community. Additional activities that draw tourists include the local theatres, as well as First Nations Pow Wows throughout the area.

Table 5.5.3-7: Major Festivals and Events in the Study Areas (2010)

Festival/Event	Location	Dates
Fish Kincardine Derby	Lake Huron – Based from Kincardine Harbour	May 21 to May 30
Kincardine Scottish Festival and Highland Games	Kincardine	July 2 to 4
Chantry Chinook Classic Fish Derby	Lake Huron – Based from Kincardine Harbour	July 24 to August 8
Kincardine Summer Music Festival	Kincardine	August 1 to 14
Saugeen First Nation Contest Pow Wow	Southampton	August 7 and 8
Nawash Unceded First Nation Pow Wow	Cape Croker	August 21 and 22
Mass Pipes & Drums Gathering	Kincardine	August 28
Port Elgin Pumpkinfest	Port Elgin	October 2 and 3
Pipe Band Parades	Kincardine	Every Saturday During Summer Months
Music in the Park Events	Kincardine	Every Wednesday (July 7 to August 25)
Sing-a-Long Events	Kincardine	Every Sunday Night During July and August

Source: [124;125]

5.5.4 Residential Property Values

Property value refers to the market value of land and buildings. The value of residential property determines the ability of a resident to purchase a home. A person's residence is often an individual's largest single personal investment and is therefore a key determinant of one's financial status. The value of residential property has a substantial effect on a person's spending power. As such, the value of one's property is often one of the most important determinants of an individual's use and enjoyment of property and their satisfaction with community. To the municipalities and communities, property values also affect physical, financial and social assets. For example, property values can affect an area's character and cohesion. In part, property values determine municipal tax revenues and therefore a municipality's financial health.

An analysis of real estate data, carried out for the period 1996 to 2000 as a part of the EA for the Restart of Bruce A Units 3 & 4 [126], indicated that the number of properties sold in municipalities adjacent to the Bruce nuclear site was variable over these years, peaking in 1999. The data indicated that declines in property value 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 Bruce nuclear site 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 at Bruce A (i.e., Units 3 & 4) resulted in increased confidence in the local

housing market. By May of 2001, average prices across Kincardine fully recovered and were at approximately \$117,000 per unit.

Data on the number of sales and residential property values in Kincardine and Saugeen Shores for the period of 2001 to September 2010 is provided in Table 5.5.4-1. This data was obtained from the Bruce-Grey Owen Sound Real Estate Board and local realtor interviews.

The data supports the characterization of the housing market as being very strong, especially during the period of 2001 to 2004 and in the year 2007. Although the number of properties sold was variable year over year, average housing prices steadily increased from 2001 to 2007. The average sales values in Kincardine and Saugeen Shores declined slightly in 2008 and 2009, respectively, but have since recovered. Overall, average values of properties sold increased over the period 2001 to September 2010 by 110% in Kincardine and by 128% in Saugeen Shores.

Table 5.5.4-1: Residential Sales and Property Values (2001 to 2010)

Year	Kincardine		Saugeen Shores	
	Sales (#)	Average Value (\$)	Sales (#)	Average Value (\$)
2001	173	117,047	202	122,881
2002	269	127,914	268	136,171
2003	245	146,200	275	172,339
2004	284	177,481	309	194,636
2005	174	177,951	246	208,562
2006	172	199,132	201	231,226
2007	200	238,787	238	268,298
2008	159	234,196	156	268,344
2009	158	248,762	220	265,520
2010 (Jan-Sep)	122	246,272	156	279,703

Source: [127;128;129;130]

Interviews with local realtors indicated that property values respond directly to changes in local population and economy. The realtors interviewed indicated that increasing property values are attributable to the restart of Bruce A as well as growing attractiveness of the area to retirees [89].

5.5.5 Municipal Finance and Administration

The Municipal Finance and Administration VEC encompass the financial dimensions of all municipal services and the general administrative functions of municipal government. With regard to finances, municipal revenue sources can include general tax revenues from property assessment and business taxes, special taxes and payments in lieu of taxes, and various types of grants, fees and service charges. Municipal expenditures tend to be on purchases of land

and capital as well as operating and maintenance costs associated with the provision of municipal infrastructure and services. The administration component relates to the administrative structure and organization of government and the services it provides its constituents.

The availability and quality of public services and infrastructure affect the well-being of individuals who live, work or visit Kincardine and the Regional Study Area. The status of municipal finances and administration affects the availability of services and the confidence people have in the governance of their community.

Table 5.5.5-1 presents the 2009 property tax rates across property types in Kincardine. Applicable tax rates for Kincardine, Bruce County and the area school boards (Bluewater District School Board and Bruce-Grey Catholic District School Board) are noted with the final column indicating the total property tax rate for each property type.

Table 5.5.5-1: Property Tax Rates in Kincardine for Kincardine, Bruce County and Local School Boards (%) (2009)

Property Type	Kincardine	Bruce County	Schools	Total
Residential	0.413231	0.448138	0.252000	1.113369
Multi-Residential	0.413231	0.448138	0.252000	1.113369
Commercial/Office Building – Fully Occupied	0.509555	0.552599	1.336758	2.398912
Commercial – Vacant/Excess Land	0.356688	0.386819	0.935731	1.679238
Industrial Occupied	0.722203	0.783210	2.095036	3.600449
Industrial Vacant/Excess Land	0.469430	0.509087	1.361773	2.340291
Farmland	0.103308	0.112034	0.063000	0.278342
Managed Forest	0.103308	0.112034	0.063000	0.278342

Note: Property tax payable is calculated by multiplying the assessed property value by the tax rate.

Source: [131]

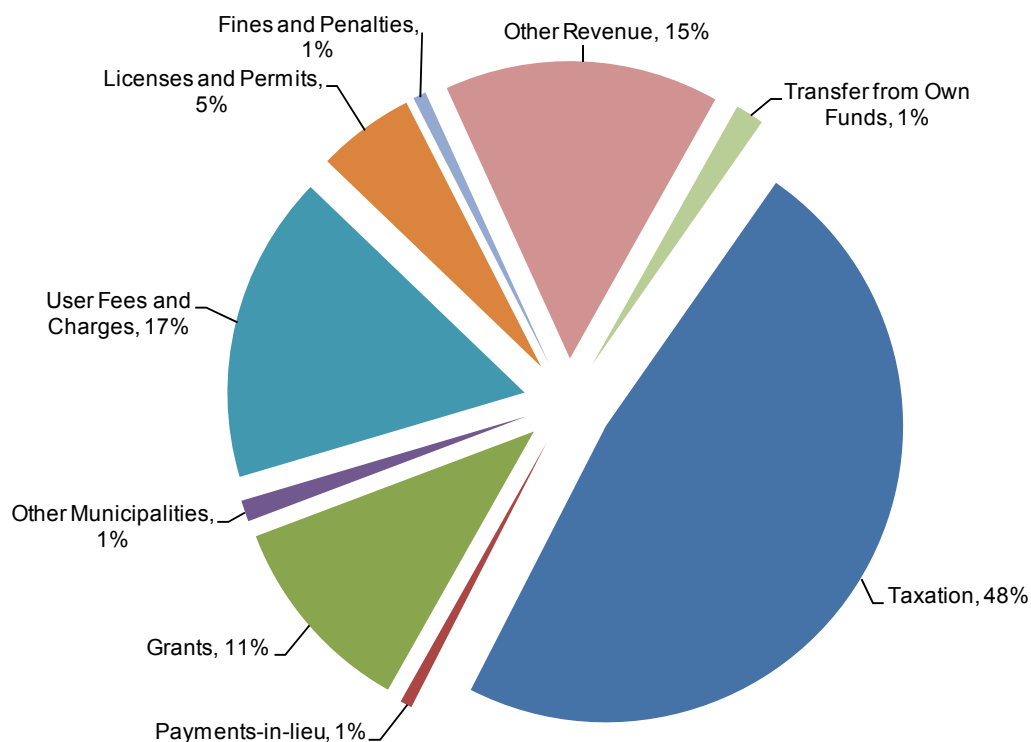
Table 5.5.5-2 provides a summary of the taxable assessment base in the Local and Regional Study Areas.

Table 5.5.5-2: Taxable Assessment Base (\$ Million) (2008)

Assessment	Kincardine	Regional Study Area Municipalities					Total
		Arran-Elderslie	Brockton	Huron-Kinloss	Saugeen Shores	South Bruce	
Total Taxable Assessment Base (\$M)	1,299	487	726	920	1,395	513	5,341

Source: [41;42;43;44;45;46]

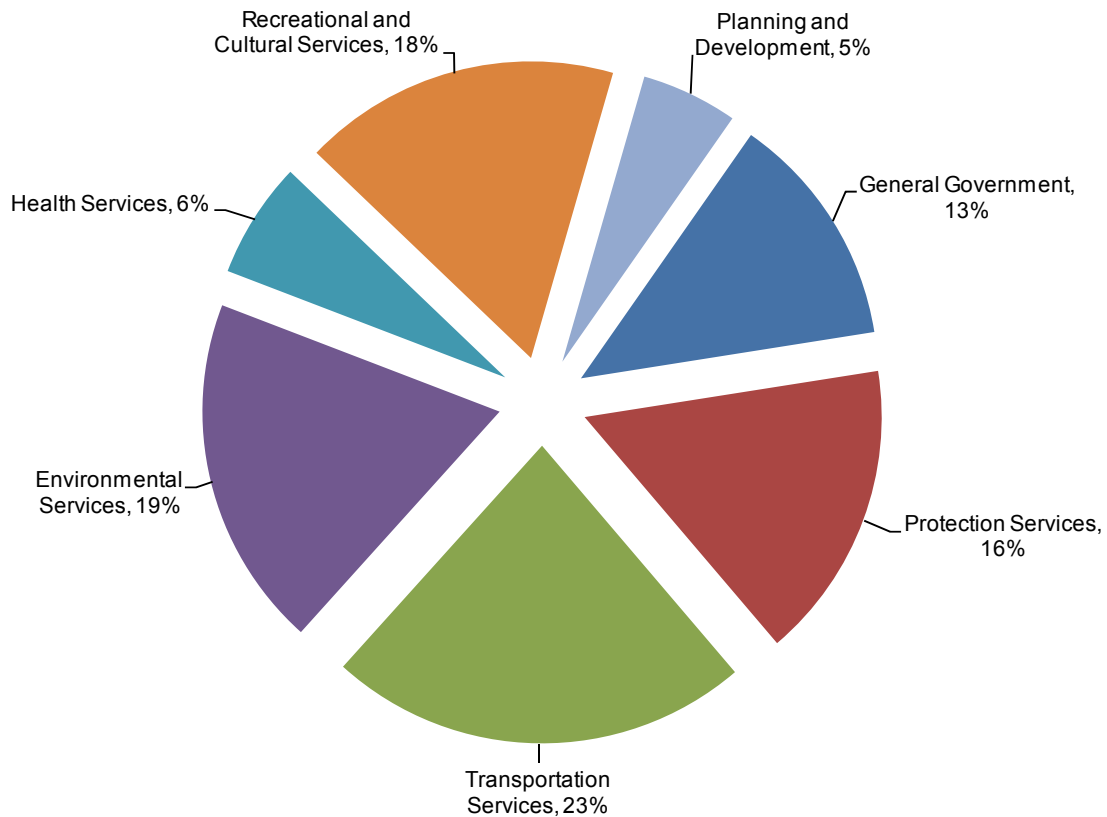
In 2008, the Municipality of Kincardine total revenue fund revenues was \$19.6 million. The principle sources of revenue were taxation (48%), user fees and charges (17%) and other revenues (15%). Payments-in-lieu contributed 1%. Figure 5.5.5-1 shows the overall distribution. Municipal revenues are generated by the current land use activity at the Bruce nuclear site. In 2009, OPG made property tax payments of approximately \$5 million for its lands, buildings and structures at the Bruce nuclear site. Approximately \$472,200 was for its waste management operations at the site.



Source: [41]

Figure 5.5.5-1: Municipality of Kincardine – Major Revenue Distribution (2008)

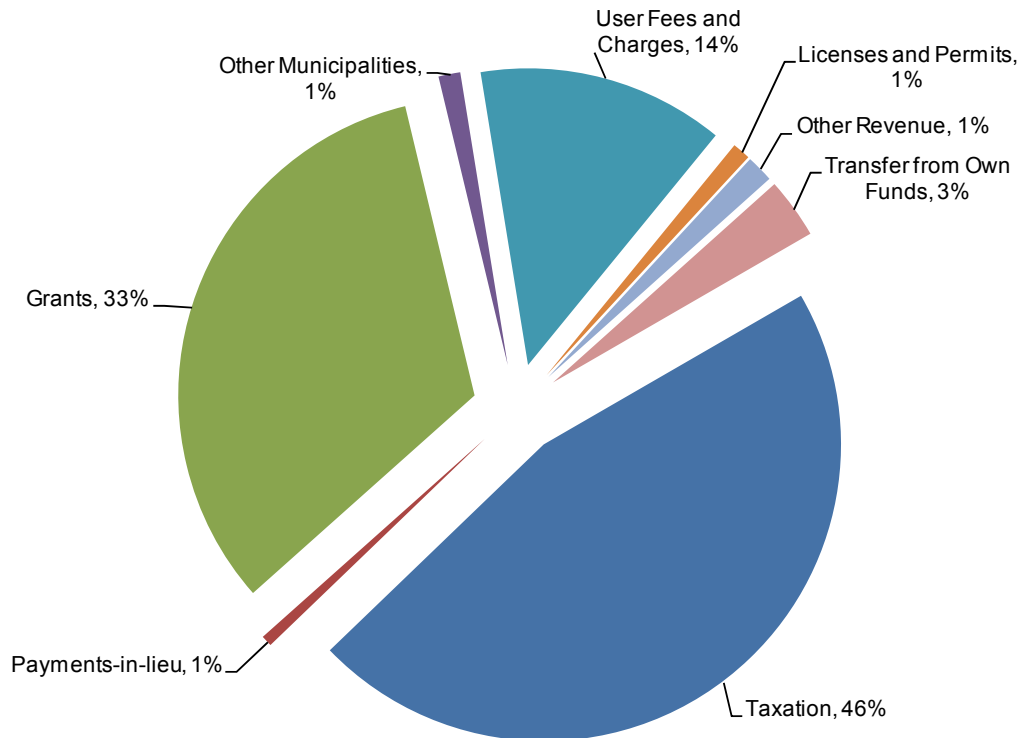
The Municipality of Kincardine distribution of expenditures in 2008 was such that transportation services was the dominant expenditure category at 23% followed by environmental services at 19% and recreational and cultural services at 18%. Figure 5.5.5-2 provides the overall distribution.



Source: [41]

Figure 5.5.5-2: Municipality of Kincardine – Major Expenditure Distribution (2008)

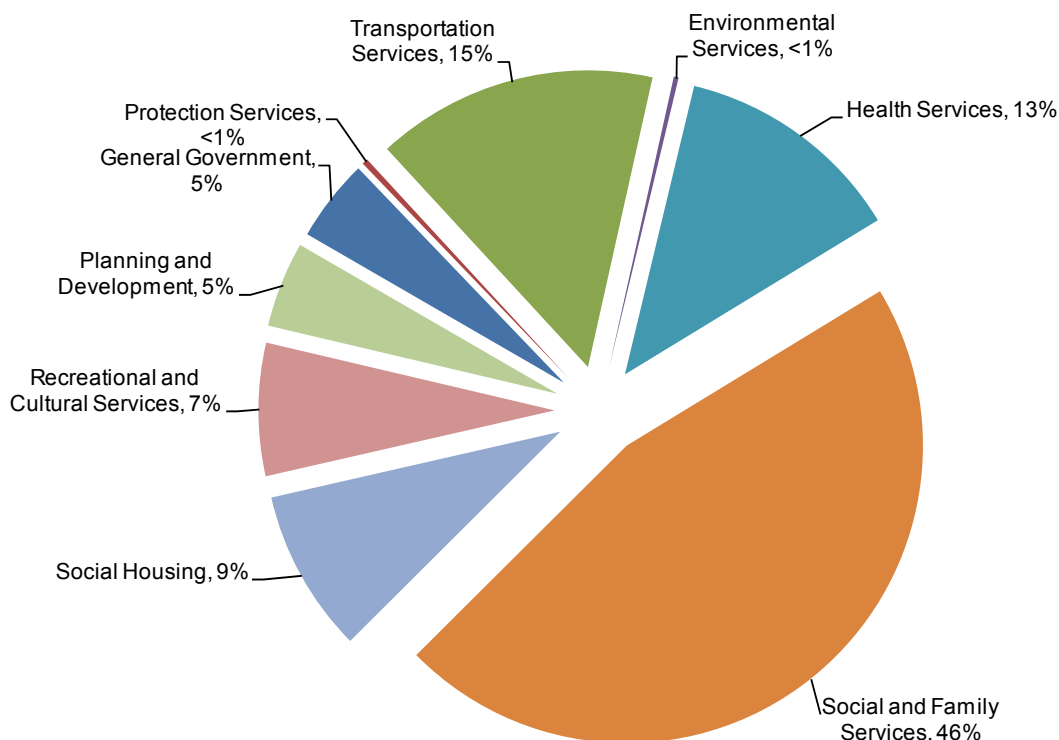
In 2008, Bruce County total revenue fund revenues, that is revenue from all external sources, was \$70.4 million. The distribution of revenue by source is shown in Figure 5.5.5-3. Taxes are the largest revenue source accounting for 46% of total revenues followed by grants (33%) and user fees and charges (13%). Payments-in-lieu contribute 1%.



Note: Numbers may not appear to add up to 100% because of rounding
Source: [40]

Figure 5.5.5-3: Bruce County – Major Revenue Distribution (2008)

In 2008, the distribution of Bruce County expenditures was such that social and family services accounted for 46% of the monies dispersed, followed by transportation services (15%) and health services (13%). The overall distribution is shown in Figure 5.5.5-4.



Note: Numbers may not appear to add up to 100% because of rounding

Source: [40]

Figure 5.5.5-4: Bruce County – Major Expenditure Distribution (2008)

5.5.6 Other Financial Assets

5.5.6.1 Income

Income derived from employment and business activity (including tourism) is considered a financial asset and a major determinant of overall community well-being. To individuals, families or households, people use income to achieve their personal financial objectives, which define their style and quality of life. Income provides a sense of personal security and contributes to a person's own self image and status within a community. Income provides the financial means for residents to undertake a variety of educational, social and community activities that strengthen a community's human and social assets.

Current and historic average household income levels within the Local and Regional Study Areas are presented in Table 5.5.6-1. In the most recent Census (2006), the average household income across the Local and Regional Study Areas was approximately \$73,200, ranging from approximately \$56,550 in Arran-Elderslie to approximately \$89,900 in Saugeen Shores. The average household income in Kincardine was the second highest in the Local and Regional Study Areas at approximately \$80,400.

Between 2001 and 2006, average household income increased in each municipality. Across the Local and Regional Study Area, this increase was 27%, or an average 5.4% per year. The strongest growth in average household income was found in Saugeen Shores (39%), while the lowest increase occurred in South Bruce (11%). Over the five-year period, the average household income in Kincardine increased by 33%, or 6.6% annually.

Table 5.5.6-1: Average Household Income – Local and Regional Study Area (2001 to 2006)

Year	Municipality of Kincardine	Regional Study Area Municipalities					Average
		Arran-Elderslie	Brockton	Huron-Kinloss	Saugeen Shores	South Bruce	
	\$	\$	\$	\$	\$	\$	\$
2001	60,279	50,135	53,515	56,952	64,917	55,125	57,877
2006	80,399	56,547	64,093	68,355	89,915	61,379	73,216
2001-2006 % Change	33%	13%	20%	20%	39%	11%	27%

Source: [24;25;26;27;28;29;30;31;32;33;34;35]

5.5.6.2 Renewable and Non-Renewable Resource Use

Renewable and non-renewable resource uses are important financial assets. Commercial fishing, forestry and mineral aggregates are all forms of business activity that can contribute to income and employment levels, which, in turn, will contribute to the quality of life and sense of personal security of individuals, families or households.

Commercial Fishing

The commercial fishery in the Ontario waters of Lake Huron is managed by the Ontario Ministry of Natural Resources, Upper Great Lakes Management Unit in co-operation with Aboriginal commercial fishermen. The Saugeen Ojibway Nation (SON) holds exclusive rights to the commercial fishery in the vicinity of the Bruce nuclear site through a commercial fishing agreement in place with the Ontario Ministry of Natural Resources. The SON commercial fishing area extends from Point Clark to Craighleigh (in Grey County) to the international border. Further discussion of use of traditional territory for fishing can be found in the Aboriginal Interests TSD.

The Bruce nuclear site is located within Lake Huron's quota management area 4-4, which extends from Point Clark (in the Township of Huron-Kinloss) in the south to approximately Stokes Bay (in the Municipality of Northern Bruce Peninsula) in the north. Catch, harvest and quota data for key commercially-caught fish species in this area in 2008 is presented in Table 5.5.6-2. The total harvest of fish by commercial fishers in 2008 was 242,291 kg, with an estimated value of \$646,706. The lake whitefish harvest accounted for the vast majority of the total harvest.

Table 5.5.6-2: Commercial Fish Harvest Data for Lake Huron's Quota Management Area 4-4 (2008)

Species	Catch (kg)	Harvest (kg)	Quota (kg)	% Quota Taken	Value (\$)
Lake Trout	22,900	22,900	7,998	286.3	26,757
Lake Whitefish	218,052	218,052	424,368	51.4	615,318
Walleye	509	509	742	68.6	2,570
Yellow Perch	568	568	9,372	6.1	1,991

Source: [132]

Forestry

Data on forestry activity in the Local and Regional Study Areas were not readily available. The forestry sector was not mentioned in stakeholder interviews as a substantial contributor to economic activity in the study areas. Nevertheless, as described in the Terrestrial Environment TSD, approximately 25% of Bruce County is forested, with much of the northern portion of the County, the Bruce Peninsula, under forest cover. Much of the natural forest cover within the Local and Regional Study Areas has been cleared for agriculture. Remnant forested areas in the Local Study Area are primarily associated with the Lake Huron shoreline, valleys and areas with steep topography, and poorly drained sites.

Non-Renewable Resource Use

Mineral aggregate is a basic non-renewable resource that forms a key ingredient in the production of concrete and concrete products, asphalt pavements and sub-surface fills. Over 7,000 people are employed directly by the aggregate industry in Ontario and an estimated 34,000 are involved indirectly through transportation and equipment services in Ontario. In 2009, 3,759 licensed aggregate sites were on private land and 3,038 were permitted on Crown lands [133].

Overall production of mineral aggregates in 2009 totalled approximately 153 million tonnes across the Province, down 14 million tonnes or 8.4% from the previous year. Production from licensed operations was approximately 139 million tonnes, down 15 million tonnes or 9.7% from 2008. In 2009, the Local and Regional Study Areas combined produced approximately 1% of the Province's aggregates from licensed operations (Table 5.5.6-3).

Table 5.5.6-3: Aggregate Production from Licensed Operations (2009)

Municipalities	Production (metric tonnes)	% of Ontario Total
Kincardine	28,083	0.02%
Arran-Elderslie	115,590	0.08%
Brockton	146,974	0.11%
Huron-Kinloss	339,631	0.24%
Saugeen Shores	274,588	0.20%
South Bruce	432,185	0.31%
Total Local and Regional Study Area	1,337,052	0.96%
Total Ontario	138,659,270	100%

Note: Numbers may not appear to sum to 100% because of rounding.

Source: [133]

5.5.6.3 Agriculture

Farm operations provide employment and income to individuals, families or households. Food production generates further employment, which can influence the human, physical and social assets of the municipality, community or regions.

Bruce County has over 3,750 farm operators that generate over \$255 million in gross sales annually. Approximately 62% of the County's land area is dedicated to the agricultural industry. The County is ranked first in Ontario for total cattle production, with 51% 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. Approximately 63% of all Bruce County farms are family owned and operated, and together Bruce County farms generate over 28,000 weeks of direct full-time and part-time employment per year [134].

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 [111]. Seven agricultural fairs are held annually in the Regional Study Area and one takes place in Kincardine each year [134].

Based on 2006 and 2001 Census data, the number of farms within Kincardine and Regional Study Area municipalities decreased by 2.5% from 2001 to 2006. Kincardine experienced the largest decline in number of farms over this period (6%). However, the average area of farms increased by 4% across Kincardine and the Regional Study Area, and average gross farm receipts increased by 12% from 2001 to 2006 [135;136].

Despite these statistics, the PAR research identified that few residents feel agricultural issues are among the most important issues facing their community. Approximately 1% of respondents

in the Local Study Area and 5% in the Regional Study Area identified agriculture as their most important issue. Among the stakeholders interviewed, nine out of 76 mentioned decline in agriculture as one of the greatest threats facing their community, and 12 of 76 stakeholders mentioned that agriculture and farmland are important attributes to be maintained in their communities.

5.5.6.4 Economic Development Services

Economic development refers to the services provided by municipalities and affiliated organizations to its residents and businesses that are aimed at generating wealth through increased employment and business activity, and attracting investment and tourists.

Economic development in the Local and Regional Study Areas is a co-ordinated activity among many local, Provincial and federal government organizations. For the Local Study Area, the Municipality of Kincardine issued a “Community Plan” in February 2010. A series of economic development initiatives are identified in this plan aimed at creating an environment that supports existing businesses and industry while promoting economic growth [137].

In the Regional Study Area, the Bruce Community Futures Development Corporation (BCFDC) plays a central role in co-ordinating research and implementing economic development programs and has prepared an economic diversification plan for the South Bruce area [138]. This plan was prepared in response to the 1998 lay-up of Bruce A. It recognizes that economic diversification of the local economy is critical to the future of the County. The plan identifies a number of community-based actions for each of the major sectors of the local economy (i.e., industry, tourism, agriculture) and for infrastructure/transportation, training and small business development. The actions identified in the industrial and tourism sectors are the most relevant to this assessment and are described below.

In the industrial sector, the focus of the economic development plan is support for the ongoing evolution of the Bruce ECO-Industrial Park towards new technologies in the areas of agri-processing and co-generation. The BCFDC report also notes that the “*Recovery of Bruce A and continued operations of all other BNPD site facilities remain a high priority issue for the South Bruce area*” [138].

In the tourism sector, the focus of the plan is on the co-ordination of tourism marketing and development activities undertaken in the region, making the South Bruce area an ‘all season destination’, promoting the development of ‘adult lifestyle’ retirement housing, securing and expanding hotel and resort tourist facilities, retaining Provincial signage and maps that position Bruce County as a tourist destination and encouraging the development of abandoned rail corridors for multi-use purposes.

5.6 PHYSICAL ASSETS

Physical assets consider the basic infrastructure that allows a community to function effectively. The availability and quality of such physical assets serve to attract and retain people and investment in a community; they influence personal health and satisfaction with a community. Overall, these physical assets serve to maintain overall community well-being. The community character parameter is also included in this asset category. Although this is not a “hard” element of the community infrastructure, it is tangible and measurable, and it is often an

important parameter when considering community well-being. For the purposes of this socio-economic assessment, the VECs that are considered within this sub-component of the framework include:

- Housing;
- Municipal Infrastructure and Services; and
- Other Physical Assets, including:
 - land use;
 - transportation infrastructure; and
 - community character.

Each of these parameters is defined and discussed in terms of its contribution to community well-being.

5.6.1 Housing

The housing stock in a community, including its quality and diversity, is a fundamental physical asset that directly affects a community's well-being. Housing considered in its broadest form encompasses individual dwellings or residences and their broader neighbourhoods and communities. A dwelling or place of residence provides the basic shelter and sanitary facilities necessary for physical health. Adequate housing provides privacy and security, each having a symbolic value that contributes to psychological health and a sense of personal safety. Housing has a substantial effect on spending power. Housing is often an individual's largest single personal expenditure and therefore its cost or rent is a key determinant of one's quality of life. Housing is often the most important determinant of an individual's use and enjoyment of property and their satisfaction with community. To municipalities and communities, housing affects an area's character, cohesion and a municipality's financial health.

The housing stock base for 2001 and 2006 (the most recent available) within the Local and Regional Study Areas is presented in Table 5.6.1-1.

The inventory of housing stock in Bruce County was estimated in the 2006 Census at 38,432 units [139], of which approximately 25,000 dwellings were within the Regional Study Area. Of these 25,000 units, 65% were found in the three more populated municipalities (i.e., Saugeen Shores, Kincardine and Brockton), with 22% of the total in the Municipality of Kincardine itself.

Permanent private dwellings represent more than 80% of this housing stock (20,490 units). Of those, about 83% are single detached houses. The majority of the rest are found in buildings with two to four units each.

Home ownership is common for most people living in the Municipality of Kincardine and neighbouring municipalities. Approximately 82% of permanent private dwellings in Kincardine are owner-occupied and the remainder are rental units. Available data indicates that much of the existing housing stock was built either before 1946 or during the 1970s in response to the construction of the Bruce A and B nuclear generating stations. Since 2001 the housing stock inventory in the Municipality of Kincardine and neighbouring municipalities has grown at a modest pace.

Table 5.6.1-1: Housing Stock – Local and Regional Study Area (2001 to 2006)

Year	Municipality of Kincardine		Regional Study Area Municipalities										Total	
			Arran-Elderslie		Brockton		Huron-Kinloss		Saugeen Shores		South Bruce			
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
2001	5,257	21.9	2,705	11.3	3,987	16.6	3,560	14.8	6,215	25.9	2,278	9.5	24,002	100
2006	5,447	21.8	2,791	11.2	4,064	16.3	3,759	15.0	6,645	26.6	2,297	9.2	25,003	100
2001-2006 Change (%)	3.6		3.2		1.9		5.6		6.9		0.8		4.2	

Source: [24;25;26;27;28;29;30;31;32;33;34;35]

The Official Plan for the Municipality of Kincardine recognizes that the housing mix of the municipality is heavily weighted to single detached dwellings and identifies a need to encourage a greater range of housing to meet the needs of both young families and retirees. The proposed housing mix is to include 70% low density development, 25% medium density and 5% high density. The municipality shall strive to achieve a housing tenure mix of 70% ownership and 30% rental [37].

In a 2003 analysis of seasonal homes versus year-round residential properties in Bruce County, there were an estimated 22,439 assessment parcels that were coded as year-round residential and 11,235 coded as seasonal recreational properties.

5.6.2 Municipal Infrastructure and Services

Municipal infrastructure and services are the basic physical assets and the support structure of any municipality, community or region. Their availability and quality directly affect a community's well-being. To an individual or family or household, municipal infrastructure defines the style of quality of life, people's use and enjoyment of property and satisfaction with community. To the municipalities and communities, such infrastructure represents major expenditures, influencing their financial assets. The availability and quality of municipal infrastructure serve to attract new residents and businesses thereby influencing future economic development and community character.

5.6.2.1 Water Supply

The Municipality of Kincardine has two separate water systems for the urban areas, one for the community of Tiverton and one serving the former town of Kincardine and the shoreline properties north to Inverhuron, including Inverhuron Provincial Park [140]. The communities of Scott Point and Underwood have municipal wells. In addition, there are a series of communal wells along the lakeshore.

The Kincardine Water Treatment Plant (WTP) draws its supply from Lake Huron. The maximum day plant rated capacity is 11,578 cubic metres per day (m³/day). The current reserve capacity

of 4,550 m³/day is available for supply to infill plus future growth. The plant will eventually service a total population of 13,476 people.

The community of Tiverton is serviced by two wells with a maximum day design capacity of 1,028 m³/day (2004). Currently, there is no reserve capacity available for any development. Should future development be proposed in Tiverton, either the existing well system for Tiverton would have to be expanded, or the existing Kincardine municipal system would have to be extended by trunk watermains.

The Bruce ECO-Industrial Park that is adjacent to the Bruce nuclear site has its own potable/non-potable water supply systems. Bruce Power has an ownership role in the non-potable water distribution system. Ownership and responsibilities for this system are being reviewed by the Municipality of Kincardine at the time of writing [109].

In Saugeen Shores, the Southampton WTP is located approximately 20 km northeast of the Bruce nuclear site. The plant draws its raw water from Lake Huron and provides water to both Southampton and Port Elgin. It also provides water to the Chippewas of Saugeen First Nation and MacGregor Point Provincial Park. The Port Elgin WTP was taken out of service as of October 31, 2008 [141]. Following recent upgrades, the Southampton WTP has sufficient maximum day treatment capacity for the 20-year maximum day design flow [142].

The Bruce nuclear site has its own potable water supply. Bruce B supplies water to the facilities at the centre of the site, including the WWMF. Municipal potable water is available at the site boundary with Inverhuron Provincial Park, but is not used at the Bruce nuclear site [143].

5.6.2.2 Waste Water Treatment

The waste water systems for the municipalities of Kincardine and Saugeen Shores are discussed, below.

Waste water treatment services are provided by two treatment plants, the Kincardine Sewage Treatment Plant and a treatment plant located at the Bruce ECO-Industrial Park [140]. With an average design capacity of 5,910 m³/day, the Kincardine Sewage Treatment Plant provides sewer service to the urban centre of Kincardine and shoreline properties north to Inverhuron. There are approximately 903 lots approved to be serviced by this treatment plant. With the deduction of this requirement from the existing capacity, a remaining uncommitted hydraulic capacity of 1,515 m³/day is available for future growth and development.

The community of Tiverton and portions of Inverhuron, as well as Inverhuron Provincial Park receive waste water treatment services from the Bruce ECO-Industrial Park Sewage Treatment Plant. This plant has an average design flow of 2,200 m³/day. An agreement is in place with purchased capacity of 700 m³/day average daily flow, and a peak flow of 2,557 m³/day. Based on the information provided for 2009, existing flows utilize approximately 50% of this capacity. Approximately 404 new residential lots have been approved that will utilize some of the available capacity. The remaining uncommitted treatment flow capacity, which could service future, unidentified growth is 107 m³/day. The Bruce ECO-Industrial Park Sewage Treatment Plant discharges its treated effluent through the Bruce B discharge channel [140].

In Saugeen Shores, the Port Elgin Water Pollution Control Plant (WPCP) serves a population of over 7,000 and handles an average daily flow of between 2,120 and 2,786 m³/day. The Water and Sewer Servicing Master Plan (2009) indicates that no substantial upgrades in terms of average daily capacity are required. The Port Elgin WPCP also services MacGregor Point Provincial Park. The Southampton WPCP serves a population of approximately 3,100 and handles an average daily flow of between 1,425 and 1,734 m³/day. The Master Plan indicates that this plant has capacity for the 20-year average daily sewage flow [142].

The Bruce nuclear site has a sewage treatment plant that handles all sewage from the site and discharges clean effluent via the Douglas Point outfall. The plant is at capacity, largely because of process inefficiencies. Existing capacity issues relate to the large amount of non-sewage water diverted to the plant. Bruce Power is investigating the necessary improvements to the sewage treatment plant [143].

5.6.2.3 Conventional Solid Waste Management

The Municipality of Kincardine operates three solid, non-hazardous, conventional waste management landfill sites. The Ward 1 Kincardine Landfill is at capacity. A new waste management centre at the Ward 2 landfill site located in Armow will have sufficient waste disposal capacity for the entire municipality for 40 years. The Ward 3 landfill site has 15 years of capacity remaining [144].

Conventional solid waste generated at the Bruce nuclear site is either recycled or reused where feasible, or disposed of at an on-site landfill. Construction waste and contaminated materials may be disposed of at off-site facilities that are licensed for the specific waste materials.

5.6.3 Other Physical Assets

5.6.3.1 Land Use

The use of land is a major determinant of a municipality, community or region's financial, physical, social and natural assets. Official Plans and land use policies influence the patterns of settlement, protect and conserve agricultural land, protect the quality of the natural environment, encourage economic development, and social, cultural and educational facilities and services. These plans and policies articulate a community's vision for their future.

Existing land use designations in Bruce County and within the Municipality of Kincardine and the Town of Saugeen Shores and corresponding permitted uses are described along with relevant policies within the respective Official Plans. There are no Provincial land use plans that specifically apply to the study areas.

Bruce County Official Plan

The Bruce County Official Plan was approved by the Ontario Municipal Board on November 16, 1999 [38].

One of the goals of the County, as expressed in its Official Plan, is to “*maintain the small community environment and enhance the quality of life in Bruce County.*” To ensure the

protection of agricultural and rural areas, the Official Plan focuses future growth in the County to Primary and Secondary Urban Communities and Hamlet Communities. Primary Urban Centres such as the town of Kincardine are expected to function as regional service centres by *“accommodating the largest concentration and widest range of residential, economic and social opportunities, services and facilities available in the County”* [38]. Secondary Urban Centres such as the Town of Saugeen Shores are expected to accommodate a range of similar services. The Official Plan recognizes both types of urban centres for their tourism potential in the County economy. Hamlet communities such as Inverhuron, located to the south of the Bruce nuclear site, are to be protected as settlement areas *“providing limited services and facilities, and offering an alternative living area.”*

The lands along the shoreline to the north and south of the Bruce nuclear site are designated primarily as Shoreline Development Areas. The Official Plan identifies Shoreline Development Areas as the principal areas for tourism and recreation in the County, while providing for limited permanent residential development. Immediately south of the Bruce nuclear site is Inverhuron Provincial Park, designated as Major Open Space Area. There are a number of Special Policy Areas within Bruce County, including several in the vicinity of the Bruce nuclear site. Of relevance is Special Policy Area “H”, which applies to the Bruce ECO-Industrial Park, located to the east of the Bruce nuclear site. *“The intent of this area was to encourage new development to utilize the electricity and heat energy from the Bruce nuclear site for industrial development.”*

The Official Plan acknowledges the contribution made by the Bruce nuclear site to the County’s economy (Section 4.5.2 of the Official Plan). Other policies relevant to the Bruce nuclear site include Section 4.6.7 of the Official Plan, which is intended to encourage improvements to recreational and commercial harbour facilities along the Lake Huron and Georgian Bay shorelines. Specifically, this policy states, *“County Council will encourage a deep sea port facility near the Bruce Nuclear Power Development (BNPD) area for the transportation of goods and products beneficial to the BNPD and industries located at the BNPD or the Bruce Energy Centre.”*

Apart from these specific references, the Bruce County Official Plan does not apply to the Bruce nuclear site. The lands are considered outside the jurisdiction of the County.

Municipality of Kincardine Official Plan

The Municipality of Kincardine Official Plan was adopted by Council on June 7, 2006. This Plan covers the entire Municipality of Kincardine and replaces the previous Official Plan for the town of Kincardine as well as the Tiverton Secondary Plan and the Kincardine Township Lakeshore Secondary Plan [37].

The Municipality’s Official Plan provides local planning policies for areas within the Local Study Area including the Bruce ECO-Industrial Park, the community of Inverhuron, the community of Kincardine, and the Lakeshore Area that extends along Lake Huron. Section B1 (Basis of the Plan) recognizes that the Bruce nuclear site (referred to as the BNPD in the Official Plan) is a dominant force in the municipality, while acknowledging that *“agriculture, tourism and retail also continue to play an important role in the economy of the Municipality as well as contributing to the character of the area”*.

Policies dealing with energy also reflect the importance of the Bruce nuclear site. For example, policy C4.3.1 states, "*The Municipality will continue to initiate, endorse and promote proposals to ... utilize power from the Bruce Nuclear Power Development to its full potential.*" Similarly, policy C4.3.2 states, "*it is the intent of this Plan to support efforts to attract industries to the area based on electricity from the Bruce Nuclear Power Development.*" The municipality is committed to promoting the Bruce ECO-Industrial Park and the development of secondary industry necessary to support the activities at the Bruce nuclear site. Within the Bruce ECO-Industrial Park, the majority of the land is designated as either Industrial, or Natural Environment, and a small portion is designated "Open Space." One of the objectives of the Industrial designation listed in Section D3.2.3 is to encourage secondary industries related to the Bruce nuclear site to locate in the Bruce ECO-Industrial Park.

The community of Inverhuron is designated Shoreline except for a narrow band designated Natural Environment. The remainder of the Lakeshore Area is a combination of Shoreline, Natural Environment and Open Space. One of the goals of the Shoreline designation, as provided in Section D8.1, is "*to recognize and preserve the historic character of Inverhuron*". Another goal is to promote the establishment of a resort community to satisfy Provincial and local demand for recreational development.

The community of Kincardine, located at the south end of the municipality, is primarily designated Residential with a large swath of land designated Natural Environment. Lands designated Industrial are located at the south end of the community, while the Business Park designation applies primarily to lands to the east of Highway 21 and south of Highway 9. Immediately south of the Business Park designation are lands outside the Urban Service Area that are designated Future Development. This designation also applies to lands abutting the northern boundary of Kincardine.

The municipality intends to promote tourism associated with the community of Kincardine and specifically its harbour, waterfront and associated parks and beaches. In support of this objective, policy C6.3.3 states, "*The Municipality shall present its waterfront and marina as important tourism assets. The development of this area should be carried out with input from the Municipality of Kincardine Waterfront Development Plan.*" The harbour is also a focus for economic development and policy C5.3.7 refers to means of upgrading harbour facilities throughout the municipality.

Section C8 of the Official Plan deals specifically with electric power facilities. Policy C8.1 conforms to the Bruce County Official Plan in permitting existing power facilities in any land use designation without the necessity for an amendment to the Plan. However, it adds, "*Unless approved under the Environmental Assessment Act, any major new electric power facilities or undertakings will require an amendment to this Plan and to the Municipality's Zoning By-Law. Minor new electric power facilities, under 50 megawatts, or undertakings may be permitted without the necessity of an amendment to this Plan; however, such minor facilities or undertakings may require an amendment to the Municipality's Zoning By-Law.*" In addition, policy C8.3 enshrines the municipality's right to participate in discussions on the location and design criteria of new electric power facilities.

Furthermore, policy C8.2 states, "*Land and buildings used for executive, administrative or retail purposes or held under lease or licence from Ontario Power Generation and Bruce Nuclear Power Development shall comply with the land use designations and policies of this Plan and the Municipality's Zoning By-Law.*"

As with the Bruce County Official Plan, Kincardine has no direct jurisdiction over the Bruce nuclear site lands.

Town of Saugeen Shores Official Plan

The Town of Saugeen Shores Official Plan was adopted on June 26, 2006 and approved on January 4, 2007.

Like the Municipality of Kincardine, the predominant land use in the Town of Saugeen Shores is Residential. According to Section 4.1.4, much of the Town's expected population growth can be attributed to the Bruce nuclear site's contribution as a major employer in the County [36].

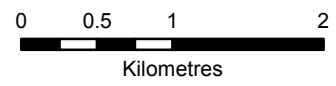
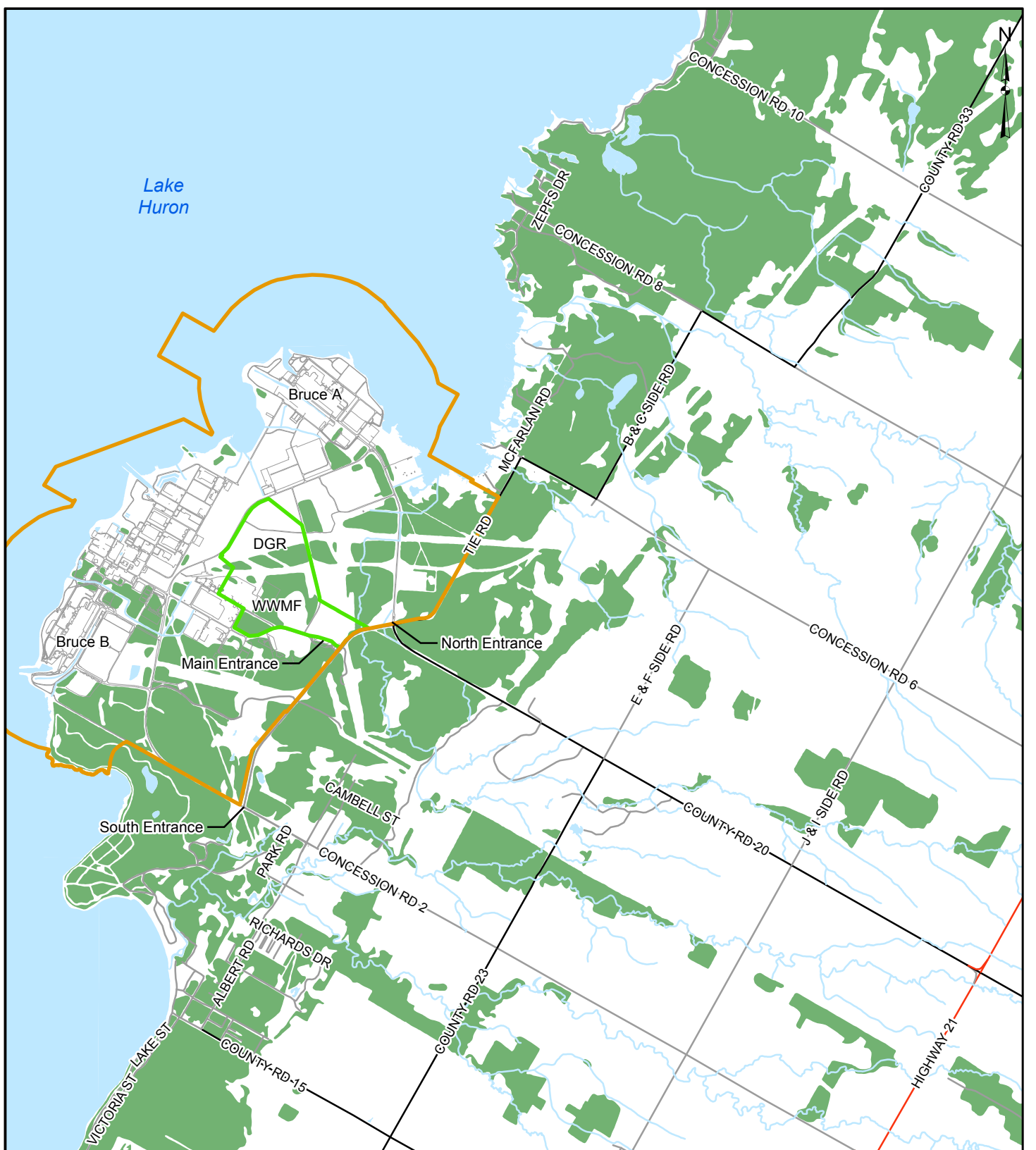
The Official Plan provides for a range of land use designations along the lakefront, including Shoreline Residential, Environmental Hazard, Marine Commercial, and Parks and Open Space. Regarding the latter, Section 4.8.1.2 of the Plan recognizes the waterfront as an important recreational, economic and natural resource in the Town and supports *"the continued and enhanced use of the waterfront for a diverse range of community, recreational, tourism, parks and open space uses"*. One such use is a proposed continuous Waterfront Trail that will be connected to existing waterfront public open spaces and other points of interest along the waterfront.

5.6.3.2 Transportation Infrastructure and Services

The purposes of transportation infrastructure are to provide a consistent level of service for motor vehicle travel between local urban, industrial, commercial and recreational centres. Transportation infrastructure can contribute to the human, financial, physical and social assets of a community. For example, well planned road networks and efficient public transit can affect income and employment levels, and the ability to access health and safety services, education facilities and community and recreational facilities.

Information in this section is based on the Traffic Impact Study prepared for the DGR Project [53]. The discussion relates to an area bounded by County Road 20 (formerly Concession 4) to the north, Highway 21 to the east, Concession 2 to the south and the Bruce nuclear site to the west. The transportation network in this area, including the three entrances to the Bruce nuclear site on Tie Road between Bruce Concession 2 and Bruce Concession 4, is illustrated on Figure 5.6.3-1.

Traffic flow on this transportation network is dominated by Bruce Power, OPG, Hydro One and AECL workers that access the Bruce nuclear site on a daily basis. The employees at the Bruce nuclear site include the existing (permanent) Bruce Power employees, OPG, Hydro One and AECL employees, as well as temporary Bruce A refurbishment workers. Of these, the largest number are the approximately 4,000 permanent Bruce Power employees. These workers generally have a flexible eight-hour day, although 130 of the workers adhere to a specific 8 p.m. to 8 a.m. day. In addition, there are 400 refurbishment workers at Bruce A at the time of writing, of which approximately 75% are construction staff working 10-hour days Monday to Thursday, and 25% are support staff working 8-hour days Monday to Friday. OPG and AECL have a staff of 306 employees, who work a flexible eight-hour day.



- LEGEND**
- Highway
 - Major Road
 - Local Road
 - Project Area (OPG-retained lands that encompass the DGR project)
 - Site Study Area¹

NOTES

1. Site Study Area is defined by EIS Guidelines as: "includes the facilities, buildings and infrastructure at the Bruce nuclear site, including the existing licensed exclusion zone for the site on land and within Lake Huron, and particularly the property where the Deep Geologic Repository is proposed."

REFERENCE

Base Data Provided by 4DM, November 2007.
 Imagery and Topo Collected and Processed by Terrapoint Canada Inc.,
 Acquisition Date: Nov. 12, 14, and 15, 2006, Ground Resolution: 0.25m,
 Datum: NAD 83 Projection: UTM Zone 17N

PROJECT: SOCIO-ECONOMIC ENVIRONMENT
 TECHNICAL SUPPORT DOCUMENT

TITLE: **TRANSPORTATION NETWORK**

PROJECT No. 06-1112-037		SCALE: AS SHOWN	R000
DESIGN	ASB 17 Oct 2007	FIGURE 5.6.3-1	
GIS	BC 31 May 2010		
CHECK	AB 31 May 2010		
REVIEW	MAR 31 May 2010		



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Site Access

There are currently three entrances to the Bruce nuclear site. The northern entrance at Tie Road/Bruce County Road 20 provides access primarily for plant workers at Bruce A and refurbishment workers. The south entrance at Tie Road/Bruce Concession 2 provides signalized access primarily for plant workers at Bruce B, which has all four reactors in operation.

The north and south entrances operate as inbound only during the morning and outbound only during the afternoon. The main entrance, located on Tie Road, provides two-way access to the centre of the site and is the primary access used by OPG and AECL workers as well as all visitors.

The Bruce nuclear site is also serviced by shuttle buses for Port Elgin and Kincardine; however, in 2007 only 1.5% of plant workers utilized the shuttle buses on a regular basis. The majority of the permanent staff and refurbishment workers drive their own vehicles to work and park on-site. The distribution of vehicles between the three entrances was found to be nearly equal in both the A.M. and P.M. peak hours. During the A.M. peak hour 32% of vehicles entered through the north entrance, 32% through the main Bruce nuclear site entrance, and 36% through the south entrance. During the P.M. peak hour 43% of vehicles exited through the north entrance, 31% through the main Bruce nuclear site entrance, and 26% through the south entrance.

Local council has discussed whether or not the Emergency Gate Access, which connects Kincardine to Inverhuron and subsequently the Bruce nuclear site, should be opened to public use [145] for the purposes of improved safety during extreme weather conditions to allow staff safer access to the Bruce nuclear site. Initial tests in February 2008 successfully used the emergency route to get staff from Kincardine to the site by bus during extreme weather conditions. As yet, this route is not available to the general public [146].

Traffic Volumes

Turning movement counts were undertaken at the intersections of Bruce County Road 23/Bruce County Road 20 (formerly Bruce Concession 4) and Highway 21/Bruce Concession 2 over an 8-hour period on May 22, 2008. A comparison of the traffic volumes travelling through the intersections of Bruce County Road 23/Bruce Concession 2, Highway 21/Bruce Concession 2, Highway 21/Bruce County Road 20 revealed a large volume of traffic using Sideroad J/1. The peak hour traffic volumes at the intersections of Sideroad J/1 and Bruce Concession 2 and Bruce County Road 20 were estimated by comparing the change in traffic volumes between Highway 21 and Bruce County Road 23 as well as considering the road surfaces along Sideroad J/1.

In 2010, the A.M. peak hour was estimated to occur from 6:15 – 7:15 with 2,384 vehicles entering the Bruce nuclear site and 209 vehicles exiting. The 2010 P.M. peak hour was estimated to occur from 16:00 – 17:00 with 2,135 vehicles exiting the site and 159 vehicles entering the site. An estimated breakdown of the 2010 peak hour traffic volumes by employee type is shown in Table 5.6.3-1.

Table 5.6.3-1: Existing Peak Hour Traffic Volumes

Type of Employee	A.M. Peak Hour		P.M. Peak Hour	
	Inbound	Outbound	Inbound	Outbound
Permanent Staff				
Bruce A and B Employees	2,026	177	143	1,874
OPG & AECL	155	14	11	143
Refurbishment Workers				
Construction	157	14	2	82
Support	46	4	3	36
Total	2,384	209	159	2,135

Source: [53]

Existing Intersection Operations

Existing A.M. and P.M. peak hour intersection levels of service were analyzed using Synchro analysis software. Only the Tie Road/Bruce County Road 20 and Tie Road/Bruce Concession 2 intersections are operating as signalized intersections. As such, these two intersections were analyzed as signalized intersections and the other seven intersections were analyzed as unsignalized intersections. The level of service analysis indicated that during the A.M. peak hour, two intersections are operating at unacceptable levels of service (LOS) 'E' or 'F'. These are the intersection at Tie Road and Bruce County Road 20 (LOS 'F'), and the intersection at County Road 23 and Bruce County Road 20 (LOS 'E'). During the P.M. peak hour, two intersections are operating at unacceptable levels of service 'E' or 'F'. These are the intersection at Tie Road and Bruce County Road 20 (LOS 'E'), and the intersection at Highway 21 and County Road 20. At some intersections, there may be individual turning movements that operate at unacceptable levels of service, but operations at the intersection as a whole are reflective of acceptable intersection delay. Level of service 'A' through 'D' would be reflective of acceptable intersection delay. A summary of the results including the critical movements is shown in Table 5.6.3-2.

Table 5.6.3-2: Existing Intersection Level of Service

Intersection	A.M. Peak Hour	P.M. Peak Hour
1 - Tie Road and Bruce County Road 20 ^a	F	E
Eastbound Left-Through-Right	—	E
Northbound Left	F	—
Northbound Through-Right	E	F
Southbound Left	E	—
Southbound Through-Right	F	—
Westbound Left – Through – Right	F	—

Table 5.6.3-2: Existing Intersection Level of Service (continued)

Intersection	A.M. Peak Hour	P.M. Peak Hour
2 - Tie Road and Bruce Main Entrance	B	A
3 - Tie Road and Bruce Concession 2 ^a	C	B
4 - County Road 23 and Bruce County Road 20	E	C
Northbound Left-Through-Right	F	—
5 - County Road 23 and Bruce Concession 2	D	C
Northbound Left-Through-Right	F	—
6 - Sideroad J/1 and Bruce County Road 20	D	D
Northbound Left-Through-Right	F	—
7 - Sideroad J/1 and Bruce Concession 2	B	A
8 - Highway 21 and Bruce County Road 20	D	E
Eastbound Left-Through	—	F
9 - Highway 21 and Bruce Concession 2	A	A

Notes:

a Signalized Intersection

— Data not available

Levels of Service 'A' through 'D' reflect acceptable traffic operating conditions, 'E' reflects increasing traffic congestion, and 'F' reflects traffic operating at or beyond capacity.

Source: [53]

A.M. Peak Conditions

A site visit was conducted June 10, 2008 from 06:00 – 09:00 to assess the traffic operations on public roads in the immediate vicinity of the Bruce nuclear site. There was a considerable peak in traffic volumes observed between 06:15 and 07:30, which created long queues on Bruce Concession 2 and Bruce County Road 20 and delays in excess of one minute for vehicles performing a northbound left turn at County Road 23/Bruce Concession 2, County Road 23/Bruce County Road 20, and Sideroad J/1/Bruce County Road 20. Traffic along Bruce County Road 20 was observed flowing westbound steadily from Highway 21 to Bruce County Road 23 where it slowed considerably to stop-and-go conditions. The field observations identified queuing delays of up to 15 minutes on both Bruce County Road 20 and Bruce Concession 2 between Tie Road and County Road 23. The delay on the approach to Tie Road may have been due in part to the ongoing intersection construction but also appeared to be related to traffic flow constraints at the entrance intersections and within the Bruce nuclear site. The flow constraints at the site entrances are caused by vehicles having to slow down as they pass through security for access to the site.

The inbound vehicles at the north and south entrances are, in theory, supposed to enter the Bruce nuclear site unimpeded via a free-flow movement. However, because of on-site traffic flow constraints, traffic was observed queuing back past the entrance intersections. Since the inbound traffic is unable to enter the site in a free-flow movement, the north and south site entrances are actually functioning like an all-way stop condition, where all approaches are taking turns entering the intersection.

P.M. Peak Conditions

A site visit was conducted June 9, 2008 from 15:30 – 18:00 to assess the traffic operations on public roads in the immediate vicinity of the Bruce nuclear site. Queues of up to 15 vehicles exiting the Bruce nuclear site were frequently visible. Once traffic was past the site entrance there were no major traffic operational issues observed other than the eastbound left from Bruce County Road 20 to Highway 21, where some delay was observed.

Collision Analysis

The traffic report [53] provides an analysis of reported collisions between 2002 and 2006 at the nine off-site intersections examined nearest to the Bruce nuclear site. The number of collisions with white-tailed deer is quite low, averaging less than one/year over this period. Only three collisions that did not involve wildlife were reported over this time period.

5.6.3.3 Community Character

Community character refers to the unique or distinctive qualities of a community. The character of a community influences the way a municipality, community or region is perceived, that is, its attractiveness as a place to live, visit or conduct business.

Image of Kincardine and the Surrounding Area

Respondents in the PAR and Tourist and Day User Surveys were asked to describe the first image or thing that came to mind when thinking of Kincardine and the surrounding municipalities. They were also asked if this image or thing was positive or negative.

Table 5.6.3-3 summarizes the results of the PAR. The majority of the residents in the Local and Regional Study Areas identified Lake Huron, the waterfront, beaches and the lighthouse as their first image of the area (34% of Local Study Area respondents viewed this as positive image and less than 1% as negative one, while 24% of Regional Study Area respondents viewed this as positive image and 1% as a negative one). Residents also felt that the beauty of the area, nature and scenery were all positive images (8% in the Local Study Area and 8% in the Regional Study Area).

Table 5.6.3-3: Image of the Municipality of Kincardine and the Neighbouring Municipalities from the PAR

Image	Local Study Area (Total Number of Responses=393)				Regional Study Area (Total Number of Responses=385)			
	Positive		Negative		Positive		Negative	
	%	Number of Responses	%	Number of Responses	%	Number of Responses	%	Number of Responses
Lake Huron/Waterfront/ Beaches/Lighthouse	34	133	<1	1	24	92	1	3
Beautiful/Nature/ Scenery/Sunset	12	48	0	0	9	36	0	0
Farmland	7	27	1	3	8	31	1	4
Close-knit/Community Minded/Friendly People	6	22	0	0	4	15	1	2
Bruce Nuclear Site	5	20	<1	1	13	50	2	8
Quiet/Pleasant/Good Image	4	17	<1	1	4	16	0	0
Tourism	4	16	0	0	5	19	0	0
Countryside/Cottage Country	3	13	1	2	2	7	<1	1
Great Place to Live/Home	2	9	0	0	1	5	<1	1
Heritage Festivals/Sites	2	8	<1	1	1	3	0	0
Windmills	2	6	2	6	1	5	3	11
Quality of Drinking Water/Clean Air	2	6	0	0	2	6	0	0
Safety	1	5	0	0	1	2	<1	1
Nothing	0	0	0	0	1	2	0	0
Growth of Economy	1	5	<1	1	1	5	1	2
Not Well Represented Politically	1	2	2	8	1	3	1	4
Access to Health Care	<1	1	<1	1	1	2	1	2

Table 5.6.3-3: Image of the Municipality of Kincardine and the Neighbouring Municipalities from the PAR (continued)

Image	Local Study Area (Total Number of Responses=393)				Regional Study Area (Total Number of Responses=385)			
	Positive		Negative		Positive		Negative	
	%	Number of Responses	%	Number of Responses	%	Number of Responses	%	Number of Responses
Education	<1	1	0	0	<1	1	<1	1
Discrimination	0	0	0	0	0	0	1	2
Other	1	9	2	8	4	16	3	10
Don't know/refused	3	11	<1	1	3	13	1	4
Total	—	359	—	34	—	329	—	56

Notes:

Percentages are expressed as percentage of total number of responses per study area. Percentages may not sum to 100% because of rounding.

— Not applicable

Source: [21]

The Bruce nuclear site was identified by a small proportion of respondents as a thing or image that came to mind when thinking about Kincardine and the surrounding area. Approximately 13% of Regional Study Area respondents characterized the Bruce nuclear site as a positive image and 2% as a negative one. Among the Local Study Area respondents, 5% characterized the Bruce nuclear site as a positive image and less than 1% as a negative one. Overall, 87% of the respondents who named the Bruce nuclear site consider it a positive image. Therefore overall, the Bruce nuclear site is not seen by many respondents as a negative influence on community character or image. Based on these PAR results, there are no strong indications that a stigma has been attributed to the Municipality of Kincardine or the neighbouring municipalities because of the Bruce nuclear site.

Tourist and day users of MacGregor Point and Inverhuron Provincial Parks, as well as from the Brucedale Conservation Area, were also asked to describe their first image of Kincardine and the surrounding municipalities, as well as to describe if this image was positive or negative. The majority of responses (64%) were that the first image of Kincardine and the surrounding municipalities was of a green or pleasant environment. Approximately 16% of the responses identified tourism or other points of interest as their first image; while 8% stated their first image was of the Bruce nuclear site. Of these responses (i.e., the 8% identifying the Bruce nuclear site), all were positive, except for one. Overall, 98% of the tourist and day user responses were positive images of Kincardine and the surrounding municipalities. Table 5.6.3-4 summarizes these responses.

Table 5.6.3-4: Image of the Municipality of Kincardine and the Surrounding Municipalities from Tourist and Day User Surveys

Image	Positive Image (Number of Responses)	Negative Image (Number of Responses)	Total Number of Responses	%
Green/Pleasant Environment	83	0	83	64%
Tourism/Points of Interest	21	0	21	16%
Bruce Nuclear Site	9	1	10	8%
Other	5	0	5	4%
Activities & Recreation	4	0	4	3%
Windmills	2	1	3	2%
Rural Area/Farmlands	2	0	2	2%
Close Proximity to Permanent Residence	1	0	1	1%
Total	127	2	129	100%

Notes:

The total number of responses is greater than the number of people surveyed as some people gave more than one response.

Percentages may not appear to sum to 100% because of rounding.

The relatively low number of negative responses (less than 1%) from the tourists and day users that stated the image of the Bruce nuclear site was a negative image of the Municipality of

Kincardine and the surrounding municipalities further supports the conclusion that stigma has not been attributed to this area because of the presence of the Bruce nuclear site.

Attractiveness as a Place to Live and for Tourism

Local and Regional Study Areas' respondents positive image of the Municipality of Kincardine and the Neighbouring Municipalities is further demonstrated in people's assessments of the attractiveness of the area as a place to live. As noted in Table 5.6.3-5, over 70% of the respondents state that the Municipality of Kincardine and the neighbouring municipalities are 'very attractive' or 'somewhat attractive' as a place to live (97% Kincardine, 95% neighbouring municipalities).

Table 5.6.3-5: Attractiveness of the Municipality of Kincardine and the Neighbouring Municipalities based on PAR

Response		Local Study Area (%)	Regional Study Area (%)
Place to Live	Very attractive	71	59
	Somewhat attractive	26	36
	Somewhat unattractive	2	4
	Very unattractive	2	1

Notes:

Cases may not sum to 401 for the total of Bruce County or 408 for Kincardine where 'no opinion' is excluded. Percentages may not appear to sum to 100% because of rounding.

Source: [21]

Tourists and day users were also asked to provide an opinion on the attractiveness of the Municipality of Kincardine and surrounding areas as a place to visit. These results are summarized in Table 5.6.3-6. The majority of respondents (73%) stated that this area was 'very attractive' and 27% stated that this area was 'somewhat attractive'. Only one respondent (less than 1%) stated that Kincardine and surrounding areas were 'very unattractive'.

Table 5.6.3-6: Tourist and Day User Ratings of Local Provincial Parks and Conservation Area

Response	Number of Responses	%
Very Attractive	82	73%
Somewhat Attractive	30	27%
Somewhat Unattractive	0	0%
Very Unattractive	1	1%
Total	113	100%

Notes:

The total number of responses is less than the number of people surveyed as one person did not provide a response to this question.

Total may not appear to sum to 100% because of rounding.

Landscape and Visibility of the Existing Bruce Nuclear Site

The physical landscape and visual setting is an important element in defining a community's character. The following discussion describes the existing landscape character and the visibility of the Bruce nuclear site [8]. For the purposes of this assessment, a Visual Study Area was defined as a 20 km radius from the Bruce nuclear site and encompassed the areas from where the Bruce nuclear site is likely to be visible [8]. The Visual Study Area is shown on Figure 2.4.2-1.

Landscape Character

The small peninsula on the eastern shore of Lake Huron occupied by the Bruce nuclear site, known as Douglas Point, has an elevation ranging from 175 to 190 m above sea level. It lies below the Algonquin Bluff; a 40 m ridge running along the Lake Huron shoreline. Above the bluff the topography is generally flat to rolling agricultural land, ranging from approximately 230 to 270 m elevation within a distance of 20 km inland.

The Bruce nuclear site is an extensive complex of buildings, structures and open space that has an overall organized, spacious and industrial character. It has two existing power generating stations (Bruce A and Bruce B) as well as a non-operational reactor building. The tallest and most visible structure at the Bruce nuclear site is a stack from an old steam plant.

The Lake Huron shoreline generally consists of either rocky beaches or sand dunes with inland tree cover. There are several residences scattered along the shoreline along with many public water-access points. As a result of people's inherent attraction to waterside views [147], the visibility of the Bruce nuclear site is a major influence on the aesthetic quality of the shoreline.

The inland area of the Visual Study Area has a distinct agricultural character. Here, agricultural fields are the dominant land use (73% by area) followed by forest cover (19%). The remaining areas are composed of transportation routes (3%), wetlands (2%), built-up areas (2%), extraction areas (0.5%) and open water (0.5%). Notably, the presence of approximately 115 large wind turbines within the Visual Study Area establishes a mixed industrial-agricultural landscape character in some areas.

Visibility of the Existing Bruce Nuclear Site

Agricultural and open lands are flat or rolling in this region. These open spaces provide direct sightlines for distant objects. Because of their non-industrial character, the visibility of the Bruce nuclear site has a major influence on the aesthetic and visual quality of agricultural and open space areas immediately surrounding the site. The Algonquin Bluff screens much of the Bruce nuclear site from inland views further from the site. Forested areas also screen views of the Bruce nuclear site locally. Transportation routes in the vicinity of the Bruce nuclear site are generally straight and grid-like, resulting in long sightlines. As such, the Bruce nuclear site is most visible along straight roads that lead towards it. The visibility of the site is less when travelling in other directions, when views are intermittent and controlled by the landforms and forest cover adjacent to the road.

For example, Highway 21 is a major transportation route in the vicinity of the Bruce nuclear site, following the shoreline of Lake Huron in a north-south direction from Southampton to Port

Franks. The Bruce nuclear site is not visible along much of this highway since it runs past the site and not towards it in an east-west direction; however, intermittent views are possible. In contrast, County Road 20 leads straight into the Bruce nuclear site from the east. The Bruce nuclear site is clearly visible along this road. The volumes of traffic along County Roads are typically lower than along Highway 21, therefore there are typically fewer numbers of viewers. Depending on the season, the Bruce nuclear site may become more visible to drivers. Vegetation, especially deciduous forest tracts, becomes more transparent in the winter, reducing their ability to screen views.

Clearer views of the Bruce nuclear site may also occur from wetland and inland areas with open water. The larger wetlands within the Visual Study Area are, however, mostly forested wetlands so views of the Bruce nuclear site are largely obstructed. Most of the open water areas such as rivers, streams or ponds are small and distant from the Bruce nuclear site. The influence of the Bruce nuclear site on the aesthetic and visual quality of these areas is less than for large, open bodies of water. When viewed from a vessel on Lake Huron, the entire Bruce nuclear site is clearly visible.

The Bruce nuclear site is visible from a few points along the Lake Huron shoreline. To the south these points are:

- south of Inverhuron Provincial Park along Lake Road;
- Lower Beach Road near Kincardine; and
- part of Boiler Beach in Kincardine.

To the north these points are:

- Baie du Doré;
- some small peninsulas by Concession Road 8;
- a few areas along Sunset Drive;
- the end of County Road 11 (Bruce Saugeen Townline Road); and
- North Shore Road in Port Elgin.

The southern portion of the Bruce nuclear site is visible from some shoreline areas at Inverhuron Provincial Park. However, most of the views from this park are screened by trees. As a result of its north-facing shore and extensive tree cover, the Bruce nuclear site is not visible from MacGregor Point Provincial Park.

The Bruce Power Visitors' Centre located near the eastern edge of the Bruce nuclear site rests at the top of the Algonquin Bluff and provides a sweeping view of the Bruce nuclear site.

In summary, the Bruce nuclear site has an industrial character and is highly visible from several areas within the Visual Study Area, particularly Lake Huron and points along the shoreline. The Algonquin Bluff and forested areas greatly reduce the visibility of the Bruce nuclear site from inland viewpoints. County Road 20 leads straight into the Bruce nuclear site from the east and views from this road are greatly influenced by the existing Bruce nuclear site. As a result of undulations in topography and seasonal changes in vegetation, intermittent views from Highway 21 are also possible.

Photographs were taken during summer 2008 (July 18, 2008) to document views of the Bruce nuclear site from different vantage points. Photographs 5.6.3-1 to 5.6.3-4 depict views from several vantage points. There have been no substantial changes in the ensuing two years.



Photograph 5.6.3-1: View from Baie du Doré (2008)



Photograph 5.6.3-2: View from Tie Road (2008)



Photograph 5.6.3-3: View from Bruce Power Visitors' Centre (2008)



Photograph 5.6.3-4: View from Inverhuron Provincial Park (2008)

5.7 SOCIAL ASSETS

Social assets consider the social and community activities in which people participate and the facilities or amenities that they draw upon in pursuit of their personal and community well-being objectives. This asset category also considers people's use and enjoyment of their private property for a variety of purposes (e.g., raising a family, leisure, home-based businesses). The activities undertaken at people's homes and at community and recreational facilities serve to create networks within the community and among communities, increase connectivity among people and generate relationships. To this end, the overall cohesiveness of a community is also considered as a social asset. For the purposes of this socio-economic assessment, the VECs that are considered as social assets include:

- Inverhuron Provincial Park; and
- Other Social Assets, including;
 - community and recreational facilities and programs (including community and recreational resource use);
 - use and enjoyment of private property;
 - cultural and heritage resources; and
 - community cohesion.

5.7.1 Inverhuron Provincial Park

Inverhuron Provincial Park is located along the eastern shore of Lake Huron approximately 14 km north of Kincardine and 22 km southwest of Port Elgin and is within the Local Study Area. The community of Inverhuron abuts the southerly boundary of the park and the Bruce nuclear site is located immediately to the north. The park is 288 ha in size and has been in operation since 1959. The park property is owned by OPG. The Ministry of Natural Resources (MNR) has a long term lease agreement with OPG allowing continued operation of the park.

Inverhuron Provincial Park is classified as a "Recreation Park". From 2001 to 2009 park visitation grew steadily, with visits ranging from approximately 35,600 to approximately 65,000 visitors per year and averaging about 48,700 visitors annually (shown in Table 5.7.1-1).

Table 5.7.1-1: Visitation at Inverhuron Provincial Park (2001 to 2009)

Year	Total Number of Visitors
2001	35,605
2002	49,253
2003	38,463
2004	37,811
2005	41,837
2006	55,760
2007	58,304
2008	56,054

Table 5.7.1-1: Visitation at Inverhuron Provincial Park (2001 to 2009) (continued)

Year	Total Number of Visitors
2009	65,383
Average	48,719

Source: [51;49;50;52]

The park was converted from a day-use only to overnight camping in 2005. Inverhuron Provincial Park has 162 camping sites; and 80 additional camping sites planned for the next few years. This park has discontinued the use of groundwater for its water supply and is connected to the municipal water supply system.

Based on the 2009 DGR survey of Inverhuron Provincial Park tourist and day users, most visitors to the park stayed for three to four days (Table 5.7.1-2).

Table 5.7.1-2: Average Length of Stay by Visitors to Inverhuron Provincial Park

Length of Stay (Days)	Number of Responses	%
1 – 2	4	8%
3 – 4	25	51%
5 – 6	5	10%
7 – 8	11	22%
9 or more	4	8%
Total	49	100%

Note: Total may not appear to sum to 100% because of rounding.

Source: [148]

Table 5.7.1-3 details activities that Inverhuron Provincial Park tourists and day users undertook while visiting the park. Activities most frequently undertaken included camping (19%), hiking (17%) and wildlife viewing or bird watching (13%) [148].

Table 5.7.1-3: Activities Undertaken at Inverhuron Provincial Park

Activity	Number of Responses	%
Camping	46	19%
Hiking	41	17%
Wildlife Viewing or Bird Watching	30	13%
Biking/Cycling	25	11%
Unorganized Sporting or Fitness Activities	22	9%
Fishing/Boating	20	8%
Swimming	20	8%

Table 5.7.1-3: Activities Undertaken at Inverhuron Provincial Park (continued)

Activity	Number of Responses	%
Conservation Area Programs and Organized Activities	13	5%
Organized Group Sporting or Social Activities	2	1%
Other	18	8%
Total	237	100%

Note: Total may not appear to sum to 100 percent because of rounding.

Source: [148]

5.7.2 Other Social Assets

5.7.2.1 Cultural and Heritage Resources

The following sections summarize the cultural landscapes and the Euro-Canadian heritage resources in the study area. Aboriginal heritage resources are discussed in the Aboriginal Interests TSD.

A Stage 1 Archaeological Assessment [55] was completed for the Project Area. These lands comprise an approximately 30 ha (75 acre), irregularly-shaped parcel that includes sections of Lake Shore Range (Concession A) Lots 17 to 24 of the former Bruce Township, Municipality of Kincardine, Bruce County. A Stage 2 Archaeological Assessment [54] was completed for Part Lots 11-31 Concession A (Lake Range) of Bruce Township, which includes the on-land portions of the Site Study Area.

Based on the Stage 1 and 2 Archaeological Assessments, in the mid-19th century it was planned that three towns and ports would surround the Douglas Point headland along Lake Huron, with Inverhuron to be developed to the south of the peninsula; and Port Bruce and Malta to the north. The most effective means of linking these proposed communities was to build a road along the slightly elevated band of loamy soil at the base of Douglas Point, avoiding the lower-lying, mucky wetlands that occurred on either side.

Speculators began to purchase lakeshore lots (i.e., Lake Shore Range Concession A) in 1854 in anticipation of traffic that would flow between the communities. It was not until 1867 that Euro-Canadian settlers began to appear along either side of the Inverhuron to Port Bruce/Malta Road where it passed through Lake Shore Range (Concession A) lots. Interest was greatest in those lots that would provide frontage along both sides of the road, specifically Lots 17 to 20.

At various times there appear to have been houses on either side of the Inverhuron to Port Bruce/Malta Road on dissected Lots 17, 18 and 19. As the road got closer to or was coincident with the Concession A/B boundary, houses were limited to the road's west side on Lots 20, 21 and 22. Lots 23 and 24 never appear to have been settled. In July 1862, a swamp fire destroyed many Port Bruce and Malta area homes, while blazes in 1882 and 1887 ended Inverhuron's commercial life.

The completion of the Stage 2 Archaeological Assessment [54] resulted in the definition of four culturally-sensitive areas (A, B, C and D, shown on Figure 5.7.2-1) within the Bruce nuclear site. For the purposes of this socio-economic assessment, a culturally-sensitive area is one that is known to contain a Euro-Canadian archaeological site or within which there is potential for one to be encountered as a result of ground disturbance. The Stage 2 Archaeological Assessment confirmed the presence of three Euro-Canadian archaeological sites:

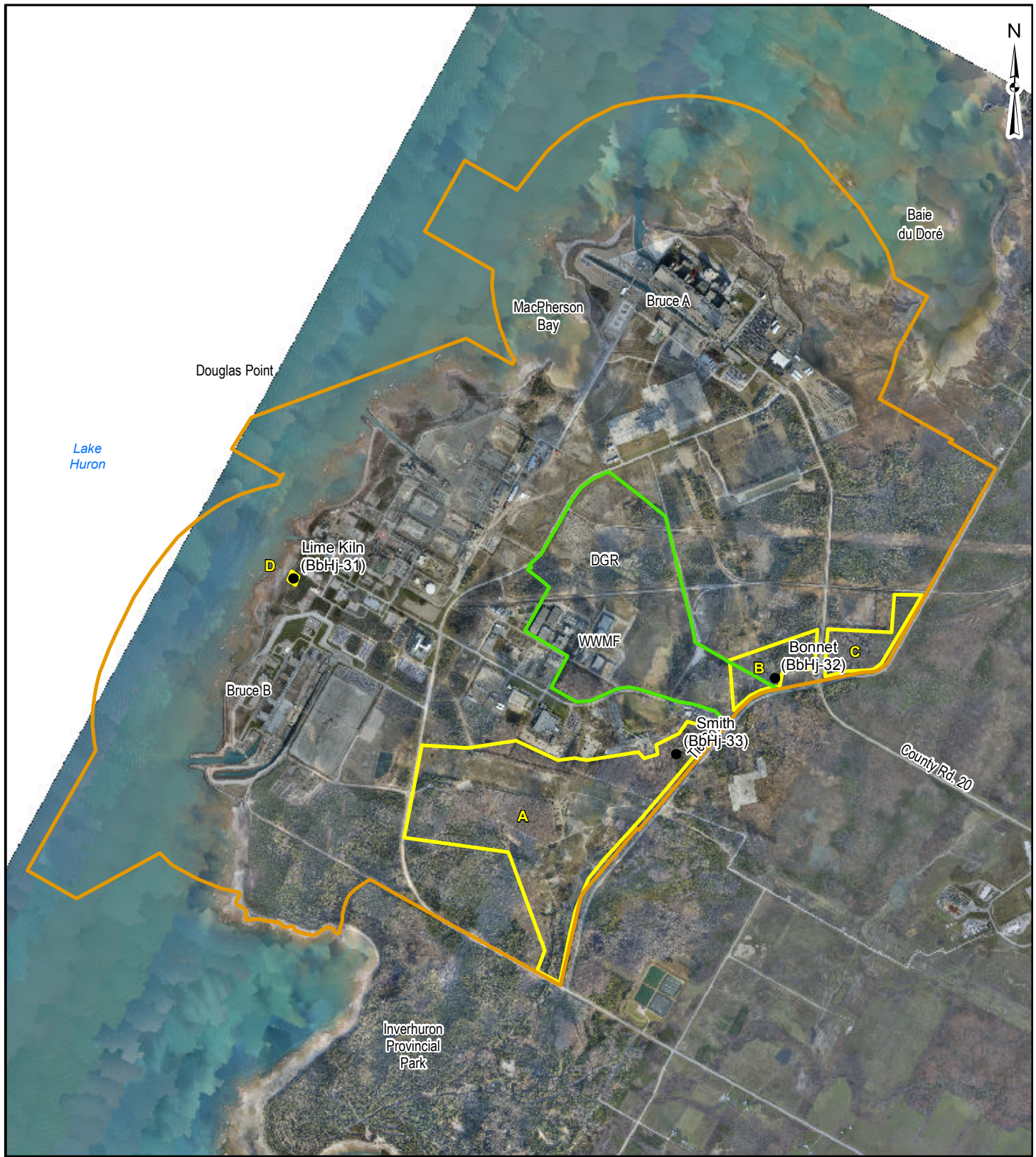
- *Smith (BbHj-33)* is located within culturally-sensitive area A (CSA A). Here there exists the ruins of a cobble foundation and several nearby depressions on the west side of Tie Road/Bruce Road 33 where it passes through Lot 18. They can be attributed to the Euro-Canadian homestead established after the September 27, 1854 land sale of Bruce Township lots. The Stage 1 assessment of Lot 18 details the Euro-Canadian history of the homestead site.
- *Bonnett (BbHj-32)* is located within culturally-sensitive area B (CSA B). Here there exists a band of low-relief cobble piles, generally less than 2 m in diameter, stretching along a 150 m section of a cobble terrace adjacent to a large conifer swamp that spreads to the northwest and north. A section of a collapsed snake rail fence straddles the terrace and swamp along the Lot 21/Lot 22 line.
- *Lime Kiln (BbHj-31)* is located within culturally sensitive area D (CSA D). Here there is a ruin of a lime kiln located approximately 200 m southwest of the DPNGS on the terrace immediately above the active Lake Huron shoreline. Quicklime was an essential 19th century building (mortar, plaster, whitewash), disinfecting, and agricultural product. The site features the kiln's cylindrical burning chamber, which had been constructed from igneous and metamorphic cobbles and small boulder. The collapsed front opening of the chamber faces Lake Huron. The opening would have served for fuel insertion, air intake, and the removal of the burned lime.

Culturally-sensitive area C (CSA-C) is part of Bruce Power leased lands and consists of a series of well-defined wooded, sandy beach ridges attributable to the high-water and recessional phases of the Nipissing Great Lakes and the Lake Algoma shoreline (ancestral Baie du Doré). Its physiography is identical to that found at the sandy head of Inverhuron Bay where cultural sites spanning the Late Archaic to Late Woodland periods are concentrated. CSA C was defined for its potential to contain Aboriginal heritage resources and is discussed further in the Aboriginal Interests TSD.

The Stage 2 Archaeological Assessment [54] concluded that the remainder of the Bruce nuclear site, including the DGR Project site is considered to be cleared of further archaeological concern.

5.7.2.2 Community Recreational Facilities and Programs

Community recreational facilities and programs (e.g., parks, trails, community recreation centres and arenas) play an important role in maintaining community cohesion and the satisfaction of residents with their community. These facilities are used by the community for a variety of social and recreational activities throughout the year, providing vital opportunities for recreation and personal fitness, space for individuals and groups to participate in and contribute to community life and programming to enrich personal knowledge, support hobbies and other interests. Many of these features also play an important role in attracting tourists to the area and in generating local business activity.



LEGEND

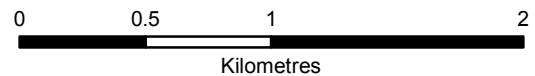
- Culturally Sensitive Area
- Project Area (OPG-retained lands that encompass the DGR Project)
- Site Study Area ¹

NOTES

1. Site Study Area is defined by EIS Guidelines as: "includes the facilities, buildings and infrastructure at the Bruce nuclear site, including the existing licensed exclusion zone for the site on land and within Lake Huron, and particularly the property where the Deep Geologic Repository is proposed."

REFERENCE

Base Data Provided by 4DM, November 2007.
 Imagery and Topo Collected and Processed by Terrapoint Canada Inc.,
 Acquisition Date: Nov. 12, 14, and 15, 2006, Ground Resolution: 0.25m,
 Datum: NAD 83 Projection: UTM Zone 17N



PROJECT	SOCIO-ECONOMIC ENVIRONMENT TECHNICAL SUPPORT DOCUMENT			
TITLE	CULTURALLY SENSITIVE AREAS IN THE SITE STUDY AREA			
	PROJECT No. 06-1112-037	SCALE: AS SHOWN	R000	
	DESIGN ASB 17 Oct. 2007		FIGURE 5.7.2-1	
	GIS BC 31 May, 2010			
	CHECK AB 31 May, 2010			
	REVIEW MAR 31 May, 2010			



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A wide variety of community and recreational facilities and natural areas serve local residents within Kincardine and the Regional Study Area and many also attract users from across southern Ontario.

The Davidson Centre (approximately 23 km from the Bruce nuclear site) is the main community centre in the Local Study Area. The centre has an ice pad, a fitness centre, meeting rooms and multipurpose rooms. The facility runs programming for people of all ages, including, for example, summer day camps and yoga classes. In early 2010, construction began at the Davidson Centre to create a new addition to the east side of the facility, which is expected to open in 2011. The new expansion will include a double gymnasium as well as new dressing rooms.

Outdoor activities that are conducted at community facilities may be sensitive to changes in environmental quality. Some of the many outdoors activities include:

- organized sporting activities;
- fishing, boating, swimming, sailing and other water-based recreational activities;
- unorganized play/playground activities and picnics; and
- walking, hiking and biking.

Area Provincial parks, conservation areas and recreational trails are not only important tourist features but also provide important recreational opportunities for local residents offering access to the Lake Huron shoreline. Presented in Table 5.7.2-1, 2009 PAR survey data indicates that over 70% of residents in the Local Study Area and 50% in the Regional Study Area either regularly or occasionally use the area parks and recreational trails.

Table 5.7.2-1: Frequency of Use of Provincial Parks, Conservation Areas and Recreational Trails by Local Residents (2009)

Frequency	Kincardine	Regional Study Area Municipalities
Regularly	34%	16%
Occasionally	42%	34%
Never	22%	49%
Number of Responses	396	401

Note: Percentages may not appear to sum to 100% because of rounding.

Source: [21]

The following sections describe key recreation facilities in Kincardine and the Regional Study Area as well as a number of popular recreational pursuits of the community. The sections discuss use and visitation at facilities and data from the PAR study conducted for the DGR Project are presented to illustrate resident participation in a range of outdoor activities.

Provincial Parks and Conservation Areas

In addition to Inverhuron Provincial Park (see Section 5.7.1 for a detailed discussion), MacGregor Point Provincial Park is a 1,204 ha natural environment park located along the shoreline of Lake Huron, approximately 15 km north of the Bruce nuclear site, within the

Regional Study Area. It currently offers 360 developed camping sites. Park visitation grew steadily from about 135,000 visitors in 2001 to more than 167,600 visitors in 2004 and then decreased to 160,068 in 2009. On average, over 156,800 people visited the park annually over the period of 2001 to 2009 (Table 5.7.2-2). This park recently discontinued use of surface water for its water supply and is now connected to the municipal water supply system.

Table 5.7.2-2: Visitation at MacGregor Point Provincial Park (2001 to 2009)

Year	Total Number of Visitors
2001	135,187
2002	134,275
2003	160,150
2004	167,671
2005	165,413
2006	161,630
2007	166,347
2008	160,606
2009	160,068
Average	156,816

Source: [51;49;50;52]

Stoney Island Conservation Area and Brucedale Conservation Area are both located within the Local Study Area (see Figure 2.4.2-2). Brucedale Conservation Area is a 49 ha area offering 52 overnight camping sites and attracting approximately 100 visitors annually [149]. Stoney Island Conservation Area is a 40 ha area containing no camping sites but provides 6 km of nature trails and is open for public use year round. No data was available on visitation rates at this conservation area [150].

Survey data from 2009 indicates that visitors to MacGregor Point Provincial Park and the conservation areas examined stayed on average for three to four days (Table 5.7.2-3) per visit.

Table 5.7.2-3: Average Length of Stay by Visitors to MacGregor Point Provincial Park and Conservation Areas

Length of Stay (Days)	Number of Responses	%
0	4	6%
1 – 2	10	15%
3 – 4	30	44%
5 – 6	10	15%
7 – 8	8	12%

Table 5.7.2-3: Average Length of Stay by Visitors to MacGregor Point Provincial Park and Conservation Areas (continued)

Length of Stay (Days)	Number of Responses	%
9 or more	6	9%
Total	68	100%

Note: Percentages may not appear to sum to 100% because of rounding.

Source: [148]

Table 5.7.2-4 details activities that tourists and day users undertook while visiting these facilities. Activities most frequently undertaken included camping (20%), hiking (19%) and wildlife viewing or bird watching (11%) [148].

Table 5.7.2-4: Activities Undertaken at Regional Study Area Provincial Parks and Conservation Areas

Activity	Number of Responses	%
Camping	56	20%
Hiking	52	19%
Wildlife Viewing or Bird Watching	30	11%
Biking/Cycling	28	10%
Conservation Area Programs and Organized Activities	21	8%
Fishing/Boating	18	6%
Swimming	16	6%
Unorganized Sporting or Fitness Activities	12	4%
Organized Group Sporting or Social Activities	5	2%
Other	41	15%
Total	279	100%

Note: Percentages may not appear to sum to 100% because of rounding.

Source: [148]

Recreational Trail Systems

There are a number of promoted and signed trail systems throughout the study areas that are available to visitors and local residents. These include: canoe/kayak routes, cycling and hiking trails, and 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 [111].

Recreational Fishing and Boating

A recreational fishing survey published by Fisheries and Oceans Canada [151] indicates that a wide variety of fish are targeted or caught by recreational anglers. The fish species most frequently caught by recreational anglers on Lake Huron are smelt, perch, smallmouth bass and pike, which account for approximately 74% of all fish caught. Approximately half of the fish caught on Lake Huron are kept, while others are released.

Marinas and fishing charter businesses and the proximity of Kincardine to Lake Huron offer recreational boating and fishing opportunities for local residents and tourists alike. Data from the PAR study are presented in Table 5.7.2-5. The survey responses indicate that 33% of residents in Kincardine and 24% of residents in the Regional Study Area go fishing and boating occasionally or on a regular basis. Stakeholder interviews with local marinas, fishing charters and boating clubs also indicate that these boating and fishing opportunities draw local residents and tourists alike.

Table 5.7.2-5: Frequency of Fishing and Boating by Local Residents (2009)

Frequency	Local Study Area	Regional Study Area Municipalities
Regularly	11%	6%
Occasionally	22%	18%
Never	67%	76%
Number of Responses	395	406

Notes: Percentages may not appear to sum to 100% because of rounding.

Source: [21]

Bird Watching and Nature Viewing

The natural beauty of the Lake Huron shoreline is a major attraction for both residents and tourists. The two Provincial parks, local beaches, the Bruce Dale and Stoney Island Conservation Areas and other hiking and cross-country ski trails provide access to the shoreline and wooded areas for nature enthusiasts. Inverhuron Provincial Park, the wooded areas surrounding the Bruce nuclear site and Baie du Doré, located immediately north of the Bruce nuclear site, are popular locations for bird watching and nature viewing. The annual Huron Fringe Bird Festival organized by MacGregor Point Provincial Park in May attracts an average of 300 participants to observe birds and their habitats across the local area [89]. The Baie du Doré wetland is designated as a Provincially Significant Wetland (PSW) and supports a wide diversity of plant species and is used by deer and waterfowl. Rare flora and fauna have been observed at this location. There are also several other environmentally significant areas in the vicinity of the Bruce nuclear site. The Terrestrial Environment TSD provides more information regarding the natural heritage values in the study areas.

PAR data presented in Table 5.7.2-6 indicates that the majority of residents in Kincardine (72%) and neighbouring municipalities (54%) either regularly or occasionally use the lands and waters in the vicinity of the Bruce nuclear site for bird watching or nature viewing.

Table 5.7.2-6: Frequency of Bird Watching or Nature Viewing by Local Residents (2009)

Frequency	Local Study Area	Regional Study Area Municipalities
Regularly	33%	22%
Occasionally	39%	32%
Never	28%	46%
Number of Responses	400	406

Note: Percentages may not appear to sum to 100% because of rounding.

Source: [21]

5.7.2.3 Use and Enjoyment of Private Property

Use and enjoyment of private property is considered an important social asset because of its role often as a residence as well as in providing residents with a place to undertake a variety of recreational and social activities. The ability to use and enjoy one's property is considered a major determinant of one's satisfaction with community. In general, factors that tend to affect people's use and enjoyment of private property include:

- sense of security and safety;
- neighbours and friendliness of a community;
- municipal services;
- a healthy and clean environment;
- recreational activities and availability; and
- property and tax levies.

For the purposes of this assessment, the description of the existing environment conditions relevant to people's use and enjoyment of private property is focussed on a general discussion of study area residential properties, including those used for recreational and seasonal purposes.

In the Local and Regional Study Areas, use of personal property in settlement areas as well as rural and cottage properties is characterized by a mix of outdoor uses including boating, hiking, nature viewing, relaxing, swimming, gardening, farming, outdoor meals and other recreational activities. The community of Inverhuron in particular is notable for the presence of seasonal residences and cottages, as well as permanent residences and farms.

For the purposes of this assessment, 14 "Site Neighbours" to the Bruce nuclear site were identified (see Appendix C for detailed Site Neighbour survey methodology). Of these property owners, four residential site neighbours described their outdoor use and enjoyment of their properties, which included the following activities:

- enjoying the creek;
- nature viewing;
- hiking and walking;
- gardening;
- swimming;
- fishing;
- camping;
- ATVing;
- farming;
- mushroom collecting;
- gardening;
- relaxing outdoors; and

- bonfires;
- BBQs;
- snowmobiling;
- skiing;
- entertaining.

When asked to describe the things they enjoy about owning properties near the Bruce nuclear site, the site neighbours stated the following aspects:

- location;
- close to home;
- beach;
- Inverhuron Provincial Park;
- very pretty hobby farm;
- privacy;
- climate;
- natural beauty;
- personal freedom;
- desire to contribute and learn; and
- space.

5.7.2.4 Community Cohesion

Community cohesion refers to people's sense of belonging to a self-defined community and is considered a social asset. A cohesive community maintains and generates relationships and community pride, it also helps in defining a common vision among its residents that serves to maintain and enhance other community assets and overall community well-being. Several factors contribute to the cohesiveness of a community. These include length of residency in a community and the demographic characteristics of the households in that community (composed of young families or not for example). Key factors contributing to residents' feelings of community cohesion and direct comments from residents regarding their feelings are presented in this section.

Information in the section is drawn from Census data (2006), the PAR, Community Leader, Stakeholder and Neighbouring Property Owner surveys conducted for the DGR Project.

Length of Residency and Households with Children

The length of residency is a key factor contributing to or an indicator of community cohesion. 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 Tables 5.7.2-7 and 5.7.2-8 support the characterization of this area as a well established and stable community. From the 2006 Census data, it is clear that many of the residents have lived at their current address for the past five years (68% in the Local Study Area and 69% in the Regional Study Area). From the PAR, it is evident that the local population is aging and over 62% of Local Study Area respondents have lived at their present address for 21 years or more. Slightly fewer (59%) of the Regional Study Area respondents have lived at their present address for 21 years or more.

Table 5.7.2-7: Length of Residence from Statistics Canada

Length of Residence	Local Study Area		Regional Study Area	
	%	Number of Responses	%	Number of Responses
Same Residence 5 years ago	68	7,230	69	26,450
Different Residence 5 years ago	32	3,390	31	11,670

Note: Percentages may not appear to sum to 100% because of rounding.

Source: [30;31;32;33;34;35]

Table 5.7.2-8: Length of Residence from the PAR

Length of Residence	Local Study Area		Regional Study Area	
	%	Number of Responses	%	Number of Responses
Less than 1 year	5	20	4	17
1-10 years	19	75	21	87
11-20 years	14	55	15	61
21 or more years	62	249	59	241

Note: Percentages may not appear to sum to 100% because of rounding.

Source: [21]

A small number (four) of site neighbours that are permanent residents in the areas immediately adjacent to the site were also asked about their length of residence. These results are detailed in Table 5.7.2-9. It is important to note, however, that one of the two site neighbours that have been living at their current residence for one to 10 years actually has had that property in their family for over 50 years. So while they may appear to be a newer resident, they are also a long-time stakeholder in the area.

Table 5.7.2-9: Length of Residence from the Site Neighbour Surveys

Length of Residence	Site Neighbours	
	%	Number of Responses
Less than 1 year	0	0
1-10 years	50	2 ^a
11-20 years	25	1
21 or more years	25	1

Note:

a One of these two residents has had ownership of the neighbouring property in their family for over 50 years but has only moved to the property relatively recently.

The 2006 Census data presented in Table 5.7.2-10 indicate household characteristics in the Local and Regional Study Areas. Approximately 27% of households in the Local Study Area

are composed of couples with children. This number is slightly higher in the Regional Study Area (30%). These data illustrate that the families in the Local Study Area, when compared to the Regional Study Area, tend to have fewer households with children, or one person households.

Table 5.7.2-10: Household Characteristics from Statistics Canada

Characteristics	Local Study Area		Regional Study Area	
	%	Number of Responses	%	Number of Responses
Total Private Households	100	4,605	100	15,885
Households containing a couple with children	27	1,245	30	4,790
Households containing a couple without children	38	1,755	36	5,790
One-person households	26	1,175	24	3,820
Other household types	9	425	9	1,475

Note: Percentages may not appear to sum to 100% because of rounding.
Source: [30;31;32;33;34;35]

The PAR results included in Table 5.7.2-11 also indicate that nearly three quarters of the households in the Local and Regional Study Areas do not have children (74% in both the Local and Regional Study Area).

Table 5.7.2-11: Households with Children 18 Years of Age or Younger from the PAR

Response	Local Study Area		Regional Study Area	
	%	Number of Responses	%	Number of Responses
No	74	295	74	301
Yes	26	105	26	105

Note: Percentages may not appear to sum to 100% because of rounding
Source: [21]

All of the four residential site neighbours surveyed do not have any children living at that residence, as indicated in Table 5.7.2-12.

Table 5.7.2-12: Households with Children 18 Years of Age or Younger from the Site Neighbour Surveys

Response	Local Study Area	
	%	Number of Responses
No	100	4
Yes	0	0

Social and Community Organizations

In addition to the direct contributions of individuals and families to community cohesion, social and community organizations contribute to the cohesiveness of their communities by promoting social interaction, integration and mutual support. They also serve as a means for community expression, thereby influencing the 'self image' of community members, the organization and the community as a whole. Table 5.7.2-13 lists some of the social and community organizations that serve the Local Study Area.

Many of these organizations and services rely heavily on fundraising events and volunteers for their operations. Some are affiliated with broader Provincial and national organizations.

OPG's Contribution to Community Cohesion

Corporate involvement and support for community activities can help strengthen community character and cohesion. Through its Corporate Citizenship Program (CCP), OPG provides financial support and hands-on involvement to registered charities and not-for-profit community, educational and environmental organizations [152]. OPG provided contributions of \$140,000 in 2009 and has planned contributions of \$100,000 in 2010. OPG also provides the Educational Excellence program with an annual contribution of \$100,000.

OPG supports more than 120 local non-for-profit initiatives and over 75 community events and clubs each year. Some of these include support of the Kincardine Scottish Festival and Highland Games Heavy Events, Port Elgin's Pumpkinfest, the Bruce County Museum and Cultural Centre, local food banks, minor sports, environmental initiatives and First Lego Leagues.

Some other examples of OPG's involvement in local communities include:

- a financial donation for the Lindsay Tract Trail Development Project, in partnership with the County of Bruce and the Municipality of Northern Bruce Peninsula to develop 80 km of new trails with the upgrading of 40 km of trails between Stokes Bay and Miller Lake;
- hosting of "Media Day", inviting journalists to the WWMF to learn more about the interim waste management for low and intermediate level wastes at that facility;
- a Young Worker Safety session at Kincardine District Secondary School, simulcast to more than 80 schools and approximately 40,000 students across the Province in partnership with "Our Youth at Work";
- sponsorship of the "OPG Environment Award" at the annual Kincardine Chamber of Commerce Award Ceremony, to recognize local groups and individuals that take action on environmental issues in their communities;
- participation in Earth Day activities, including tree planting initiatives;
- sponsorship of post-secondary students conducting local environmentally-related research; and
- hosting of community events at the Bruce nuclear site.

Several stakeholders and community leaders remarked that OPG has, in the past, been an excellent community partner.

Table 5.7.2-13: Selected Social and Community Organizations in the Local Study Area

Type of Organization	Selected Organizations Operating in the Local Study Area
Social Service	<ul style="list-style-type: none"> • Community Living Kincardine and District • Bruce County Legal Aid • Community Food Bank • Day Away Program • Newcomers Club • Women's House Serving Bruce and Grey • Big Brothers and Sisters
Health and Safety	<ul style="list-style-type: none"> • Canadian Cancer Society
Arts and Recreation	<ul style="list-style-type: none"> • Bruce Bowling Lanes • Gymbags Health and Fitness • Kincardine Curling Club • Kincardine Karate Dojo • Davidson Centre • Tiverton Sports Arena • Tiverton Lions Bingo Hall • Whitney Crawford Community Centre • Kincardine Yacht Club and Marina • Kincardine Power and Sail Squadron • Kincardine Scottish Pipe Band • Kincardine Community Singers • Kincardine Sunset Quilters Guild • Kincardine Tartan Twirlers • Kincardine Theatre Guild
Environmental/Advocacy	<ul style="list-style-type: none"> • South Bruce Amnesty
Ratepayers	<ul style="list-style-type: none"> • Inverhuron and District Rate Payers Association
Community Organizations	<ul style="list-style-type: none"> • Knights of Columbus • Rotary Club of Kincardine • Tiverton Lions Club • Kincardine and District Lions Club • Air Cadets • Boy Scouts • Kincardine and District Horticultural Society • Bruce County Historical Society • Kincardine Area Seniors Advisory Action Committee • Merry Kin Club • Bruce Shrine Club

NWMO has taken a similar approach and interest in supporting community cohesion. From the outset, the DGR Project has been developed in partnership with Kincardine and surrounding Bruce County municipalities. The DGR Project has enjoyed strong community support over the years. To maintain and strengthen community partnerships, the DGR Community Partnership Program was developed and implemented by the NWMO [153]. The DGR Community Partnership Program provides annual support of \$100,000.

5.8 NATURAL ASSETS

The natural assets component of the community assets framework considers the biophysical environment upon which community well-being depends. The natural assets are described in detail in separate TSDs, but aspects relevant to the socio-economic environment are summarized in the followings sections. The following natural assets are considered:

- atmospheric environment;
- hydrology and surface water quality;
- aquatic environment;
- terrestrial environment;
- geology; and
- radiation and radioactivity.

5.8.1 Atmospheric Environment

For the purposes of this socio-economic assessment, the relevant aspects of the atmospheric environment are the existing levels of particulate (fugitive dust), and noise levels in the Local Study Area as they may be a source of disruption. Three receptor locations were included to evaluate air quality and noise exposures that may be affected by the DGR Project: a residential dwelling on Albert Road (R1), a cottage located across Baie du Doré from Bruce A (R2) and an overnight campsite at Inverhuron Provincial Park (R3) as shown on Figure 5.8.1-1. The information summarized here is more fully presented in the Atmospheric Environment TSD.

The existing air quality in the Local Study Area is deemed to be characteristic of the general air quality in Southwestern Ontario, and was described using monitoring data from regional stations along with modelling of emissions from existing sources at the Bruce nuclear site. Overall, the existing air quality in the Local Study Area complies with relevant criteria.

The existing baseline noise levels at receptor locations surrounding the Bruce nuclear site were evaluated by a review of available monitoring data, supplemented by a field investigation, which are described in the Atmospheric Environment TSD. In general, the off-site noise levels are reflective of a rural environment (i.e., sound levels were generally <50 dBA) and are characterized by the sounds of nature (e.g., rustling leaves, waves on the shore of Lake Huron, birds). Noise from the operations at the Bruce nuclear site was audible at Baie du Doré (R2) and Inverhuron Provincial Park (R3).

5.8.2 Hydrology and Surface Water Quality

For the purposes of the socio-economic assessment, the relevant aspects of hydrology and surface water quality are water resources, because they may be used as a supply of drinking

water or for agricultural or recreational purposes. The information summarized here is more fully presented in the Hydrology and Surface Water Quality TSD.

As described in the Hydrology and Surface Water Quality TSD, Lake Huron is used locally for sport and commercial fishing, as well as recreational swimming and boating. The warmer waters from the cooling water discharges from the Bruce generating stations provide year round sport fishing opportunities. The Baie du Doré wetland adjacent to the Bruce nuclear site provides habitat suitable for warmwater fish spawning and rearing.

Municipal, commercial and recreational uses of Lake Huron in the Local and Regional Study Areas include drinking water intakes, commercial and recreational fishing, recreational boating, and swimming [154]. The towns of Southampton and Kincardine have municipal water treatment plants (WTPs) that obtain water from Lake Huron, and water pollution control plants (WPCPs) that discharge treated wastewater to Lake Huron. These are described in Section 5.6.2.

MacGregor Point and Inverhuron Provincial Parks' drinking water comes from municipal systems while Brucedale Conservation Area relies on wells for drinking water (see Section 5.6.2.1 for a detailed discussion of water supply for the Local and Regional Study Areas).

The Local Study Area incorporates the Underwood Creek and Stream C watersheds. Surface water runoff from the Local Study Area drains into Lake Huron. The Site Study Area has an extensive drainage system of catchbasins, manholes, open ditches and culverts that directs drainage to Lake Huron via several outfalls and drainage features. Surface water enters the Site Study Area via Stream C, which is a former tributary of the Little Sauble River that was diverted to the Baie du Doré during initial development of the Bruce nuclear site in the 1960s.

As described in Section 5.5.1 of the Hydrology and Surface Water Quality TSD, Lake Huron's water quality data from the Local Study Area generally meets water quality standards established within the Provincial Water Quality Objectives (PWQOs) [155], Ontario Drinking Water Objectives (ODWS) [156] and Canadian Environmental Quality Guidelines (CEQGs) [157]. A surface water sampling program conducted in 2007 and 2009 found iron concentrations above the PWQO for samples in Lake Huron (MacPherson Bay).

5.8.3 Aquatic Environment

For the purposes of this socio-economic assessment, the relevant aspects of the aquatic environment are the aquatic features, fish and fish habitat present across the study areas, with a strong focus on the shore areas of Lake Huron. These features, habitats and fish species attract many people to the Local and Regional Study Areas for recreational and commercial fishing, and water-based recreation. The information summarized here is more fully presented in the Aquatic Environment TSD.

Within Lake Huron near the Bruce nuclear site there are two main habitats: the near shore and offshore. The near shore habitat consists mainly of rocky areas that are exposed to the wind and wave action of the Lake Huron shoreline (e.g., MacPherson Bay) and sheltered bays such as Baie du Doré, which provide a more constant environment, protected from wave and current action. Offshore habitat consists of the deep, cool, open waters of Lake Huron.



LEGEND

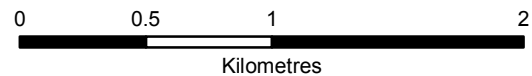
- Noise Receptor
- Project Area (OPG-retained lands that encompass the DGR Project)
- Site Study Area¹

NOTES

1. Site Study Area is defined by EIS Guidelines as: "includes the facilities, buildings and infrastructure at the Bruce nuclear site, including the existing licensed exclusion zone for the site on land and within Lake Huron, and particularly the property where the Deep Geologic Repository is proposed."

REFERENCE

Base Data Provided by 4DM, November 2007.
 Imagery and Topo Collected and Processed by Terrapoint Canada Inc.,
 Acquisition Date: Nov. 12, 14, and 15, 2006, Ground Resolution: 0.25m,
 Datum: NAD 83 Projection: UTM Zone 17N



PROJECT	SOCIO-ECONOMIC ENVIRONMENT TECHNICAL SUPPORT DOCUMENT			
TITLE	DUST AND NOISE RECEPTORS			
PROJECT No. 06-1112-037	SCALE: AS SHOWN	R000		
DESIGN ASB 17 Oct. 2007	CHECK KC 31 May, 2010	FIGURE 5.8.1-1		
GIS BC 31 May, 2010	REVIEW AB 31 May, 2010			
REVIEW AB 31 May, 2010				



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In the open waters of Lake Huron, the species encountered are those that are well adapted to the cold water and utilize open lake or deeper coastal habitats for the majority of their life cycles or the majority of the year. Species included in this category are round whitefish (*Prosopium cylindraceum*), lake whitefish (*Coregonus clupeaformis*), lake trout (*Salvelinus namaycush*) and deepwater sculpin (*Myoxocephalus thompsoni*). Most make use of the nearshore areas only during spawning and prefer offshore deeper waters, particularly during the warmer summer months. Lake whitefish are important to the Aboriginal commercial and traditional fisheries in Lake Huron.

Fish found in the nearshore areas such as the inner, protected portion of the Baie du Doré are generally warmwater species. Shallow shoal areas within Baie du Doré provide spawning, nesting, rearing and feeding habitats for fish. Species known to use this habitat, and often targeted by anglers, are smallmouth bass (*Micropterus dolomieu*), northern pike (*Esox lucius*), spottail shiner (*Notropis hudsonius*) and bowfin (*Amia calva*). Smallmouth bass are common in the discharge channels and Baie du Doré and have been observed spawning in these areas.

Fish species have also been recorded in the constructed South Railway Ditch in the Project Area. Fish also utilize Stream C. The Project Area and Stream C within the Bruce nuclear site are not accessible to the public for fishing.

5.8.4 Terrestrial Environment

For the purposes of this socio-economic assessment, the relevant aspects of the terrestrial environment are the vegetation communities and wildlife species present in the Local and Regional Study Area. These features attract people to the study areas for a variety of land based recreation. The information summarized here is more fully presented in the Terrestrial Environment TSD.

As described in the Terrestrial Environment TSD, the landscape in Bruce County is predominantly level or gently rolling plains, disrupted by large physical features such as the Niagara Escarpment, which runs from Niagara Falls to the northern end of the Bruce Peninsula. This divide in terrain type has resulted in land use in southern Bruce County being primarily agricultural, while natural systems are more prevalent in northern Bruce County. Forested areas include both lowland and upland deciduous, mixed, and coniferous forests. In addition to the Niagara Escarpment, landscape-scale features in the Regional Study Area include the Lake Huron shoreline, the Saugeen River riparian corridor and associated wetland complexes (i.e., Greenock Swamp).

A number of Natural Heritage System components that support a wide variety of vegetation communities and wildlife species have ecological functions that are important at both the local and regional scales. The following core natural areas are present within the Local Study Area:

- Inverhuron Provincial Park, which is also an International Biological Program Site;
- Baie du Doré PSW;
- Scott Point PSW Complex and Provincially Significant Life Science Area of Natural & Scientific Interest (ANSI);
- MacGregor Point Provincial Park which also is a PSW Complex and a Regionally Significant Life Science ANSI and a Provincial Park;

- MacGregor Point Wildlife Management Unit, which is an International Biological Program Site;
- Lorne Beach Swamp, which is a Regionally Significant Wetland;
- South Lorne Shoreline International Biological Program Site;
- North Lorne Shoreline International Biological Program Site; and
- Huron Fringe Deeryard.

Generally, the terrestrial conditions in the Site Study Area and Project Area are not relevant to the socio-economic analysis given the restricted public access to these areas. However, considering the potential for wildlife movement between the Site Study Area and Local and Regional Study Areas, the following information regarding the Site Study Area is noted.

The Bruce nuclear site is approximately 29% covered by forested areas. A relatively large number of vascular plants have been recorded in the Site Study Area and adjacent lands including portions of Inverhuron Provincial Park and the Baie du Doré wetland. The wildlife habitat functions of the remnant woodland habitat units within the Site Study Area are limited by their small size, high degree of fragmentation, and disturbed nature. These areas are capable of supporting wildlife species that are not dependent on forest interior; however, they may be part of habitat areas used by wildlife with larger territorial ranges, such as wild turkey and white-tailed deer. At least two distinct flocks of 20 to 30 wild turkeys occur in the Site Study Area. The eastern limits of the Site Study Area and Project Area are part of the Huron Fringe Deeryard.

Breeding bird surveys recorded diverse avian communities in the Site Study Area. Several species of herptofauna have been recorded from the Site Study Area, with spring peeper and American toad being the most commonly recorded amphibian species.

5.8.5 Geology

For the purposes of the socio-economic assessment, the relevant aspect of the geological environment is the groundwater resources in the Local Study Area that may be used as a supply of drinking water or may interact with surface waters used for drinking water, agricultural or recreational purposes. The surficial and bedrock geology is relevant to the socio-economic environment as it helps to characterize the landscape, contributes to the visual characteristics of the site within the landscape and the terrain itself contributes to the community sense of place. The information summarized here is more fully presented in the Geology TSD.

Groundwater flow within the surficial deposits and bedrock of the Local Study Area is directed north-westward toward Lake Huron, and is consistent with the established surface drainage pattern. Fresh groundwater is available from sand and gravel lenses within the clayey glacial deposits and the bedrock typically up to 100 m below ground surface. These horizons provide water supplies for domestic and municipal services throughout the Local Study Area, including municipal wells in Underwood and formerly Tiverton, a communal well at the Woodland Trailer Park and approximately 1,000 domestic wells in the Municipality of Kincardine. The Bruce nuclear site is downgradient from neighbouring groundwater users in the Local Study Area.

The dominant physiographic feature within the Local Study Area is the Algonquin Bluff, which rises approximately 30 m from the Lake Huron shoreline. The terrain above the Algonquin Bluff consists of comparatively flat clay plains, which include a network of streams that drain

westward to Lake Huron. The till is locally overlain by sand and gravel beach deposits related to the former glacial Lake Algonquin and Lake Nipissing shorelines. The shoreline areas also include deposits of till and areas of boulders, exposed by shore erosion of the till. Areas of bog and cedar swamp also occur in poorly drained areas below the Algonquin Bluff, and elsewhere within other poorly drained forested areas.

5.8.6 Radiation and Radioactivity

For the purposes of this socio-economic assessment, the relevant aspect of radiation and radioactivity is human exposure to radiation. Nuclear Energy Workers (NEWs) are expected to receive radiation doses as a result of the DGR Project. To a lesser degree, non-NEWs and members of the public may also receive radiation doses associated with the operations phase of the DGR Project. The information summarized here is more fully presented in the Radiation and Radioactivity TSD.

As part of its Radiological Environmental Monitoring Program, Bruce Power calculates the annual doses to members of the public in the vicinity of the Bruce nuclear site, based on measured concentrations of radionuclides in different media, and estimated data when monitoring data are not available. The highest dose among eight potentially critical groups of public studied was north of the site near Baie du Doré, with doses during 2008 being 2.7 and 2.15 $\mu\text{Sv/a}$ to the adult and infant, respectively. This is well below the annual dose limit of 1,000 μSv set by the CNSC.

The occupational doses received by Nuclear Energy Workers (NEWs) at the WWMF and other nuclear facilities at the Bruce nuclear site are closely monitored by comprehensive dosimetry programs. Under these programs, radiation doses are measured, recorded and reported. During 2008, the maximum individual annual whole body dose was 5.8 mSv, which is well below the regulatory limit set by the CNSC of 50 mSv in a single year and 100 mSv over any five years. The collective annual whole body doses received by workers at the WWMF were estimated to be 21.7 person-mSv, which is less than OPG's Action Levels for the WWMF.

For those workers who are working at the Bruce nuclear site but are not designated as NEWs, the regulatory dose limit of 1,000 $\mu\text{Sv/a}$ is applied. Radiation doses to non-NEWs from licensed nuclear activities are strictly monitored and controlled. In 2008, the highest dose rate measured at the perimeter of the construction island in the WWMF was below the dose rate limit established for non-NEWs, as described in the WWMF operating licence documentation.

5.9 PUBLIC ATTITUDES TOWARD PERSONAL AND COMMUNITY WELL-BEING

The final component of the community well-being framework is an integrated concept of "Public Attitudes toward Personal and Community Well-being". Three broad indicators were examined that reflected public attitudes towards their own well-being and that of their community as a whole. The first two indicators are:

- people's feelings of personal health and sense of personal safety; and
- people's satisfaction with community.

These attitudes are often considered indicators of individual and community well-being [17;158;159]. Their use as indicators of community well-being assumes that greater community

well-being is achieved when more people feel they are healthy, safe and satisfied living in their communities.

Finally, because the DGR Project has the potential to affect communities near the Bruce nuclear site, people's attitudes towards the WWMF and the Bruce nuclear site as a whole are also considered an important DGR Project-specific indicator of community well-being. To this end, a third indicator of community well-being has been included:

- people's attitudes towards the Bruce nuclear site and the WWMF.

Finally, overall attitudes toward community well-being were examined through people's attitudes towards the greatest threats to their community and those attributes of their communities that they would like to be maintained or enhanced. These PAR results indicate the assets that are most important to residents, community leaders and other community stakeholders.

5.9.1 Feelings of Personal Health and Sense of Personal Safety

The use of people's feelings of personal health and sense of personal safety as an indicator of community well-being assumes that greater community well-being is achieved the more that people feel healthy and safe living in their community. Public Attitude Research (PAR) was undertaken across the Regional and Local Study Areas to gain an understanding of how people rate their feelings of personal health and safety [21]. The results of this research are listed in Table 5.9.1-1.

Table 5.9.1-1: Ratings on Overall Feelings of Personal Health and Sense of Personal Safety

Rating	Feeling of Personal Health				Sense of Personal Safety			
	Local Study Area		Regional Study Area		Local Study Area		Regional Study Area	
	%	Number of Responses	%	Number of Responses	%	Number of Responses	%	Number of Responses
Excellent	33	133	30	121	63	251	54	218
Good	53	211	51	209	34	136	40	163
Not sure	<1	1	1	4	<1	2	<1	2
Fair	11	44	15	62	2	10	5	20
Poor	3	12	3	12	<1	2	1	5

Note: Percentages may not appear to sum to 100% because of rounding.

Source: [21]

In the Local Study Area, 86% of respondents rate their feeling of personal health as 'excellent' or 'good', 11% as 'fair' and 3% as 'poor'. The vast majority (97%) of Local Study Area respondents rate their sense of personal safety as 'excellent' or 'good' and 2% as 'fair'. With regard to the Regional Study Area specifically, 81% rate their feeling of personal health as 'excellent' or 'good', 15% as 'fair' and 3% as 'poor'. The majority (94%) of Regional Study Area respondents rate their sense of personal safety as 'excellent' or 'good', 5% as 'fair' and 1% as

'poor'. These results indicate that residents in the Local and Regional Study Areas feel that they have a high sense of personal health and an even greater sense of personal safety.

To further understand what contributes to these responses, PAR respondents were asked to describe the things or issues in their community that most strongly affect their feelings of personal health or sense of safety. These things or issues are detailed in Table 5.9.1-2.

Table 5.9.1-2: Community Issues that Affect Feelings of Personal Health or Sense of Personal Safety

Issues	Local Study Area		Regional Study Area	
	%	Number of Responses	%	Number of Responses
Human Assets:	57	230	45	184
Healthcare services/facilities	38	152	24	98
Community safety – policing, drugs	18	74	20	81
H1N1 virus/vaccine	1	4	1	5
Natural Assets:	9	37	9	35
Pollution	4	15	3	12
Weather – climate, global warming	2	9	2	7
Water quality	2	7	3	13
Environment	1	6	1	3
Attitude towards Bruce Nuclear Site/DGR:	6	24	3	14
Bruce Nuclear Power Plant	6	24	3	14
Physical Assets:	6	21	4	21
Infrastructure	2	7	1	5
Urban development/growth/congestion	2	7	1	6
Road safety/too many cars speeding	2	7	2	10
Financial Assets:	4	16	2	8
Economy	2	9	1	3
Wind turbines/noise/health concerns	2	7	1	5
Social Assets:	1	6	2	7
Community services/facilities	1	6	2	7
Other responses:	34	137	45	185
Nothing/feel safe	12	48	17	71
Other	5	19	5	22

Table 5.9.1-2: Community Issues that Affect Feelings of Personal Health or Sense of Personal Safety (continued)

Issues	Local Study Area		Regional Study Area	
	%	Number of Responses	%	Number of Responses
Don't know/refused	17	70	23	92
Total Number of Respondents	—	401	—	408

Notes:

— Not applicable

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

Source: [21]

The results in Table 5.9.1-2 indicate that the key factors that affect the Local Study Area and Regional Study Area residents' sense of personal health and safety are related to the provision of healthcare services and facilities and overall community safety (related to policing and crime). Some examples of these types of responses include:

"There is an extreme lack of doctors. If you have to go to emergency, you have to wait 3 to 4 hours." – Local Study Area Resident

"The inability to have a functional local hospital and the local healthcare in the area. It's a problem with many rural areas." – Local Study Area Resident

"The general lack of policing would affect safety since we need an adequate amount of policing. I would just want to make sure it's available. What makes me feel safe is the general lack of major crime, it is always the minor stories in the newspapers." – Local Study Area Resident

"Policing is not 24 hours. We are a small town with a lot of territory to cover" – Regional Study Area Resident

Six percent of the respondents from the Local Study Area and 3% from the Regional Study Area stated that the Bruce nuclear site affects their overall feelings of personal health and safety. This indicates that for the majority of the residents in the area, the Bruce nuclear site does not play a major role in their feelings of personal health and safety. Examples of these types of responses include:

"Living near a nuclear site. You have to rely on others to do their jobs so you'll be safe." – Local Study Area Resident

"The nuclear facility. Just any potential release of nuclear material. My family and I may be exposed to chemicals that are dangerous to our health." – Local Study Area Resident

5.9.2 Satisfaction with Community

The use of satisfaction with community and people's commitment to their community as indicators of community well-being assumes that greater community well-being is achieved when people are satisfied with living in their community. People tend to consider a wide variety of issues in making a determination relating to their level of satisfaction with and commitment to living in a community.

PAR results regarding how people rate their level of satisfaction with living in their communities and how committed they are to remaining in their community are summarized in Tables 5.9.2-1 and 5.9.2-2.

These results indicate that overall, residents of the Local and Regional Study Areas are satisfied with living in their communities (98% in the Local Study Area and 97% in the Regional Study Area) and are also committed to living in their community (94% in the Local Study Area and 93% in the Regional Study Area). Furthermore, the majority of these respondents stated that they were 'very' satisfied with living in their community (70% in the Local Study Area and 70% in the Regional Study Area) and that they were also 'very' committed to living in their community (70% in the Local Study Area and 69% in the Regional Study Area). Clearly, in addition to having a positive sense of personal health and safety, residents of the Local and Regional Study Areas are satisfied living in their communities and are committed to living there.

Table 5.9.2-1: Local and Regional Study Areas Residents' Satisfaction with Living in their Community

Satisfied:	Local Study Area		Regional Study Area	
	%	Number of Responses	%	Number of Responses
Very	70	278	70	286
Somewhat	28	112	27	109
Not very	2	7	1	5
Not at all	1	3	1	6

Note: Percentages may not appear to sum to 100% because of rounding.

Source: [21]

Table 5.9.2-2: Local and Regional Study Areas Residents' Commitment to Living in their Community

Committed:	Local Study Area		Regional Study Area	
	%	Number of Responses	%	Number of Responses
Very	70	276	69	279
Somewhat	24	94	24	97
Not very	3	13	5	22
Not at all	4	14	2	8

Note: Percentages may not appear to sum to 100% because of rounding.

Source: [21]

5.9.3 Public Attitudes toward the Bruce Nuclear Site and the WWMF

From a social effects perspective, the WWMF may represent many different things to different people. As such, understanding people's attitudes towards the WWMF is important. Through the PAR, 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 assessment of the effect of the WWMF on their daily lives.

Respondents in the PAR were asked to describe their level of familiarity with the WWMF, by rating how much they had previously heard about it. The findings presented in Table 5.9.3-1 indicate a high level of awareness of the WWMF particularly in the Local Study Area; 83% of Local Study Area respondents and 63% of Regional Study Area respondents have heard at least "something" about the facility. Awareness of the WWMF is much greater in the Municipality of Kincardine (Local Study Area) than elsewhere, Kincardine being the host municipality. Over half of the respondents have heard "a great deal" about the WWMF.

Table 5.9.3-1: Respondents' Ranking of How Much They Have Heard About the WWMF

Heard:	Local Study Area		Regional Study Area	
	%	Number of Responses	%	Number of Responses
Great deal	56	224	34	138
Something	27	106	29	118
Very little	11	44	25	100
Nothing	6	24	13	51

Note: Percentages may not appear to sum to 100% because of rounding.

Source: [21]

Respondents were also asked how often in their "day-to-day living" they "think about the fact that they live near the Western Waste Management Facility". Overall, the results summarized in Table 5.9.3-2 indicate that few people think about the existing WWMF on a daily basis; 83% of Local Study Area and 83% of Regional Study Area residents think about the fact that they live near the WWMF 'not very often' or 'never'.

Table 5.9.3-2: Residents' Frequency of Thinking about the WWMF

Think About It:	Local Study Area		Regional Study Area	
	%	Number of Responses	%	Number of Responses
Very often	8	31	7	29
Often	9	36	8	34
Not very often	42	166	37	149
Never	41	165	46	187
Not live nearby	0	0	1	6

Note: Percentages may not appear to add up to 100% because of rounding.

Source: [21]

Few Local Study Area (9%) or Regional Study Area (10%) 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.

Examples of positive effects of the existing WWMF include employment opportunities (26% in the Local Study Area and 18% in the Regional Study Area) and increased incomes (24% in the Local Study Area and 28% in the Regional Study Area).

Negative effects of the existing WWMF include increased cost of living (9% in the Local Study Area and 8% in the Regional Study Area) as well as other effects to human and natural assets (Table 5.9.3-3).

Table 5.9.3-3: Effects of the WWMF on People's Daily Life

Response	Local Study Area		Regional Study Area	
	%	Number of Responses	%	Number of Responses
No	91	360	90	364
Yes	9	34	10	39
<i>If Yes: What Effects:</i>				
Financial Assets:	59	20	54	21
Employment opportunities	35	12	15	6
Positive – increased income	18	6	31	12
Increased cost of living	6	2	8	3
Human Assets:	18	6	18	6
Health concerns	18	6	18	6
Natural Assets:	6	2	3	1
Water quality concerns	6	2	3	1
Other responses:	18	6	28	11

Note: Percentages may not appear to sum to 100% because of rounding.

Source: [21]

5.9.4 Perspectives on Community Well-being

The PAR conducted as part of this socio-economic assessment indicates that there are various perspectives regarding community attributes that ought to be maintained or enhanced and regarding the greatest threats to community well-being.

5.9.4.1 Results from the Public Attitude Research

When asked to describe the attributes of their community that ought to be maintained or enhanced, PAR respondents indicated that financial (28%), physical (24%) and social (25%) assets were almost equally important to them. Some of these responses include:

“Availability of employment and the availability of jobs for our young people to be able to continue living in this community.” – Local Study Area Resident

“I like the small town feel of the community. I don’t want the big box stores. I don’t want to see the stores be emptied out. I would like to keep this small town feel.” – Local Study Area Resident

“The sense of community. We’re a small community and we all work together to make it a better place. We need to work on keeping it like that to get young families to stay”. – Local Study Area Resident

The PAR results indicate that, of the respondents that chose to describe the greatest threats to their community, most indicated that the greatest threats were to financial assets (48%) and these were largely focused on employment, income and economic opportunities. Some examples of these types of responses are:

“I guess the loss of the Bruce Power. This is because it’s the largest employer in the area. Without it, our economy would die and our value and home value would decrease and people would lose their jobs and money.” – Regional Study Area Resident

“Our main employer in this community is Bruce Power. If anything bad happens to them it will be disastrous. There are more than 75% of people living here that are employed by them”. – Local Study Area Resident

The second most frequently stated threat to community well-being from the PAR results was related to human assets (30%) and was largely focused on health care, skills and labour supply and population demographics. Some examples of these types of responses are:

“I would say the lack of health care. Well, the shortage of doctors and the shortage of health care services” – Local Study Area Resident

“It’s becoming a retirement community and it needs to be refreshed with young people” – Local Study Area Resident.

The PAR responses indicate that while residents in the Local and Regional Study Areas generally feel that the greatest threats to their community’s well-being are related to financial and human assets, they also feel that their physical and social assets ought to be enhanced or maintained to support community well-being. The PAR responses are illustrated on Figure D-1 (Appendix D).

5.9.4.2 Results from the Community Leader Surveys

Community Leaders, representing selected municipal officials or other individuals representing key community interests were also asked to describe the attributes they thought ought to be maintained or enhanced and the greatest threats to their community’s well-being. There were 61 responses for the most important attributes to be maintained. The most frequently stated were Financial (n=19) and Social (n=16) Assets. Some examples of these responses are:

“Farming and the farm community – farming is the backbone of the community and the industry needs to be maintained” – Community Leader

“The natural environment and the outdoor experience that maintains tourist activity” – Community Leader

“Community involvement in recreational and social events that are driven by volunteers” – Community Leader

“The Old Time feel and respect for the past, such as our Scottish heritage, celebrated with the Scottish Festival” – Community Leader

When asked to describe the greatest threat to community well-being, Community Leaders gave a total of 38 responses, and of those 19 were related to financial assets. Some examples of these responses are:

“Volatility of small business – the highest paying jobs are at Bruce and it makes it difficult to attract labour in other businesses” – Community Leader

“The poor economy and lack of well paying local jobs. For example, the recent closure of the Glass Plant” – Community Leader

Overall, Community Leaders identified the need for economic diversification and increased pay for local employees. While the jobs at the Bruce nuclear site were seen as positive aspects of the community, the difference in pay between these employees and the remainder of the population was also seen as a threat to community well-being. For example:

“The remuneration paid to Bruce staff and contractors draws staff resources away from local businesses and contractors. At \$45/hour plus benefits, it is very difficult to compete. Local restaurants, banks and semi-skilled positions are difficult to fill.” – Community Leader.

While Community Leaders generally felt that the greatest threats to their community's well-being are related to financial assets, they also felt that social assets ought to be enhanced or maintained to support community well-being. The Community Leader responses are illustrated on Figure D-1 (Appendix D).

5.9.4.3 Results from the Community Stakeholder Interviews

Community Stakeholders, such as Local Study Area and Regional Study Area businesses, community organizations, health and safety representatives, municipal representatives, tourism operators, and operators of educational institutions and recreational facilities were also asked to describe the attributes they thought ought to be maintained or enhanced and the greatest threats to their community's well-being.

When asked to describe the most important attributes to be maintained, Community Stakeholders offered a total of 116 different responses. The most frequently stated attributes

were related to financial (n = 34) and social (n = 28) assets. Some examples of these responses are:

“The availability of programming, for example in sports and the arts. Making these programs available and affordable to all people is extremely important.” – Stakeholder.

“Get the prices of agricultural goods up so that there is incentive for young people to stay on the land and farm. Agriculture is a grass roots industry and it needs to be healthy in order for the rest of the economy to function. It costs so much to get into farming and there is no incentive for farmers to join the profession and to stay on their land. Something needs to be done to encourage people to keep farming.” – Stakeholder

“Employment – this is basically a one horse town. Bruce and OPG...everything is geared to support these workers. We need to maintain these employers.” – Stakeholder.

“In general, the most important attribute of a community that needs to be maintained is openness, friendliness and a sense of a neighbourhood and neighbourhood setting.” – Stakeholder.

There were 85 responses regarding the greatest threat to community well-being from the Community Stakeholders, and of those, 44 were related to financial assets. Some examples of these responses are:

“There is only one major industry – if that industry goes well than everyone is fine. If something happens to the industry then the service businesses that support that industry are in trouble. As long as the industry is safe the service businesses will continue to grow. If the power plant slows down then the town will slow down. This is a small town problem. The town is unstable because it is reliant on one major industry.” – Stakeholder.

“Not having the people here; not enough jobs in the area to keep the people here. The farming community has dropped.” – Stakeholder

“The economic crisis, the decrease in travel and tourism and people who are skimping out on ‘luxuries’.” – Stakeholder.

These results indicate that while community stakeholders generally feel that the greatest threats to their community’s well-being are related to financial assets, they also feel that social assets ought to be enhanced or maintained to support community well-being. The stakeholder responses are illustrated in Figure D-1 (Appendix D).

5.10 SUMMARY OF EXISTING ENVIRONMENT

This section provides a summary description of the existing socio-economic conditions in the Local and Regional Study Areas.

The Municipality of Kincardine, located on the east coast of Lake Huron, is a community composed of the town of Kincardine and several small villages and hamlets including Inverhuron and Tiverton. The municipality is home to the Bruce nuclear site situated on the Lake Huron shoreline north of the town of Kincardine. The municipality has strong ties with the Bruce nuclear site, as does the Town of Saugeen Shores, located directly north of the site. In addition to Saugeen Shores, the Regional Study Area includes the municipalities of Brockton in south/central Bruce County, the Municipality of Arran-Elderslie situated in the southern portion of Bruce County, along the eastern boundary separating Grey and Bruce, the Township of Huron-Kinloss situated on Lake Huron in south/central Bruce County and the Municipality of South Bruce located in the southeastern corner of Bruce County adjoining at the Grey County and Huron County borders.

Inverhuron Provincial Park, Stoney Island Conservation Area and Brucedale Conservation Area are located within the Local Study Area. MacGregor Point Provincial Park is located in the north portion of the Regional Study Area. Visitation to Inverhuron Provincial Park averages approximately 48,700 visitors annually. A variety of outdoor activities take place at the park, including camping, hiking, wildlife viewing, biking/cycling, fishing/boating and swimming. There are a wide range of other community and recreational facilities throughout the Local and Regional Study Area, including community centres, sports complexes/arenas, parks and museums.

The level and distribution of population across the combined study area has not changed dramatically from 1996. Overall, the combined study area population declined by 4.9% from 1996 to 2001 but recovered in recent years with an average increase across municipalities of 1.5% from 2001 to 2006. In the Local Study Area, since 1996 the Municipality of Kincardine experienced a similar population growth pattern, with an increase of 1.3% from 2001 to 2006. The age profile of the Municipality of Kincardine population is similar to the age profile of the population in the combined Local and Regional Study Areas, with the largest proportions in the 25 to 44, 45 to 54 and 65+ year categories. Mobility within the Local and Regional Study Areas is relatively stable.

The study areas population is served by a broad range of health care, fire, police, emergency, social services; however, the challenges in meeting the healthcare requirements in these communities is an important issue among members of the public. School boards in the Local and Regional Study Areas report available capacity to accommodate anticipated growth.

Since 1996, municipalities in the Local and Regional Study Areas have experienced modest employment and income growth. The economic base of Kincardine is largely dependent on agriculture and tourism and the nuclear industry plays a large role; Bruce Power is the largest single employer in the municipality. The Municipality of Kincardine is home to 40.5% of all Bruce Power employees.

Residential property values in Kincardine and Saugeen Shores have tended to increase in recent years. Although the number of properties sold and average values were somewhat variable year over year, annual sales volume and average sale value have generally increased since 2001. Over the period 2001 to September 2010, average value of properties sold increased by 110% in Kincardine and by 128% in Saugeen Shores.

Overall, residents of the Regional and Local Study Area are served by a broad range of municipal infrastructure and services, and study area municipalities have experienced growth in their housing stock from 2001 to 2006.

Municipalities have sufficient existing capacity in their water, sewage and waste management systems to meet future demands. Bruce Power is considering the construction of new on-site water treatment plants because the existing plants cannot meet their existing needs. The Bruce nuclear site sewage treatment plant is at capacity, and Bruce Power is investigating options for improvement to the existing sewage treatment plant. Analysis of existing transportation infrastructure in the vicinity of the Bruce nuclear site indicates that at peak times acceptable level of service standards are not met at a number of intersections in the vicinity of the Bruce nuclear site.

In terms of community character, the Regional and Local Study Areas are characterized by a mix of rural land uses and small settlement areas with the shoreline of Lake Huron as a defining feature of Kincardine and the shoreline municipalities of Saugeen Shores and Huron-Kinloss.

In the Local and Regional Study Areas, use of personal property in settlement areas as well as rural and cottage properties is characterized by a mix of outdoor uses including boating, hiking, nature viewing, relaxing, swimming, gardening, farming, outdoor meals and other recreational activities. The community of Inverhuron, in particular, is notable for the presence of seasonal residences and cottages, as well as permanent residences and farms. Residents in Kincardine and neighbouring municipalities either regularly or occasionally use the lands and waters in the vicinity of the Bruce nuclear site for bird watching or nature viewing and the Provincial parks and conservation areas are actively used by residents and tourists for camping and other outdoor activities.

In general, Local Study Area residents enjoy good environmental quality. Regional and Local Study Area residents provide high ratings of their feelings of personal health and sense of safety; they are satisfied living in their communities and are committed to living there. Overall, the municipalities in the Local and Regional Study Areas can be characterized as having a healthy balance of community assets that contribute to their well-being.

6. INITIAL SCREENING OF PROJECT-ENVIRONMENT INTERACTIONS

The first screening considers whether there is potential for the DGR Project to interact with the socio-economic environment VECs.

6.1 INITIAL SCREENING METHODS

6.1.1 Identification of Project-Environment Interactions

Following the description of the DGR Project, identification of VECs, and description of the existing environment, the project works and activities related to the DGR Project are screened to determine those with the potential to interact with the socio-economic environment VECs. Each of the relevant project works and activities was considered individually to determine if there was a potential mechanism for the DGR Project to interact with the socio-economic environment through either direct or indirect means. For example, the DGR Project can interact with socio-economic environment VECs directly, in that community character may be affected by the visibility of buildings and structures on the DGR Project site. The DGR Project can also interact with the socio-economic environment VECs indirectly. For example, noise levels may reduce the use and enjoyment of local parks or other attractions as tourist destinations. This initial screening is based on the experience of the technical specialists supported by information about the study areas as presented in Section 5.

Both direct and indirect interactions are considered through this TSD. Where a potential interaction is identified, the individual project work or activity is considered in more detail to determine if a measurable change in the VEC is likely. Where no potential interaction is identified, no further screening or assessment is conducted. The results of the screening are documented on an interaction matrix. A potential project-VEC interaction was marked with a '•' on Matrix 1 (Section 6.3).

If, following the evaluation of project-environment interactions, there are no potential interactions between a VEC and a project work and activity or other VEC, the VEC is not considered further.

6.2 IDENTIFICATION OF THE DGR PROJECT-ENVIRONMENT INTERACTIONS

In the initial screening, all works and activities associated with the DGR Project are identified and analyzed for possible interactions with the socio-economic environment VECs. As shown in the Basis for the EA (Appendix B), the DGR Project includes the following project works and activities:

- site preparation;
- construction of surface facilities;
- excavation and construction of underground facilities;
- above-ground transfer of waste;
- underground transfer of waste;
- decommissioning of the DGR Project;
- abandonment of the DGR facility;
- presence of the DGR Project;
- waste management;

- support and monitoring of DGR life cycle; and
- workers, payroll and purchasing.

The abandonment of the DGR facility work and activity is considered in this TSD as being at the end of the decommissioning phase. The abandonment and long-term performance phase is not considered in the assessment as no activities are expected to occur during this phase. It is considered in Section 9 of the EIS.

Abnormal conditions are considered in the Malfunctions, Accidents and Malevolent Acts TSD. Radiological effects are considered in the Radiation and Radioactivity TSD. In the following sections, each work and activity is evaluated for potential direct and indirect interactions with the VECs.

6.2.1 Direct Interactions

A number of project works and activities have the potential to interact with the socio-economic environment VECs during the DGR Project phases. The potential direct interactions that have been identified are discussed below. Where no potential interactions are identified for a particular work or activity, the potential for an effect on a VEC may be considered through another project work or activity or through indirect interactions. For example, potential interactions with employment during site preparation are captured under the workers, payroll and purchasing activity. Potential interactions with residential property values during site preparation are captured through changes in air quality and noise.

6.2.1.1 Site Preparation

Site preparation includes clearing approximately 30 ha of the DGR Project site and preparing the construction laydown areas. Specific activities include:

- removal of brush and trees and transfer by truck to on-site storage;
- excavation for removal and stockpiling of topsoil and truck transfer of soil to stockpile on-site;
- grading of sites, including roads, construction laydown areas, stormwater management area, ditches;
- receipt of materials including gravel, concrete and steel;
- installation of construction roads and fencing;
- receipt and installation of construction trailers and associated temporary services; and
- installation and operation of fuel depot for construction equipment.

Site preparation has the potential to directly interact with the following socio-economic environment VECs, as summarized in Table 6.2.1-1:

- Other Human Assets: health and safety facilities and services;
- Other Financial Assets: renewable and non-renewable resources;
- Other Physical Assets: transportation infrastructure; and
- Other Social Assets: cultural and heritage resources.

Table 6.2.1-1: Summary of Potential Interactions between Site Preparation and Socio-economic Environment VECs

VEC	Potential Interactions
Population and Demographics	<ul style="list-style-type: none"> No potential interactions
Other Human Assets	<ul style="list-style-type: none"> Potential for increased use of municipal health and safety facilities and services due to typical workplace accidents
Employment	<ul style="list-style-type: none"> No potential interactions
Business Activity	<ul style="list-style-type: none"> No potential interactions
Tourism	<ul style="list-style-type: none"> No potential interactions
Residential Property Values	<ul style="list-style-type: none"> No potential interactions
Municipal Finance and Administration	<ul style="list-style-type: none"> No potential interactions
Other Financial Assets	<ul style="list-style-type: none"> Requirements for non-renewable resources (i.e., aggregate, fuel)
Housing	<ul style="list-style-type: none"> No potential interactions
Municipal Infrastructure and Services	<ul style="list-style-type: none"> No potential interactions
Other Physical Assets	<ul style="list-style-type: none"> Traffic associated with site preparation may affect transportation infrastructure functioning and safety
Inverhuron Provincial Park	<ul style="list-style-type: none"> No potential interactions
Other Social Assets	<ul style="list-style-type: none"> Disturbance of cultural and heritage resources may occur, if present

6.2.1.2 Construction of Surface Facilities

Construction of surface facilities will include the construction of the waste transfer, material handling, shaft headframes and all other temporary and permanent buildings and structures at the DGR Project site. Activities include:

- establishing a concrete batch plant;
- receipt of construction materials, including supplies for concrete, gravel and steel by road transportation;
- excavation for and construction of footings for permanent buildings, and for site services such as domestic water, sewage, electrical;
- construction of permanent buildings, including headframe buildings associated with main and ventilation shafts;
- receipt and set up of equipment for shaft sinking;
- construction of abandoned rail bed crossing between WWMF and the DGR Project site;
- fuelling of vehicles; and
- construction of electrical substation and receipt and installation of standby generators.

Construction of surface facilities has the potential to directly interact with following socio-economic environment VECs, as summarized in Table 6.2.1-2:

- Other Human Assets: health and safety facilities and services;
- Other Financial Assets: renewable and non-renewable resources; and
- Other Physical Assets: transportation infrastructure.

Table 6.2.1-2: Summary of Potential Interactions between Construction of Surface Facilities and Socio-economic Environment VECs

VEC	Potential Interactions
Population and Demographics	<ul style="list-style-type: none"> • No potential interactions
Other Human Assets	<ul style="list-style-type: none"> • Potential for increased use of municipal health and safety facilities and services due to typical workplace accidents • The presence of new buildings and structures may require modifications to emergency response plans
Employment	<ul style="list-style-type: none"> • No potential interactions
Business Activity	<ul style="list-style-type: none"> • No potential interactions
Tourism	<ul style="list-style-type: none"> • No potential interactions
Residential Property Values	<ul style="list-style-type: none"> • No potential interactions
Municipal Finance and Administration	<ul style="list-style-type: none"> • No potential interactions
Other Financial Assets	<ul style="list-style-type: none"> • Requirements for non-renewable resources (i.e., aggregate, fuel)
Housing	<ul style="list-style-type: none"> • No potential interactions
Municipal Infrastructure and Services	<ul style="list-style-type: none"> • No potential interactions
Other Physical Assets	<ul style="list-style-type: none"> • Receipt of construction materials by road transportation may affect transportation infrastructure function and safety
Inverhuron Provincial Park	<ul style="list-style-type: none"> • No potential interactions
Other Social Assets	<ul style="list-style-type: none"> • No potential interactions

6.2.1.3 Excavation and Construction of Underground Facilities

Excavation and construction of underground facilities will include excavation of the shafts, installation of the shaft and underground infrastructure (e.g., ventilation system) and the underground excavation of the emplacement and non-storage rooms. Activities include:

- drilling and blasting (use of explosives) for construction of main and ventilation shafts, access tunnels and emplacement rooms;
- receipt and placement of grout and concrete, steel and equipment;

- dewatering of the shaft construction area by pumping and transfer to the above-ground stormwater management facility;
- temporary storage of small quantities of explosives at surface and underground for construction of emplacement rooms and tunnels;
- receipt and installation of rock bolts and services; and
- installation of shotcrete.

Excavation and construction of underground facilities have the potential to directly interact with the following socio-economic environment VECs, as summarized in Table 6.2.1-3:

- Other Human Assets: health and safety facilities and services;
- Other Financial Assets: renewable and non-renewable resources; and
- Other Physical Assets: transportation infrastructure.

Table 6.2.1-3: Summary of Potential Interactions between Excavation and Construction of Underground Facilities and Socio-economic Environment VECs

VEC	Potential Interactions
Population and Demographics	<ul style="list-style-type: none"> • No potential interactions
Other Human Assets	<ul style="list-style-type: none"> • Potential for increased use of municipal health and safety facilities and services due to typical workplace accidents • The presence of underground facilities may require modifications to emergency response plans to consider mine rescue operations
Employment	<ul style="list-style-type: none"> • No potential interactions
Business Activity	<ul style="list-style-type: none"> • No potential interactions
Tourism	<ul style="list-style-type: none"> • No potential interactions
Residential Property Values	<ul style="list-style-type: none"> • No potential interactions
Municipal Finance and Administration	<ul style="list-style-type: none"> • No potential interactions
Other Financial Assets	<ul style="list-style-type: none"> • Requirements for non-renewable resources (i.e., fuel)
Housing	<ul style="list-style-type: none"> • No potential interactions
Municipal Infrastructure and Services	<ul style="list-style-type: none"> • No potential interactions
Other Physical Assets	<ul style="list-style-type: none"> • Receipt of construction materials by road transportation may affect transportation infrastructure function and safety
Inverhuron Provincial Park	<ul style="list-style-type: none"> • No potential interactions
Other Social Assets	<ul style="list-style-type: none"> • No potential interactions

6.2.1.4 Above-ground Transfer of Waste

Above-ground handling of waste will occur during the operations phase of the DGR Project and will include receipt of L&ILW from the WWMF at the staging area in the DGR Waste Package Receiving Building (WPRB) and on-site transfer to the shaft. Above-ground handling of waste includes:

- receipt of disposal-ready waste packages from the WWMF by forklift or truck;
- offloading of waste packages at the WPRB;
- transfer of waste packages within the WPRB by forklift or rail cart;
- temporary storage of waste packages inside the WPRB.

Above-ground transfer of waste has the potential to directly affect the following socio-economic environment VECs, as summarized in Table 6.2.1-4:

- Other Human Assets: health and safety facilities and services; and
- Other Financial Assets: renewable and non-renewable resources.

Table 6.2.1-4: Summary of Potential Interactions between Above-ground Transfer of Waste and Socio-economic Environment VECs

VEC	Potential Interactions
Population and Demographics	<ul style="list-style-type: none"> • No potential interactions
Other Human Assets	<ul style="list-style-type: none"> • Potential for increased use of municipal health and safety facilities and services due to typical workplace accidents
Employment	<ul style="list-style-type: none"> • No potential interactions
Business Activity	<ul style="list-style-type: none"> • No potential interactions
Tourism	<ul style="list-style-type: none"> • No potential interactions
Residential Property Values	<ul style="list-style-type: none"> • No potential interactions
Municipal Finance and Administration	<ul style="list-style-type: none"> • No potential interactions
Other Financial Assets	<ul style="list-style-type: none"> • Requirements for non-renewable resources (i.e., fuel)
Housing	<ul style="list-style-type: none"> • No potential interactions
Municipal Infrastructure and Services	<ul style="list-style-type: none"> • No potential interactions
Other Physical Assets	<ul style="list-style-type: none"> • No potential interactions
Inverhuron Provincial Park	<ul style="list-style-type: none"> • No potential interactions
Other Social Assets	<ul style="list-style-type: none"> • No potential interactions

6.2.1.5 Underground Transfer of Waste

Underground handling of waste will take place during the operations phase of the DGR Project and will include:

- receipt of waste packages at the main shaft station;
- offloading from cage and transfer of waste packages by forklift to emplacement rooms;
- rail cart transfer of some large packages (heat exchangers/shield plug containers) to emplacement rooms;
- installation of end walls on full emplacement rooms;
- remedial rock bolting and rock wall scaling;
- fuelling and maintenance of underground vehicles and equipment; and
- receipt and storage of fuel for underground vehicles.

Emplacement activities will be followed by a period of monitoring to ensure that the DGR facility is performing as expected prior to decommissioning.

Underground transfer of waste has the potential to directly affect the following socio-economic environment VECs, as summarized in Table 6.2.1-5:

- Other Human Assets (SE-1.2): health and safety facilities and services; and
- Other Financial Assets: renewable and non-renewable resources.

Table 6.2.1-5: Summary of Potential Interactions between Underground Transfer of Waste and Socio-economic Environment VECs

VEC	Potential Interactions
Population and Demographics	<ul style="list-style-type: none"> • No potential interactions
Other Human Assets	<ul style="list-style-type: none"> • Potential for increased use of municipal health and safety facilities and services due to typical workplace accidents • Underground operations may require modifications to emergency response plans to consider new types of waste transfer operations and other underground activities not currently undertaken at the WWMF
Employment	<ul style="list-style-type: none"> • No potential interactions
Business Activity	<ul style="list-style-type: none"> • No potential interactions
Tourism	<ul style="list-style-type: none"> • No potential interactions
Residential Property Values	<ul style="list-style-type: none"> • No potential interactions
Municipal Finance and Administration	<ul style="list-style-type: none"> • No potential interactions
Other Financial Assets	<ul style="list-style-type: none"> • Requirements for non-renewable resources (i.e., fuel)
Housing	<ul style="list-style-type: none"> • No potential interactions
Municipal Infrastructure and Services	<ul style="list-style-type: none"> • No potential interactions

Table 6.2.1-5: Summary of Potential Interactions between Underground Transfer of Waste and Socio-economic Environment VECs (continued)

VEC	Potential Interactions
Other Physical Assets	<ul style="list-style-type: none"> No potential interactions
Inverhuron Provincial Park	<ul style="list-style-type: none"> No potential interactions
Other Social Assets	<ul style="list-style-type: none"> No potential interactions

6.2.1.6 Decommissioning of the DGR Project

Decommissioning of the DGR Project will require a separate EA and a licence from the Canadian Nuclear Safety Commission before any activities can begin. Decommissioning of the DGR will include all activities required to seal the shafts and remove surface facilities, including:

- removal of fuels from underground equipment;
- removal of surface buildings, including foundations and equipment;
- receipt and placement of materials, including concrete, asphalt, sand and bentonite for sealing the shafts;
- construction of a concrete monolith at base of the two shafts, removal of shaft infrastructure and concrete liners, and reaming of some rock from the shafts and shaft stations;
- sealing the shafts; and
- grading of the site.

The waste rock pile (limestones) will be covered and remain on-site. Decommissioning of the DGR has the potential to directly affect the following socio-economic environment VECs, as summarized in Table 6.2.1-6:

- Other Human Assets: health and safety facilities and services;
- Other Financial Assets: renewable and non-renewable resources;
- Other Physical Assets: transportation infrastructure; and
- Other Social Assets: cultural heritage resources.

Table 6.2.1-6: Summary of Potential Interactions between Decommissioning of the DGR Project and Socio-economic Environment VECs

VEC	Potential Interactions
Population and Demographics	<ul style="list-style-type: none"> No potential interactions
Other Human Assets	<ul style="list-style-type: none"> Potential for increased use of municipal health and safety facilities and services due to typical workplace accidents Underground decommissioning operations may require modifications to emergency response plans to consider activities not currently undertaken at the WWMF

Table 6.2.1-6: Summary of Potential Interactions between Decommissioning of the DGR Project and Socio-economic Environment VECs (continued)

VEC	Potential Interactions
Employment	<ul style="list-style-type: none"> No potential interactions
Business Activity	<ul style="list-style-type: none"> No potential interactions
Tourism	<ul style="list-style-type: none"> No potential interactions
Residential Property Values	<ul style="list-style-type: none"> No potential interactions
Municipal Finance and Administration	<ul style="list-style-type: none"> No potential interactions
Other Financial Assets	<ul style="list-style-type: none"> Requirements for non-renewable resources (i.e., concrete, asphalt, sand, bentonite, fuel)
Housing	<ul style="list-style-type: none"> No potential interactions
Municipal Infrastructure and Services	<ul style="list-style-type: none"> No potential interactions
Other Physical Assets	<ul style="list-style-type: none"> Receipt of construction materials by road transportation may affect transportation infrastructure function and safety
Inverhuron Provincial Park	<ul style="list-style-type: none"> No potential interactions
Other Social Assets	<ul style="list-style-type: none"> Potential for additional ground disturbing activities (e.g., grading) to disrupt cultural heritage resources

6.2.1.7 Abandonment of the DGR Facility

Abandonment of the DGR facility will occur at some future time following decommissioning. Timing will be based on discussion with the regulator and other stakeholders. This activity includes the removal of access controls. This activity is considered to have no potential to interact with the socio-economic environment VECs because it does not involve a workforce, transportation of materials or other physical works or activities that may affect community assets outside of the Bruce nuclear site. The potential interactions associated with the ongoing presence of the DGR Project are addressed below.

6.2.1.8 Presence of the DGR Project

Presence of the DGR Project represents the meaning people may attach to the existence of a long-term waste management facility in their community and the influence its operations may have on their feelings of personal health, sense of safety and/or their satisfaction with their community over the life cycle of the DGR Project. This also includes the consideration of the visibility of the DGR facility.

Consideration of this “activity” is more subjective in nature than other project works and activities, but important from a socio-economic perspective. It is also used to capture general activity and the nuclear nature of the DGR Project as a whole. In particular, the presence of the facility itself may require the payment of property taxes and/or require other financial

agreements/requirements to be fulfilled by OPG and/or others with the host municipality and possibly with other communities.

Presence of the DGR Project has the potential to directly affect the following socio-economic environment VECs, as summarized in Table 6.2.1-7:

- Population and Demographics;
- Tourism;
- Residential Property Values;
- Municipal Finance and Administration;
- Housing;
- Other Physical Assets: housing and community character;
- Inverhuron Provincial Park; and
- Other Social Assets: community recreational facilities and programs and use and enjoyment of private property.

Table 6.2.1-7: Summary of Potential Interactions between Presence of the DGR Project and Socio-economic Environment VECs

VEC	Potential Interactions
Population and Demographics	<ul style="list-style-type: none"> • Presence of the DGR Project may affect populations because the project as a whole has the potential to change people's feelings of personal health, sense of safety or satisfaction with their community, leading to out-migration
Other Human Assets	<ul style="list-style-type: none"> • No potential interactions
Employment	<ul style="list-style-type: none"> • No potential interactions
Business Activity	<ul style="list-style-type: none"> • No potential interactions
Tourism	<ul style="list-style-type: none"> • Presence of the DGR Project may affect tourism because the project as a whole has the potential to influence community character, and has the potential to change people's feelings of personal health and/or sense of safety, making visiting tourist features less attractive
Residential Property Values	<ul style="list-style-type: none"> • Presence of the DGR Project may affect property values because the project as a whole has the potential to influence community character and/or lead to outmigration, thereby changing the demand for and value of residential properties
Municipal Finance and Administration	<ul style="list-style-type: none"> • Presence of the DGR Project may generate municipal revenue through property taxes or other means as required by agreement with the host municipality and possibly with other communities
Other Financial Assets	<ul style="list-style-type: none"> • No potential interactions

Table 6.2.1-7: Summary of Potential Interactions between Presence of the DGR Project and Socio-economic Environment VECs (continued)

VEC	Potential Interactions
Housing	<ul style="list-style-type: none"> • Presence of the DGR Project may affect the availability of housing because the project as a whole has the potential to lead to outmigration, thereby changing the demand for housing
Municipal Infrastructure and Services	<ul style="list-style-type: none"> • No potential interactions
Other Physical Assets	<ul style="list-style-type: none"> • The visibility of DGR Project buildings and structures, its activities and operations may affect community character
Inverhuron Provincial Park	<ul style="list-style-type: none"> • Presence of the DGR Project may affect people's use and enjoyment of the park due to the visibility of buildings and structures and/or changes in tourists' and day users' feelings of personal health and/or sense of safety
Social Assets	<ul style="list-style-type: none"> • Presence of the DGR Project may affect the use and enjoyment of other Provincial parks, conservation areas and/or other areas used for recreational purposes due to the visibility of buildings and structures and/or changes in people's feelings of personal health and/or sense of safety • People's use and enjoyment of private property may be affected in similar ways • Community cohesion may be affected because the project as a whole may lead to out-migration

6.2.1.9 Waste Management

Waste management represents all activities required to manage waste throughout the DGR Project lifecycle. During site preparation and construction, waste management will include managing the waste rock on the DGR Project site along with conventional wastes and small quantities of hazardous wastes. During operations, waste management would include managing conventional wastes, small quantities of hazardous wastes and the radiological wastes generated from the underground and above-ground activities. Decommissioning waste management may include management of conventional wastes, construction wastes, and very small quantities of hazardous and radiological wastes. Activities include:

- transfer of waste rock, by truck to the Waste Rock Management Area;
- placement of waste rock on the storage pile;
- collection and transfer of construction waste to on-site or licensed off-site facility;
- collection and transfer of domestic waste to licensed facility;
- collection, processing and management of any radioactive waste produced at the DGR facility; and
- collection, temporary storage and transfer of toxic/hazardous waste to licensed facility.

Waste management has the potential to directly affect the following socio-economic environment VECs, as summarized in Table 6.2.1-8:

- Business Activity;
- Municipal Finance and Administration;
- Municipal Infrastructure and Services; and
- Other Physical Assets.

Table 6.2.1-8: Summary of Potential Interactions between Waste Management and Socio-economic Environment VECs

VEC	Potential Interactions
Population and Demographics	<ul style="list-style-type: none"> • No potential interactions
Other Human Assets	<ul style="list-style-type: none"> • No potential interactions
Employment	<ul style="list-style-type: none"> • No potential interactions
Business Activity	<ul style="list-style-type: none"> • Local business activity may be influenced by increased use of private licensed waste management facilities and waste haulers
Tourism	<ul style="list-style-type: none"> • No potential interactions
Residential Property Values	<ul style="list-style-type: none"> • No potential interactions
Municipal Finance and Administration	<ul style="list-style-type: none"> • The use of licensed municipal waste management facilities by the DGR Project may generate revenues from increased tipping fees
Other Financial Assets	<ul style="list-style-type: none"> • No potential interactions
Housing	<ul style="list-style-type: none"> • No potential interactions
Municipal Infrastructure and Services	<ul style="list-style-type: none"> • The availability of municipal waste management facilities may be affected through increased demand.
Other Physical Assets	<ul style="list-style-type: none"> • The waste rock pile may be visible, thereby affecting community character • The transport by road of some wastes to off-site licensed waste management facilities may affect transportation infrastructure function and safety
Inverhuron Provincial Park	<ul style="list-style-type: none"> • No potential interactions
Other Social Assets	<ul style="list-style-type: none"> • No potential interactions

6.2.1.10 Support and Monitoring of DGR Life Cycle

Support and monitoring of DGR life cycle will include all activities to support the safe site preparation and construction, operation and decommissioning of the DGR Project. This includes:

- operation and maintenance of the ventilation fans, heating system, electrical systems, fire protection system, communications services, sewage and potable water system and the standby generator;
- collection, storage, and disposal of water from underground sumps, and of wastewater from above- and below-ground facilities;
- management of surface drainage in a stormwater management facility;
- monitoring of air quality in the facility, exhaust from the facility, water quality of runoff from the developed area around the shafts and Waste Rock Management Area, water quality from underground shaft sumps and geotechnical monitoring of various underground openings;
- maintenance and operation of fuel depots above-ground (construction only) and below-ground; and
- administrative activities above- and below-ground involving office space, lunch room and amenities space.

Support and monitoring of the DGR has no potential to directly affect any of the socio-economic environment VECs. This is because support and monitoring activities do not interact or place demands on community assets (i.e., socio-economic features off the Bruce nuclear site). Support and monitoring activities are routine and largely conventional industrial activities that are currently undertaken at the WWMF and elsewhere at the Bruce nuclear site.

6.2.1.11 Workers, Payroll and Purchasing

Workers, payroll and purchasing will include all workers required during each phase to implement the DGR Project. Activities include:

- spending in commercial and industrial sectors;
- transport of materials purchased to the site; and
- workers travelling to and from the site.

The workers, payroll and purchasing activity has the potential to directly interact with each of the socio-economic environment VECs, as summarized in Table 6.2.1-9. These interactions may occur throughout the site preparation and construction, operations and decommissioning phases of the DGR Project.

Table 6.2.1-9: Summary of Potential Interactions between Workers, Payroll and Purchasing and Socio-economic Environment VECs

VEC	Potential Interactions
Population and Demographics	<ul style="list-style-type: none"> • DGR Project employment opportunities may attract workers and their families to the Local and Regional Study Areas

Table 6.2.1-9: Summary of Potential Interactions between Workers, Payroll and Purchasing and Socio-economic Environment VECs (continued)

VEC	Potential Interactions
Other Human Assets	<ul style="list-style-type: none"> • DGR Project employment skills and labour requirements may change the availability of skills and the labour supply, particularly with respect to those skills sets that may be required for mining-type activities • Increased population may place demands on the educational, health and safety and social services
Employment	<ul style="list-style-type: none"> • Direct and indirect employment may be generated by the DGR Project expenditures on payroll, goods and services • Increased labour income may further induce employment
Business Activity	<ul style="list-style-type: none"> • DGR Project related requirements for goods and services, may generate business activity • Increased population and labour income associated with the DGR Project may further generate business activity
Tourism	<ul style="list-style-type: none"> • Temporary workers may increase demand for accommodation typically available to tourists (e.g., hotels and motels)
Residential Property Values	<ul style="list-style-type: none"> • Increased population associated with the DGR Project may increase demand for permanent housing, thereby influencing the local housing market and residential property values
Municipal Finance and Administration	<ul style="list-style-type: none"> • Increased population associated with the DGR Project may be an additional source of municipal revenue from property taxes
Other Financial Assets	<ul style="list-style-type: none"> • DGR Project expenditures on worker payroll may increase labour income • Increased population associated with the DGR Project may further increase labour income through indirect and induced means
Housing	<ul style="list-style-type: none"> • Increased population associated with the DGR Project may increase demand for permanent housing
Municipal Infrastructure and Services	<ul style="list-style-type: none"> • Increased population associated with the DGR Project may increase demand for municipal infrastructure and services
Other Physical Assets	<ul style="list-style-type: none"> • DGR Project workers travelling to the Bruce nuclear site may affect transportation infrastructure functioning and safety

Table 6.2.1-9: Summary of Potential Interactions between Workers, Payroll and Purchasing and Socio-economic Environment VECs (continued)

VEC	Potential Interactions
Inverhuron Provincial Park	<ul style="list-style-type: none"> • Temporary workers may increase demand for overnight accommodations at Inverhuron Provincial Park, typically available to tourists • Increased population associated with the DGR Project may affect the use of Inverhuron Provincial Park
Other Social Assets	<ul style="list-style-type: none"> • Temporary workers may increase demand for overnight accommodations at other Provincial parks, typically available to tourists • Increased population associated with the DGR Project may affect the use of other community and recreational facilities and programs • Changes in population and demographic may affect community cohesion

6.2.2 Indirect Interactions

Indirect interaction with socio-economic environment VECs may occur when the DGR Project leads to change in a community's natural assets. For the purposes of this socio-economic assessment, these are the natural environment VECs where there is a potential interaction with the socio-economic environment VECs. Consideration is given to the possible interactions with the following DGR Project-related environmental changes as identified in other TSDs:

- changes in air quality;
- changes in noise levels;
- changes in surface water quantity and flow;
- changes in surface water quality;
- changes in groundwater quality;
- changes in groundwater flow;
- changes in the aquatic and terrestrial environments; and
- changes in radiation and radioactivity.

Where no potential interactions are identified for a particular socio-economic VEC, the potential for an effect may have already been captured through the direct interactions of the DGR Project with socio-economic VECs. For example, potential interactions with population due changes in air quality and noise are captured under the presence of the DGR Project to the extent that these effect change people's feelings of personal health, sense of safety or satisfaction with their community.

6.2.2.1 Changes in Air Quality

During the site preparation and construction, operations and decommissioning phases, various activities and operations may result in changes in air quality. These changes have been assessed in the Atmospheric Environment TSD. Changes in air quality may affect the use and

enjoyment of schools, businesses, community and recreational facilities or private property in the Local and Regional Study Areas. Changes in air quality have the potential to indirectly interact with the following socio-economic environment VECs, as summarized in Table 6.2.2-1:

- Other Human Assets: educational facilities;
- Business Activity;
- Tourism;
- Residential Property Values;
- Other Financial Assets: agriculture;
- Other Physical Assets: community character;
- Inverhuron Provincial Park; and
- Other Social Assets: use and enjoyment of private property and community recreational facilities and programs.

Table 6.2.2-1: Summary of Potential Interactions between Changes in Air Quality and Socio-economic Environment VECs

VEC	Potential Interactions
Population and Demographics	<ul style="list-style-type: none"> • No potential interactions
Other Human Assets	<ul style="list-style-type: none"> • Diminished air quality at educational facilities may be disruptive to outdoor activities
Employment	<ul style="list-style-type: none"> • No potential interactions
Business Activity	<ul style="list-style-type: none"> • Diminished air quality may be disruptive to business operations with outdoor facilities or sensitive to increased dust levels
Tourism	<ul style="list-style-type: none"> • Diminished air quality may decrease the attractiveness of local parks and other attractions as tourist destinations, thereby affecting their use and enjoyment
Residential Property Values	<ul style="list-style-type: none"> • Diminished air quality may decrease the value of residential properties
Municipal Finance and Administration	<ul style="list-style-type: none"> • No potential interactions
Other Financial Assets	<ul style="list-style-type: none"> • Diminished air quality may adversely affect crops and reduce yields
Housing	<ul style="list-style-type: none"> • No potential interactions
Municipal Infrastructure and Services	<ul style="list-style-type: none"> • No potential interactions
Other Physical Assets	<ul style="list-style-type: none"> • Diminished air quality may change community character
Inverhuron Provincial Park	<ul style="list-style-type: none"> • Diminished air quality may decrease the attractiveness of Inverhuron Provincial Park as a tourist or day use destination, thereby affecting its use and enjoyment

Table 6.2.2-1: Summary of Potential Interactions between Changes in Air Quality and Socio-economic Environment VECs (continued)

VEC	Potential Interactions
Other Social Assets	<ul style="list-style-type: none"> • Diminished air quality may decrease the attractiveness of community and recreational features, thereby affecting their use and enjoyment • Diminished air quality may reduce people's use or enjoyment of their private property

6.2.2.2 Changes in Noise Levels

During the site preparation and construction, operations and decommissioning phases, various activities and operations may result in changes in noise levels. These changes have been assessed in the Atmospheric Environment TSD. The changes in noise levels have the potential to indirectly interact with the following socio-economic environment VECs, as summarized in Table 6.2.2-2:

- Other Human Assets: educational facilities;
- Business Activity;
- Tourism;
- Residential Property Values;
- Other Financial Assets: agriculture;
- Other Physical Assets: community character;
- Inverhuron Provincial Park; and
- Other Social Assets: use and enjoyment of private property and community recreational facilities and programs.

Table 6.2.2-2: Summary of Potential Interactions between Changes in Noise Levels and Socio-economic Environment VECs

VEC	Potential Interactions
Population and Demographics	<ul style="list-style-type: none"> • No potential interactions
Other Human Assets	<ul style="list-style-type: none"> • Increases in noise levels at educational facilities may be disruptive to indoor and outdoor activities
Employment	<ul style="list-style-type: none"> • No potential interactions
Business Activity	<ul style="list-style-type: none"> • Increased noise levels may be disruptive to business operations with outdoor facilities or sensitive to increased noise
Tourism	<ul style="list-style-type: none"> • Increased noise levels may decrease the attractiveness of local parks and other attractions as tourist destinations, thereby affecting their use and enjoyment
Residential Property Values	<ul style="list-style-type: none"> • Increased noise levels may decrease the value of residential properties

Table 6.2.2-2: Summary of Potential Interactions between Changes in Noise Levels and Socio-economic Environment VECs (continued)

VEC	Potential Interactions
Municipal Finance and Administration	<ul style="list-style-type: none"> No potential interactions
Other Financial Assets	<ul style="list-style-type: none"> Increased noise levels may adversely affect livestock
Housing	<ul style="list-style-type: none"> No potential interactions
Municipal Infrastructure and Services	<ul style="list-style-type: none"> No potential interactions
Other Physical Assets	<ul style="list-style-type: none"> Increased noise levels may change community character
Inverhuron Provincial Park	<ul style="list-style-type: none"> Increased noise levels may decrease the attractiveness of Inverhuron Provincial Park as a tourist or day use destination, thereby affecting its use and enjoyment
Other Social Assets	<ul style="list-style-type: none"> Increased noise level may decrease the attractiveness of community and recreational features, thereby affecting their use and enjoyment Similarly, increased noise levels may reduce people's use or enjoyment of their private property

6.2.2.3 Changes in Surface Water Quantity and Flow

DGR Project-related changes in surface water quantity have the potential to indirectly interact with the socio-economic environment VECs through potential effects on water supplies used for residential, business or agricultural purposes. The potential indirect interactions with the following socio-economic environment VECs are summarized in Table 6.2.2-3:

- Tourism;
- Residential Property Values;
- Other Financial Assets: agriculture;
- Municipal Infrastructure and Services;
- Other Physical Assets: community character;
- Inverhuron Provincial Park; and
- Other Social Assets: use and enjoyment of private property and community recreational facilities and programs.

Table 6.2.2-3: Summary of Potential Interactions between Changes in Surface Water Quantity and Flow and Socio-economic Environment VECs

VEC	Potential Interactions
Population and Demographics	<ul style="list-style-type: none"> No potential interactions
Other Human Assets	<ul style="list-style-type: none"> No potential interactions
Employment	<ul style="list-style-type: none"> No potential interactions

Table 6.2.2-3: Summary of Potential Interactions between Changes in Surface Water Quantity and Flow and Socio-economic Environment VECs (continued)

VEC	Potential Interactions
Business Activity	<ul style="list-style-type: none"> No potential interactions
Tourism	<ul style="list-style-type: none"> Changes to surface water quantity and flow may affect local tourism operations through potential effects on their water supplies
Residential Property Values	<ul style="list-style-type: none"> Changes to surface water quantity and flow may affect residential property values through potential effects on residential water supplies
Municipal Finance and Administration	<ul style="list-style-type: none"> No potential interactions
Other Financial Assets	<ul style="list-style-type: none"> Changes to surface water quantity and flow may affect agricultural operations through potential effects on their water supplies
Housing	<ul style="list-style-type: none"> No potential interactions
Municipal Infrastructure and Services	<ul style="list-style-type: none"> Changes to surface water quantity and flow may affect municipal infrastructure and services through a potential need for a change in sources of water The municipal finance implications of this potential effect are captured by this interaction
Other Physical Assets	<ul style="list-style-type: none"> Community character may change as a result of a change in the community's source of water.
Inverhuron Provincial Park	<ul style="list-style-type: none"> Changes to surface water quantity and flow may affect the use and enjoyment of Inverhuron Provincial Park through potential effects on their water supply
Other Social Assets	<ul style="list-style-type: none"> Changes to surface water quantity and flow may affect the use and enjoyment of community and recreational features, through potential effects on their water supplies Similarly, changes to surface water quantity and flow may affect the use and enjoyment of private property through potential effects on residential water supplies

6.2.2.4 Changes in Surface Water Quality

DGR Project-related changes in surface water quality have the potential to indirectly interact with the socio-economic environment VECs through potential effects on water supplies used for residential, business or agricultural purposes and/or potential effects on waters used for recreational purposes (e.g., swimming). The indirect interactions with the following socio-economic environment VECs are summarized in Table 6.2.2-4:

- Tourism;

- Residential Property Values;
- Other Financial Assets: agriculture;
- Municipal Infrastructure and Services;
- Other Physical Assets: community character;
- Inverhuron Provincial Park; and
- Other Social Assets: use and enjoyment of private property and community recreational facilities and programs.

Table 6.2.2-4: Summary of Potential Interactions between Changes in Surface Water Quality and Socio-economic Environment VECs

VEC	Potential Interactions
Population and Demographics	<ul style="list-style-type: none"> • No potential interactions
Other Human Assets	<ul style="list-style-type: none"> • No potential interactions
Employment	<ul style="list-style-type: none"> • No potential interactions
Business Activity	<ul style="list-style-type: none"> • No potential interactions
Tourism	<ul style="list-style-type: none"> • Changes to surface water quality may affect local tourism operations through potential effects on their water supplies and/or potential effects on waters used for recreational purposes (e.g., swimming) by tourists
Residential Property Values	<ul style="list-style-type: none"> • Changes to surface water quality may affect residential property values through potential effects on residential water supplies
Municipal Finance and Administration	<ul style="list-style-type: none"> • No potential interactions
Other Financial Assets	<ul style="list-style-type: none"> • Changes to surface water quality may affect agricultural operations through potential effects on their water supplies (e.g., water used for irrigation or food processing purposes)
Housing	<ul style="list-style-type: none"> • No potential interactions
Municipal Infrastructure and Services	<ul style="list-style-type: none"> • Changes to surface water quality may affect municipal infrastructure and services through a potential need for a change in sources of water and/or a need for additional treatment
Other Physical Assets	<ul style="list-style-type: none"> • Community character may change as a result of a change in the community's source of water
Inverhuron Provincial Park	<ul style="list-style-type: none"> • Changes to surface water quality may affect the use and enjoyment of Inverhuron Provincial Park by tourists and day users through potential effects on their water supplies and/or potential effects on waters used for recreational purposes (e.g., swimming)

Table 6.2.2-4: Summary of Potential Interactions between Changes in Surface Water Quality and Socio-economic Environment VECs (continued)

VEC	Potential Interactions
Other Social Assets	<ul style="list-style-type: none"> • Changes to surface water quality may affect the use and enjoyment of community and recreational features, through potential effects on their water supplies • Similarly, changes to surface water quality may affect the use and enjoyment of private property through potential effects on residential water supplies

6.2.2.5 Changes in Soil Quality

The DGR Project may affect the quality of soils. These interactions are fully evaluated in the Geology TSD, where soil quality is identified as a specific VEC. Although potential interactions exist between the DGR Project and soil quality in the Project Area, there is no potential for changes in soil quality in the Project Area to indirectly interact with socio-economic environment VECs. This is because there is no use of the Project Area by community members for residential, commercial, industrial, agricultural or recreational purposes. Therefore this indirect pathway is not considered further.

6.2.2.6 Changes in Groundwater Quality

Changes in groundwater quality may indirectly interact with the socio-economic VECs through effects on groundwater-supplied drinking water wells or irrigation wells. This indirect interaction is possible only where groundwater wells used for these purposes are located downgradient of the Project Area. Therefore, changes in groundwater quality have the potential to indirectly interact with the following socio-economic environment VECs, as summarized in Table 6.2.2-5:

- Tourism;
- Residential Property Values;
- Other Financial Assets: agriculture;
- Municipal Infrastructure and Services;
- Other Physical Assets: community character; and
- Other Social Assets: use and enjoyment of private property and community recreational facilities and programs.

Table 6.2.2-5: Summary of Potential Interactions between Changes in Groundwater Quality and Socio-economic Environment VECs

VEC	Potential Interactions
Population and Demographics	<ul style="list-style-type: none"> • No potential interactions
Other Human Assets	<ul style="list-style-type: none"> • No potential interactions
Employment	<ul style="list-style-type: none"> • No potential interactions

Table 6.2.2-5: Summary of Potential Interactions between Changes in Groundwater Quality and Socio-economic Environment VECs (continued)

VEC	Potential Interactions
Business Activity	<ul style="list-style-type: none"> No potential interactions
Tourism	<ul style="list-style-type: none"> Changes to groundwater quality may affect local tourism operations through potential effects on their water supplies
Residential Property Values	<ul style="list-style-type: none"> Changes to groundwater water quality may affect residential property values through potential effects on residential water supplies
Municipal Finance and Administration	<ul style="list-style-type: none"> No potential interactions
Other Financial Assets	<ul style="list-style-type: none"> Changes to groundwater quality may affect agricultural operations through potential effects on their water supplies (e.g., water used for irrigation or food processing purposes)
Housing	<ul style="list-style-type: none"> No potential interactions
Municipal Infrastructure and Services	<ul style="list-style-type: none"> Changes to groundwater quality may affect municipal infrastructure and services through a potential need for a change in sources of water and/or a need for additional treatment
Other Physical Assets	<ul style="list-style-type: none"> Community character may change as a result of a change in the community's source of water
Inverhuron Provincial Park	<ul style="list-style-type: none"> No potential interactions – Inverhuron Provincial Park does not use groundwater as a source of drinking water
Other Social Assets	<ul style="list-style-type: none"> Changes to groundwater quality may affect the use and enjoyment of community and recreational features, through potential effects on their water supplies Similarly, changes to groundwater quality may affect the use and enjoyment of private property through potential effects on residential water supplies

6.2.2.7 Changes in Groundwater Flow

Changes in groundwater quantity and flow may indirectly interact with the socio-economic VECs through effects on groundwater-supplied wells used for residential, business and/or agricultural purposes. Changes in groundwater quantity and flow have the potential to indirectly interact with the following socio-economic environment VECs, as summarized in Table 6.2.2-6:

- Tourism;
- Residential Property Values;
- Other Financial Assets: agriculture

- Municipal Infrastructure and Services;
- Other Physical Assets: community character; and
- Other Social Assets: use and enjoyment of private property and community recreational facilities and programs.

Table 6.2.2-6: Summary of Potential Interactions between Changes in Groundwater Flow and Socio-economic Environment VECs

VEC	Potential Interactions
Population and Demographics	<ul style="list-style-type: none"> • No potential interactions
Other Human Assets	<ul style="list-style-type: none"> • No potential interactions
Employment	<ul style="list-style-type: none"> • No potential interactions
Business Activity	<ul style="list-style-type: none"> • No potential interactions
Tourism	<ul style="list-style-type: none"> • Changes to groundwater quantity and flow may affect local tourism operations through potential effects on their water supplies
Residential Property Values	<ul style="list-style-type: none"> • Changes to groundwater water quantity and flow may affect residential property values through potential effects on residential water supplies
Municipal Finance and Administration	<ul style="list-style-type: none"> • No potential interactions
Other Financial Assets	<ul style="list-style-type: none"> • Changes to groundwater quantity and flow may affect agricultural operations through potential effects on their water supplies (e.g., water used for irrigation or food processing purposes)
Housing	<ul style="list-style-type: none"> • No potential interactions
Municipal Infrastructure and Services	<ul style="list-style-type: none"> • Changes to groundwater quantity and flow may affect municipal infrastructure and services through a potential need for a change in sources of water and/or a need for additional treatment capacity
Other Physical Assets	<ul style="list-style-type: none"> • Community character may change as a result of a change in the community's source of water
Inverhuron Provincial Park	<ul style="list-style-type: none"> • No potential interactions – Inverhuron Provincial Park does not use groundwater as a source of drinking water
Other Social Assets	<ul style="list-style-type: none"> • Changes to groundwater quantity and flow may affect the use and enjoyment of community and recreational features, through potential effects on their water supplies • Similarly, changes to groundwater quantity and flow may affect the use and enjoyment of private property through potential effects on residential water supplies

6.2.2.8 Changes in the Aquatic and Terrestrial Environment

Changes in the populations of fish, terrestrial wildlife and their habitats may cause changes to wildlife viewing, hunting and fishing opportunities, which are linked with a number of the VECs identified for the socio-economic environment.

Changes in the aquatic and terrestrial environments have the potential to indirectly interact with the following socio-economic environment VECs, as summarized in Table 6.2.2-7:

- Tourism; and
- Other Financial Assets: renewable and non-renewable resource use;
- Inverhuron Provincial Park; and
- Other Social Assets: community recreational facilities and programs.

Table 6.2.2-7: Summary of Potential Interactions between Changes in the Aquatic and Terrestrial Environment and Socio-economic Environment VECs

VEC	Potential Interactions
Population and Demographics	<ul style="list-style-type: none"> • No potential interactions
Other Human Assets	<ul style="list-style-type: none"> • No potential interactions
Employment	<ul style="list-style-type: none"> • No potential interactions
Business Activity	<ul style="list-style-type: none"> • No potential interactions
Tourism	<ul style="list-style-type: none"> • Changes to fish and terrestrial wildlife populations and their habitats may affect bird watching or nature viewing activities and fishing opportunities that may affect tourism (e.g., fishing charters)
Residential Property Values	<ul style="list-style-type: none"> • No potential interactions
Municipal Finance and Administration	<ul style="list-style-type: none"> • No potential interactions
Other Financial Assets	<ul style="list-style-type: none"> • Changes to fish populations and their habitats may affect commercial fishing (i.e., a renewable resource use)
Housing	<ul style="list-style-type: none"> • No potential interactions
Municipal Infrastructure and Services	<ul style="list-style-type: none"> • No potential interactions
Other Physical Assets	<ul style="list-style-type: none"> • No potential interactions
Inverhuron Provincial Park	<ul style="list-style-type: none"> • Changes to fish and terrestrial wildlife populations and their habitats may affect bird watching or nature viewing activities and fishing opportunities that may affect people's use and enjoyment of Inverhuron Provincial Park

Table 6.2.2-7: Summary of Potential Interactions between Changes in the Aquatic and Terrestrial Environment and Socio-economic Environment VECs (continued)

VEC	Potential Interactions
Other Social Assets	<ul style="list-style-type: none"> • Changes to fish and terrestrial wildlife populations and their habitats may affect bird watching or nature viewing activities and fishing opportunities that may affect people's use and enjoyment of community and recreational features (e.g., parks, conservation areas, beaches, trails, fishing and boating activities)

6.2.2.9 Changes in Radiation and Radioactivity

Changes in radiation and radioactivity because of the DGR Project may affect the community in varied and extensive ways. For the purposes of this initial screening, changes in radiation and radioactivity have the potential to indirectly interact with any or all of the socio-economic environment VECs through changes in public attitudes towards their feelings of health, sense of safety and/or satisfaction with their community.

6.3 SUMMARY OF FIRST SCREENING

Table 6.3-1 provides a summary of the initial screening for the DGR Project. The dash (—) indicates that this activity does not occur during the phase, i.e., site preparation and construction (C), operations (O), and decommissioning (D). An empty cell indicates no potential interaction. Small dots (•) on this matrix represent potential DGR Project-environment interactions identified for specific project works and activities. These potential interactions, both direct and indirect, are advanced to Section 7 for a second screening to determine those interactions that may result in a measurable change to the socio-economic environment VECs.

Following the screening of potential interactions, it was determined that all of the socio-economic environment VECs have a potential interaction with the DGR Project through direct and/or indirect means. Therefore, all of the VECs identified in Table 4.1-1 are carried forward for further assessment. The second screening (Section 7) focuses on the component of each VEC where the potential interaction was identified in the initial screening.

Table 6.3-1: Matrix 1– Summary of the First Screening for Potential Interactions with VECs

Project Work and Activity	Population and Demographics			Other Human Assets			Employment			Business Activity		
	C	O	D	C	O	D	C	O	D	C	O	D
Direct Effects												
Site Preparation		—	—	•	—	—		—	—		—	—
Construction of Surface Facilities		—	—	•	—	—		—	—		—	—
Excavation and Construction of Underground Facilities		—	—	•	—	—		—	—		—	—
Above-ground Transfer of Waste				—	•	—	—		—	—	—	—
Underground Transfer of Waste	—		—	—	•	—	—		—	—	—	—
Decommissioning of the DGR Project	—	—		—	—	•	—	—		—	—	
Abandonment of DGR Facility	—	—	—	—	—	—	—	—	—	—	—	—
Presence of the DGR Project	•	•	•									
Waste Management										•	•	
Support and Monitoring of DGR Life Cycle												
Workers, Payroll and Purchasing	•	•	•	•	•	•	•	•	•	•	•	•
Indirect Effects												
Changes in Air Quality				•	•	•				•	•	•
Changes in Noise Levels				•	•	•				•	•	•
Changes in Surface Water Quantity and Flow												
Changes in Surface Water Quality												
Changes in Soil Quality												
Changes in Groundwater Quality												
Changes in Groundwater Flow												
Changes in Aquatic and Terrestrial Environment												
Changes in Radiation and Radioactivity	•	•	•	•	•	•	•	•	•	•	•	•

Notes:

C = Site Preparation and Construction Phase;

O = Operations Phase

D = Decommissioning Phase

The matrices are meant to indicate when the effect occurs and do not imply how long an effect will last. The duration of the effects is assessed in Section 11.

The abandonment and long-term performance phase is not included in the matrix as no activities occur during this phase. The abandonment of the DGR facility work and activity occurs immediately following decommissioning within the decommissioning phase and does not encompass the entirety of the abandonment and long-term performance phase.

Blank = No potential interaction

• Potential project-environment interaction

— Not Applicable

Table 6.3-1: Matrix 1– Summary of the First Screening for Potential Interactions with VECs (continued)

Project Work and Activity	Tourism			Residential Property Values			Municipal Finance and Administration			Other Financial Assets		
	C	O	D	C	O	D	C	O	D	C	O	D
Direct Effects												
Site Preparation		—	—		—	—		—	—	•	—	—
Construction of Surface Facilities		—	—		—	—		—	—	•	—	—
Excavation and Construction of Underground Facilities		—	—		—	—		—	—	•	—	—
Above-ground Transfer of Waste	—		—	—		—	—		—		•	
Underground Transfer of Waste	—		—	—		—	—		—	—	•	—
Decommissioning of the DGR Project	—	—		—	—		—	—		—	—	•
Abandonment of DGR Facility	—	—	—	—	—	—	—	—	—	—	—	—
Presence of the DGR Project	•	•	•	•	•	•	•	•	•			
Waste Management							•	•				
Support and Monitoring of DGR Life Cycle												
Workers, Payroll and Purchasing	•	•	•	•	•	•	•	•	•	•	•	•
Indirect Effects												
Changes in Air Quality	•	•	•	•	•	•				•	•	•
Changes in Noise Levels	•	•	•	•	•	•				•	•	•
Changes in Surface Water Quantity and Flow	•	•	•	•	•	•				•	•	•
Changes in Surface Water Quality	•	•	•	•	•	•				•	•	•
Changes in Soil Quality												
Changes in Groundwater Quality	•	•	•	•	•	•				•	•	•
Changes in Groundwater Flow	•	•	•	•	•	•				•	•	•
Changes in Aquatic and Terrestrial Environment	•	•	•							•	•	•
Changes in Radiation and Radioactivity	•	•	•	•	•	•	•	•	•	•	•	•

Notes:
 C = Site Preparation and Construction Phase;
 O = Operations Phase
 D = Decommissioning Phase
 The matrices are meant to indicate when the effect occurs and do not imply how long an effect will last. The duration of the effects is assessed in Section 11.

The abandonment and long-term performance phase is not included in the matrix as no activities occur during this phase. The abandonment of the DGR facility work and activity occurs immediately following decommissioning within the decommissioning phase and does not encompass the entirety of the abandonment and long-term performance phase.

Blank = No potential interaction
 • Potential project-environment interaction
 — Not Applicable

Table 6.3-1: Matrix 1– Summary of the First Screening for Potential Interactions with VECs (continued)

Project Work and Activity	Housing			Municipal Infrastructure and Services			Other Physical Assets			Inverhuron Provincial Park			Other Social Assets		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Direct Effects															
Site Preparation		—	—		—	—	•	—	—		—	—	•	—	—
Construction of Surface Facilities		—	—		—	—	•	—	—		—	—		—	—
Excavation and Construction of Underground Facilities		—	—		—	—	•	—	—		—	—		—	—
Above-ground Transfer of Waste	—		—	—		—	—		—	—		—	—		—
Underground Transfer of Waste	—		—	—		—	—		—	—		—	—		—
Decommissioning of the DGR Project	—	—		—	—		—	—	•	—	—		—	—	•
Abandonment of DGR Facility	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Presence of the DGR Project	•	•	•				•	•	•	•	•	•	•	•	•
Waste Management				•	•		•	•	•						
Support and Monitoring of DGR Life Cycle															
Workers, Payroll and Purchasing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Indirect Effects															
Changes in Air Quality							•	•	•	•	•	•	•	•	•
Changes in Noise Levels							•	•	•	•	•	•	•	•	•
Changes in Surface Water Quantity and Flow				•	•	•	•	•	•	•	•	•	•	•	•
Changes in Surface Water Quality				•	•	•	•	•	•	•	•	•	•	•	•
Changes in Soil Quality															
Changes in Groundwater Quality				•	•	•	•	•	•				•	•	•
Changes in Groundwater Flow				•	•	•	•	•	•				•	•	•
Changes in Aquatic and Terrestrial Environment										•	•	•	•	•	•
Changes in Radiation and Radioactivity	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Notes:

C = Site Preparation and Construction Phase;
 O = Operations Phase
 D = Decommissioning Phase

The matrices are meant to indicate when the effect occurs and do not imply how long an effect will last. The duration of the effects is assessed in Section 11.

The abandonment and long-term performance phase is not included in the matrix as no activities occur during this phase. The abandonment of the DGR facility work and activity occurs immediately following decommissioning within the decommissioning phase and does not encompass the entirety of the abandonment and long-term performance phase.

Blank = No potential interaction

• Potential project-environment interaction
 — Not Applicable

7. SECOND SCREENING OF PROJECT-ENVIRONMENT INTERACTIONS

The second screening considers those DGR Project works and activities advanced from Section 6 to determine if the identified interactions are likely to cause a measurable change to the socio-economic environment VECs.

7.1 SECOND SCREENING METHODS

Each work and activity/socio-economic environment interaction identified in Table 6.3-1 was further evaluated to determine if the activity would likely result in a measurable change. The evaluation considered the professional judgement of the assessment team and the results of screenings conducted for other environmental components as described in their respective TSDs.

Specific information regarding existing conditions as described in Section 5, and more detailed information regarding the DGR Project, particularly labour requirements, and the results of analyses undertaken in relation to the various natural assets, were used in identifying those specific socio-economic environment VECs that are likely to experience a measurable change. The works and activities with potential to interact with the socio-economic environment were evaluated, as described below, to determine if the interaction was likely to result in a measurable change to the socio-economic environment VECs. The discussion is presented by DGR Project phases:

- site preparation and construction;
- operations; and
- decommissioning.

The abandonment and long-term performance phase does not have the potential to interact with the socio-economic environment VECs. Each of the identified DGR Project-environment interactions was evaluated to determine those likely to result in a measurable change in the environment. For the purposes of the assessment, a measurable change in the environment is one that is real, observable or detectable compared with existing conditions. A predicted change that is trivial, negligible or indistinguishable from the baseline was not considered measurable. The criteria used to determine measurable change include quantitative and qualitative parameters to the extent that they were available. A measurable change in a VEC was marked with a '■' on the matrix 2 (Table 7.5-1).

Where there were likely measurable changes identified as a direct or indirect result of the DGR Project works and activities, these DGR Project-related changes were advanced for further assessment in Section 8.

7.2 SITE PREPARATION AND CONSTRUCTION PHASE

During site preparation and construction, likely measurable changes to the socio-economic environment may result from some project works and activities (where potential interaction was identified), through direct and/or indirect means.

7.2.1 Direct Changes

7.2.1.1 Human Assets

Population and Demographics

Measurable population change associated with the DGR Project site preparation and construction phase can be expected to occur across the Local and Regional Study Areas. Given the influence that a change in population has on other community assets and effects on many socio-economic VECs, the magnitude of the DGR Project associated population and its distribution across the Local and Regional Study Areas will be quantified in Section 8. However, the number of in-movers associated with the DGR Project during the site preparation and construction phase is expected to be small in the context of the existing municipal populations and planned future growth, such that a measurable change in population demographics, including the overall age and gender of the population, family size or composition is not likely. As such, these demographic indicators are not considered further.

Other Human Assets

The DGR Project and the expected measurable change in associated population may place additional demands on external policing, fire-fighting, EMS services and hospital beds. Similarly, the expected measurable change in population associated with the DGR Project may result in increased school enrolment and demands on social services.

The worker requirements for the DGR Project are not expected to be large enough to measurably change the general availability of skills and labour in the Local or Regional Study Areas. However, because the skills and expertise necessary for excavating the shafts and underground work are not likely to be available in the Local or Regional Study Areas, there will be a need to find these skills and expertise from further afield. Therefore, the consideration of changes in existing skills and labour within the Local and Regional Study Areas are carried forward for further assessment.

7.2.1.2 Financial Assets

Employment

The DGR Project site preparation and construction phase is expected to generate measurable direct, indirect and induced employment opportunities.

Business Activity

DGR Project-related expenditures on payroll will directly change labour income of construction employees. The income generated by the DGR Project, through direct, indirect and induced employment will likely generate business activity through household spending. Goods and services purchasing for the DGR Project will also generate measurable business activity.

Off-site management of DGR Project non-hazardous non-radiological and small amounts of hazardous wastes at licensed facilities is required. Consumable material, such as rags and

coveralls used in maintenance and clean-up operations and solids generated by the underground sanitary facilities will be transported to appropriate licensed waste disposal facilities. Therefore, there is likely measurable change to business activity at private disposal facilities.

Tourism

The DGR Project-related workforce and the presence of the DGR Project as a whole may result in a measurable change to the use and enjoyment of tourist features, considering the likelihood of measurable changes in public attitudes and behaviours attributable to the DGR Project.

Residential Property Values

The expected measurable change in the population associated with the DGR Project during the site preparation and construction phase could change the demand for housing, thereby influencing the housing market and residential property values.

Municipal Finance and Administration

Construction of new buildings and structures related to the DGR Project may require the payment of property taxes and building permit fees. Payment of development charges, taxes and/or other monetary payments would generate measurable revenue. Off-site management of DGR Project non-hazardous and non-radiological waste at licensed facilities is required. This may represent an additional, measurable source of revenue for a municipality through tipping fees.

Other Financial Assets

A measurable change in non-renewable resource use, particularly aggregate and fuels, is likely during site preparation and construction. A measurable change DGR Project-related employment will generate labour income, which is likely to be measurable within the Local and Regional Study Areas.

7.2.1.3 Physical Assets

Housing

A measurable change in DGR Project associated housing is likely as a result of a measurable increase in the population associated with the DGR Project.

Municipal Infrastructure

Measurable change to the demands on municipal infrastructure is likely as a result of a measurable increase in the population associated with the DGR Project. The management of DGR Project generated domestic waste (non-hazardous and non-radiological waste) off-site at municipal waste management facilities may also be required.

Other Physical Assets

A measurable change to land use and community character may occur as a result of the visibility of the above ground buildings and structures, including the waste rock management area. The DGR Project as a whole (considering the likelihood of measurable changes in public attitudes and behaviours attributable to the DGR Project) may result in a measurable change in land use and community character, through the potential attribution of a stigma. Measurable change in transportation infrastructure functioning and safety throughout this phase is likely as a result of movement of employee vehicles and DGR Project-related truck traffic, including the movement of goods onto the DGR Project site and removal of DGR Project-related materials for recycling or disposal.

7.2.1.4 Social Assets

Inverhuron Provincial Park

The DGR Project-related workforce and the presence of the DGR Project as a whole may result in a measurable change to the use and enjoyment of Inverhuron Provincial Park, considering the likelihood of measurable changes in public attitudes and behaviours attributable to the DGR Project.

Other Social Assets

The DGR Project-related workforce and the presence of the DGR Project as a whole (considering the likelihood of measurable changes in public attitudes and behaviours attributable to the DGR Project) may result in a measurable change to the use and enjoyment of community and recreational features, and community cohesion. The disruption to a cultural heritage resource potentially encountered in the Project Area during the site preparation and construction phase is also considered to be measurable, should this occur.

7.2.2 Indirect Changes

Other measurable changes in the socio-economic environment during the site preparation and construction phase of the DGR Project may be associated with measurable changes in natural assets (i.e., natural components of the environment).

In terms of changes in air quality, suspended particulate matter (SPM, i.e., dust) was selected as the indicator for changes to the socio-economic environment VECs. Visible dust is considered to be a nuisance.

As described in the Atmospheric Environment TSD, measurable increases in suspended particulate matter are expected in a portion of the Local Study Area in close proximity to the Bruce nuclear site. These increased SPM concentrations, from a socio-economic perspective, may change the use and enjoyment of private property, community and recreational facilities, Inverhuron Provincial Park and schools. The use and enjoyment of, or operations at, tourist facilities may also be affected by these air quality changes, as may agricultural activities. Taken together, all of these changes have the potential to measurably change property values and community character. As no businesses or agricultural operations that are likely to be sensitive

to change in SPM concentrations were identified in close proximity to the Bruce nuclear site, no measurable change in business or agricultural activities are anticipated as a result of air quality change.

As described in the Atmospheric Environment TSD, measurable increases in noise levels during site preparation and construction are predicted in a portion of the Local Study Area in close proximity to the Bruce nuclear site. Measurable changes in several socio-economic environment VECs is likely since increased noises levels could affect sensitive receptors including:

- educational facilities;
- residences and people's use and enjoyment of private property;
- community and recreational facilities;
- Inverhuron Provincial Park; and
- other tourist facilities.

Taken together, all of these changes have the potential to measurably change property values and community character. However, no business or agricultural operations that are likely to be sensitive to changes in noise levels were identified in close proximity to the Bruce nuclear site; therefore, no measurable change to business or agricultural activities are anticipated as a result of a change in noise levels.

As discussed in the Terrestrial Environment TSD, some mixed woods forest units in the Project Area are to be removed during site preparation. Although this is considered a measurable change in the Terrestrial Environment TSD, the removal of mixed woods forest occurs only in the Project Area, which is inaccessible to the public and not used for any commercial or recreational purpose. Therefore, it is not assessed further in relation to socio-economic VECs. The increase in DGR Project-related vehicles during the site preparation and construction phase may result in a small increase in wildlife mortality due to vehicle strikes. However, this increase is considered to be negligible since the loss of a few individuals from any of the wildlife species VECs will not affect their populations. No measurable change to wildlife species VECs were identified during any phase of the DGR Project. Therefore, no measurable change to socio-economic environment VECs is anticipated, and further evaluation is not warranted.

As discussed in the Aquatic Environment TSD, site preparation and construction activities are likely to cause a measurable change to aquatic VECs, including burrowing crayfish, aquatic plant and baitfish VECs in the South Railway Ditch. However, measurable changes occur only within the Project Area boundary, which is inaccessible to the public and not used for any commercial or recreational purpose. Therefore, no measurable change to the socio-economic environment VECs is anticipated and further evaluation is not warranted.

As described in the Geology TSD, changes potentially influencing groundwater quality were identified during the site preparation and construction phase of the DGR Project. However, these changes are restricted to the Site Study Area where there are no groundwater users. Moreover, groundwater wells used for drinking or irrigation purposes are located up gradient of the Site Study Area and are not likely to be affected. Therefore no measurable change to the socio-economic environment VECs is expected and no further evaluation is warranted.

The Geology TSD identifies that a measurable change is likely in groundwater flow during the site preparation and construction phase. Potential interactions were identified with socio-economic environment VECs through potential effects on drinking water and irrigation wells. However, the changes in groundwater flow are restricted to the Site Study Area where there are no groundwater users. Therefore, no measurable change to socio-economic environment VECs is anticipated and there is no need to further consider effects from changes in groundwater flow on socio-economic environment VECs.

As discussed in the Hydrology and Surface Water Quality TSD, the diversion of flow from the Stream C watershed to MacPherson Bay will cause a measurable change in stream flow in Stream C, the North Railway Ditch at Stream C, and the existing drainage ditch that conveys runoff from the centre of the Bruce nuclear site to MacPherson Bay. However, these changes will be measurable only within the boundaries of the Site Study Area and therefore no measurable change to the socio-economic environment VECs is anticipated. Therefore, no further consideration is required.

The Hydrology and Surface Water Quality TSD also identified that no measurable changes in surface water quality outside of the Site Study Area are expected during any phase of the DGR Project. No measurable changes to Lake Huron water quality are anticipated. Therefore, this potential indirect change is not considered further in relation to the socio-economic environment VECs.

As described in the Radiation and Radioactivity TSD, no measurable change in radiation and radioactivity during the site preparation and construction phase is anticipated. Therefore, this potential indirect change is not considered further in relation to the socio-economic environment VECs.

7.3 OPERATIONS PHASE

During the operations phase of the DGR Project, measurable changes on the socio-economic environment may result from many of the works and activities where an interaction was identified, through direct and/or indirect means.

7.3.1 Direct Changes

7.3.1.1 Human Assets

Population and Demographics

Measurable population change associated with the DGR Project's operations phase can be expected to occur across the Local and Regional Study Areas. Given the influence that a change in population has on other community assets and effects on many socio-economic VECs, the magnitude of the DGR Project associated population and its distribution across the Local and Regional Study Areas will be quantified in Section 8. However, the number of in-movers associated with the DGR Project during the operations phase is expected to be small in the context of the existing municipal populations and planned future growth, such that a measurable change in population demographics, including the overall age and gender of the population, family size or composition is not likely. Therefore, these demographic indicators are not considered further.

Other Human Assets

The DGR Project and the expected measurable change in associated population may place additional demands on external policing, fire-fighting, EMS services and hospital beds. Similarly, the expected measurable change in population associated with the DGR Project during the operations phase may result in increased school enrolment and demands on social services. Operations at new buildings and structures and underground activities may require changes to emergency preparedness plans.

The worker requirements for the DGR Project are not expected to be large enough to measurably change the general availability of skills and labour in the Local or Regional Study Areas. Most of the skills and expertise necessary for operations at the DGR facility are likely to be transferable between the WWMF and the DGR Project or available in the Local or Regional Study Areas. Therefore, the changes in existing skills and labour within the Local and Regional Study Areas during the operations phase are not likely, and no further consideration is warranted.

7.3.1.2 Financial Assets

Employment

The DGR Project operations phase is expected to generate measurable direct, indirect and induced employment opportunities.

Business Activity

DGR Project-related expenditures on payroll will directly change labour income of permanent employees. The income generated by the DGR Project, through direct, indirect and induced employment will likely generate business activity through household spending. Goods and services purchasing for the DGR Project will also generate measurable business activity.

Off-site management of DGR Project non-hazardous non-radiological and small amounts of hazardous wastes at licensed facilities is required. Consumable material, such as rags and coveralls used in maintenance and clean-up operations and solids generated by the underground sanitary facilities will be transported to appropriate licensed waste disposal facilities. Therefore, there is a likely measurable change to business activity at private disposal facilities.

Tourism

The DGR Project-related workforce and the presence of the DGR Project as a whole may result in a measurable change to the use and enjoyment of tourist features, considering the likelihood of measurable changes in public attitudes and behaviours attributable to the DGR Project.

Residential Property Values

The expected measurable change in the population associated with the DGR Project during the operations phase could change the demand for housing, thereby influencing the housing market and residential property values.

Municipal Finance and Administration

The presence of new buildings and structures related to the DGR Project may require the payment of property taxes. OPG may make other payments to the host municipality and other communities that would also generate measurable revenues. Off-site management of DGR Project non-hazardous and non-radiological wastes at licensed facilities is required. This may represent an additional, measurable source of revenue for a municipality through tipping fees.

Other Financial Assets

A measurable change in non-renewable resource use, particularly fuel, is likely during the operations phase. DGR Project-related employment will generate labour income that is likely to be measurable within the Local and Regional Study Areas.

7.3.1.3 Physical Assets

Housing

A measurable change in DGR Project associated housing is likely as a result of a measurable increase in the population associated with the DGR Project's operations phase.

Municipal Infrastructure

Measurable change to the demands on municipal infrastructure is likely as a result of a measurable increase in the population associated with the DGR Project. The management of DGR Project generated domestic waste (non-hazardous and non-radiological waste) off-site at municipal waste management facilities may also be required.

Other Physical Assets

A measurable change to land use and community character may occur as a result of the visibility of the above ground buildings and structures, including the waste rock management area. The DGR Project as a whole (considering the likelihood of measurable changes in public attitudes and behaviours attributable to the DGR Project) may result in a measurable change to land use and community character, through the potential attribution of a stigma. Measurable change in transportation infrastructure functioning and safety throughout this phase is likely as a result of movement of employee vehicles and DGR Project-related truck traffic, including the movement of goods onto the DGR Project site and removal of DGR Project-related materials for recycling or disposal.

7.3.1.4 Social Assets

Inverhuron Provincial Park

The DGR Project-related workforce and the presence of the DGR Project as a whole may result in a measurable change to the use and enjoyment of Inverhuron Provincial Park, considering the likelihood of measurable changes in public attitudes and behaviours attributable to the DGR Project.

Other Social Assets

The DGR Project-related workforce and the presence of the DGR Project as a whole may result in a measurable change to the use and enjoyment of community and recreational features, and community cohesion, considering the likelihood of measurable changes in public attitudes and behaviours attributable to the DGR Project.

7.3.2 Indirect Changes

Other likely measurable changes in the socio-economic environment during the operations phase of the DGR Project may be associated with measurable changes in natural assets. Measurable change in these natural assets and indirect effects on the socio-economic environment VECs are discussed below.

For potential effects on the socio-economic environment VECs due to changes in air quality, suspended particulate matter (SPM), (i.e., dust) was selected as the indicator compound. As described in the Atmospheric Environment TSD, measurable increases in SPM are expected during operations in a portion of the Local Study Area in close proximity to the Bruce nuclear site. These increased SPM concentrations, from a socio-economic perspective, may change the use and enjoyment of private property, community and recreational facilities, Inverhuron Provincial Park and schools. The use and enjoyment of, or operations at, tourist facilities may also be affected by these air quality changes, as may agricultural activities. Taken together, all of these changes have the potential to measurably change property values and community character. As no businesses or agricultural operations that are likely to be sensitive to changes in SPM concentrations were identified in close proximity to the Bruce nuclear site, no measurable change to business or agricultural activities are anticipated as a result of changes in air quality.

As described in the Atmospheric Environment TSD and Section 8.8.1.2 of this TSD, a measurable increase in noise levels during the operations phase is predicted in a portion of the Local Study Area in close proximity to the Bruce nuclear site, but this increase is considered to be hardly perceptible to the human ear. As such, measurable changes in the socio-economic environment VECs are not likely.

As described in the Terrestrial Environment TSD, the increase in DGR Project-related vehicles may result in a small increase in wildlife mortality. However, this increase is considered to be negligible since the loss of a few individuals from any of the wildlife species VECs will not affect their populations. Accordingly, no indirect measurable changes in the socio-economic environment VECs are likely. No further consideration is warranted.

As described in the Geology TSD, changes potentially influencing groundwater quality were identified during the operations phase of the DGR Project. However, these changes are restricted to the Project Area where there are no groundwater users. Moreover, groundwater wells used for drinking or irrigation purposes are located up gradient of the Project Area and are not likely to be affected. Therefore no measurable change to the socio-economic environment VECs is expected and no further evaluation is warranted.

Also described in the Geology TSD, changes in groundwater flow during the operations phase of the DGR Project are expected to be negligible, and therefore, not measurable. As such, there is no need to further evaluate effects from changes on groundwater flow on socio-economic environment VECs.

As discussed in the Hydrology and Surface Water Quality TSD, the diversion of flow from the Stream C watershed to MacPherson Bay during the operations phase will cause a measurable change in stream flow in Stream C, the North Railway Ditch at Stream C and the existing drainage ditch that conveys runoff from the centre of the Bruce nuclear site to MacPherson Bay. However, changes will only be measurable within the boundary of the Site Study Area and are not expected to have an indirect measurable change on the socio-economic environment VECs. Therefore, no further consideration is required.

As described in the Hydrology and Surface Water Quality TSD, no measurable changes in surface water quality outside of the Site Study Area are expected during any phase of the DGR Project. No measurable changes to Lake Huron water quality are expected. Therefore, this potential indirect change in socio-economic environment VECs is not considered further.

Changes in radiation and radioactivity, dose to Nuclear Energy Workers (NEWs), other workers at the Bruce nuclear site (non-NEWs) and members of the public were selected as indicators of potential effects on the socio-economic environment. As described in the Radiation and Radioactivity TSD, measurable changes in human exposure are expected during the operations phase of the DGR Project. Changes in radiation and radioactivity have the potential to indirectly interact with all of the socio-economic environment VECs through changes in public attitudes towards their feelings of health and sense of safety.

There is also potential for radiological releases resulting from malfunctions, accidents or malevolent acts. From a socio-economic perspective such releases may affect any or all components of the socio-economic environment, depending on the level and extent of releases. The assessment of socio-economic implications related to radiological malfunctions and accidents is discussed in the Malfunctions, Accidents and Malevolent Acts TSD.

7.4 DECOMMISSIONING PHASE

During the decommissioning phase of the DGR Project, measurable changes on some socio-economic environment VECs are likely.

7.4.1 Direct Changes

7.4.1.1 Human Assets

Population and Demographics

Measurable population change associated with the DGR Project decommissioning phase can be expected to occur across the Local and Regional Study Areas. Given the influence that a change in population has on other community assets and effects on many socio-economic VECs, the magnitude of the DGR Project associated population and its distribution across the Local and Regional Study Areas will be quantified in Section 8. However, the number of in-movers associated with the DGR Project during the decommissioning phase is expected to be small in the context of the existing municipal populations and planned future growth, such that a measurable change in population demographics, including the overall age and gender of the population, family size or composition is not likely. The same can be said with respect to the loss of population at the end of the decommissioning phase. It is anticipated that the out-moving population will also be small in the context of the existing population and planned future growth. As such, these demographic indicators are not considered further.

Other Human Assets

The DGR Project and the expected measurable change in associated population may place additional demands on external policing, fire-fighting, EMS services and hospital beds. Similarly, the expected measurable change in population associated with the DGR Project may result in increased school enrolment and demands on social services.

The worker requirements for the DGR Project decommissioning phase are not expected to be large enough to measurably change the general availability of skills and labour in the Local or Regional Study Areas. Because much of the skills and expertise necessary for decommissioning work are likely to be drawn from the labour force in the Local or Regional Study Areas, the consideration of changes in existing skills and labour within the Local and Regional Study Areas are carried forward for further assessment.

7.4.1.2 Financial Assets

Employment

The DGR decommissioning phase is expected to generate measurable direct, indirect and induced employment opportunities. Effects on employment are expected to be similar to a typical, temporary construction project.

Business Activity

DGR Project-related expenditures on payroll will directly change labour income of construction employees. The income generated by the DGR Project, through direct, indirect and induced employment will likely generate business activity through household spending. Goods and services purchasing for the DGR Project will also generate measurable business activity.

Off-site management of DGR Project non-hazardous, non-radiological, and small amounts of hazardous wastes at licensed facilities is required. Therefore, there is likely measurable change to business activity at private disposal facilities.

Tourism

The DGR Project-related workforce and the presence of the DGR Project as a whole may result in a measurable change to the use and enjoyment of tourist features, considering the likelihood of measurable changes in public attitudes and behaviours attributable to the DGR Project. Any adverse effects would cease upon completion of the decommissioning phase.

Residential Property Values

The expected measurable change in the population associated with the DGR Project during the decommissioning phase could change the demand for housing, thereby influencing the housing market and residential property values. Any adverse effects would cease upon completion of the decommissioning phase.

Municipal Finance and Administration

The demolition and/or removal of existing new buildings and structures related to the DGR Project will reduce the payment of property taxes. Other monetary payments by OPG may continue and would generate measurable revenues. Off-site management of decommissioning non-hazardous and non-radiological waste at licensed facilities is required. This may represent an additional, measurable source of revenue for a municipality through tipping fees.

Other Financial Assets

A measurable change in non-renewable resource use, particularly aggregate, asphalt, bentonite, sand and fuels, is likely during the decommissioning phase. A measurable change in DGR Project-related employment will generate labour income that is likely to be measurable within the Local and Regional Study Areas.

7.4.1.3 Physical Assets

Housing

A measurable change in DGR Project associated housing is likely as a result of a measurable increase in the population associated with the DGR Project over baseline conditions and the operations phase. Any adverse effects would cease upon completion of the decommissioning phase.

Municipal Infrastructure

Measurable change to the demands on municipal infrastructure is likely as a result of a measurable increase in the population associated with the DGR Project. The management of DGR Project generated domestic waste (non-hazardous and non-radiological waste) off-site at

municipal waste management facilities may also be required. Any adverse effects would cease upon completion of the decommissioning phase.

Other Physical Assets

The above-ground features, including the shaft headframes and buildings, will be removed so that the DGR facility will no longer have a surface presence. A measurable change to community character is likely as a result of the ongoing visibility of the waste rock management area and long-term presence of the DGR Project at the Bruce nuclear site.

Measurable change in transportation infrastructure functioning and safety throughout this phase is likely as a result of movement of employee vehicles and DGR Project-related truck traffic, including the movement of goods onto the DGR Project site and removal of DGR Project-related materials for recycling or disposal.

7.4.1.4 Social Assets

Inverhuron Provincial Park

The DGR Project-related workforce and the presence of the DGR Project as a whole may result in a measurable change to the use and enjoyment of Inverhuron Provincial Park, considering the likelihood of measurable changes in public attitudes and behaviours attributable to the DGR Project.

Other Social Assets

The DGR Project-related workforce and the presence of the DGR Project as a whole may result in a measurable change to the use and enjoyment of community and recreational features, and community cohesion, considering the likelihood of measurable changes in public attitudes and behaviours attributable to the DGR Project. Although decommissioning activities are not likely to occur in previously undisturbed areas, the disruption to a cultural heritage resource potentially encountered in the Project Area during the decommissioning phase is also considered to be measurable, should this occur.

7.4.2 Indirect Changes

Other likely measurable changes in the socio-economic environment during the decommissioning phase of the DGR Project may be associated with measurable changes in natural assets. Measurable change in these natural assets and indirect effects on the socio-economic environment VECs are discussed below.

As described in the Atmospheric Environment TSD, measurable increases in particulate matter (SPM) are expected during decommissioning in a portion of the Local Study Area in close proximity to the Bruce nuclear site. These changes in air quality could affect the use and enjoyment of property, community recreational facilities, parks (Inverhuron Provincial Park) and schools. The use and enjoyment of, or operations at, tourist facilities may also be affected by these air quality changes. Taken together, these effects have the potential to change property values and community character. As no businesses or agricultural operations likely to be

sensitive to particulate matter were identified, no measurable changes to business or agricultural activity are anticipated.

Changes in noise levels associated with the decommissioning activities are expected to be similar to increases predicted during the site preparation and construction phase (also described in the Atmospheric Environment TSD). These changes in noise levels could affect educational facilities, the use and enjoyment of property, community and recreational facilities and Inverhuron Provincial Park. The use and enjoyment of, or operations at, tourist facilities may also be affected by the changes in noise levels. Taken together, these effects have the potential to change residential property values and community character.

As described in the Geology TSD, changes in groundwater flow during the decommissioning of the DGR are expected to be negligible and therefore not measurable. As such, there is no need to further evaluate changes in groundwater flow in relation to the socio-economic environment VECs. Changes directly influencing groundwater quality were identified during the decommissioning of the DGR facility including effects from shaft sealing materials and dissolved minerals from waste rock. However, these changes were considered negligible (i.e., not measurable) and do not warrant further evaluation in relation to the socio-economic environment VECs.

As discussed in the Hydrology and Surface Water Quality TSD, the diversion of flow from the Stream C watershed to MacPherson Bay during the decommissioning phase will cause a measurable change in stream flows in Stream C, the North Railway Ditch at Stream C and the existing drainage ditch that conveys runoff from the centre of the Bruce nuclear site to MacPherson Bay. However, these changes are confined within the Site Study Area and are not expected to result in an indirect measurable change in the socio-economic environment VECs. Therefore, no further consideration is required.

The Hydrology and Surface Water Quality TSD, Aquatic Environment TSD and the Terrestrial Environment TSD do not predict any measurable changes outside of the Site Study Area during the decommissioning phase of the DGR Project. Therefore, these potential indirect changes are not considered further in relation to the socio-economic VECs.

As described in the Radiation and Radioactivity TSD, measurable changes in human exposure to radiation are expected during the decommissioning phase of the DGR Project. Therefore, this potential indirect change is considered further in relation to the socio-economic VECs.

7.5 SUMMARY OF SECOND SCREENING

Table 7.5-1 provides a summary of the second screening for the DGR Project. Squares (■) on this matrix represent DGR Project-environment interactions resulting in a likely measurable change in the socio-economic environment VECs. These interactions are advanced to Section 8 for a third screening to determine those interactions that may result in a likely effect, either adverse or beneficial, on the socio-economic environment VECs.

Table 7.5-1: Matrix 2 – Summary of the Second Screening for Measurable Change to VECs

Project Work and Activity	Population and Demographics			Other Human Assets			Employment			Business Activity		
	C	O	D	C	O	D	C	O	D	C	O	D
Direct Effects												
Site Preparation		—	—	■	—	—		—	—		—	—
Construction of Surface Facilities		—	—	■	—	—		—	—		—	—
Excavation and Construction of Underground Facilities		—	—	■	—	—		—	—		—	—
Above-ground Transfer of Waste				—	■	—	—		—	—		—
Underground Transfer of Waste	—		—	—	■	—	—		—	—		—
Decommissioning of the DGR Project	—	—		—	—	■	—	—		—	—	
Abandonment of DGR Facility	—	—	—	—	—	—	—	—	—	—	—	—
Presence of the DGR Project	■	■	■									
Waste Management										■	■	
Support and Monitoring of DGR Life Cycle												
Workers, Payroll and Purchasing	■	■	■	■	■	■	■	■	■	■	■	■
Indirect Effects												
Changes in Air Quality				■	■	■				•	•	•
Changes in Noise Levels				■	•	■				•	•	•
Changes in Surface Water Quantity and Flow												
Changes in Surface Water Quality												
Changes in Soil Quality												
Changes in Groundwater Quality												
Changes in Groundwater Flow												
Changes in Aquatic and Terrestrial Environment												
Changes in Radiation and Radioactivity	•	■	■	•	■	■	•	■	■	•	■	■

Notes:

C = Site Preparation and Construction Phase;
 O = Operations Phase
 D = Decommissioning Phase
 The matrices are meant to indicate when the effect occurs and do not imply how long an effect will last. The duration of the effects is assessed in Section 11.

The abandonment and long-term performance is not included in the matrix as no activities occur during this phase. The abandonment of the DGR facility work and activity occurs immediately following decommissioning within the decommissioning phase and does not encompass the entirety of the abandonment and long-term performance phase.

Blank = No potential interaction
 • Potential project-environment interaction
 ■ Measurable change
 — Not Applicable

Table 7.5-1: Matrix 2 – Summary of the Second Screening for Measurable Change to VECs (continued)

Project Work and Activity	Tourism			Residential Property Values			Municipal Finance and Administration			Other Financial Assets		
	C	O	D	C	O	D	C	O	D	C	O	D
Direct Effects												
Site Preparation		—	—		—	—		—	—	■	—	—
Construction of Surface Facilities		—	—		—	—		—	—	■	—	—
Excavation and Construction of Underground Facilities		—	—		—	—		—	—	■	—	—
Above-ground Transfer of Waste	—		—	—		—	—		—		■	
Underground Transfer of Waste	—		—	—		—	—		—	—	■	—
Decommissioning of the DGR Project	—	—		—	—		—	—		—	—	■
Abandonment of DGR Facility*	—	—	—	—	—	—	—	—	—	—	—	—
Presence of the DGR Project	■	■	■	■	■	■	■	■	■			
Waste Management							■	■				
Support and Monitoring of DGR Life Cycle												
Workers, Payroll and Purchasing	■	■	■	■	■	■	■	■	■	■	■	■
Indirect Effects												
Changes in Air Quality	■	■	■	■	■	■				•	•	•
Changes in Noise Levels	■	■	■	■	•	■				•	•	•
Changes in Surface Water Quantity and Flow	•	•	•	•	•	•				•	•	•
Changes in Surface Water Quality	•	•	•	•	•	•				•	•	•
Changes in Soil Quality												
Changes in Groundwater Quality	•	•	•	•	•	•				•	•	•
Changes in Groundwater Flow	•	•	•	•	•	•				•	•	•
Changes in Aquatic and Terrestrial Environment	•	•	•							•	•	•
Changes in Radiation and Radioactivity	•	■	■	•	■	■	•	■	■	•	■	■

Notes:

C = Site Preparation and Construction Phase;

O = Operations Phase

D = Decommissioning Phase

The matrices are meant to indicate when the effect occurs and do not imply how long an effect will last. The duration of the effects is assessed in Section 11.

The abandonment and long-term performance phase is not included in the matrix as no activities occur during this phase. The abandonment of the DGR facility work and activity occurs immediately following decommissioning within the decommissioning phase and does not encompass the entirety of the abandonment and long-term performance phase.

Blank = No potential interaction

• Potential project-environment interaction

■ Measurable change

— Not Applicable

Table 7.5-1: Matrix 2 – Summary of the Second Screening for Measurable Change to VECs (continued)

Project Work and Activity	Housing			Municipal Infrastructure and Services			Other Physical Assets			Inverhuron Provincial Park			Other Social Assets		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Direct Effects															
Site Preparation		—	—		—	—	■	—	—		—	—	■	—	—
Construction of Surface Facilities		—	—		—	—	■	—	—		—	—		—	—
Excavation and Construction of Underground Facilities		—	—		—	—	■	—	—		—	—		—	—
Above-ground Transfer of Waste	—		—	—		—	—		—	—		—	—		—
Underground Transfer of Waste	—		—	—		—	—		—	—		—	—		—
Decommissioning of the DGR Project	—	—		—	—		—	—	■	—	—		—	—	■
Abandonment of DGR Facility	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Presence of the DGR Project	■	■	■				■	■	■	■	■	■	■	■	■
Waste Management				■	■		■	■	■						
Support and Monitoring of DGR Life Cycle															
Workers, Payroll and Purchasing	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Indirect Effects															
Changes in Air Quality							■	■	■	■	■	■	■	■	■
Changes in Noise Levels							■	•	■	■	•	■	■	•	■
Changes in Surface Water Quantity and Flow				•	•	•	•	•	•	•	•	•	•	•	•
Changes in Surface Water Quality				•	•	•	•	•	•	•	•	•	•	•	•
Changes in Soil Quality															
Changes in Groundwater Quality				•	•	•	•	•	•				•	•	•
Changes in Groundwater Flow				•	•	•	•	•	•				•	•	•
Changes in Aquatic and Terrestrial Environment										•	•	•	•	•	•
Changes in Radiation and Radioactivity	•	■	■	•	■	■	•	■	■	•	■	■	•	■	■

Notes:

C = Site Preparation and Construction Phase;
 O = Operations Phase
 D = Decommissioning Phase
 The matrices are meant to indicate when the effect occurs and do not imply how long an effect will last. The duration of the effects is assessed in Section 11.

The abandonment and long-term performance phase is not included in the matrix as no activities occur during this phase. The abandonment of the DGR facility work and activity occurs immediately following decommissioning within the decommissioning phase and does not encompass the entirety of the abandonment and long-term performance phase.

Blank = No potential interaction
 • Potential project-environment interaction
 ■ Measurable change
 — Not Applicable

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8. IDENTIFICATION AND ASSESSMENT OF ENVIRONMENTAL EFFECTS

This section predicts and describes the likely effects, mitigation measures and residual adverse effects on socio-economic environment VECs that could reasonably be expected as a result of the DGR Project.

8.1 ASSESSMENT METHODS

8.1.1 Identify Likely Environmental Effects

All measurable changes identified in the second screening (Section 7) are advanced for assessment. Consistent with accepted EA practice, quantitative and qualitative methods, including professional expertise and judgement, are used to predict and describe the project-specific effects. Where possible, future conditions are predicted and evaluated to allow for a detailed assessment of likely effects within their appropriate temporal context.

Numerical models were used to combine predicted future socio-economic conditions with the anticipated project effects to assess the likely adverse effects of the DGR Project on the identified VECs. Details regarding socio-economic modelling methods are described in Section 8.1.1.3.

Where a likely environmental effect was identified, the effect was assessed as being either beneficial or adverse. All adverse effects on VECs attributable to the DGR Project were advanced for consideration of possible mitigation measures. Beneficial effects were also identified during this step and marked with a '+' on the matrix. Consideration of mitigation measures was not required for beneficial effects. Likely effects are described in Sections 8.3 to 8.8.

8.1.1.1 Treatment of Public Attitudes towards Risk and Stigma in the Socio-economic Effects Assessment

The construction and operation of a new nuclear facility may result in changes in public attitudes regarding their feelings of personal health, sense of safety and satisfaction with community. This can occur regardless of the actual effects (for example, effects to human health or the natural environment) that result from by a project. The socio-economic effects assessment of the DGR Project acknowledges the legitimacy of public attitudes and the potential for changes to occur as a result of the DGR Project. To this end, public attitude research (PAR) undertaken as part of this assessment [21] focuses on changes to people's attitudes that could lead to social and economic effects. In this context, the DGR Project as a whole, including the various components of the project that the public might be consider to be 'risky' and those that might generate changes in attitudes, are looked upon as a source of potential socio-economic effects. Therefore, changes in people's attitudes and the association that community members make between the DGR Project and people's own feelings of personal health and sense of personal safety are considered to be important intervening variables, or the pathways by which social and economic effects might occur. People's behavioural responses (i.e., changes in what people do and activities they undertake) could contribute to the nature and importance of some of the social and economic effects. This conceptual model is illustrated in Figure 8.1.1-1.



Figure 8.1.1-1: Socio-economic Assessment Model Regarding Public Attitudes and Behaviours

The first step in the method adopted for this socio-economic assessment is to establish whether or not the public is in fact concerned over, or anticipates risks and effects from the DGR Project, and to determine the extent to which people's attitudes might change in response. Specifically, changes in people's feelings of personal health, sense of personal safety and their satisfaction with community are the focus of the research. This is presented in Section 8.7 where, based on PAR, the likely changes in public attitudes towards personal and community well-being are presented. Secondly, the research then considers how people might respond to the DGR Project and its effects in terms of changes in their behaviours and/or activities. This is presented throughout Sections 8.3 to 8.8 in the assessment of likely effects on various community assets.

It must be acknowledged that people do not always act on their behavioural intentions and that specific behaviours depend on the nature of the behaviour (spontaneous or deliberative) and on such individual differences as motivation and control [160]. Therefore, the results of PAR presented throughout this socio-economic assessment provide a general sense of changes in people's attitudes and the strength of their behavioural intentions.

For the purposes of this socio-economic assessment, stigma refers to the negative images attached to a neighbourhood or community by the residents themselves or others from outside the community (e.g., tourists and other visitors). Social science theorists have proposed that people's images of places become "marked" by positive and negative attitudes and that these attitudes motivate action or changes in behaviour. When a negative marker is linked to an image, it sounds an alarm and motivates avoidance [161]. Such behaviour may mean that people choose not to visit a place, undertake a certain activity or buy a product. Much of the more recent stigma research has been done in the context of technologies or facilities that are considered 'risky' and is considered directly applicable to the DGR Project. According to the proponents of this "stigma theory", there are five identifying features of stigma [162]:

- the source of the stigma is a hazard with consequences that typically contribute to high perceptions of risk (e.g., they are particularly dreaded or involuntary);
- a standard of what is considered to be "right and natural" has been violated or overturned because of the abnormal nature of a precipitating event or "trigger";

- the effects of the event are perceived as being inequitably distributed across social groups (e.g., children are affected disproportionately) or geographic areas (e.g., one community experiences adverse effects disproportionately);
- the effects of the event are unbounded in the sense that their magnitude or persistence over time is not well known; and
- management of the hazard is brought into question (i.e., concerns over competence, failure to apply precautions, lack of trust).

Given these characteristics of stigma, sociological research also indicates that several things must happen before a community becomes stigmatized and adverse socio-economic effects begin to emerge. First, stigma requires a precipitating event or trigger to bring about behavioural changes and adverse effects. In the case of a fixed facility, the facility itself would have to become a salient issue. People (whether local residents, people living outside of a community, tourists or other visitors) would have to have a very high level of awareness of the facility and feel threatened by it to the extent that they would seek out and accept “information” about a facility from their neighbours, family and friends, government, the media and the facility operator. Second, the information they hear or otherwise receive about the facility would have to confirm their beliefs and attitudes that the facility threatens them personally or their community as a whole. Thirdly, before any noticeable socio-economic effect occurs, people would have to change their behaviours in response to their attitudes and beliefs [163].

In this socio-economic assessment, the potential for stigma is assessed in Section 8.5.3.3 (Community Character) and potential stigma related socio-economic effects are assessed throughout Sections 8.3 to 8.8 in the assessment of likely effects on various community assets.

8.1.1.2 Treatment of Community Knowledge in the Socio-economic Effects Assessment

The *Canadian Environmental Assessment Act* (Section 16.1) encourages the consideration of community knowledge in conducting an environmental assessment. To integrate community knowledge into the socio-economic effects assessment, the analytical approach utilizes the concept of ‘self-assessment’, whereby key stakeholders and other members of the public are asked to assist in the characterization of their community and provide their opinions and judgements regarding the likely effects of the DGR Project on their facilities, operations, memberships or clientele, and the implications of the project on community well-being. This approach acknowledges that people living, working or having an interest in the study areas hold specialized knowledge and insights regarding their community and the effects of the DGR Project on its well-being.

8.1.1.3 Predictive Modelling

Predictive economic modelling was undertaken to assess the effect of the DGR Project on components of the financial assets and selected components of human assets and physical assets. Economic modelling estimates the direct, indirect and induced effects on the following parameters in the Local and Regional Study Area:

- population (i.e., associated population);
- employment (e.g., direct, indirect and induced employment);
- income (i.e., total household income);

- housing (i.e., associated housing stock);
- health care (e.g., indirect demands on hospital beds);
- emergency services (e.g., indirect demands on EMS, police and fire services); and
- education (e.g., indirect school enrolment).

The economic modelling was undertaken to provide a quantitative assessment of the overall economic effect of the DGR Project on the municipalities in the Local and Regional Study Areas. The Statistics Canada Inter-Provincial Input/Output model was used to generate a set of multipliers for the DGR Project. These multipliers formed the foundation for the rest of the economic model and support the subsequent analysis.

The economic model developed for the DGR Project contains several modules that work in unison and, iteratively, generate estimates of the projected economic effects of the DGR Project on various parameters. Input modules respectively incorporate information from Statistics Canada on multipliers; the NWMO on workforce projections; the municipalities on population projections; and the municipalities and various service organizations on service levels. One group of output modules calculates the direct, indirect and induced effects of the DGR Project on the study area municipalities for full time jobs, labour income, gross domestic product and gross output. Another set of output modules calculate potential DGR Project effects on study area municipalities in terms of population, housing, health care, emergency services and school enrolments. Associated population is estimated as the population that can be considered to be linked or “associated” with the DGR Project, as workers and their families take up the opportunities in the Local and Regional Study Areas and beyond.

These data were incorporated into a spreadsheet-based model using Quantrix v3 software. The Quantrix v3 software is a business modelling and analytics tool that is used worldwide. It is currently used by over 900 companies in 50 countries for modelling and analysis. Quantrix has a proven track record for finance, forecasting, risk management and business planning applications as well as established presence in engineering, scientific and policy research fields.

This Quantix model provided outputs based on three assumed time frames that reflect DGR Project-related hiring and spending patterns rather than the time frames during which physical works and activities would be undertaken once licenses are secured. For the purposes of economic modelling, the site preparation and construction phase was assumed to span the period from 2013 to 2018; the operations phase was assumed to span the period from 2017 to 2058; and the decommissioning phase was assumed to span the period from 2055 to 2062. While these specific time frames were used for modelling purposes, the actual start or completion of each phase will depend upon licensing approval from the CNSC and/or other applicable regulatory bodies. Given the modest growth rates in population and employment that are anticipated in the Local and Regional Study Areas, changes in actual start and end dates for the various phases are not likely to alter the conclusions of this assessment. More detail regarding the structure and functionality of the economic model used in this assessment is provided in Appendix E. The abandonment and long-term performance phase is not considered because there are no potential effects.

8.1.2 Consider Mitigation Measures

When the assessment of effects indicates that an adverse effect on one of the socio-economic environment VECs is likely, technically and economically feasible mitigation measures are proposed to address the identified effect.

8.1.3 Identify Residual Adverse Effects

Once mitigation measures are proposed, the likely adverse effect is re-evaluated with the mitigation measures in place to identify any residual adverse effects. A residual adverse effect on a VEC is marked with a '◆' on Matrix 3 (Section 8.9). Residual adverse effects are advanced to Section 11 for an assessment of significance.

8.2 LINKAGE ANALYSIS

Linkages exist between each of the community assets, including changes in natural assets, and the DGR Project. These are direct and indirect effects, as described below.

Direct effects are those changes to the four community assets (i.e., physical, social, financial, and human) that occur as a result of the DGR Project works and activities. For example, DGR Project workforce requirements will directly affect employment opportunities. In this case, there is no change in the natural environment that causes the effect and therefore no pathway between the source (DGR workforce) and receptor (the Employment VEC).

Indirect effects are those changes to various community assets (receptor) as a result of effects on the natural or other community assets (pathway) from project works and activities (source). In other words, indirect socio-economic effects are changes in a community's natural and/or other community assets, such as changes in the air quality, or hydrology that, in turn, affect the community. For example, site preparation may result in a direct effect on the atmospheric environment as a result of noise and dust. These changes in the atmospheric environment may be of sufficient magnitude to be considered as nuisances, affecting residents' use and enjoyment of private property in an adverse way. Therefore, changes in air quality (an atmospheric environment VEC) may result in an indirect effect on the socio-economic environment VECs.

In addition, changes in public attitudes, such as feelings of personal health, sense of safety, satisfaction with their community, can also indirectly affect community assets if these attitudes result in behavioural changes, such as out-migration of residents from their communities. As mentioned previously, changes in attitudes do not necessarily manifest into changes in people's behaviours.

8.3 EFFECTS ON HUMAN ASSETS

For the purposes of this socio-economic assessment, the parameters that are considered within this sub-component of the framework include:

- Population and Demographics; and
- Other Human Assets, including:

- skills and labour supply;
- education;
- health and safety facilities and services; and
- social services.

8.3.1 Population and Demographics

Likely effects on population and demographics are assessed using a variety of analytical methods and data sources, including economic modelling (detailed in Appendix E), and professional judgement.

8.3.1.1 Likely Effects (Population and Demographics)

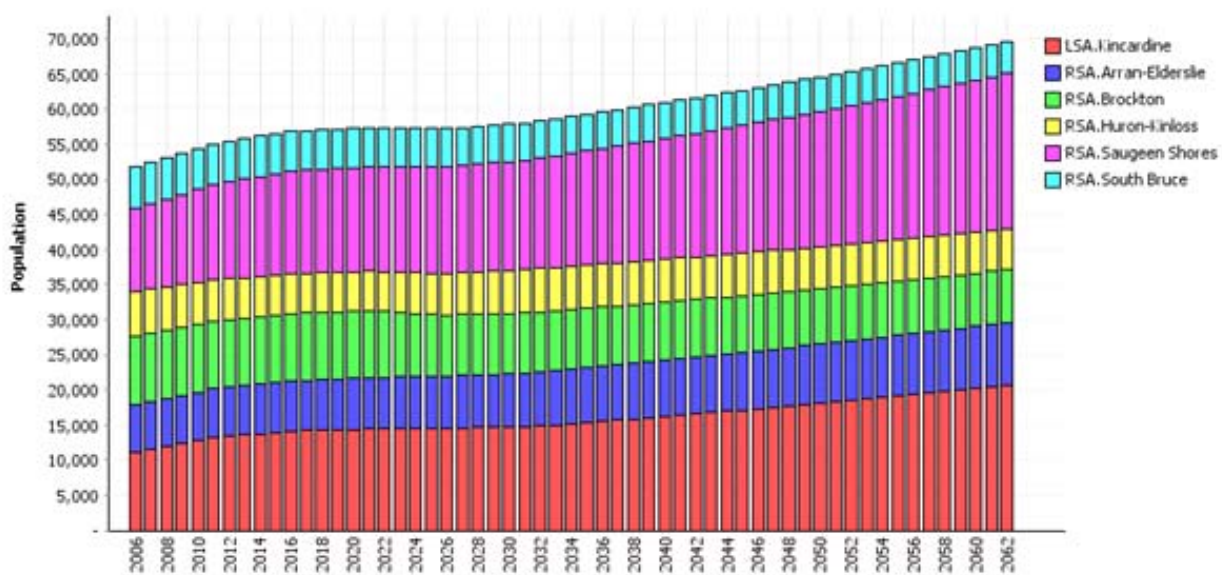
As described in the existing conditions section related to population and demographics (Section 5.4.1), the Regional and Local Study Area municipalities have experienced modest growth (~1.6% from 2001 to 2006) in their populations over the past several years.

The following discussion provides the baseline projections for population by study area municipalities from 2006 through to the end of the DGR Project decommissioning in 2062 (Table 8.3.1-1 and Figure 8.3.1-1). In Table 8.3.1-1, the year 2013 represents the anticipated start of site preparation, while the year 2062 represents the completion of decommissioning.

Table 8.3.1-1: Population Projections by Municipality - Summary (2006 to 2062)

Year/ Forecast	Municipality of Kincardine	Regional Study Area Municipalities					Total
		Arran- Elderslie	Brockton	Huron- Kinloss	Saugeen Shores	South Bruce	
2006	11,173	6,747	9,641	6,515	11,720	5,939	51,735
2013	13,587	7,001	9,615	5,809	14,029	5,761	55,803
2062	20,698	8,905	7,509	5,843	22,109	4,639	69,703

Source: [164;39;165;166;167] and Economic Modelling (see Appendix E)



Note: RSA = Regional Study Area, LSA = Local Study Area
 Source: Economic Modelling (see Appendix E)

Figure 8.3.1-1: Population Projections by Municipality – without DGR Project (2006 to 2062)

The baseline population projections show the combined study area population increasing from roughly 52,000 in 2006 to almost 70,000 people by 2062. Kincardine and Saugeen Shores will grow proportionately faster over the forecast period. In 2006 these communities accounted for 44% of the Local and Regional Study Area population; by 2062 they are projected to account for almost 58%.

Table 8.3.1-2 and Figure 8.3.1-2 summarize the population (i.e., the number of people) associated with the DGR Project in the context of municipal population projections during all phases of the DGR Project. The population associated with the DGR Project is estimated based on the projected direct, indirect and induced employment associated with project expenditures on payroll, goods and services, and an assumed employment to population ratio. Distribution of the project-related population reflects the distribution of project expenditure by geographic area. These estimates are the result of economic modelling completed as part of this socio-economic assessment.

Table 8.3.1-2: DGR Project Associated Population Summary

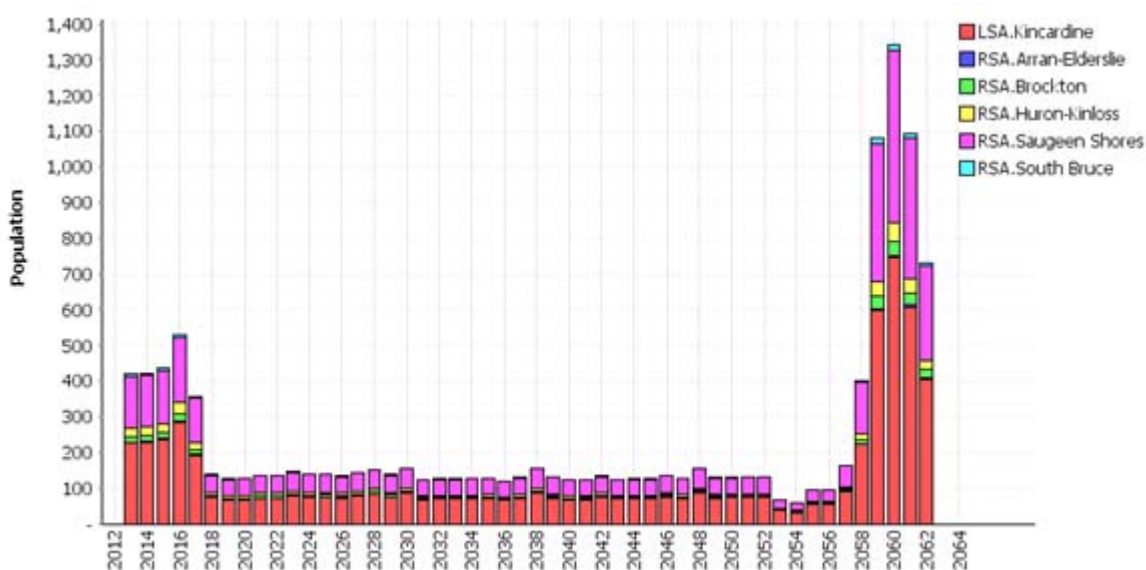
Year/Forecast	Municipality of Kincardine	Regional Study Area Municipalities					Total
		Arran-Elderslie	Brockton	Huron-Kinloss	Saugeen Shores	South Bruce	
2013	551	9	41	59	340	15	1,480
2014	555	9	41	60	342	16	1,491

Table 8.3.1-2: DGR Project Associated Population Summary (continued)

Year/Forecast	Municipality of Kincardine	Regional Study Area Municipalities					Total
		Arran-Elderslie	Brockton	Huron-Kinloss	Saugeen Shores	South Bruce	
2015	572	10	43	62	353	16	1,538
2016	695	12	52	75	429	19	1,870
2017	466	8	35	50	287	13	1,253
2018	177	3	14	20	112	5	486
2019 – 2054 (average)	146	3	11	17	96	4	278
2055 – 2062 (average)	655	14	49	82	452	21	1,274

Source: Economic Modelling (see Appendix E)

Note: 2019 – 2054 is a linear time sequence that is close but does not precisely reflect the operations phase



Note: RSA = Regional Study Area, LSA = Local Study Area

Source: Economic Modelling (see Appendix E)

Figure 8.3.1-2: DGR Project Associated Population Distribution (2013 to 2062)

In the context of these projections, the effects of the DGR Project on population are likely to be noticeable by community residents, particularly during the site preparation and construction and decommissioning phases. The DGR Project is forecast to create 650 jobs in the Local and Regional Study Areas during peak construction, 128 jobs per year on average during operations and 548 jobs per year on average during decommissioning. Overall the DGR Project’s effect on population in the Local and Regional Study Areas is relatively small but apparent (approximately 5% of the total projected population in the Local and Regional Study Areas in the peak year of

2060). It is anticipated that the largest associated population will be in the decommissioning phase, rather than the site preparation and construction phase. This is because many more residents from the Local and Regional Study Areas are likely to fill decommissioning phase jobs than during the site preparation and construction phase.

Experience with other projects, particularly those involving radiation or radioactivity and/or wastes, indicates that population levels may be affected if residents choose to leave their community as a direct result of the undertaking, and if growth is not sufficient to offset this loss. Although the Bruce nuclear site has been in operation for decades, the DGR Project represents a new and potentially unfamiliar nuclear operation. Sociological research indicates that individuals or groups tend to conduct a mental 'cost-benefit' analysis of what they are satisfied or dissatisfied with in their communities and that there is a tendency to tolerate certain conditions until a threshold is reached. At such a time, individuals or groups may become more motivated to leave and find a new location with more positive and satisfying features.

Public attitude research conducted for this study indicates that individuals who experience a change in their feelings of personal health, sense of personal safety or a change in their satisfaction with community may choose to voluntarily leave their communities.

With regard to people's feelings of personal health and sense of safety, PAR results indicate that 9% of Local Study Area residents and 10% of Regional Study Area residents reported that they might experience reduced feelings of personal health and sense of safety as a result of the DGR Project. Up to 3% across both study areas believe that their attitudes regarding their personal health and sense of safety, would decrease "a great deal" as a result of the DGR Project. With regard to people's overall satisfaction with community, 7% of Local Study Area and 7% of Regional Study Area residents reported that they might experience reduced feelings of satisfaction with living in their community as a result of the DGR Project. Up to 3% across both study areas believe that their satisfaction with community, would decrease "a great deal" as a result of the DGR Project [21].

These people (i.e., up to approximately 3%) are considered to be most sensitive to the proposed DGR Project and its anticipated effects. Therefore they are considered the most likely to fundamentally change their attitudes such that they might actually consider moving from their community (i.e., they demonstrate the strongest behaviour intention to move). However, when asked directly whether the DGR Project might affect their commitment to living in the community, even fewer existing residents indicated that their commitment to living in the community would decrease as a result of the DGR Project. These results are summarized in Table 8.3.1-3. Only 5% of Local Study Area residents and 6% of Regional Study Area residents indicated that their commitment to living in their community would decrease. Only 1% of Local Study Area residents and 3% of Regional Study Area residents indicated that their commitment would go down a 'great deal'. Conversely, between 1% (Local Study Area) and 4% (Regional Study Area) indicated the opposite, namely that their level of satisfaction with living in their community might increase as a result of the DGR Project.

Table 8.3.1-3: Residents' Commitment to Living in Their Community

Level of Commitment to Living in Your Community		No Change	Not Sure	Change Attitudes:				Total
				Go down		Go up		
				Great Deal	Some	Some	Great Deal	
Local Study Area	% of Total	92	1	1	4	1	0	100
	Number of Respondents	368	6	5	18	4	0	401
Regional Study Area	% of Total	86	4	3	3	3	1	100
	Number of Respondents	351	18	14	11	11	3	408

Note: Percentages may not appear to add up to 100% because of rounding.

Source: [21]

These results indicate that there will be some people who will be motivated to move because of the new or unfamiliar nature of the nuclear operations and/or the long-term waste management aspects of the DGR Project or because of the changes that occur within their communities. It is expected that only those who are already "not at all satisfied" with their community, have rated their feelings of health and sense of personal safety as "very poor", and are highly mobile (e.g., those in a favourable housing, financial or employment position) may consider moving.

Table 8.3.1-4 presents population mobility from the 2006 Census. The data indicates that the mobility of people living in the Local Study Area is slightly lower than the mobility of people living in the Regional Study Area as a whole, indicating that people have not been moving into or out of the Local Study Area at a disproportionate rate when compared to the Regional Study Area as a whole.

Table 8.3.1-4: Population Mobility – Local and Regional Study Areas' Municipalities (2006)

Category	Municipality of Kincardine	Regional Study Area Municipalities					Total
		Arran-Elderslie	Brockton	Huron-Kinloss	Saugeen Shores	South Bruce	
Total – Mobility Status 1 year	10,975	6,570	9,380	6,400	11,475	5,875	50,675
• Non-movers (%)	90	92	90	90	89	91	90
• Movers – Non-migrants (%)	5	2	5	3	6	2	4
Total – Mobility Status 5 year	10,625	6,290	9,005	6,115	11,140	5,575	48,750
• Non-movers (%)	68	69	68	71	66	78	69

Table 8.3.1-4: Population Mobility – Local and Regional Study Areas’ Municipalities (2006) (continued)

Category	Municipality of Kincardine	Regional Study Area Municipalities					Total
		Arran-Elderslie	Brockton	Huron-Kinloss	Saugeen Shores	South Bruce	
• Movers – Non-migrants (%)	13	12	14	11	14	9	13

Note:

The values above do not total 100% as the data does not include “migrants”. Migrants are those who moved in from outside of the municipality (i.e., from another municipality, province or country).

Source: [30;31;32;33;34;35]

Given the relatively high levels of satisfaction present in the Local and Regional Study Areas, and the small likelihood of major changes in levels of satisfaction with community, people’s feelings of personal health and sense of personal safety, it is projected that, at most, 3% of the total population in the Local and Regional Study Areas might consider moving during the DGR Project lifetime (see Section 8.7 of this TSD). This value falls within the typical percentage of “movers” that can be expected within the Local or Regional Study Areas in a given year (i.e., 4%), and is also below the anticipated growth in the populations in the study areas over the DGR Project lifetime.

Considering that people do not always act on their intentions, actual out-migration of existing residents because of the DGR Project is likely to be minimal. In the event that some individuals leave as a result of the DGR Project, they will likely be replaced by others who may be more tolerant of local conditions or have fewer issues regarding the Bruce nuclear site, the WWMF or the DGR Project and its environmental or socio-economic effects. As such, out-migration, should it occur, will not be noticeable to the vast majority of residents.

Finally, in the absence of malfunctions or accidents at the Bruce nuclear site or the DGR facility, and the associated publicity that would occur, the number of people considering leaving their communities as a result of the DGR Project is expected to decrease over time. The potential for socio-economic effects of such events are addressed in the Malfunctions, Accidents and Malevolent Acts TSD.

8.3.1.2 Recommended Mitigation or Effects Management (Population and Demographics)

OPG will share information with local and regional land use planners and economic development officials regarding the timing and magnitude of meaningful changes in its on-site labour requirements for each phase of the DGR Project. Because no adverse effects on population and demographics are anticipated as a result of the DGR Project, no additional mitigation is identified or warranted.

8.3.1.3 Residual Adverse Effects (Population and Demographics)

No residual adverse effects on population are anticipated as a result of the DGR Project.

8.3.1.4 Beneficial Effects (Population and Demographics)

The beneficial effect of the DGR Project on population is increased population associated with, or directly dependent on DGR Project-related employment. The increase in population associated with DGR employment will support the achievement of municipal planning objectives regarding population growth, maintaining the stability of Local and Regional Study Area municipalities. This beneficial effect will likely be experienced in Kincardine and by all Regional Study Area municipalities, with the greatest beneficial effect in Kincardine.

8.3.2 Other Human Assets

8.3.2.1 Skills and Labour Supply

Likely effects on skills and labour supply are assessed using a variety of methods and data sources, including the analysis of DGR Project-related demand relative to baseline conditions, results from stakeholder interviews, past experience, and professional judgement.

Likely Effects (Skills and Labour Supply)

Planned construction techniques for the DGR Project will require standard engineering trades, management and support as well as specialized labour. The estimated labour complement required during construction is summarized in Section 8.4.1. These requirements include a geological characterization team that includes a rock mechanics engineer and geologist who will be involved in construction design and inspection activities. Further detail regarding skill requirements can be found in Section 4 of the EIS. Based on information provided in Section 5.4.2.1, specialized skills associated with geology or mining-like construction works are not likely to be available in the Local and Regional Study Areas.

While some mining occurs nearby in the Town of Goderich, the labour force associated with primary industry across the Local and Regional Study Areas is largely in the agricultural sector. Therefore, it is anticipated that the construction workforce will largely be sourced from outside the Local and Regional Study Area. This expectation seems justified as the skills and expertise, particularly when it comes to underground work, do not likely to exist in the Local or Regional Study Areas since mining is not a major industrial activity. Nevertheless, the DGR Project can benefit from the specialized skills and knowledge that exists because of the mining activity in the Goderich area. Similarly, the indirect employees who would build the machinery and supply the construction materials for the site preparation and construction phase are also not likely to reside in the Local or Regional Study Areas as the manufacturing sector is not dominant here and the study area municipalities do not have an extensive nuclear service industry. The relatively small number of DGR Project-related jobs associated with the construction phase that would be sourced locally is not expected to noticeably affect local skills and labour availability. It is not likely that any economic sector would be adversely affected by the DGR Project skills and labour requirements.

This scenario changes to some extent during the operations phase, as the jobs are longer term and because there will likely be some employment transfer between the WWMF and the DGR. Some nuclear-related expertise will also be available from other employers with operations at the Bruce nuclear site. It is therefore anticipated that most of the individuals to be employed,

both directly and indirectly as a result of the DGR Project, will be from the Local and/or Regional Study Areas. The indirect jobs associated with operations are much less specialized than those associated with construction and are likely to be sourced and/or could be trained locally. The jobs induced by the DGR Project are also likely to be sourced from the local workforce. From experience with other projects of a similar type, there is a greater tendency during operations to use local firms to supply goods and services to the project for most routine purchases. Overall, it is not likely that any economic sector would be adversely affected by the DGR Project skills and labour requirements.

During decommissioning, there is a substantial increase in employment relative to the operations phase. As with the operations phase, it is expected that this employment will be predominately sourced from the Local and Regional Study Areas, where the skills required for construction-type activities and transportation are likely to be available. Nevertheless, given the size of the DGR Project skills and labour requirements for decommissioning relative to the existing labour pool, it is not likely that any economic sector would be adversely affected by the DGR Project skills and labour requirements.

Recommended Mitigation or Effects Management (Skills and Labour Supply)

While no adverse effects are identified, as a mitigation or effects management measure, OPG will share information with local and regional land use planners and economic development officials regarding the timing and magnitude of meaningful changes to its on-site labour force and skills requirements for each phase of the DGR Project.

Residual Adverse Effects (Skills and Labour Supply)

No residual adverse effects on labour supply are anticipated as a result of the DGR Project.

8.3.2.2 Education

Likely effects on education are assessed using a variety of analytical methods and data sources, including economic modelling, results of stakeholder interviews, past experience and case studies, and professional judgement.

Likely Effects (Education)

Elementary and Secondary Schools

As discussed in Section 5.4.2.2 of this TSD, the Regional Study Area municipalities are serviced by two school boards. A small increase in enrolment of students in elementary and secondary schools is anticipated during all phases because of increased DGR Project-related population.

The economic modelling provided a forecast of the population associated with the DGR Project and school enrolment was subsequently calculated based on current population to enrolment ratios for Kincardine and Saugeen Shores. For the purposes of this socio-economic assessment, a focus was placed on Kincardine and Saugeen shores where, based on the assessment of DGR Project associated population, there was the greatest potential for an adverse effect. Further details on the method for considering school enrolment within the

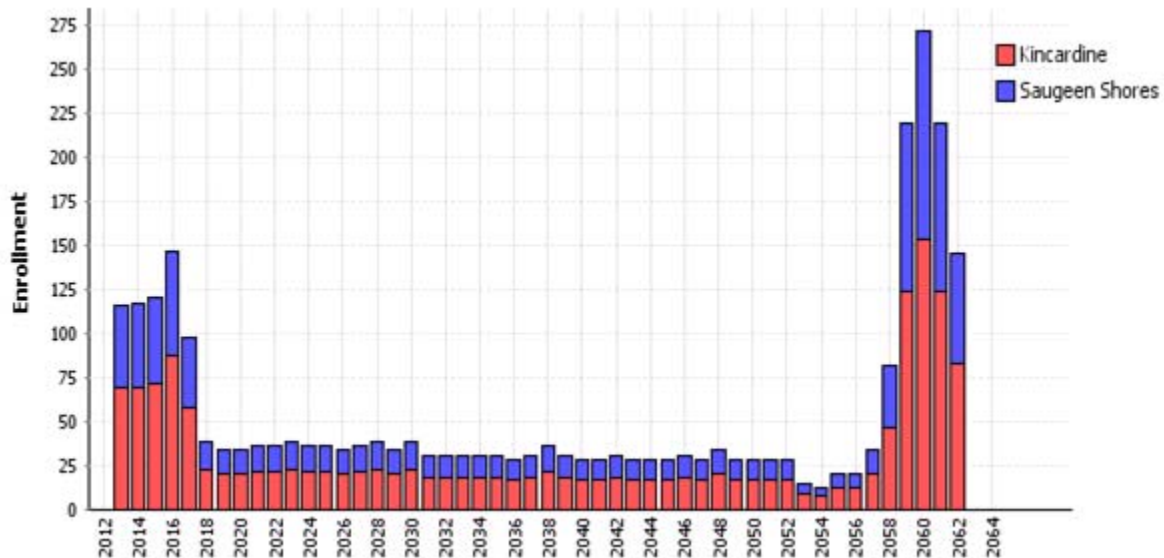
economic model can be found in Appendix E. The effect of the DGR Project on local school enrolment in Kincardine and Saugeen Shores is depicted in Table 8.3.2-1 and Figure 8.3.2-1.

During the site preparation and construction phase, the DGR Project could be associated with up to 150 students in Kincardine and Saugeen Shores. It is not likely that all of these students would be new ones, as much of the labour force for the site preparation and construction phase would be comprised of workers relocating to the area for a relatively short period of time and are not likely to be permanent in-movers. During the operations phase the corresponding figure is about 31 students. These students are most likely to be associated with permanent residents or in-movers. During the decommissioning phase the associated enrolment in Kincardine and Saugeen Shores briefly is predicted to be approximately 130 students, on average. While a peak of approximately 270 students may be associated with the decommissioning phase, it is not likely that all of these students would be new ones, as much of the labour force for the decommissioning phase would be sourced from the Local and Regional Study Areas, rather than being in-movers.

Based on information from stakeholder interviews, the schools in Kincardine have the capacity to receive approximately 350 more students and the schools in Saugeen Shores have capacity to receive approximately 700 more students. Given current population and demographic trends, the number of new students who might be associated with the DGR will absorb a small fraction of the excess capacity. However, because many of these students will not be new to the school system, but from families already residing in the study areas, there will not be a major contribution to new school enrolment.

Table 8.3.2-1: DGR Project Associated School Enrolment (Students)

Year/Forecast	Municipality of Kincardine	Saugeen Shores	Total
2013	69	47	116
2014	69	48	117
2015	71	49	120
2016	87	60	146
2017	58	40	98
2018	22	16	38
2019 to 2054 (average)	18	13	31
2055 to 2062 (average)	71	55	126



Source: Economic Modelling (see Appendix E)

Figure 8.3.2-1: School Enrolment Effects (2013 to 2062)

Apart from the direct effects of the workforce on school enrolment, changes in noise or dust levels as a result of the DGR Project were considered due to their potential to disrupt activities at schools. However, changes in noise and dust are not likely to be noticeable at schools nearest to the DGR Project site (i.e., Kincardine Township Tiverton Public School and Kincardine District Secondary School), which are located 15 and 16 km, respectively, from the DGR Project site boundary. There are no schools in close proximity to the site where nuisance effects are most likely (see Section 8.8 of this TSD). No schools are located directly on any major transportation routes in the vicinity of the DGR Project site and therefore, they are not likely to experience traffic-related disruption. Therefore, it is highly unlikely that the DGR Project will disrupt activities conducted at individual schools (e.g., indoor classes or outdoor activities, use of school facilities by other community members or staff) through indirect nuisance effects.

Overall, no adverse effects on individual schools or School Boards are anticipated in the Local or Regional Study Areas as a direct result of the DGR Project.

Finally, interviews with stakeholders from local area schools also mentioned increased educational opportunities for their students as a result of the DGR Project. As a leading new technology for the long-term management of nuclear waste in Canada, the DGR Project will be the first of its kind in North America, and will provide unique learning opportunities for students in the Local and Regional Study Areas, as well as Ontarians and out-of-Province visitors.

The 2004 DGR Hosting Agreement between Ontario Power Generation and Municipality of Kincardine provides support from OPG for local and international tours of the DGR facility for educational purposes. The Agreement also recognizes the opportunity for further increasing Kincardine and neighbouring municipalities' educational opportunities through the presence as a

centre of energy excellence. The two parties agree to use commercially reasonable efforts to support the concept of a centre of energy excellence [57].

Recommended Mitigation (Education)

No adverse effects on education are anticipated as a result of the DGR Project; therefore, no additional mitigation is identified or warranted.

Residual Adverse Effects (Education)

No residual adverse effects on education are anticipated as a result of the DGR Project.

Beneficial Effects (Education)

The beneficial effect of the DGR Project on education is increased educational opportunities for students. The DGR Project will be the first of its kind in North America, and provide unique learning opportunities for students in the Local and Regional Study Areas, as well as Ontarians and out-of-Province visitors. Educational opportunities may also result from the DGR Hosting Agreement and municipal support for the area as a center of energy excellence.

8.3.2.3 Health and Safety Facilities and Services

Likely effects on health and safety facilities and services are assessed using a variety of analytical methods and data sources, including the analysis of effects on natural assets, economic modelling and results of stakeholder interviews, past experience and case studies, and professional judgement.

Likely Effects (Health and Safety Facilities and Services)

As identified in Section 6, there is a potential for the DGR Project to increase the use of municipal health and safety facilities and services due to typical workplace accidents. In addition, underground operations may require modifications to emergency response plans to consider new types of waste transfer operations and other underground activities not currently undertaken at the WWMF. Generally, three types of events could occur at the DGR that would require an emergency response:

- fire;
- rock fall; and
- radiological contamination release.

Procedures for response are outlined in the Malfunction, Accidents and Malevolent Acts TSD and Section 4 of the EIS. Trained and qualified mine rescue teams (primary and back-up rescue teams) will be provided as required by applicable mining regulations. A primary mine rescue team will be available to assist with the evacuation of workers from the DGR to the surface. Backup rescue team(s) will be available through mutual assistance agreements with nearby facilities.

In the event that workers get trapped by a rock fall or other extraordinary event, facility management will co-ordinate the response and utilize the mine rescue teams to assess the situation and recommend a recovery strategy depending on the circumstances. Radiological contaminant release will be responded to with a pre-developed plan for rescue of personnel and clean up.

In some cases, local health and safety service providers may be called upon to assist in an emergency at the DGR. Therefore, specialized training and preparation for the unlikely event of an emergency may be required for staff at existing health and safety facilities and services.

While the Bruce nuclear site has its own fire services department (as detailed in Section 5.4.2.3 of this TSD) Bruce Power and OPG will work co-operatively with Emergency Management Ontario and other local emergency responders to assist in the development and testing of emergency plans throughout the life of the DGR Project. Local fire departments may require additional orientation and training of their staff regarding the presence of new above-ground and below-ground facilities and equipment. Some may require specialized training and resources to respond to emergencies, especially below-ground emergencies, which are likely to be new and unfamiliar to emergency response staff, should they be called upon to assist. Based on stakeholder interviews, Local and Regional Study Area fire departments confirmed that they would require additional information and training and that this issue is of primary concern to them.

Other demands on municipal health and safety services may result from the DGR-associated population in the Local and Regional Study Areas. The health and safety services investigated for this assessment include health care, EMS, fire and police protection. Economic modelling, detailed in Appendix E, outlines the method used to forecast effects of the DGR Project on these services. In the case of health services, the measure used to assess DGR Project effects was in-patient beds per capita. In the case of the other three services, the unit measure was the number of staff per capita.

As was seen from the population analysis, the effect of the DGR Project is estimated to be noticeable. However, the effect is barely measurable when translated into additional requirements for health and safety services (Table 8.3.2-2). During construction, the DGR Project is predicted to result in an average annual requirement for additional capacity across the Regional Study Area of approximately:

- 0.8 in-patient hospital beds;
- 0.8 staff persons for both EMS and police services; and
- 2 firefighters.

During the operations phase, the DGR Project is predicted to result in an average annual requirement for additional capacity of approximately:

- 0.2 in-patient hospital beds;
- 0.2 staff persons for both EMS and police services; and
- 0.5 firefighters.

During the decommissioning phase, the DGR Project is predicted to result in an average annual requirement for additional capacity of approximately:

- 1 in-patient hospital bed;
- 1 staff person for both EMS and police services; and
- 2 firefighters.

Table 8.3.2-2: Regional Study Area DGR Associated Average Unit Service Demands – Health Care and Emergency Services

Phase	Health Care	Emergency Services		
	In-Patient Bed	EMS Worker	Policing Staff	Firefighter
Site Preparation and Construction	0.80	0.76	0.81	1.71
Operations	0.23	0.22	0.23	0.50
Decommissioning	1.01	0.96	1.02	2.16

Source: Economic Modelling (see Appendix E)

These results indicate that the increased demand on health and safety facilities is not likely to be noticeable in terms of levels of service provided to community members.

Interviews conducted with stakeholder representatives from Local and Regional Study Area health and safety service providers support this conclusion. They did not anticipate an adverse effect on their operations or the levels of service they provide community members as a result of the DGR Project. For example, the main concerns of hospital officials were with the aging population in the area. While they did anticipate some increased demand in services because of the DGR Project, the project-related workers would largely be young families, and so would not put an increased strain on resources required to care for the aging population in the area. Similarly, stakeholder representatives from local area police services did not anticipate an adverse effect on their operations or the levels of service they provide community members as a result of the DGR Project. Some concern was expressed regarding potential increase in traffic-related incidents, though these were not considered substantial enough to affect their operations or levels of service.

Recommended Mitigation or Effects Management (Health and Safety Facilities and Services)

While no adverse effects on health and safety facilities and services are anticipated, OPG will ensure that an emergency and fire response plan is prepared and implemented for the DGR Project, including plans for mine rescue. This information is outlined in the Malfunctions, Accidents and Malevolent Acts TSD and Section 4 of the EIS. In addition, OPG will share DGR Project information with local and regional health and safety service providers about timing and large changes in the magnitude of its on-site labour force and training opportunities applicable to each phase of the DGR Project.

Residual Adverse Effects (Health and Safety Facilities and Services)

No residual adverse effects on health and safety facilities and services are anticipated as a result of the DGR Project.

8.3.2.4 Social Services

Likely effects on social services are assessed using a variety data sources, including economic modelling, past experience and professional judgement.

Likely Effects (Social Services)

The population associated with the DGR Project (see Figure 8.3.1-2 and Table 8.3.1-2) is anticipated to be extremely minor in the context of current and foreseeable population levels. In addition, no change in the demographic characteristics of the population is anticipated as a result of the DGR Project. On the other hand, increased employment and business opportunities along with increased labour income may contribute towards reducing the demand for various social services offered throughout the study areas. Therefore, no adverse effects on demands on social services are anticipated as a result of the DGR Project.

Recommended Mitigation or Effects Management (Social Services)

Because no adverse effects on social services are anticipated as a result of the DGR, no mitigation is identified.

Residual Adverse Effects (Social Services)

No residual adverse effects on social services are anticipated as a result of the DGR Project.

8.4 EFFECTS ON FINANCIAL ASSETS

For the purposes of this socio-economic assessment, financial assets consider the following VECs:

- Employment;
- Business activity;
- Tourism;
- Residential property values;
- Municipal finance and administration; and
- Other Financial Assets, including:
 - income;
 - renewable and non-renewable resources use;
 - agriculture; and
 - economic development services.

8.4.1 Employment

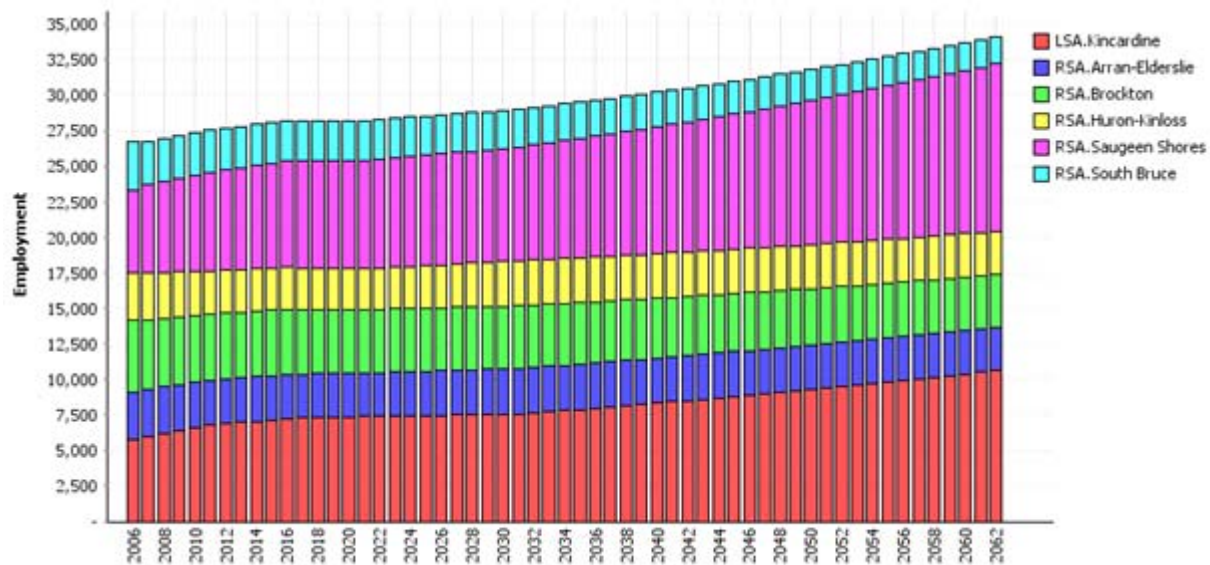
Likely effects on employment are assessed using a variety of data sources as part of the economic modelling undertaken for this socio-economic assessment. The economic model is described in Appendix E.

8.4.1.1 Likely Effects (Employment)

The importance of employment to the well-being of Local and Regional Study Areas' communities is clearly evident from the research undertaken as part of this socio-economic assessment. Public attitude research undertaken as part of this socio-economic assessment indicates that up to 65% of Local Study Area residents and 64% of Regional Study Area residents anticipate that the new jobs and employment opportunities created by the DGR Project will contribute positively to their community's well-being [21]. The threat of decreased employment (including tourism employment) was considered to be one of the greatest threats to community well-being by 18% and 22% of the Local and Regional Study Areas PAR respondents respectively. Furthermore, 17% of Local Study Area and 5% of Regional Study Area respondents indicated that reduced employment at the Bruce nuclear site was a key threat to community well-being. Similarly, stakeholder and community leader interviews indicated that financial issues, particularly related to employment opportunities and potential loss of employment at the Bruce nuclear site are among the dominant threats to community well-being in the study areas.

Employment Projections without DGR

As described in the existing conditions sections of this TSD, the municipalities in the Local and Regional Study Areas have experienced modest employment growth over the past several years. To provide a context within which the effects of the DGR Project on employment may be felt, projections for employment growth, without the DGR, are provided in Figure 8.4.1-1. For the purposes of this assessment, employment from 2006 to 2062 has been estimated based on the 2006 population to employment ratio and projected population over the forecast period. Overall, each of the municipalities in the Local and Regional Study Areas is anticipated to experience modest employment growth over the long term.



Note: RSA = Regional Study Area, LSA = Local Study Area
 Source: Economic Modelling (see Appendix E)

Figure 8.4.1-1: Employment Projections by Municipality – without DGR Project (2006 to 2062)

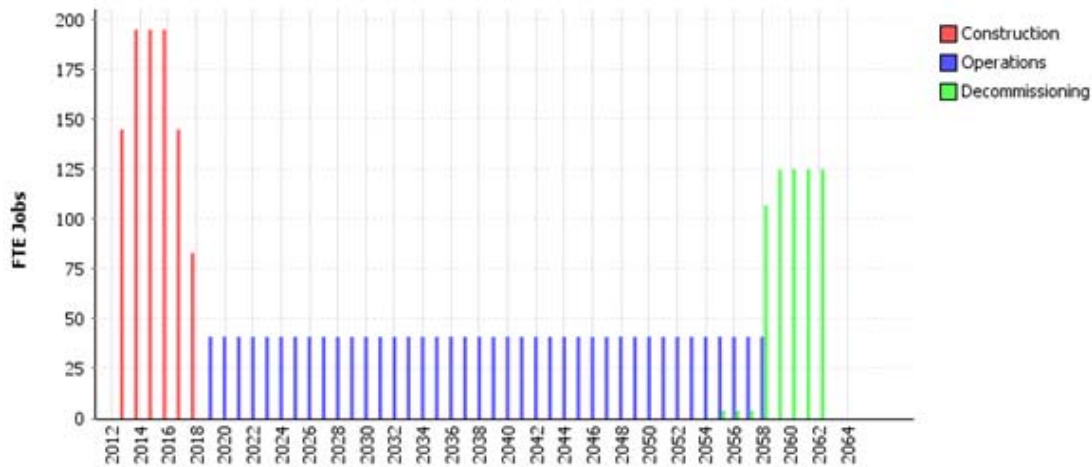
DGR Project Employment

The following three types of employment are predicted to result from the DGR Project, and may affect the employment VEC:

- **On-site employment** refers to the on-site workforce, that is OPG and NWMO personnel at the DGR Project site and construction workers employed at the DGR Project site.
- **Indirect employment** refers to jobs created in the economy to support the industry sectors represented by the direct jobs. These are typically upstream suppliers of goods and services to the direct industries.
- **Induced employment** refers to the induced or “spin-off” jobs as the result of income spending by DGR Project-associated employees from the direct and indirect industry sectors. Income spending exclusive of income tax typically reflects household spending for a wide variety of commercial goods and services to meet the day to day needs of the household.

Figure 8.4.1-2 shows the anticipated workforce profile for the DGR Project over the forecast period. For the purposes of this assessment, DGR Project-related hiring and spending for the site preparation and construction phase is assumed to begin in 2013 and conclude in 2018. The required on-site labour force during this period ranges from about 80 to 200 workers. The operations phase is assumed to begin in 2017 and runs through to 2058. During this phase of the DGR Project the average on-site employment compliment will be approximately 40. Hiring and spending related to the decommissioning phase runs from 2055 to 2062 and requires an on-site workforce compliment ranging from four to a peak of approximately 125. While these

specific timeframes were used for modelling purposes, the actual start or completion of each phase will depend upon licensing approval from the CNSC and/or other applicable regulatory bodies.



Source: Economic Modelling (see Appendix E)

Figure 8.4.1-2: DGR Project On-site Jobs (2013 to 2062)

DGR Employment in Context

The DGR will be one of several facilities at the Bruce nuclear site. For the purpose of this assessment of the DGR Project, the following assumptions are made:

- refurbishment of Bruce A Units 1 & 2 will be completed and both units will return to service in mid-to-late 2011 [168];
- employment associated with current per unit operational employment is assumed for Bruce A units 1 & 2 once on-line;
- operation of Bruce A Units 3 & 4 will continue until the end of the study period (2062) with no interruptions for down time or refurbishment;
- operation of Bruce B Units 5 to 8 will continue until the end of the study period (2062) with no interruptions for down time or refurbishment; and
- operations at the WWMF will change to co-ordinate with the DGR Project; WWMF employment will adjust accordingly.

Refer to Section 10 of the EIS for the assessment of potential cumulative effects of the Bruce A and B refurbishments and the DGR Project. The proposed labour force associated with the DGR Project, through the site preparation and construction, operation and decommissioning phases, represents a small part of the overall labour force at the Bruce nuclear site while the Bruce A and B generating stations are operating. Should the currently operating stations be in a lay-up state, DGR Project employment will be more important, but still a small proportion of the labour force in the Local Study Area and Regional Study Area.

Total Job Creation

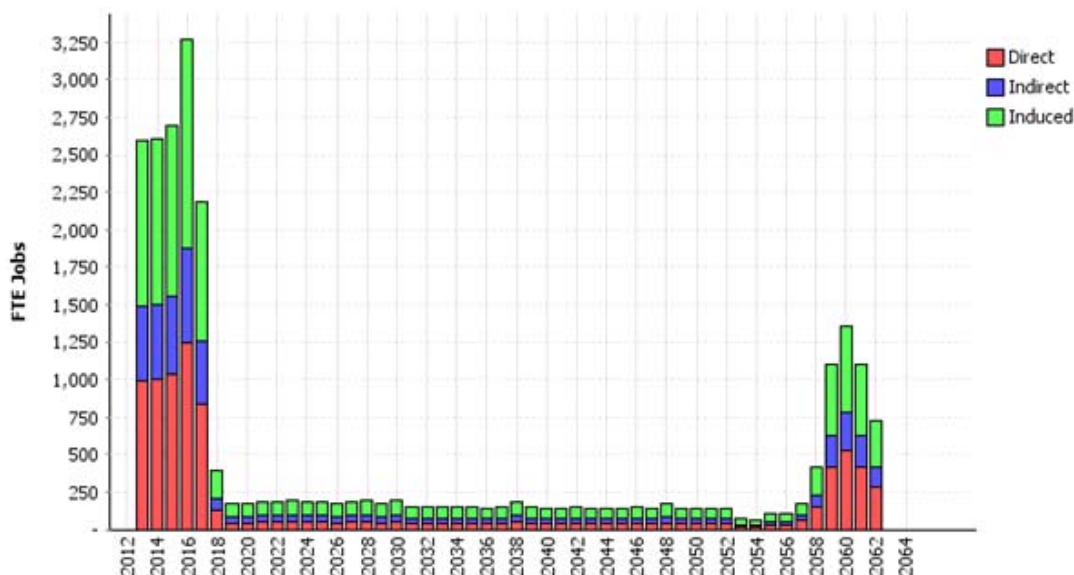
The Statistics Canada Inter-Provincial Input/Output Tables for Ontario at the S-Level were used to derive multipliers for the site preparation and construction, operations and decommissioning phases of the DGR Project. The site preparation and construction multipliers were taken from the construction sector (NAICS code 23); the operations multipliers were derived from the mining sector (NAICS code 21); and the decommissioning multipliers were derived from the construction section (NAICS code 23).

Through the use of these multipliers, the full time equivalent person years of employment associated with the DGR Project from the site preparation and construction phase through to the end of the decommissioning phase were estimated as shown in Table 8.4.1-1. Figure 8.4.1-3 illustrates the DGR Project related employment across the site preparation and construction, operations and decommissioning phases. Of the total 24,330 person years associated with the DGR Project, 6,522 person years (27%) are anticipated within the Local Study Area and 5,849 (24%) are anticipated in the Regional Study Area. The balance of DGR Project-related employment (49%) will likely occur outside the study areas.

Table 8.4.1-1: DGR Project Total Project Employment over Forecast Period

Employment Type	Full Time Equivalent (Person Years)
Direct	8,640
Indirect	4,800
Induced	10,890
Total	24,330

Source: Economic Modelling (see Appendix E)



Source: Economic Modelling (see Appendix E)

Figure 8.4.1-3: Total DGR Project Employment – Direct, Indirect and Induced (2013 to 2062)

Job Distribution

As mentioned previously, not all employment opportunities created as a result of the DGR Project will be taken by employees who reside in the Local Study Area. A substantial number will be distributed across the Regional Study Area, other parts of the Province and in some cases beyond Ontario. Table 8.4.1-2 depicts the estimated distribution of jobs to Kincardine, the Regional Study Area and outside the Regional Study Area by DGR Project phase. This allocation reflects DGR Project procurement distribution assumptions developed by NWMO as well as Regional Study Area distributions derived from workforce place of residence/goods and services/income spending data for the WWMF. The estimated full time equivalent jobs associated with the DGR Project, distributed by area according to the distribution assumptions noted in Table 8.4.1-2, are illustrated in Figure 8.4.1-4. Total employment is the sum of direct, indirect and induced full time equivalent jobs associated with the DGR Project in each of the study years.

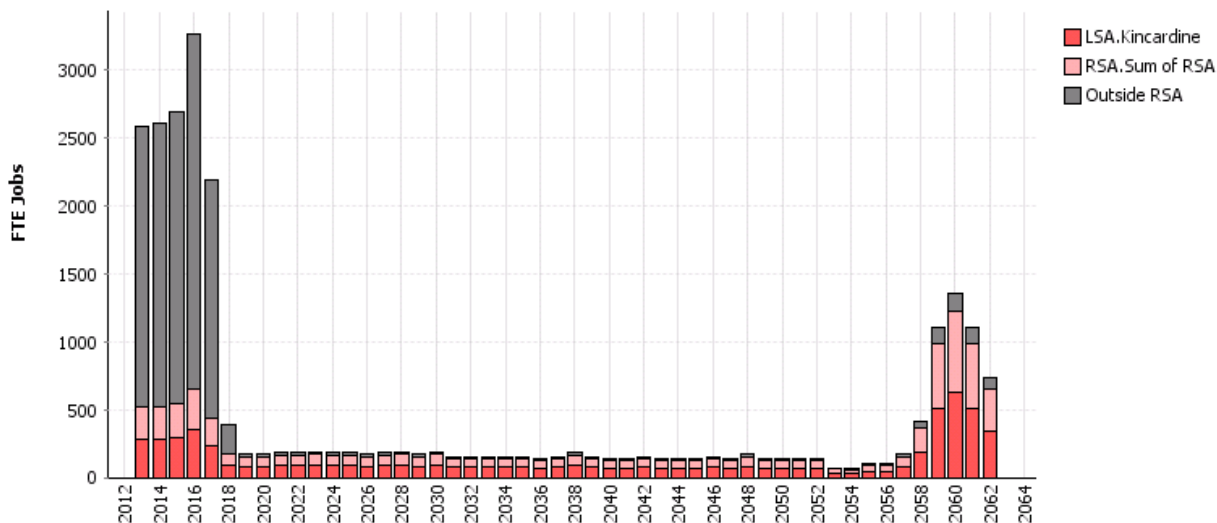
Table 8.4.1-2: DGR Project Employment Distributions

Phase and Area		Direct Employment	Indirect Employment	Induced Employment	
Site Preparation and Construction	Local Study Area	Kincardine	10%	10%	12%
	Regional Study Area	Arran-Elderslie	0.2%	0.2%	0.1%
		Brockton	0.8%	0.8%	0.7%

Table 8.4.1-2: DGR Project Workforce Distributions (continued)

Phase and Area		Direct Employment	Indirect Employment	Induced Employment	
		Huron-Kinloss	1.3%	1.3%	1.0%
		Saugeen Shores	7.4%	7.4%	5.8%
		South Bruce	0.3%	0.3%	0.3%
		Sum of Regional Study Area	10%	10%	8%
	Outside Regional Study Area		80%	80%	80%
	Total All Areas		100%	100%	100%
Operations	Local Study Area	Kincardine	40%	40%	55%
	Regional Study Area	Arran-Elderslie	0.8%	0.8%	0.6%
		Brockton	4.2%	4.2%	3.0%
		Huron-Kinloss	6.7%	6.7%	4.7%
		Saugeen Shores	36.7%	36.7%	25.8%
		South Bruce	1.6%	1.7%	1.2%
	Sum of Regional Study Area	50%	50%	35%	
	Outside Regional Study Area		10%	10%	10%
Total All Areas		100%	100%	100%	
Decommissioning	Local Study Area	Kincardine	40%	40%	55%
	Regional Study Area	Arran-Elderslie	0.8%	0.8%	0.6%
		Brockton	4.2%	4.2%	3.0%
		Huron-Kinloss	6.7%	6.7%	4.7%
		Saugeen Shores	36.7%	36.6%	25.8%
		South Bruce	1.6%	1.7%	1.2%
	Sum of Regional Study Area	50%	50%	35%	
	Outside Regional Study Area		10%	10%	10%
Total All Areas		100%	100%	100%	

Source: Economic Modelling (see Appendix E)



Note: RSA = Regional Study Area, LSA = Local Study Area
 Source: Economic Modelling (see Appendix E)

Figure 8.4.1-4: Total Employment Distribution - Kincardine, Regional Study Area, Outside Regional Study Area (2013 to 2062)

The DGR Project employment, including direct, indirect and induced employment, is presented as the average annual employment over the forecast period within the Local and Regional Study Area municipalities in Table 8.4.1-3. The modelling analysis indicates that the DGR Project will contribute to Local and Regional Study Area employment over the forecast period, with the greatest effect of 1.55% occurring in Kincardine, followed by employment in Saugeen Shores.

Table 8.4.1-3: Summary of DGR Employment in Study Areas (2013 to 2062)

Study Area		Employment		
		Municipal Average	DGR Project Average	DGR Project Effect
Local Study Area	Kincardine	8,398	130	1.55%
Regional Study Area	Arran-Elderslie	3,131	2	0.06%
	Brockton	4,206	10	0.23%
	Huron-Kinloss	3,067	16	0.51%
	Saugeen Shores	8,992	86	0.95%
	South Bruce	2,479	4	0.16%
	Sum of Regional Study Area	21,871	117	0.53%

Source: Economic Modelling (see Appendix E)

In summary, the economic modelling indicates that the DGR Project will create new direct, indirect and induced employment opportunities in the Local and Regional Study Areas and beyond that will contribute to overall community well-being. As anticipated by the PAR respondents, a positive local employment effect is likely; however, this effect is relatively modest in the context of the Bruce nuclear site employment and within the context of employment levels within the municipalities over the life of the DGR Project. The number of jobs created and their distribution over time does not suggest that the municipalities in the study areas would experience any "boom" or "bust" effects as a result of the DGR Project as previously experienced in relation to other nuclear projects at the Bruce nuclear site.

The presence of the DGR is also seen by some in the community as an indication of the continued presence of nuclear-related activity and employment opportunities at the Bruce nuclear site. This expectation may contribute to positive attitudes toward the future well-being of the community.

8.4.1.2 Recommended Mitigation or Effects Management (Employment)

Because no adverse effects on employment are anticipated as a result of the DGR Project, no mitigation is identified.

8.4.1.3 Residual Adverse Effects (Employment)

No residual adverse effects on employment are anticipated as a result of the DGR Project.

8.4.1.4 Beneficial Effects (Employment)

The DGR Project will create new direct, indirect and induced employment opportunities. This effect is a beneficial influence on the economies of the municipalities in the Local and Regional Study Areas and overall community well-being during the site preparation and construction, operations and decommissioning phases.

8.4.2 Business Activity

Likely effects on business activity are assessed using a variety of data sources as part of the economic modelling undertaken for this socio-economic assessment. The economic model is described in Appendix E. The assessment of likely effects also considered the results of PAR, stakeholder interviews and field surveys.

8.4.2.1 Likely Effects (Business Activity)

The economic modelling of likely effects of the DGR provides insights into the effects of the DGR Project in the Local and Regional Study Area economies. As described previously, not all jobs created as a result of the DGR will reside in the Local Study Area. A substantial number will be distributed to the Regional Study Area, other parts of the Province and in some cases beyond Ontario. In addition, the supply of goods and services directly to the DGR Project can be expected to contribute to business activity in the Local and Regional Study Areas. In particular, aggregate required during the site preparation and construction phase and during the decommissioning phase will likely be sourced from off-site aggregate operations providing

additional business opportunities for Regional Study Area suppliers. Similarly, transportation of various goods to the DGR Project site and the removal of conventional, non-hazardous wastes and small quantities of hazardous wastes will provide business opportunities for the waste management and transportation sectors.

However, experience from other Bruce nuclear site developments indicate that a substantial proportion of goods and services expenditure related to nuclear operations is not captured by local businesses and that the potential benefit is felt in other parts of the Province and beyond. In addition to general construction related goods and services, construction of the DGR will require a suite of mining equipment to complete the underground mining construction work; these equipment requirements are expected to be sourced from outside the Local and Regional Study Areas.

Indirect effects on business activity may also occur as a result of other environmental changes. As with any major industrial construction project or activity, nuisance and traffic-related effects have the potential to be disruptive to business activities should they be of sufficient magnitude over baseline conditions, particularly at sensitive business locations (i.e., commercial operations with an outdoor component, businesses typically relying on transient or drive-by customers). It is not expected that any commercial business in the Local or Regional Study Areas will experience nuisance or traffic-related disruption because of the DGR Project for the following reasons:

- the Atmospheric Environment TSD concludes that nuisance dust effects are not likely to be widespread in the Local Study Area, but rather restricted to a small portion of the Local Study Area in close proximity to the Bruce nuclear site (e.g., Baie du Doré area);
- based on-site reconnaissance visits, there are no sensitive businesses located in the vicinity of Baie du Doré area where a potential nuisance noise effect may be experienced; and
- traffic associated with the DGR Project can be accommodated within the current transportation infrastructure, largely maintaining existing levels of service.

8.4.2.2 Recommended Mitigation or Effects Management (Business Activity)

Because no adverse effects on business activity are anticipated as a result of the DGR Project, no additional mitigation is identified.

To enhance the potential for beneficial effects on local and regional business activity, the DGR Project non-salary expenditures will be sourced locally wherever practical and in accordance with relevant supply chain policies, procedures and standards for competitive purchasing.

8.4.2.3 Residual Adverse Effects (Business Activity)

No residual adverse effects on business activity are anticipated as a result of the DGR Project.

8.4.2.4 Beneficial Effects (Business Activity)

As noted above, a beneficial effect on business activity is anticipated during all DGR Project phases, which can be enhanced through the utilization of local business services where

practical and in accordance with relevant supply chain policies, procedures and standards for competitive purchasing.

8.4.3 Tourism

Likely effects on tourism are assessed using a variety of data sources. Consideration is primarily given to the analysis of effects on natural assets and community character, the results of stakeholder interviews and field surveys, past experience and case studies, and professional judgement.

8.4.3.1 Likely Effects (Tourism)

Tourism is an important and thriving component of the Local and Regional Study Areas. The study areas are home to many tourist attractions and tourist accommodations both large and small. Seasonal cottages and a vibrant array of local community events also serve to attract a growing number of visitors from outside the area.

During the site preparation and construction phase, it is assumed that some construction workers, particularly those that are transient, may compete with tourists for temporary accommodation in the vicinity of the Bruce nuclear site. This assumption is based on experience from other major construction projects, including the recent refurbishment of Bruce A reactors. This competition may result in some tourists deciding to search for alternative accommodations elsewhere in the Local and Regional Study Area. If this effect is of sufficient magnitude, some tourists may choose to “stop coming” or will choose to “look elsewhere” for accommodations and tourist activities. As such, some tourist businesses, including souvenir and gift shops, pick-your-own farm operations, B&Bs and other temporary accommodation providers, whose operations are largely dependent on visiting tourists (including day-trippers) for the majority of their revenues, would be the most vulnerable to adverse effects on their business activity.

With regard to the DGR Project, the site preparation and construction phase will require an on-site workforce of up to 200 skilled and unskilled workers for approximately six years and a smaller contingent during the decommissioning phase. Given the small size of the labour force associated with the site preparation and construction phase and the decommissioning phase for the DGR Project, some competition for temporary accommodation is anticipated but is not expected to be of sufficient magnitude to affect the tourism accommodation industry. Interviews with tourism accommodation providers across the Regional and Local Study Area indicate that most operators attribute some of their business to the presence of the Bruce nuclear site, its employees or activities and some indicated that up to 70% of their business can be attributed to Bruce nuclear site employees. The increased number of workers on-site because of the DGR Project and increased number of corporate clients using local hotels and motels during the off-season is likely to help maintain the economic viability of these businesses, but is not expected to be of sufficient magnitude to generate substantial re-investment into these facilities by their owners, nor encourage the improvement of the tourist accommodation stock over the long term.

Notwithstanding the positive effects on temporary accommodation providers, should tourists and other visitors to the Provincial parks, Local Study Area hotels, motels and campgrounds “stop coming” or be “diverted elsewhere” as a result of increased competition, it is not likely that the overall tourism industry would suffer. This possible loss of visitation would not likely translate

directly into a loss in revenues at all tourism establishments, because DGR Project worker would act as a substitute source of revenue to some extent. For example, the additional construction workforce associated with the DGR Project may choose to visit downtown Kincardine and Port Elgin merchants and purchase goods and services year round, as tourists would do during peak season.

Results of air quality and noise studies indicate that the DGR Project is not likely to result in noticeable increased dust or noise levels at Inverhuron Provincial Park or MacGregor Point Provincial Park, or any other key tourist attraction areas. Surface water studies also indicate that the DGR Project is not likely to measurably change the water quality at Local or Regional Study Area beaches and nearshore areas used by tourists and day users for outdoor leisure activities such as swimming, fishing and boating. As such, the DGR Project will not result in environmental effects to the Provincial parks, affect their accessibility nor require park operators to modify their facilities or programs.

Apart from the potential effects of dust, noise and traffic, it was hypothesized that adverse effects on the use and enjoyment of the Provincial parks and the tourism industry in general within the Local and Regional Study Areas may occur, if the DGR Project results in an adverse effect on community character (i.e., a physical asset), particularly if a stigma is attributed to the Local Study Area and tourists take steps to avoid the area, and its tourism-related products and services.

As concluded in Section 8.3, the DGR Project is not likely to result in adverse effects on community character. Rather the DGR Project represents a strengthening of an existing industrial presence at the Bruce nuclear site. However, this is not expected to adversely affect the attractiveness of the Local or Regional Study Area to tourists for the following reasons:

- no noticeable increases in dust or noise levels at the two Provincial parks, downtown Kincardine or Port Elgin are anticipated during the DGR Project phases;
- the DGR Project is not likely to noticeably change environmental conditions at the beaches and nearshore areas used by tourists and day users;
- increased traffic is not anticipated to be noticeable at the entrance to Inverhuron Provincial Park or on Highway 21, which are regularly used by tourists;
- the DGR Project is not expected to result in a substantial change in the visual character of the Local Study Area, nor block view of the lake from the Provincial parks or the Bruce Power Visitors' Centre;
- based on the results of the Inverhuron and MacGregor Point Provincial Park Survey, the DGR Project is not likely to affect the things or special features that affect the use and enjoyment of the Provincial parks by tourists (i.e., beaches, park amenities and atmosphere, surrounding environment and recreational opportunities); and
- the DGR Project will be visible from Lake Huron, but its above-ground facilities will not be dominant as compared to the existing buildings and structures at the Bruce nuclear site.

Notwithstanding the link between Inverhuron Provincial Park and the Bruce nuclear site in terms of their proximity, there are no strong indications that a stigma has already been attributed to the park. The results of stakeholder interviews conducted as part of this socio-economic assessment across the Local and Regional Study Areas support the conclusion that the Regional and Local Study Areas have not been stigmatized by the ongoing presence of the

Bruce nuclear site or the WWMF. Surveys of tourists at Provincial parks and conservation areas also support this conclusion. Of the 119 park and conservation area users surveyed, 104 respondents said that the existing Bruce nuclear site has not affected their use and enjoyment of these areas. Of those same users, 108 said that the existing WWMF has not affected their use and enjoyment of those areas.

Finally, Provincial park statistics collected by Ontario Parks over the past several years indicate that at Inverhuron Provincial Park, there has been an 84% increase in visitation since 2001 or approximately 9% per year. At MacGregor Point Provincial Park, there has been a 18% increase in visitation since 2001, or approximately a 2% increase per year [51;49;50]. Clearly, tourists and day users continue to visit these tourist features despite their proximity to the Bruce nuclear site. As such, no adverse effects on Provincial parks or the tourism industry as a whole are expected during the DGR Project.

8.4.3.2 Recommended Mitigation or Effects Management (Tourism)

Because no adverse effects on tourism are anticipated as a result of the DGR Project, no additional mitigation is identified.

8.4.3.3 Residual Adverse Effects (Tourism)

No residual adverse effects on tourism are anticipated as a result of the DGR Project.

8.4.4 Residential Property Values

Likely effects on residential property values are assessed using a variety of data sources. Consideration is primarily given to the analysis of effects on natural assets and community character, past experience and case studies, and professional judgement.

The effect of nuclear facilities on residential property values is a typical public concern. For example, the potential for decreased property values was identified as a concern during the EAs for the refurbishment of the Pickering B Nuclear Generating Station [169], the Darlington Used Fuel Dry Storage Project [170] and the Pickering Waste Management Facility [171]. Concerns over property values were also expressed in the PAR conducted as part of this socio-economic assessment. Stakeholder interviews for the DGR Project occasionally identified the potential for property value effects when asked what effects the project may have on the image of the community (two of 76 respondents).

In these cases, the focus was on the residential sector based on concerns regarding health and safety; nuisance effects such as noise, dust, traffic, visual intrusion; and potential for value reductions because of changes in community character or image. The analysis of the potential for adverse effects on property values was undertaken qualitatively based on the anticipated characteristics and environmental effects of the DGR Project and responses from community members regarding their self assessment of potential project effects.

8.4.4.1 Likely Effects (Residential Property Values)

Decreased property values and increased marketing time (i.e., time between listing and sale) typically result from noticeable increases in nuisance effects such as noise, dust, and traffic associated with a project. In the case of the DGR Project, the following conclusions were reached regarding such nuisance effects:

- no nuisance effects because of dust;
- no nuisance effects because of noise at R1 (a residential dwelling on Albert Road) and R3 (Inverhuron Provincial Park);
- a moderately perceptible increase in noise with a low nuisance effect at R2 (Baie du Doré); and
- modest increased traffic levels on local roads in the vicinity of the DGR Project site during the site preparation and construction phase and decommissioning phase are anticipated. The DGR Project will not be the cause of unacceptable levels of service along the local transportation network within the Local Study Area.

Therefore, no change in property values are anticipated from changes in dust, noise or local traffic conditions.

The DGR Project will be located at the Bruce nuclear site, which represents an existing industrial and nuclear presence in the Local Study Area and its visibility from areas in close proximity to the site is not likely to be a major determinant of residential property values. Although no contamination is expected to result from the DGR Project, property values could be affected should operation of the DGR result in contamination beyond the site boundaries. In any case, the 2004 DGR Hosting Agreement between OPG and the Municipality of Kincardine provides a property value protection plan to compensate property owners for any such losses, subject to meeting specified conditions [57].

Therefore, it is concluded that while there may be some nuisance effects associated with the project, these are localized to a small portion of the Local Study Area in close proximity to the Bruce nuclear site and are not anticipated to result in property value changes in that area.

8.4.4.2 Recommended Mitigation or Effects Management (Residential Property Values)

Taking into account the availability of a property value protection plan, no adverse effects on property values are anticipated as a result of the DGR Project and no additional mitigation is identified.

8.4.4.3 Residual Adverse Effects (Residential Property Values)

No residual adverse effect to property values are anticipated as a result of the DGR Project.

8.4.5 Municipal Finance and Administration

Likely effects on municipal finance and administration are assessed using a variety of data sources as part of the economic modelling undertaken for this socio-economic assessment.

The economic model is described in Appendix E. In addition, past experience with the OPG approach to municipal payments are considered.

8.4.5.1 Likely Effects (Municipal Finance and Administration)

The DGR Project could affect municipal finance in the Local and Regional Study Area municipalities in two key ways, namely by changing municipal revenues or expenditures. Firstly, municipalities gain the vast majority of their revenues from property taxes. In the case of the DGR Project, an increase in municipal revenue as a result of changes in area housing or commercial/industrial development is expected to occur. Increased property tax and other revenues for land development may be attributable to the DGR Project. A much greater change in municipal revenues may also result from land improvements at the Bruce nuclear site associated with the DGR Project. The land improvements will generate building permit fees and development charges, which will be paid by OPG. No upgrades or improvement to municipal infrastructure associated with the DGR Project are identified as necessary in this TSD.

In 2009, OPG contributed approximately \$5 million to the Municipality of Kincardine and Bruce County through property tax payments. These payments will be reassessed to take into account the new DGR buildings and structures. Any change in property tax is subject to final DGR Project design and confirmation by the Municipal Property Assessment Corporation (MPAC).

Increased municipal expenditures are possible due to increased service demands from new residents and businesses on municipally-provided services such as water, sewage and waste management. Overall, however, the population and business-related development is anticipated to be relatively small; therefore, it is not expected to generate a meaningful net (revenue less expenditure) effect on municipal finance. Moreover, service capacity remains for these services as the municipalities continue to plan for anticipated population growth regardless of the DGR Project.

Because of the small magnitude of DGR Project-related changes to municipal revenues and expenditures, it is not necessary to quantify these effects. Moreover, in October 2004, the DGR Hosting Agreement between OPG and the Municipality of Kincardine was accepted by the two parties. This agreement established one-time cash payments and annual payments to Kincardine and the specified adjacent municipalities (Saugeen Shores, Huron Kinloss, Arran-Elderslie and Brockton) based on completion of activity and approval milestones throughout the construction and operation of the DGR Project. This Agreement also clarified the payments to be made regarding applicable property tax and building permits that would otherwise be payable to the Municipality of Kincardine [57].

8.4.5.2 Recommended Mitigation or Effects Management (Municipal Finance and Administration)

Because no adverse effects on municipal finance and administration are anticipated as a result of the DGR Project, no mitigation is identified.

8.4.5.3 Residual Adverse Effects (Municipal Finance and Administration)

No residual adverse effects to municipal finance and administration are anticipated because of the DGR Project.

8.4.5.4 Beneficial Effects (Municipal Finance and Administration)

The DGR Project will likely result in increased municipal revenues through various monetary payments to the host municipalities as calculated in consultation with the Municipality of Kincardine, Bruce County and MPAC.

8.4.6 Other Financial Assets

8.4.6.1 Income

Likely effects on income are assessed using a variety of data sources as part of the economic modelling undertaken for this socio-economic assessment. The economic model is described in Appendix E.

Likely Effects (Income)

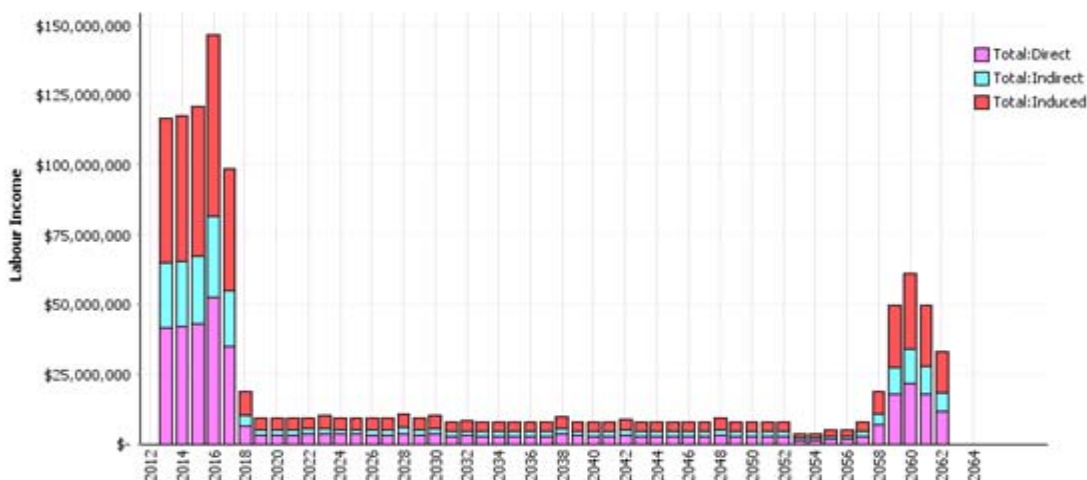
To assess the effects of the DGR Project on income, three types of income are estimated:

- **Direct Income** is the initial value created by the DGR Project through direct project spending on labour, goods and services;
- **Indirect Income** is the subsequent value added in the economy through the economic sectors that support the direct work being completed for the DGR Project. This value comes from increases in economic activity from upstream suppliers of goods and services to the direct industries; and
- **Induced Income** is the increase in value created in the economy through growth in goods and services to meet the demands of additional labour income spending directly and indirectly related to the DGR Project.

DGR Project-Associated Income

Figure 8.4.6-1 shows the anticipated direct, indirect and induced income creation by the DGR Project over its lifetime. For the purposes of this assessment, the DGR Project-related hiring and spending for the site preparation and construction phase is assumed to begin in 2013 and conclude in 2018. The annual income added to the economy ranges from \$11.4M to \$146.8M during this phase. Hiring and spending related to the operations phase begins in 2017 and runs through 2058. Annual average income creation during this period is in the order of \$7.6M. Hiring and spending related to the decommissioning phase is assumed to run from 2055 to 2062 and annual average income creation associated with this phase is in the order of \$27.4M. While these specific timeframes were used for modelling purposes, the actual start or completion of each phase will depend upon licensing approval from the CNSC and/or other applicable regulatory bodies.

The estimated direct, indirect and induced income associated with the DGR Project from the site preparation and construction phase to the end of the decommissioning phase are summarized in Table 8.4.6-1.



Source: Economic Modelling (see Appendix E)

Figure 8.4.6-1: Total DGR Project Income – Direct, Indirect and Induced (2013 to 2062)

Table 8.4.6-1: Direct, Indirect and Induced Income Associated with the DGR Project

Income Type	Income
Direct	\$408,728,000
Indirect	\$229,475,000
Induced	\$510,562,000
Total	\$1,148,765,000

Source: Economic Modelling (see Appendix E)

Income Distribution

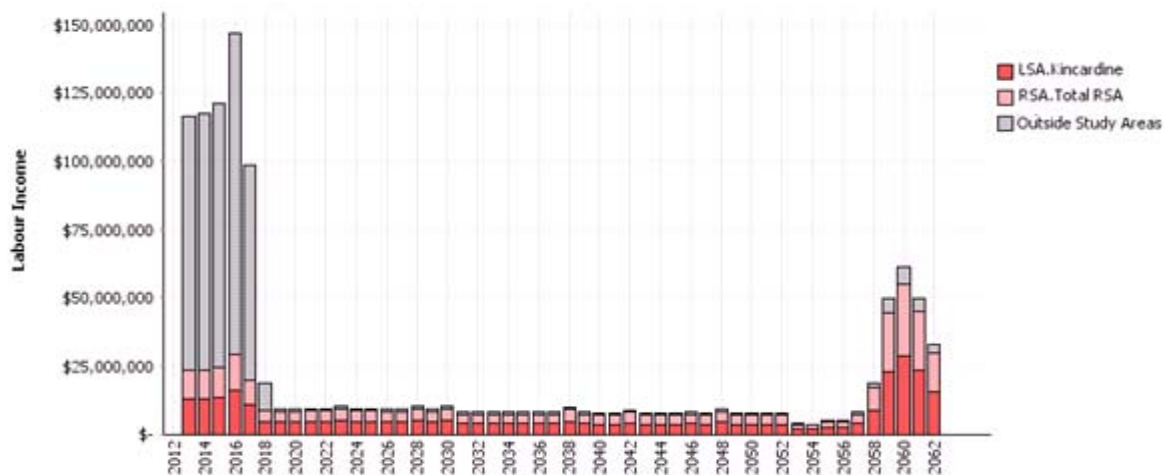
Not all of the income created as a result of the DGR Project will be generated in the Local Study Area. Table 8.4.6-2 depicts the distribution of income in the Local and Regional Study Areas. This allocation reflects DGR Project procurement scenario distribution assumptions developed by NWMO as well as Regional Study Area distributions derived from workforce place of residence, goods and services and income spending data for the WWMF. It should be noted that the following table does not incorporate direct municipal finance benefits, nor benefits stipulated in the Memorandum of Understanding (MOU). Refer to Section 5.3 for more information on the MOU.

Table 8.4.6-2: Bruce Nuclear Site Income Distributions

Phase and Area		Direct Income	Indirect Income	Induced Income	
Site Preparation and Construction	Local Study Area	Kincardine	10%	10%	12%
	Regional Study Area	Arran-Elderslie	0.2%	0.2%	0.1%
		Brockton	0.8%	0.8%	0.7%
		Huron-Kinloss	1.3%	1.3%	1.0%
		Saugeen Shores	7.4%	7.4%	5.8%
		South Bruce	0.3%	0.3%	0.3%
		Sum of Regional Study Area	10%	10%	80%
	Outside Regional Study Area		80%	80%	80%
	Total All Areas		100%	100%	100%
Operations	Local Study Area	Kincardine	40%	40%	55%
	Regional Study Area	Arran-Elderslie	0.8%	0.8%	0.6%
		Brockton	4.2%	4.2%	3.0%
		Huron-Kinloss	6.7%	6.7%	4.7%
		Saugeen Shores	37%	37%	26%
		South Bruce	1.6%	1.7%	1.2%
		Sum of Regional Study Area	50%	50%	35%
	Outside Regional Study Area		10%	10%	10%
	Total All Areas		100%	100%	100%
Decommissioning	Local Study Area	Kincardine	40%	40%	55%
	Regional Study Area	Arran-Elderslie	0.8%	0.8%	0.6%
		Brockton	4.2%	4.2%	3.0%
		Huron-Kinloss	6.7%	6.7%	4.7%
		Saugeen Shores	37%	37%	26%
		South Bruce	1.6%	1.7%	1.2%
		Sum of Regional Study Area	50%	50%	35%
	Outside Regional Study Area		10%	10%	10%
	Total All Areas		100%	100%	100%

Note: Percentages may not appear to sum to 100 percent because of rounding
Source: Economic Modelling (see Appendix E)

These income distributions are depicted in Figure 8.4.6-2.



Note: RSA = Regional Study Area, LSA = Local Study Area
 Source: Economic Modelling (see Appendix E)

Figure 8.4.6-2: Bruce Nuclear Site Income Distributions (2013 to 2062)

The DGR Project income, including direct, indirect and induced income, within the Local and Regional Study Areas municipalities is summarized in Table 8.4.6-3.

Table 8.4.6-3: Summary of DGR Income Distribution in Study Areas

Area		Income (GDP)
Local Study Area	Kincardine	\$316,710,459
Regional Study Area	Arran-Elderslie	\$4,786,505
	Brockton	\$24,286,103
	Huron-Kinloss	\$38,303,683
	Saugeen Shores	\$211,897,733
	South Bruce	\$9,567,157
	Total Regional Study Area	\$288,841,181
	Outside Regional Study Area	\$543,213,581
Total		\$1,148,765,221

Source: Economic Modelling (see Appendix E)

In summary, this analysis indicates that the DGR Project would create a substantial amount of direct, indirect and induced labour income in the Local and Regional Study Areas.

Recommended Mitigation or Effects Management (Income)

Because no adverse effects on income are anticipated as a result of the DGR Project, no additional mitigation is identified.

Residual Adverse Effects (Income)

No residual adverse effects on income are anticipated as a result of the DGR Project.

Beneficial Effects (Income)

The DGR Project would create a substantial amount of direct, indirect and induced income in the Local and Regional Study Areas.

8.4.6.2 Renewable and Non-Renewable Resource Use

Renewable and non-renewable resource availability and use in the community is a financial asset that contributes to economic activity and community well-being. The EIS Guidelines for the DGR Project (included as Appendix A in the EIS) require that the assessment consider capacity of renewable resources that could be significantly affected by the DGR Project.

Likely Effects (Renewable and Non-Renewable Resource Use)

Renewable Resources

The renewable resource considered in this analysis is commercial fishing. The commercial fishery in Lake Huron in the vicinity of the Bruce nuclear site is an active and valuable activity managed in partnership by area First Nations. The Saugeen Ojibway Nation (SON) has exclusive rights to the commercial fishery in the vicinity of the Bruce nuclear site through a commercial fishing agreement in place with the Ontario Ministry of Natural Resources. The likely effects of the DGR on this resource and its contribution to community well-being are therefore discussed in the Aquatic Environment TSD and the Aboriginal Interests TSD.

Non-renewable Resources

The greatest potential for non-renewable resource use is associated with the DGR Project's use of aggregate and fuels. Most of the aggregate required during the site preparation and construction phase and the decommissioning phase will likely be sourced from off-site aggregate operations. As discussed in Section 5.5.6.2, aggregate production across the Province, including production within the Local and Regional Study Areas is sufficient to supply the DGR Project and is not likely to cause a shortage for other community uses. The DGR Project assumes that any waste rock excavated from the DGR facility and not required for the DGR Project itself will remain on-site, thereby eliminating the potential for increased supply to affect local markets and production.

Fuels for on-site vehicle and equipment operation are required from site preparation through decommissioning of the DGR Project. One of the main sources of fuel consumption will be the heating of intake air in winter for DGR ventilation. Because this will be achieved using electric

heaters, fuel consumption will be minimized. The annual requirement of fuel for DGR Project vehicles and equipment is not expected to be of such magnitude to affect fuel supply in any community or the Province as a whole.

Recommended Mitigation or Effects Management (Renewable and Non-Renewable Resource Use)

Because no adverse effects on renewable and non-renewable resources are anticipated as a result of the DGR Project, no additional mitigation is identified.

Residual Adverse Effects (Renewable and Non-Renewable Resource Use)

No residual adverse effects on renewable or non-renewable resources are anticipated as a result of the DGR Project.

8.4.6.3 Agriculture

The Local and Regional Study Areas include small rural communities, with economies largely based on agriculture and tourism. As such, agriculture plays a vital role in the well-being of residents and the community as a whole. From the PAR [21], 4% of Local Study Area and 6% of Regional Study Area residents stated that agricultural issues were among the greatest threats to community well-being. In addition, of the 107 stakeholders, community leaders and site neighbours interviewed, nine of the respondents stated a decline in the agricultural sector as a major issue facing the community and 12 of the respondents stated that farmland and agriculture were among those things that ought to be maintained in their communities.

Likely Effects (Agriculture)

As discussed in Sections 6 and 7, no measurable direct or indirect changes in agricultural activity attributable to the DGR Project are anticipated. For the purposes of this socio-economic assessment, only traffic-related effects have the potential to be disruptive to agricultural activities since increased traffic may disrupt the movement of slow-moving farm vehicles.

Most farmers utilize public roads for the movement of farm vehicles from property to property, or use these roads to transport their produce to market. This is the case for roads in the vicinity of the Bruce nuclear site that will experience increased traffic volumes as a result of the DGR Project. Therefore, DGR Project-related traffic can be expected to disrupt the movement of slow moving farm vehicles such as tractors, combines, cultivators, and spreaders.

Recommended Mitigation or Effects Management (Agriculture)

Mitigation measures may be warranted to minimize disruption to the movement of slow moving farm vehicles and other users of local roads in the vicinity of the Bruce nuclear site during site preparation and construction. To this end, farmers in the Local Study Area along the transportation route should be informed if and when oversize or slow-moving project-related vehicles will be on local or municipal area roads during the planting or harvesting season.

Residual Adverse Effects (Agriculture)

Taking into account the recommended mitigation measures, no residual adverse effects on agriculture are anticipated as a result of the DGR Project.

8.4.6.4 Economic Development Services

Economic development services are those provided by municipalities and affiliated organizations to its residents and businesses that are aimed at generating wealth through increased employment and business activity, and attracting investment and tourists. Likely effects on economic development services are assessed using a variety of analytical methods and data sources, including the analysis of economic modelling results, results of stakeholder interviews and surveys, past experience and professional judgement.

Likely Effects (Economic Development Services)

This socio-economic assessment indicates that the DGR Project will contribute to increased local and regional economic development throughout each of its phases. The local and regional economies will be stimulated by the increased population and skills base, more employment opportunities and greater income, and the increased business activity generated by the DGR Project. Each of these positive effects is anticipated to improve the attractiveness of the Local and Regional Study Areas to potential investors, particularly those in the nuclear service industry.

Overall, the DGR Project is considered to be compatible with, and supportive of, local and regional economic development initiatives. The development of a centre of energy excellence, as envisaged in the DGR Hosting Agreement, provides an opportunity to enhance existing initiatives aimed at economic diversification. However, it is not anticipated that existing economic development plans would need to be modified or otherwise reconsidered as a result of the DGR Project.

Recommended Mitigation or Effects Management (Economic Development Services)

OPG will share information with local and regional economic development officials with respect to the timing and magnitude of meaningful changes to its on-site labour requirements associated with each phase of the DGR Project. Because no adverse effects on economic development services are anticipated as a result of the DGR Project, no additional mitigation measures are identified.

Residual Adverse Effects (Economic Development Services)

No residual adverse effects on economic development services are anticipated as a result of the DGR Project.

8.5 EFFECTS ON PHYSICAL ASSETS

The Physical Assets VEC considers the basic infrastructure that allows a community to function effectively. The availability and quality of such physical assets serve to attract and retain people

and investment in the community; they influence personal health and satisfaction with the community. Overall, these physical assets serve to maintain overall community well-being. For the purposes of this socio-economic assessment, this asset considers the following VECs:

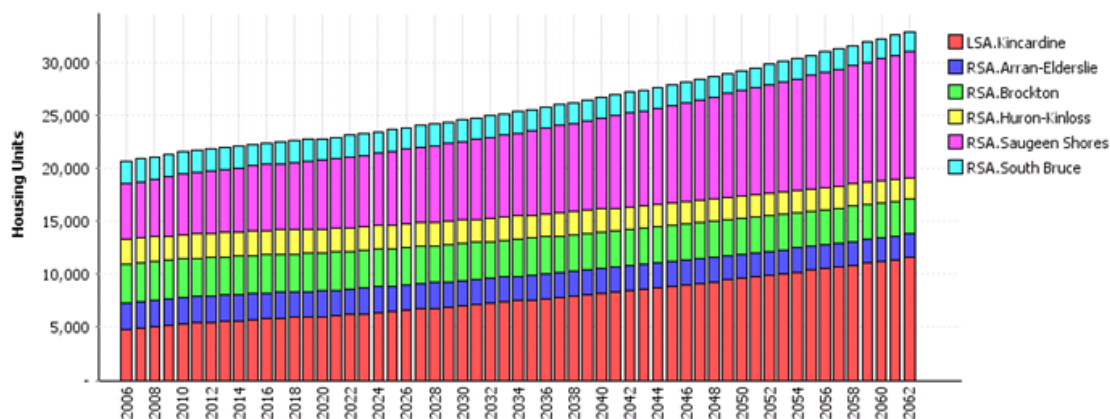
- Housing;
- Municipal Infrastructure and Service;
- Other Physical Assets, including:
 - land use
 - transportation infrastructure; and
 - community character.

8.5.1 Housing

Likely effects on housing are assessed using a variety of data sources as part of the economic modelling undertaken for this socio-economic assessment. The economic model is described in Appendix E. In addition, consideration is also given to past experience and professional judgement.

8.5.1.1 Likely Effects (Housing)

The combined Local and Regional Study Areas housing stock is forecast to rise from 21,000 units to almost 33,000 units between 2006 and 2062 (Figure 8.5.1-1). This projection does not include the DGR Project. Similar to the population and employment projections, the dominant housing stock concentrations are in Kincardine and Saugeen Shores (Figure 8.5.1-1).

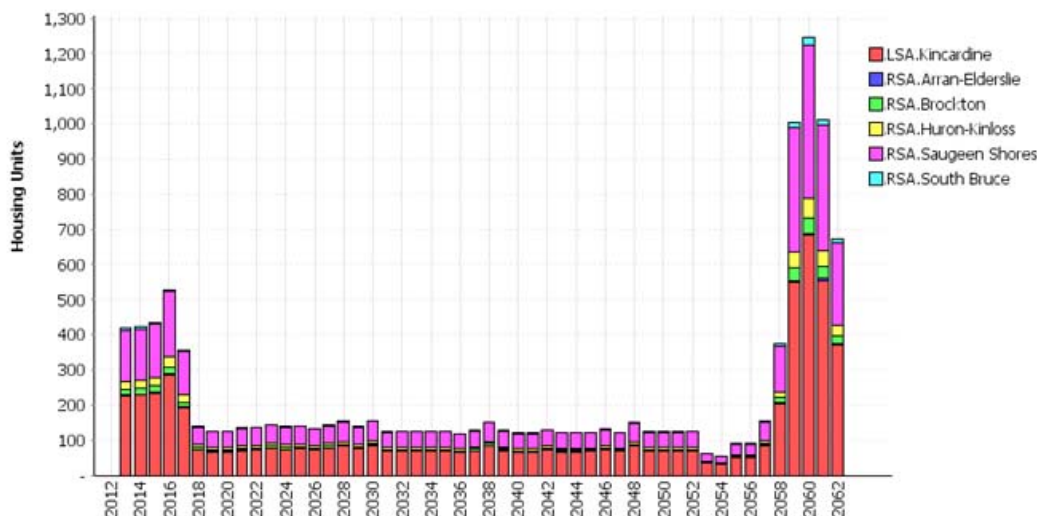


Note: RSA = Regional Study Area, LSA = Local Study Area

Source: Economic Modelling (see Appendix E)

Figure 8.5.1-1: Housing Projections by Municipality – without DGR Project (2006 to 2062)

In the context of the Local and Regional Study Area communities, the effect of the DGR Project on the availability of housing is quite small (Figure 8.5.1-2). Tables 8.5.1-1, 8.5.1-2 and 8.5.1-3 indicate the average magnitude of the DGR Project effect relative to the average size of the municipality's housing stock. The DGR Project represents 1% or less of each municipality's housing stock, with the exception of Kincardine and Saugeen Shores.



Note: RSA = Regional Study Area, LSA = Local Study Area
 Source: Economic Modelling (see Appendix E)

Figure 8.5.1-2: DGR Project Associated Housing Distribution (2013 to 2062)

During site preparation and construction the DGR Project’s association with projected housing stock is 3.4% in Kincardine and 2.1% in Saugeen Shores. During decommissioning the DGR Project’s association with projected housing stock is 2.8% in Kincardine and 1.7% in Saugeen Shores. Further, it is expected that many of the DGR Project-associated households, particularly during the operations and decommissioning phases, will be occupied by long-term residents of the communities. Therefore, it is not expected that the DGR Project will have a substantial effect on housing availability in the Local and Regional Study Areas.

Table 8.5.1-1: Local and Regional Study Area DGR Project Effects during Site Preparation and Construction – Housing

Area		Housing		
		Municipal Average	Project Average	Project Effect
Local Study Area	Kincardine	5,755	198	3.44%
Regional Study Area	Arran-Elderslie	2,451	3	0.12%
	Brockton	3,623	14	0.38%
	Huron-Kinloss	2,203	21	0.9%
	Saugeen Shores	6,181	127	2.06%
	South Bruce	2,079	5	0.24%
	Sum of Regional Study Area	16,537	170	1.03%

Source: Economic Modelling (see Appendix E)

Table 8.5.1-2: Local and Regional Study Area DGR Project Effects during Operations – Housing

Area		Housing		
		Municipal Average	Project Average	Project Effect
Local Study Area	Kincardine	8,262	65	0.78%
Regional Study Area	Arran-Elderslie	2,397	1	0.03%
	Brockton	3,545	4	0.12%
	Huron-Kinloss	2,242	6	0.26%
	Saugeen Shores	8,646	41	0.48%
	South Bruce	2,036	2	0.08%
	Sum of Regional Study Area	18,866	54	0.29%

Source: Economic Modelling (see Appendix E)

Table 8.5.1-3: Local/Regional Study Area DGR Project Effects during Decommissioning – Housing

Area		Housing		
		Municipal Average	Project Average	Project Effect
Local Study Area	Kincardine	10,994	305	2.78%
Regional Study Area	Arran-Elderslie	2,239	3	0.14%
	Brockton	3,310	20	0.60%
	Huron-Kinloss	2,092	24	1.16%
	Saugeen Shores	11,304	196	1.74%
	South Bruce	1,904	8	0.44%
	Sum of Regional Study Area	20,849	251	1.20%

Source: Economic Modelling (see Appendix E)

There will not be substantial increased demand for housing that could not be reasonably absorbed by the municipal housing stock or planned additions to it. In this context, the DGR Project is considered to be a very small contributor to the anticipated housing growth in these municipalities during the study period.

8.5.1.2 Recommended Mitigation or Effects Management (Housing)

Because no adverse effects on housing are likely as a result of the DGR Project, no mitigation is identified.

8.5.1.3 Residual Adverse Effects (Housing)

No residual adverse effects on housing are anticipated as a result of the DGR Project.

8.5.2 Municipal Infrastructure and Services

Likely effects on municipal infrastructure and services are assessed using a variety of data sources to place DGR Project demands in the context of available service capacity.

8.5.2.1 Likely Effects (Municipal Infrastructure and Services)

Potable water is required primarily for underground workers' use and also as a supply to the washrooms and refuge chambers. Potable water will be supplied from Bruce Power's on-site water treatment plant. This service will not result in any direct demands on, or modification to, the municipal water supply system.

All human effluent from underground "mine-toilets" and surface washrooms will be collected and pumped to the existing sewage treatment system at the Bruce nuclear site. The DGR Project will not result in any direct demands on, or modification to, the municipal sewage system.

Municipalities will not experience substantial direct increased demands on their solid non-hazardous waste management facilities as a result of the DGR Project. This is because it is expected that the current practice of managing all Bruce non-hazardous solid waste on-site (i.e., through reuse, recycling and the on-site landfill) will continue. Should off-site disposal of some wastes be required, it is anticipated that licensed private facilities would be utilized rather than municipal landfills.

Increased demand for potable water, sewage treatment and solid non-hazardous waste management will also result from the increased population associated with the DGR; however, given the small magnitude of the anticipated increases in associated population in the context of existing capacities and planned growth, this demand is considered negligible. It is not expected that increased demand due to DGR Project-associated population will exceed the available service capacities in the study area municipalities.

8.5.2.2 Recommended Mitigation or Effects Management (Municipal Infrastructure and Services)

Because no adverse effects on municipal infrastructure and services are anticipated as a result of the DGR Project, no mitigation is identified.

8.5.2.3 Residual Adverse Effects (Municipal Infrastructure and Services)

No residual adverse effects on municipal infrastructure and services are anticipated as a result of the DGR Project.

8.5.3 Other Physical Assets

8.5.3.1 Land Use

Likely effects on social services are assessed using a variety of data sources, Official Plans, past experience and professional judgement.

Likely Effects (Land Use)

As documented in the land use existing conditions (Section 5.6.3.1), the DGR Project is fully contained within the boundaries of the Bruce nuclear site. No planning applications regarding Official Plan designation or zoning to Bruce County or to Kincardine are required to proceed with the DGR Project. As is the case with all activity at the Bruce nuclear site, no Site Plan Applications or Building Permits are required for site development; the Municipality of Kincardine has no review or approval roles in this regard.

The DGR Project is not expected to change the Bruce nuclear site land use or its compatibility with adjacent land uses. This is because the DGR Project is a nuclear facility located on a licensed nuclear site and the visual presence of the DGR Project will not be substantially different to what viewers are accustomed to seeing under existing conditions.

The visual analysis for the DGR Project provides a conservative estimate of the general distribution of visible areas. Many of the visualizations illustrated in the analysis are from observation points that are 5 to 7 km from the Bruce nuclear site and the buildings and structures associated with the DGR Project appear as very small portions of the viewscape. From places where the DGR Project's buildings and structures are likely to be visible, they are surrounded by existing, and larger buildings with similar industrial character. The existing old steam stack will remain as the tallest building at the Bruce nuclear site.

Figures 8.5.3-1 to 8.5.3-6 depict the outline of the DGR surface facilities and waste rock pile from a range of vantage points where the DGR Project will have highest visibility. The Baie du Doré and Kincardine vantage points reflect the two settlement areas nearest to the DGR Project. The two visualizations from Inverhuron Provincial Park demonstrate a difference in view from different viewpoints within the park. A view from the Bruce Power Visitors' Centre is included as is one looking directly west from the Highway 21 and County Road 20 intersection. From this analysis, it is concluded that the DGR will be a barely visible object on the horizon. The DGR Project's buildings and structures will be visible from some off-site areas but they will often be screened from view. Moreover, the presence of existing wind turbines and hydro towers in the Local and Regional Study Area landscapes further influences the industrial nature of these viewsheds.

Finally, the DGR Project's effect on population levels both in the Local and Regional Study Areas during project life is small. Therefore, no noticeable induced residential development and/or associated changes in land use in the Local and Regional Study Areas are anticipated.

Overall, it is determined that the DGR Project will have a minor visual effect that is not likely to influence existing or planned land uses.



Figure 8.5.3-1: View of DGR Project from Baie du Doré



Figure 8.5.3-2: View of DGR Project from Saugeen Drive, Kincardine



View One ▲ Aerial view highlighting Inverhuron Provincial Park (vantage point #1) in relation to both existing and proposed facilities.



View Two ▲ Viewing existing facilities from 200 m.

View Three ▼ Computer generated view from Inverhuron Provincial Park (vantage point #1) of both existing and proposed facilities.

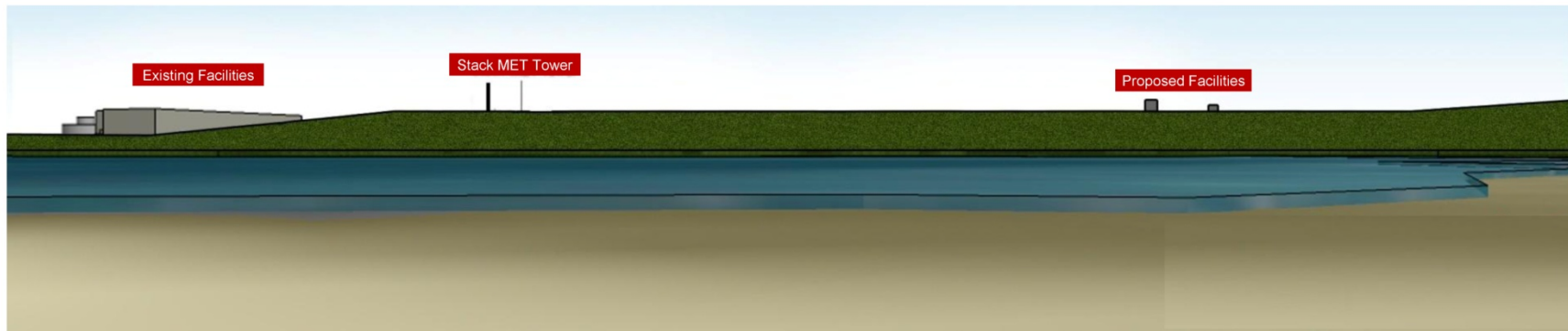
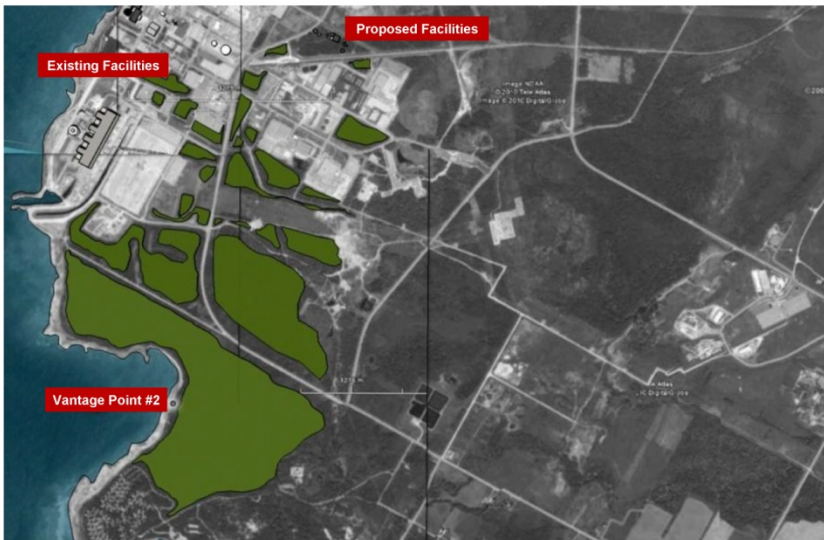


Figure 8.5.3-3: View of DGR Project from Inverhuron Provincial Park, Vantage Point #1



View One ▲ Aerial view highlighting Inverhuron Provincial Park (vantage point #2) in relation to both existing and proposed facilities.



View Two ▲ View from vantage point #2 along Inverhuron Provincial Park beach, illustrating height of treeline.

View Three ▼ Computer generated view from Inverhuron Provincial Park beach (vantage point #2) of both existing and proposed facilities behind the treeline

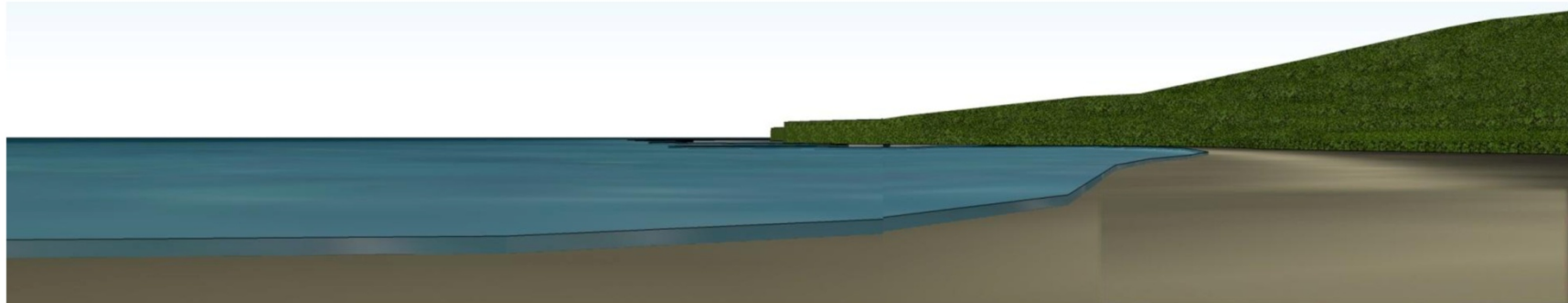


Figure 8.5.3-4: View of DGR Project from Inverhuron Provincial Park, Vantage Point #2



Figure 8.5.3-5: View of DGR Project from Bruce Power Visitors' Centre



Figure 8.5.3-6: View of DGR Project from Highway 21 and County Road 20 Intersection

Recommended Mitigation or Effects Management (Land Use)

Because no adverse effects on land use are anticipated as a result of the DGR Project, no additional mitigation is identified.

Residual Adverse Effects (Land Use)

No residual adverse effects on land use are anticipated as a result of the DGR Project.

8.5.3.2 Transportation Infrastructure

For the purposes of this socio-economic assessment, the relevant aspects related to traffic and transportation includes the likely effects of the DGR Project on the functioning and operation of transportation infrastructure in the Local Study Area. Intersections functional capacity analysis of the current road network given existing Bruce nuclear site traffic and with anticipated DGR Project-related traffic was undertaken.

Likely Effects (Transportation Infrastructure)

The information contained in this section is drawn from the Traffic Impact Study completed as part of this socio-economic assessment [53]. Specific employment assumptions are noted and reflect the information available when this analysis was undertaken.

As discussed previously, a number of intersections are currently operating at capacity under existing conditions and improvements are currently required to alleviate the existing congestion. The DGR Project has been analyzed for three timeframes: the site preparation and construction phase (2017), the initial operations phase (2019) and long range operations phase (2029). In the context of ongoing operations at the Bruce nuclear site, the DGR Project workforce requirements will contribute very little to the overall Bruce nuclear site traffic. Even at its peak, DGR Project-related site traffic remains marginal in relation to the existing traffic. Nevertheless, DGR Project related site traffic has the potential to decrease levels of service at the following intersections during the AM and/or PM peak hours:

- Tie Road/Bruce Site Entrance;
- County Road 23/Bruce Concession 2;
- Sideroad J/1 and Bruce Concession 2; and
- Highway 21/Bruce Concession 4.

In most cases, traffic operations remain within the acceptable level of service range of A to D. However, when compared to existing conditions, the DGR Project has the potential to result in a changed level of service at County Road 23/Bruce Concession 2 from level of service D to E in the AM peak hour, during the site preparation and construction phase horizon year of 2017. A level of service rating of E reflects a congested operating condition, but below the intersection capacity limit. During the PM peak hour of the operations phase horizon years of 2019, the DGR Project has the potential to result in the level of service at Highway 21/Bruce Concession 4 changing from level of service E to F. A level of service F reflects operating conditions at or beyond the intersection capacity. Given the very low collision rates at these intersections over

the past several years, these small changes in levels of service are not likely to pose safety hazards.

Overall, the DGR Project on its own does not result in a need for any improvements to the road network over the forecast period as these improvements were already warranted under existing conditions, regardless of the DGR Project. However, should the improvements required to alleviate existing congestion be undertaken, the addition of the DGR Project site traffic would not result in any unacceptable levels of service nor a need for any additional improvements to the road network.

Recommended Mitigation or Effects Management (Transportation Infrastructure)

Additional mitigation is warranted to minimize congestion at intersections nearest the Bruce nuclear site. In collaboration with relevant stakeholders, OPG will develop and implement a traffic management plan for the site preparation and construction phase that will serve to minimize DGR Project-related peak hour volumes. Specific measures may include: staggering of shifts; encouraging ride sharing and the use of shuttle buses; and off-peak timing of shipments of materials and wastes on and off the DGR Project site.

Residual Adverse Effects (Transportation Infrastructure)

Taking into account the implementation of mitigation, no residual adverse effects on traffic and transportation are anticipated as a result of the DGR Project

8.5.3.3 Community Character

Likely effects on community character are assessed using a variety of data sources, including the analysis of effects on natural assets and land use, results of PAR, stakeholder interviews and field surveys, past experience and professional judgement.

Likely Effects (Community Character)

In general, the DGR Project could affect the character of the community if it fundamentally changes key assets of the community, particularly those assets that are valued by its residents for their positive influence on community character or attributes a negative stigma, potentially associated with nuclear waste. Based on the results of PAR undertaken as part of this socio-economic assessment, residents in the Local Study Area value Lake Huron, the waterfront and the lighthouses, the nature and scenery, the agricultural presence, the close-knit feel and friendly people in the community.

As described in Section 8.8.1 of this TSD, nuisance effects are not likely to have an effect on the environment such that community character would be affected. For example, dust levels are not expected to be a nuisance outside of the Bruce nuclear site. Noise levels are also expected to be hardly perceptible at two of the three noise receptors identified for the socio-economic assessment, and only noticeable at one of these three noise receptors (i.e., at Baie du Doré). Overall, these results indicate that increased noise levels are not expected to have a nuisance effect at most off-site locations and so will not have an indirect effect on community character.

The DGR Project is not expected to affect Lake Huron, the beachfront, or the lighthouses, nor is it expected to have an overall effect on the natural landscape and its visual aesthetic. Agriculture is not expected to be affected by the DGR Project, which is also an attribute that contributes to community character. Community cohesion is also not likely to be negatively affected by the DGR Project because of the slight increases in population and stable demographic character of the communities.

Community character may also be adversely affected if the assets that are seen to be negative influences on community character become more pronounced as a result of the DGR Project. In the Local Study Area, the most frequently mentioned negative influences on community character include: the presence of windmills and political issues. These factors are not expected to change as a direct result of the DGR Project.

It was also hypothesized that the DGR Project might adversely affect the character of the community if a stigma is generated because of the DGR Project. Stigma refers to the negative images attached to a neighbourhood, community, other geographic area and its residents, or to local products and services.

In the stakeholder interviews and the tourist and day user surveys, respondents were asked to describe how, if at all, the DGR Project might affect their image of Kincardine and the surrounding municipalities. Table 8.5.3-1 summarizes the stakeholders' responses of the effect of the DGR Project on the image of Kincardine and the surrounding municipalities. Table 8.5.3-2 summarizes the tourist and day users' responses.

Table 8.5.3-1: Effect of the DGR Project on the Image of Kincardine and its Neighbouring Municipalities (Stakeholder Interviews)

Area	Image might change in a negative way - but because of lack of information	Image might change – not sure	Image might change in a negative way	Image might change in a positive way	Image will not change	Total Number of Responses
Local Study Area	9	2	9	7	14	41
Regional Study Area	2	1	8	3	17	31

Note: Not all respondents chose to answer this question, so total of responses is less than the number of total respondents.

Table 8.5.3-2: Effect of the DGR Project on the Image of Kincardine and its Neighbouring Municipalities (Tourist and Day Users)

Response	Number of Responses
Image will change	31
Image will not change	79
Both	2
Don't Know	8
Total	120

Note:

Not all respondents chose to answer this question, so total of responses is less than the number of total respondents.

Table 8.5.3-1 indicates that most of the stakeholders interviewed feel that the DGR Project will not change the image of Kincardine and its neighbouring municipalities, or that it would change the image in a positive way (41 out of 72 responses). Approximately 28 of 72 respondents felt that the DGR Project would adversely change the image of the Local and Regional Study Area communities. Some examples of these responses include:

“Locals will see no change. People who live close to the plant are not afraid of nuclear or they would have left already.” – Stakeholder

“The community embraces the increase in employment and the safe management of nuclear waste. This would definitely have a positive effect.” – Stakeholder

“Some people may be scared or threatened by the thought of burying the waste. This might be a downside to the attractiveness of the area” – Stakeholder

Table 8.5.3-2 indicates that most of the tourists and day users (79 out of 120) felt that their image of Kincardine and the surrounding municipalities would not change as a result of the DGR Project. Of the 31 (of 120 respondents) that said the DGR would affect their image, comments were most frequently related to a lack of information, transportation and truck traffic and the safety of the operations.

With regard to the Bruce nuclear site and its influence on community character, less than 1% of Local Study Area and 2% of Regional Study Area respondents from the PAR considered the Bruce nuclear site as a negative influence, while a slightly larger proportion (5% of Local Study Area and 13% of Regional Study Area) of respondents considered the Bruce nuclear site as a positive influence on community character.

Therefore, from the perspectives of many knowledgeable community members and tourists from outside the Local and Regional Study Areas, the DGR Project is not expected to adversely affect community character.

The overall rural and small town feel of the communities is not likely to be affected by the DGR Project. This is because of the relatively small workforce and associated increase in population expected as a result of the DGR Project. Existing housing stock, municipal infrastructure and

health and safety facilities and services are all expected to be able to absorb the small increase in population with no adverse effects. The effect of the DGR Project on local traffic and transportation is minimal. The DGR Project is placed in the context of existing land uses in the Local Study Area and is considered to be compatible with the existing community character.

The DGR Project does, however, introduce a new type of nuclear facility to the Local and Regional Study Areas, which is unique in North America at the time of writing. Therefore, there remains some potential for this new type of facility to be a source of stigma, as it is relatively unknown and unfamiliar to the residents of the Local and Regional Study Areas. Nevertheless, there are no strong indications that the DGR Project would result in such a stigma for the following reasons:

- The existing Bruce nuclear site has operated for several decades and low and intermediate level waste has been stored safely at the WWMF, without any strong indications of an existing stigma.
- The DGR Project is not anticipated to pose a threat to a substantial number of people's feelings of health or sense of safety that might trigger stigmatization. Public attitude research results indicate that 79% of Local Study Area residents do not anticipate any change to their feelings of health or sense of safety as a result of the DGR Project. Only 3% of Local Study Area residents believe that their feelings of health or sense of safety would decrease "a great deal" [21].
- The DGR Project can be considered similar to the existing WWMF in terms of function, in that it will be the facility used to store low and intermediate level nuclear waste. It is also similar to the ongoing operations at the Bruce nuclear site in terms of its association with nuclear energy. No major changes in the safety or security of operations at the new facility are anticipated. To this end, PAR results indicated that:
 - Less than 1% of Local Study Area and 2% of Regional Study Area respondents identified the existing Bruce nuclear site as a negative influence on community image or character [21].
 - Only 8% of Local Study Area and 7% of Regional Study Area respondents think about the existing WWMF "very often" and in total, 17% of the Local Study Area and 15% of Regional Study Area respondents think about living near the WWMF "often" or "very often" [21]. These results are similar to those from the 2003 PAR.
 - Fully 63% of Local Study Area residents are "very" confident in the radioactive technologies used at the WWMF [21], which is higher than the 53% of Local Study Area respondents that reported this in the 2003 PAR [10]. This indicates that confidence in the technologies used at the WWMF among Local Study Area residents has increased.
- Only three stakeholders identified an adverse effect from the current Bruce nuclear site and activities on community image. The balance of the 76 Local and Regional Study Areas' stakeholders interviewed as part of this socio-economic assessment indicated their organization's members or businesses' clients do not link their products or services to the Bruce nuclear site in an adverse way, nor do existing operations have an adverse effect on their community's character or image. Under the assumption that the new facility would be similar to the WWMF in terms of its function and safety, none of these stakeholders indicated that there would likely be a change in community character or image as a result of the DGR Project.
- The population associated with the DGR Project is expected to be minimal and associated demands on housing, infrastructure and other services are also expected to be minimal and easily absorbed by the existing capacity.

Overall, the indirect effects of the project are not likely to change the physical aspects of the community that define its community character. However, widespread changes in the attitudes among tourists are not expected, and overall, the community character is not expected to change as a result of the DGR Project.

Recommended Mitigation or Effects Management (Community Character)

A small number of tourists and day users and stakeholders stated that their image of Kincardine might change as a result of the DGR Project. Because no adverse effects on community character are anticipated as a result of the DGR Project, no additional mitigation is identified.

Residual Adverse Effects (Community Character)

No residual adverse effects to community character are anticipated. The DGR Project represents a strengthening of an existing nuclear presence at the Bruce nuclear site. This strengthening is not considered to be an adverse nor a beneficial effect.

8.6 EFFECTS ON SOCIAL ASSETS

For the purposes of this socio-economic assessment, this asset considers the following VECs:

- Inverhuron Provincial Park; and
- Other Social Assets, including:
 - cultural and heritage resources;
 - community recreational facilities and programs;
 - use and enjoyment of private property; and
 - community cohesion.

8.6.1 Inverhuron Provincial Park

In this section, Inverhuron Provincial Park is examined as its own VEC, since it is identified in the EIS Guidelines and because it is in such close proximity to the Bruce nuclear site. See Section 8.6.2.2 for a discussion of MacGregor Point Provincial Park, located in the Regional Study Area.

Likely effects on Inverhuron Provincial Park are assessed using a variety of data sources. Consideration is given to the analysis of effects on natural and physical assets, results of PAR, stakeholder interviews, field surveys and professional judgement.

8.6.1.1 Likely Effects (Inverhuron Provincial Park)

For the purposes of this socio-economic assessment, nuisance effects have the potential to be disruptive to activities and operations conducted at Inverhuron Provincial Park. An interview with the park superintendent revealed some concerns regarding the DGR Project and its effects on Inverhuron Provincial Park. These included a concern over potential nuisance effects because of construction and the potential for an accident at the DGR. However, it is not expected that any areas in the park will experience nuisance disruption for the following reasons:

- no adverse effects from dust levels across the Local Study Area during all phases of the DGR Project are predicted (see Atmospheric Environment TSD); and
- small, barely perceptible changes in noise levels (i.e., up to 2 dBA) are predicted at Inverhuron Provincial Park (see Atmospheric Environment TSD).

Although the DGR Project will add some volumes of traffic to the road network it is expected that these effects will be very small and will not affect park access.

Other adverse effects on Inverhuron Provincial Park may occur indirectly, because of changes in demand as a result of increased project-associated population, as a result of adverse effect on community character or if a stigma is attributed to the Local Study Area and people subsequently decide to avoid Inverhuron Provincial Park.

Since the increased population associated with the DGR Project is expected to be relatively small and will not impose a noticeable increase in demand on housing stock, municipal infrastructure or health and safety facilities and services, it is also expected that the small population increase will not change the overall demand for the recreational opportunities provided by Inverhuron Provincial Park.

Stakeholder concerns regarding the potential for an accident at the DGR are normal concerns associated with any major nuclear project. However, this potential will not likely result in the attribution of a stigma, as demonstrated in the detailed discussion on community character (see Section 8.5.3.3). There is no strong evidence for the presence of an existing stigma associated with the existing WWMF, and there are no strong indications that the DGR Project would result in the attribution of a stigma in the future. This conclusion is also supported by insights gained through an interview with the park superintendant. While the park superintendant indicated that visitors at Inverhuron Provincial Park do link the park operations with the presence of the Bruce nuclear site (some lights from the Bruce nuclear site are visible at night, one building is visible and some areas of the park have restricted access because of the nuclear plant), most of the visitors at the park are not aware of the presence of the WWMF, and the park superintendant very rarely hears concerns about the WWMF. The superintendant remarked that the Bruce nuclear site has not affected the positive visitation trend at the park. Therefore, it is not expected that the DGR Project will have any effect on Inverhuron Provincial Park as a result of stigma.

The results of the PAR [21] indicate that the vast majority of people (i.e., more than 86% in the Local Study Area and 75% in the Regional Study Area) do not anticipate any changes to their use of community and recreational facilities or other areas in the vicinity of the Bruce nuclear site. However, a smaller number of respondents anticipated their use and enjoyment might decrease "a great deal" (3 % in the Local Study Area and 5% in the Regional Study Area) or increase (1% in the Local Study Area and 2% in the Regional Study Area). These results are listed in Table 8.6.1-1.

Table 8.6.1-1: Changes to Residents' Use and Enjoyment of Parks, Conservation Areas and Trails along the Waterfront near the Bruce Nuclear Site

Use and enjoyment of parks, conservation areas and trails along the waterfront near the Bruce nuclear site		No Change	Not Sure	Change Behaviour:				Total
				Go down		Go up		
				Great Deal	Some	Some	Great Deal	
Local Study Area	% of Total	86	4	3	5	1	1	100
	Number of Respondents	345	17	13	19	4	3	401
Regional Study Area	% of Total	75	12	5	4	2	1	100
	Number of Respondents	307	49	20	17	9	6	408

Note: Percentages may not appear to sum to 100% because of rounding

Source: [21]

More specifically, Inverhuron Provincial Park users were asked about the potential for the DGR to affect their use and enjoyment of the park, conservation areas and trails along the waterfront near the Bruce nuclear site. As a group, the users of the park are described as tourists and day users. These tourists and day users were asked if and how they might change their recreational behaviour at the park because of the presence of the DGR. These results are summarized in Table 8.6.1-2.

Table 8.6.1-2: Inverhuron Provincial Park Tourist and Day Users response if they might do anything differently as a recreational user in the area because of DGR Project

Response	Inverhuron Provincial Park	
Yes	13	25%
No	38	75%
Total	51	100%

Of the 13 respondents that said they would do something differently at Inverhuron Provincial Park, six indicated that they would consider no longer visiting the park, while seven indicated that they would keep a close watch on safety and would only return to the park if there were no negative effects on health or the environment.

Notwithstanding results, Inverhuron Provincial Park will remain an important local feature that will continue to be accessible and provide benefits to community residents, tourists and other visitors. In the context of the general population growth anticipated across the Regional and Local Study Area, Inverhuron Provincial Park will likely continue to be attractive and utilized extensively by an increasing number of users. The DGR Project will not result in direct environmental effects to the park, affect accessibility nor require any modifications to accommodate the DGR Project. Any users who might choose to frequent Inverhuron Provincial Park less or stop coming outright are likely to be replaced by others who are more tolerant of

local conditions or have fewer issues regarding the DGR Project. Similarly, no measurable changes are anticipated in the demand for Inverhuron Provincial Park as the population change associated with DGR will be relatively minor. Overall, widespread effects on people's use and enjoyment of Inverhuron Provincial Park attributable to the DGR Project are not anticipated and therefore, no adverse effects on visitation to the park are anticipated.

8.6.1.2 Recommended Mitigation or Effects Management (Inverhuron Provincial Park)

While no adverse effects on Inverhuron Provincial Park are anticipated as a result of the DGR Project, OPG will continue to keep its neighbours and the broader public informed concerning DGR Project activities at the Bruce nuclear site.

8.6.1.3 Residual Adverse Effects (Inverhuron Provincial Park)

No residual adverse effects to Inverhuron Provincial Park as a result of the DGR Project are anticipated.

8.6.2 Other Social Assets

8.6.2.1 Cultural and Heritage Resources

Likely effects on cultural and heritage resources are assessed using the Stage 1 and Stage 2 archaeological assessments completed for the DGR Project at the Bruce nuclear site [54]. Further analysis of cultural and heritage resource effects relevant to Aboriginal interests can be found in the Aboriginal TSD.

Likely Effects (Cultural and Heritage Resources)

The site preparation, construction and decommissioning activities to be undertaken at surface and for underground facilities could uncover and disturb Euro-Canadian cultural and heritage resources, particularly if they are deeply buried in culturally-sensitive areas. The Stage 1 and Stage 2 archaeological assessments identified three known Euro-Canadian archaeological sites within three culturally-sensitive areas at the Bruce nuclear site. A fourth culturally-sensitive area was associated with Aboriginal heritage resources and is considered in the Aboriginal Interests TSD.

The Stage 2 archaeological assessment concluded that only the extreme southeastern corner of the Project Area overlaps with culturally-sensitive area B (CSA-B), which contains the Bonnett (BbHj-32) cultural heritage feature (i.e., a band of low-relief cobble piles that represent a section of a collapsed snake rail fence along the Lot 21/Lot 22 line). The remaining culturally sensitive areas (A, C and D) are located well away from the Project Area and will not be subject to any project works or activities. The Stage 2 archaeological assessment also concluded that the remainder of the Bruce nuclear site, including the DGR Project site, is considered to be cleared of further archaeological concern.

Because the site preparation, construction and decommissioning activities are to be limited to the DGR Project Site and are therefore well removed from the Bonnett cultural heritage feature and the overlapping portion of CSA-B, it is unlikely that the Bonnett cultural heritage feature will

be directly affected. Nor is it likely that any unknown Euro-Canadian cultural heritage features, including deeply buried ones would be disturbed.

Recommended Mitigation or Effects Management (Cultural and Heritage Resources)

In the unlikely event that site preparation, construction or decommissioning activities encounter artifacts that could be associated with a cultural or heritage resource, the activities will be curtailed until further assessment (i.e., a Stage 3 and/or 4 archaeological assessment) can be undertaken to protect the resource from further disturbance and conserve its cultural heritage value.

Residual Adverse Effects (Cultural and Heritage Resources)

Taking into account the recommended mitigation measures, no residual adverse effects on cultural and heritage resources are anticipated.

8.6.2.2 Community Recreational Facilities and Programs

Likely effects on community and recreational facilities and programs are assessed using a variety of data sources. Consideration is primarily given to the analysis of effects on natural and physical assets, results of PAR, stakeholder interviews, field surveys and professional judgement.

Likely Effects (Community Recreational Facilities and Programs)

For the purposes of this socio-economic assessment, nuisance effects have the potential to be disruptive to activities and operations conducted at community and recreational facilities located near the Bruce nuclear site, particularly at those facilities with outdoor components such as MacGregor Point Provincial Park and Brucedale Conservation Area (for a detailed discussion of likely effects to Inverhuron Provincial Park see Section 8.6.1 of this TSD). However, it is not expected that any community or recreational facilities will experience nuisance disruption for the following reasons:

- No adverse effects from dust levels across the Local Study Area during any phases of the DGR Project are predicted (see Atmospheric Environment TSD).
- Small, barely perceptible changes in noise levels (i.e., up to 2 dBA) are predicted at Inverhuron Provincial Park (see Atmospheric Environment TSD). No other outdoor recreational facilities are expected to experience a change to noise levels.

Although the DGR Project will add some traffic to the road network it is expected that effects will be very small and will not cause a change in existing levels of service. In addition, there are no community or recreational facilities present along the main transportation routes to and from the Bruce nuclear site.

Other adverse effects on community and recreational features within the Local and Regional Study Areas may occur:

- because of changes in demand as a result of increased DGR Project associated population; and
- as a result of adverse effect on community character, particularly if a stigma is attributed to the Local Study Area and people take steps to avoid community and recreational facilities in the vicinity of the Bruce nuclear site.

Since the increased population associated with the DGR Project is expected to be relatively small and will not impose any increased demands on housing stock, municipal infrastructure or health and safety facilities and services, it is also expected that the small population increase will not change the overall demand for recreational facilities in the Local or Regional Study Area.

A detailed discussion on the likely effects on community character and the potential for the attribution of stigma is presented in Section 8.5.3.3. There is no strong evidence for the presence of an existing stigma associated with the existing WWMF, and there are no strong indications that the DGR Project would result in the attribution of a stigma in the future. This conclusion is also supported by the results of interviews undertaken with community and recreational facility operators in the Local Study Area. None of the representatives from community facility operators interviewed indicated that their clients or members link their operations with the presence of the Bruce nuclear site in a negative way and so they do not expect that the DGR Project will have any effect on community recreational facilities and programs.

The results of the PAR [21] indicate that a large majority of people (i.e., more than 86% in the Local Study Area and 75% in the Regional Study Area) do not anticipate any changes to their use of community and recreational facilities or other areas in the vicinity of the Bruce nuclear site. However, a smaller number of respondents anticipated their use and enjoyment might decrease “a great deal” (3% in the Local Study Area and 5% in the Regional Study Area) or increase (1% in the Local Study Area and 2% in the Regional Study Area). These results are listed in Table 8.6.1-1.

In addition, users at MacGregor Point Provincial Park and the Brucedale Conservation Area were asked about the potential for the DGR to affect their visitation to these areas. As a group, the users of these areas are described as tourists and day users. These tourists and day users were asked if they might change their recreational behaviour at these parks and conservation areas because of the presence of the DGR. These results are summarized in Table 8.6.2-1.

Table 8.6.2-1: Tourist and Day Users Response if They Might Do Differently as a Recreational User in the Area

Response	MacGregor Point Provincial Park		Brucedale Conservation Area		Total Number of Responses	
	Count	Percentage	Count	Percentage	Count	Percentage
Yes	9	18%	3	16%	12	18%
No	42	82%	15	83%	57	83%
Total	51	100%	18	100%	69	100%

Notes:

Total number of responses is less than the number of people surveyed as some people did not reply to this question
The numbers may not appear to sum to 100% because of rounding

Of those 12 respondents that said they would do something differently at the Provincial parks or conservation area, responses, by recreational area included:

- **MacGregor Point Provincial Park:** Of the nine respondents who indicated that they would change their behaviour, the majority indicated that they would no longer visit MacGregor Point Provincial Park. More specifically:
 - six stated that they may not come back;
 - one stated that they would more closely monitor safety at the park;
 - one stated that they would still come to the park but that it may affect other aspects of visitation; and
 - one made no comment.

- **Bruce Dale Conservation Area:** Of the three respondents who indicated that they would change their behaviour, comments were made that the construction would make them stop and think before visiting the conservation area but none indicated that they would stop visiting. More specifically:
 - two stated that they would still come to the park but that it may affect other aspects of visitation; and
 - one made no comment.

Overall, 57 out of 69 respondents stated that they would not do anything differently at those recreational areas because of the presence of the DGR. Of those that replied that the DGR Project would affect their behaviour or visitation to these areas, some of the respondents simply stated that they would try to stay more informed of site activities while others stated that the DGR Project would deter them from visiting the area in the future.

Through the PAR, residents in the Local and Regional Study Areas were also asked if other outdoor recreational behaviour (outside of the local Provincial parks and conservation areas) might change as a result of the DGR Project. Table 8.6.2-2 summarizes these results. These different types of recreational behaviours included bird watching or other nature viewing (passive recreation) along the Lake Huron shoreline, use and enjoyment of the beaches along the waterfront near the Bruce nuclear site and fishing or recreational boating on Lake Huron near the Bruce nuclear site.

Overall, most residents in the Local and Regional Study Areas feel that their recreational behaviours would not change as a result of the DGR Project. Of those that said their behaviours would change as a result of the DGR, the greatest change was anticipated by Regional Study Area residents (6%) who anticipated their use and enjoyment of the beaches along the waterfront near the Bruce nuclear site would decrease 'somewhat'.

Table 8.6.2-2: Changes in Recreational Behaviour as a Result of the DGR Project

Activity	Area	Respondents	No Change	Not Sure	Change Behaviour:				Total
					Go down		Go up		
					Great Deal	Some	Some	Great Deal	
Bird watching or nature viewing activities along the Lake Huron shoreline	Local Study Area	% of Total	87	8	2	2	0	0	100
		Number of Respondents	348	34	9	8	1	1	401
	Regional Study Area	% of Total	80	12	4	3	1	1	100
		Number of Respondents	325	49	16	11	3	4	408
Use and enjoyment of the beaches along the waterfront near the Bruce nuclear site	Local Study Area	% of Total	85	7	3	4	1	0	100
		Number of Respondents	341	27	12	18	3	0	401
	Regional Study Area	% of Total	76	12	4	6	2	1	100
		Number of Respondents	308	49	17	23	7	4	408
Fishing or boating activities on Lake Huron near the site	Local Study Area	% of Total	81	17	1	1	0	0	100
		Number of Respondents	325	67	3	5	1	0	401
	Regional Study Area	% of Total	75	17	4	4	0	1	100
		Number of Respondents	304	70	15	15	2	2	408

Note: Percentages may appear to sum to greater than 100% because of rounding

Source: [21]

Notwithstanding these PAR results, the community and recreational features in the Local Study Area will remain important local features that will continue to be accessible to community residents, tourists and other visitors. In the context of the general population growth anticipated across the Regional and Local Study Areas, these features will likely continue to be attractive and utilized extensively by an increasing number of users. The DGR Project will not result in direct environmental effects to these features, affect their accessibility nor require any modifications to accommodate the DGR Project. Any users who might choose to frequent these areas less or stop coming outright because of the DGR Project are likely to be replaced by others who are more tolerant of local conditions or have fewer issues regarding the DGR Project. Overall, widespread effects on people's use and enjoyment of community and recreational features across the Local and Regional Study Areas attributable to the DGR Project are not anticipated.

No measurable changes are anticipated in the demand for community recreational facilities as the population change associated with DGR will be relatively minor.

Recommended Mitigation or Effects Management (Community Recreational Facilities and Programs)

While no adverse effects are identified, OPG will continue to keep its neighbours and the broader public informed concerning its activities at the Bruce nuclear site as appropriate to each phase of the DGR Project, and will continue to make contributions to the community through its Corporate Citizenship Program.

Residual Adverse Effects (Community Recreational Facilities and Programs)

No residual adverse effects to community recreational facilities and programs are expected as a result of the DGR Project.

8.6.2.3 Use and Enjoyment of Private Property

Likely effects on residents' use and enjoyment of property are assessed using a variety of data sources. Consideration is primarily given to the analysis of effects on natural and physical assets, effects on community character and the results of PAR, stakeholder interviews, field surveys and professional judgement.

Likely Effects (Use and Enjoyment of Private Property)

Effect of major industrial projects on people's use and enjoyment of private property (i.e., people's homes) is a typical public concern. For the purposes of this socio-economic assessment, the focus is placed on the Local Study Area, reflecting the more direct relationship between the presence of the Bruce nuclear site and the Local Study Area and where nuisance and traffic effects are most likely to be the greatest.

As demonstrated in this assessment, no adverse nuisance effects are expected because of dust. However, some nuisance effects can be expected for some residences in the Local Study Area, particularly those residents in the Baie du Doré area (R2), who can expect a low level of nuisance (+5 dBA) because of noise associated with the DGR Project. All other noise receptors

were found to have minimal to no noise effect. Therefore, permanent and seasonal residents near Baie du Doré may experience some noise effects, which may indirectly affect their use and enjoyment of private property.

Secondly, the DGR Project might adversely affect people's use and enjoyment of private property if it fundamentally changes those features of the community or neighbourhood that are valued for their positive influence on use and enjoyment of property or prevents or constrains people from using their private property in the manner they choose.

Based on the results of PAR undertaken as part of this socio-economic assessment [21] residents in the Local Study Area most value Lake Huron, the waterfront and the lighthouse, the nature and scenery, the agriculture and farmland as well as the cohesiveness of their community. These aspects of the community are not likely to be affected by the DGR Project directly or indirectly. Similarly, based on the results of the site neighbour survey and from observation and professional judgement, residents in the immediate vicinity of the Bruce nuclear site use their property for a variety of purposes, the most popular of which are gardening, swimming, relaxing outside, and general outdoor recreational activities. The ability of residents to undertake these activities is not likely to be affected by the DGR Project directly or indirectly.

With regard to the influence of increased growth and development on people's use and enjoyment of private property, the increased population associated with the DGR Project is expected to be relatively small and effects on housing stock are not anticipated. Therefore, people are not likely to consider the DGR Project as an influence on their use and enjoyment of property.

Finally, the DGR Project might adversely affect people's use and enjoyment of private property if it adversely affects community character or if a stigma is generated because of the DGR Project. Adverse changes in community character or the attribution of a stigma would likely make the area less desirable as a place to live, potentially adversely affecting people's enjoyment of their property. A detailed discussion on community character and the potential for the attribution of stigma is presented in Section 8.5.3.3. There is no strong evidence for the presence of an existing stigma associated with the existing WWMF and there are no strong indications that the DGR Project would result in the attribution of a stigma in the future. This conclusion is also supported by the results of interviews undertaken with site neighbours and stakeholder representatives from real estate agencies. None of the local residents negatively associated their residence and their use and enjoyment of that residence with the Bruce nuclear site, nor did the stakeholder representative state that their firm's clients negatively associate housing in the Local Study Area with the Bruce nuclear site.

The visual analysis concluded that the DGR Project will be a barely visible object on the horizon and will have a minor visual impact. The existing old steam plant stack will remain as the tallest structure on-site. The DGR Project's surface buildings and structures will be visible from some off-site areas but will often be screened from view. From places where the surface buildings and structures will be visible, they are surrounded by other existing buildings and structures with similar industrial character. For example, the presence of the existing wind turbines and hydro towers in the landscape further influences the industrial nature of these viewsheds. Therefore, the visual impact of the DGR Project's surface buildings and structures will not be drastically different to what viewers are already accustomed to seeing, and the DGR Project's visual effect is not expected to indirectly affect people's use and enjoyment of private property.

These conclusions are supported by PAR results. Residents in the Local and Regional Study Areas were asked, through the PAR, if they anticipated the DGR Project might affect their use and enjoyment of their private property. These results, which are summarized in Table 8.6.2-3, indicate that the vast majority of respondents (96% in the Local Study Area and 91% in the Regional Study Area) do not anticipate that the DGR Project will affect the use and enjoyment of their private property.

Table 8.6.2-3: Changes to Residents' Use and Enjoyment of Private Property as a Result of the DGR Project

Use and Enjoyment of Your Private Property		No Change	Not Sure	Change Behaviour:				Total
				Go down		Go up		
				Great Deal	Some	Some	Great Deal	
Local Study Area	% of Total	96	1	1	2	0	0	100
	Number of Respondents	386	3	3	8	1	0	401
Regional Study Area	% of Total	91	3	3	2	1	0	100
	Number of Respondents	371	12	12	7	6	0	408

Note: Percentages may sum to greater than 100% because of rounding

Source: [21]

Finally, all of the four residential site neighbours surveyed stated that they do not anticipate doing anything differently at their property as a result of the DGR Project.

Overall, widespread effects on people's use and enjoyment of private property attributable to the DGR Project are not anticipated. However, increases in off-site noise levels during site preparation and construction phase and during the decommissioning phase will be approximately 5 dBA, which is a noticeable level of change. This change may reduce the enjoyment of private property in the Baie du Doré area, in close proximity to the Bruce nuclear site.

Recommended Mitigation or Effects Management (Use and Enjoyment of Private Property)

Noise mitigation measures are described in the Atmospheric Environment TSD. OPG will continue to keep its neighbours and the broader public informed concerning its activities at the Bruce nuclear site as appropriate to each phase of the DGR Project, and will continue to make contributions to the community through its Corporate Citizenship Program.

Residual Adverse Effects (Use and Enjoyment of Private Property)

Increases in off-site noise levels during site preparation and construction phase, and during the decommissioning phase will be approximately 5 dBA, which is a noticeable level of change. This change may reduce the enjoyment of private property in the Baie du Doré area, in close

proximity to the Bruce nuclear site. This is the residual adverse effect of the DGR Project on the Other Social Assets VEC.

8.6.2.4 Community Cohesion

Likely effects on community cohesion are assessed using a variety of data sources. Consideration is primarily given to the results of PAR, stakeholder interviews, and professional judgement.

Likely Effects (Community Cohesion)

For the purposes of this socio-economic assessment, effects on community cohesion are focused on the Local Study Area, reflecting the more direct relationship between the presence of the Bruce nuclear site and the Local Study Area.

The DGR Project would be considered a negative influence on the cohesiveness of a community if it fundamentally changes those aspects of the community that are considered to be positive influence on community cohesion. Based on the results of PAR undertaken as part of this socio-economic assessment [21], residents in the Local Study Area consider the fact that the area has a small town community with friendly people as positive influences on community cohesion. Cohesion in the Local Study Area is also influenced by the social and community events in their communities and the fact that the community works together.

Previous sections of this socio-economic assessment and the results from the assessments completed regarding other assets considered a variety of positive and adverse effects on other community assets. Overall, few adverse effects of the DGR Project were identified that would directly influence or fundamentally change those assets that are considered for their positive influence on community cohesion. Specifically:

- the DGR Project is not expected to increase population levels or change the demographic characteristics in the Local Study Area to an extent that the project might affect people knowing each other, their friendliness, helpfulness or other personal traits that contribute to community cohesion;
- the majority of residents in the Local and Regional Study Areas do not anticipate that the DGR Project will change their participation in outdoor activities;
- the majority of Local Study Area residents share the belief that the DGR Project will not affect their feelings of health, sense of safety and satisfaction with community; and
- the vast majority of residents look forward to the employment and other financial benefits associated with the DGR Project [21].

Therefore, the DGR Project is not likely to become a divisive issue among Local Study Area residents to the extent that the cohesiveness of the community would be lost or substantially affected.

It is not anticipated that the overall small town feel of the Local Study Area will be indirectly adversely affected by the DGR Project. Population increases associated with the DGR Project are expected to be relatively small and traffic levels associated with the DGR Project are also expected to be very small. The demand for rental and permanent housing across the Local

Study Area is not expected to be substantial and so is not expected to indirectly contribute to adverse effects on community cohesion.

The DGR Project would also be considered a negative influence on community cohesion should people change those behaviours that support community cohesion as a result of the DGR Project. For example, community cohesion might be adversely affected if service clubs or other organizations and individuals are unable to make use of facilities that are used for socializing or other community-based activities. Based on feedback from stakeholders, including operators of community and recreational facilities, the DGR Project and associated workforce is not expected to have an adverse effect on recreational opportunities in the area that support cohesiveness.

Finally, the DGR Project would be a negative influence on community cohesion should people choose to move from their neighbourhoods or community. Although some people might consider moving from their community because of the DGR Project, out-migration of residents is not anticipated to be widespread nor of such magnitude that it would adversely affect the cohesiveness of the community as a whole. None of the four residential site neighbours interviewed stated that they would move as a result of the DGR Project.

In the long-term, the DGR Project is likely to be a positive influence on community cohesion. In 2009, OPG was a large private employer in the Local and Regional Study Areas with 183 employees, and Bruce Power was the largest private employer with 4,000 employees. Continued development at the Bruce nuclear site will, therefore, strengthen the presence of this site and nuclear industry employees in the community.

Most importantly, the DGR Project will provide OPG with opportunities to continue its presence as an economic driver and corporate citizen in the Local Study Area. It is likely that more people, community groups and organizations will have opportunities to connect or partner with OPG. For example, OPG is and will continue to be an employer that promotes community cohesion through its Corporate Citizenship Program and the community initiatives of its employees. OPG encourages its employees to contribute individually through volunteering, coaching of amateur sports, participating in local service groups and fundraising for local charities. A workforce related to constructing, operating and eventually decommissioning the DGR will likely translate into continued charitable donations by employees and opportunities for volunteerism. OPG encourages employee charitable donations through a program called the OPG Charity Trust. Furthermore, OPG, the Power Workers' Union and the Society of Energy Professionals have all developed many partnerships with local and regional community service organizations, schools and others to deliver specific initiatives aimed at improving the well-being of community members. As demonstrated by the results of the Community Leader Survey, OPG is a recognized and well-respected member of the community. Through the ongoing delivery of such programs and activities and the opportunities for their expansion, OPG and its partners will continue to foster socially meaningful interactions within the community, thereby strengthening its positive influence on community cohesion. This will benefit not only those who directly engage in these programs and activities, but also all residents living in the Local and Regional Study Area.

Overall, each individual, neighbourhood or community will experience changes in cohesion in their own way, depending upon the strength of the positive and negative influences encountered. The positive influences on community cohesion are more likely to be noticeable than the negative ones. On a community wide basis, adverse effects attributable to the DGR Project are not considered likely.

Recommended Mitigation or Effects Management (Community Cohesion)

As an effects management measure, OPG will continue to keep its neighbours and the broader public informed concerning activities at the Bruce nuclear site as appropriate to each phase of the DGR Project. In addition, OPG will continue to make contributions to the community through its Corporate Citizenship Program and will continue to work with various stakeholders to deliver its community, recreational and educational initiatives.

Residual Adverse Effects (Community Cohesion)

No residual adverse effects to community cohesion are anticipated as a result of the DGR Project.

8.7 LIKELY CHANGES IN PUBLIC ATTITUDES TOWARD PERSONAL AND COMMUNITY WELL-BEING

This section provides an analysis of the likely changes to people's attitudes towards their personal and community well-being. For the purposes of this socio-economic assessment, changes in people's attitudes are not considered adverse effects of the DGR Project, but rather they are considered to be intervening variables or the "social pathways" through which socio-economic effects occur (i.e., effects on community assets). Using this conceptual model of how socio-economic effects might occur, public attitudes towards the DGR Project and its implications for community well-being are considered to be integral parts of what the undertaking is, and reflect what the presence of the DGR Project and the Bruce nuclear site as a whole means to community members. These attitudes are reflected in current behaviours, and people's behavioural intentions are seen as predictors of future behaviour. For the purposes of a socio-economic assessment, the presence of the DGR Project is considered the "source" of the socio-economic effect, while the changes in public attitudes are considered the "pathway" by which the effect manifests itself.

8.7.1 People's Feelings of Personal Health and Sense of Safety

Through the PAR [21], residents in the Local and Regional Study Areas were asked if they thought the DGR Project might change their attitudes towards personal health and safety. These results are summarized in Table 8.7.1-1. The majority of residents indicated that the DGR Project will not affect their feelings of personal health or sense of safety (79% in the Local Study Area and 75% in the Regional Study Area). Approximately 9% of Local Study Area and 10% of Regional Study Area residents anticipated that their feelings of personal health and safety would decrease as a result of the DGR and that 7% of Local Study Area and 7% of Regional Study Area residents feel that this feeling will increase.

Table 8.7.1-1: Changes to People's Feelings of Personal Health and Sense of Safety

Feelings of Personal Health or Sense of Safety		No Change	Not Sure	Change Attitudes:				Total
				Go down		Go up		
				Great Deal	Some	Some	Great Deal	
Local Study Area	% of Total	79	5	3	6	6	1	100
	Number of Respondents	318	20	11	23	26	3	401
Regional Study Area	% of Total	75	8	3	7	5	2	100
	Number of Respondents	307	31	13	28	19	10	408

Note: Percentages may not appear to sum to 100% because of rounding

Source: [21]

Based on the PAR results, Local Study Area respondents who are themselves or have household members employed in the nuclear industry are less likely to anticipate a change. Regional Study Area respondents who have children are more likely to anticipate a change [21].

Overall, it is not expected that extreme or widespread reductions in people's feelings of personal health or sense of safety will occur as a result of the DGR Project. A small proportion of the population (i.e., 3% in the Local Study Area and 3% in the Regional Study Area) are more likely to experience a change in their attitudes than others. These people have expressed attitudes regarding their feelings of personal health that are strongly held and are therefore more likely to change their behaviours as a result of the DGR Project.

8.7.2 People's Satisfaction with Living in the Community

Residents were also asked if they thought the DGR Project might change their satisfaction with living in the community. Table 8.7.2-1 summarizes these results. The vast majority of residents anticipate that the DGR Project will not change their level of satisfaction with living in the community (82% in the Local Study Area and 77% in the Regional Study Area). An equal percentage of Local Study Area residents anticipate that their level of satisfaction with living in the community will increase and decrease (7% anticipate an increase and 7% anticipate a decrease). A slightly larger percentage of Regional Study Area residents anticipate that their satisfaction with living in their community will increase (9%) rather than decrease (7%). Based on the results of the site neighbour survey, two of the eight respondents said that their level of satisfaction with living in their community might decrease 'somewhat' and the other two stated that they anticipate no change to their level of satisfaction.

Table 8.7.2-1: Changes in People's Satisfaction with Community

Level of Satisfaction with Living in Your Community		No Change	Not Sure	Change Attitudes:				Total
				Go down		Go up		
				Great Deal	Some	Some	Great Deal	
Local Study Area	% of Total	82	4	2	5	4	3	100
	Number of Respondents	329	16	7	21	17	11	401
Regional Study Area	% of Total	77	7	3	4	7	2	100
	Number of Respondents	314	28	14	17	28	7	408

Note: Percentages may not appear to sum to 100% because of rounding

Source: [21]

Based on geographic characteristics collected in the PAR results, Saugeen Shores respondents are more likely to anticipate that their level of satisfaction with living in their community will change as are Local Study Area respondents who have lived in the community for fewer years [21].

Overall, it is not expected that extreme or widespread reductions in people's satisfaction with community will occur as a result of the DGR Project. As discussed in Section 8.3.1 of this TSD, a small proportion of the Local Study Area population (i.e., 3%) is considered to be most sensitive to the DGR Project and its anticipated effects. These people have expressed attitudes regarding their satisfaction with community that are strongly held and are therefore more likely to change their behaviours as a result of the DGR Project.

8.7.3 Public Attitudes toward the Bruce Nuclear Site and the DGR Project

As mentioned in Section 5.9, people's attitudes toward the Bruce nuclear site and the DGR Project are also considered an important indicator of community well-being. With regard to the Bruce nuclear site as a whole, PAR [21] results indicate that nuclear issues, whether it is in reference to Bruce Power or nuclear waste, are not top-of-mind issues to the public. Indeed, the Bruce nuclear site is mentioned as a community attribute that needs to be maintained or enhanced (9% in the Local Study Area) and as the greatest threat in the long term if it was not in the community (17%). Few people name the Bruce nuclear site as an issue that affects feelings of personal health or sense of safety (6% in the Local Study Area and 3% in the Regional Study Area), which is similar to the responses received in the 2003 PAR [10]. Very few people name nuclear waste as a threat (2% Local Study Area, 1% Regional Study Area).

With regard to the WWMF at the Bruce nuclear site, the issue here is whether people have confidence in the facility currently being operated by OPG. PAR respondents were asked "How confident are you in the radioactive waste management technologies used at the Western Waste Management Facility?" The results indicate that the clear majority of people in the study areas have confidence in the technologies used at the WWMF. As can be seen in Table 8.7.3-1, 90% of respondents in the Local Study Area, and 84% in the Regional Study

Area are at least “somewhat” confident. Indeed, 63% of the respondents in the Local Study Area are “very” confident.

Table 8.7.3-1: Confidence in the Radioactive Waste Management Technologies Used at the WWMF

Level of Confidence	Local Study Area		Regional Study Area	
	%	Number of Responses	%	Number of Responses
Very	63	246	47	179
Somewhat	27	103	37	142
Not very	6	22	11	41
Not at all	4	17	5	20

Note: Percentages may not appear sum to 100% because of rounding
Source: [21]

Residents in the Local Study Area were more confident in 2009 with the radioactive waste management technologies used at the WWMF than they were in 2003. When compared to the 2003 PAR [10], 53% of Local Study Area residents stated that they were “very” confident, compared to 63% in 2009. Overall, the percentage of residents in both the Local and Regional Study Areas that said they were “somewhat” or “very” confident has not meaningfully changed, but more Local Study Area residents are more likely to say they are “very” confident in 2009 when compared to 2003.

Although the DGR has not established a track record in the community as an operating facility, PAR respondents were asked “How confident are you in the safety of a Deep Geologic Repository at the Western Waste Management Facility?” The results indicate that the clear majority of people in the study areas have confidence in the safety of the DGR. As can be seen in Table 8.7.3-2, 83% of respondents in the Local Study Area, and 73% in the Regional Study Area are at least “somewhat” confident. Indeed, 54% of the respondents in the Local Study Area are “very” confident.

Table 8.7.3-2: Confidence in the Safety of the DGR Project

Level of Confidence	Local Study Area		Regional Study Area	
	%	Number of Responses	%	Number of Responses
Very	54	210	34	127
Somewhat	29	115	39	147
Not very	9	35	15	58
Not at all	8	30	12	46

Note: Percentages may not appear to sum to 100% because of rounding
Source: [21]

The confidence in OPG and the DGR Project is clearly evident when PAR respondents were asked “What can OPG do to increase your level of confidence in the safety of the DGR Project?” Here the most frequent response is that there is nothing to be done by OPG to improve confidence in the safety of the DGR because the respondents are already confident in OPG and/or the DGR (29% Local Study Area and 21% Regional Study Area). A variety of suggestions were provided by respondents, several of which were related to communications. Suggestions included educating and informing the public (16% Local Study Area and 17% Regional Study Area), suggesting specific forums for educating the public (9% Local Study Area and 6% Regional Study Area), keeping in touch with the public (9% Local Study Area and 6% Regional Study Area), providing specific information (6% Local Study Area and 7% Regional Study Area), addressing environmental effects (4% Local Study Area and 3% Regional Study Area). Less than 10% of respondents indicated lack of confidence in their replies. Specifically, 7% Local Study Area and 9% Regional Study Area respondents indicated that OPG should not build the DGR at all, or that OPG should move the repository elsewhere.

In light of the importance of communications to improve confidence in the DGR Project, it is noteworthy that OPG communications efforts related to the WWMF are rated highly within the Local Study Area. Approximately 75% of Local Study Area respondents rate OPG communications on the existing facility as “good” or “very good”. When these responses are added to the percentage of respondents who volunteer that they “have no questions,” 81% of the Local Study Area respondents can be described as being satisfied with OPG’s ongoing communication efforts.

Overall, with regard to confidence in OPG, the results of the Community Leader’s Survey indicated that OPG is a recognized and well-respected member of the community. PAR [21] results also indicate that OPG has developed a very strong reputation for its communications efforts in the Local Study Area. Within this context, there are no strong indications that the implementation of the DGR Project would result in widespread changes in the level of confidence people have in OPG or the DGR Project in the future.

8.7.4 Implications for Community Well-being

Once the DGR Project commences, people will make their own judgements regarding the implications of the DGR Project on community well-being taking into account the effects of the DGR Project on all community assets. For the purposes of this socio-economic assessment, PAR [21] respondents were asked to describe how, if at all, the DGR Project might change their community’s overall well-being. Table 8.7.4-1 summarizes these results.

Almost half (49%) of the Local Study Area respondents and slightly over half (52%) of the Regional Study Area respondents stated that the DGR Project would not have any effect on community well-being. About 46% of Local Study Area residents and 40% of Regional Study Area residents stated that the DGR Project would have an effect on community well being.

Of those respondents that stated the DGR Project would have an effect on community well-being, the majority felt that the effects would be positive, the most notable being positive effects on financial assets through an increase in jobs (65% in the Local Study Area and 64% in the Regional Study Area).

The most frequently stated negative comments in the Local Study Area were regarding population growth (6%). As stated previously in this TSD, the expected population increase attributed to the DGR Project is extremely small and will not be a measurable contributor to a change in overall community well-being. In the Regional Study Area, the most frequently stated negative comments were regarding environmental concerns (8%). Changes to natural assets are not expected to result in indirect effects on socio-economic environment VECs. The one exception is a localized increase in noise levels during the site preparation and construction and decommissioning phases.

Overall, public attitudes towards the DGR Project and its implications for community well-being are seen as positive.

Table 8.7.4-1: Potential Effects on Community Well-being as a Result of the DGR Project

Potential Effects	Local Study Area		Regional Study Area	
	%	Number of Responses	%	Number of Responses
No	49	197	52	214
Not sure	5	20	8	32
Yes	46	184	40	162
<i>If Yes: What effect would the DGR Project have:</i>				
Financial Assets:	65	119	64	104
Stronger economy – more jobs	65	119	64	104
Natural Assets:	9	17	10	18
Environmental concerns	4	8	8	13
Positive environmental effect	4	7	1	1
Water quality	1	2	3	4
Human Assets:	6	11	4	6
Population-growth	6	11	4	6
Physical Assets:	5	10	3	5
Construction/traffic	3	6	2	3
Lack of affordable housing	2	4	1	2
Nuclear:	4	7	7	11
Concerned over health/well being	2	4	4	6
Increase concern over safety	2	3	3	5
Other responses:	11	20	14	18

Note: Percentages may not appear to sum to 100% because of rounding

Source: [21]

8.8 INDIRECT EFFECTS ATTRIBUTED TO CHANGES IN NATURAL ASSETS

This section provides a summary of the results of the effects assessments for other biophysical environment disciplines as they relate to the socio-economic environment. Further details, regarding these assessments are provided in their respective TSD. As described previously, interactions with the socio-economic environment occur when the DGR Project results in a measurable change in the biophysical environment that provides a mechanism to interact with the socio-economic environment. An example of a biophysical effect is dust produced by excavation or waste rock storage activities. This effect can interact with the existing socio-economic environment when dust levels become a nuisance (i.e., becomes noticeable or intolerable) to people. For the purposes of this socio-economic assessment, excavation or waste rock storage activities are considered the “source” of the socio-economic effect, while the change in dust levels is considered the “pathway” by which the effect manifests itself in the socio-economic environment.

The effects on natural assets that are considered in detail through this assessment are changes in air quality attributed to suspended particulate matter (SPM) and noise, during the site preparation and construction, operation, and decommissioning phases of the DGR Project. These measurable changes in air quality and noise may affect human, financial, physical and social assets. In turn, changes in these community assets may affect public attitudes toward personal and community well-being.

8.8.1 Effects on the Atmospheric Environment

8.8.1.1 Dust

For the purposes of this socio-economic assessment, the effects of changes on air quality were evaluated based on the quantitative modelling completed as part of the Atmospheric Environment TSD. In particular, SPM, as nuisance dust, was considered at receptors located at a residential dwelling on Albert Road, a cottage located across Baie du Doré from Bruce A and at Inverhuron Provincial Park. An increase in nuisance dust is expected to be measurable during the site preparation and construction, operations and decommissioning phases of the DGR Project.

Changes in air quality may be considered to be adverse at a receptor location if concentrations exceed both the baseline concentrations in air and the thresholds established to be protective of the receiving environment. From the perspective of a resident, worker or visitor to the DGR Project site or the Local Study Area, a change in dust levels may or may not be noticeable. SPM is comprised mainly of particles too large to be inhaled; therefore elevated SPM levels are a nuisance issue only. A maximum existing SPM level of 58.0 $\mu\text{g}/\text{m}^3$ is reported for the nuisance receptors. The maximum predicted SPM concentrations for the site preparation and construction phase, and operations phase were determined to be 168.0 and 58.5 $\mu\text{g}/\text{m}^3$, respectively. However, the predicted concentrations during the site preparation and construction phase are expected to exceed the criterion less than 1% of the time. SPM concentrations during decommissioning phase are predicted to be similar to those predicted during the site preparation and construction phase. These results are summarized in Table 8.8.1-1.

Table 8.8.1-1: Air Quality Predictions at Nuisance Receptors

Indicator Compound	Existing Concentrations ($\mu\text{g}/\text{m}^3$) at Nuisance Receptors	Maximum Site Preparation and Construction Phase Concentration ($\mu\text{g}/\text{m}^3$)	Maximum Operations Phase Concentration ($\mu\text{g}/\text{m}^3$)	Criteria ($\mu\text{g}/\text{m}^3$)
24-hour SPM	58.0	168.0 ^a	58.5	120

Note:

a Concentrations are expected to exceed the criteria of $120 \mu\text{g}/\text{m}^3$ less than 1% of the time

Source: Appendix J in the Atmospheric Environment TSD

The Atmospheric Environment TSD concludes that increased dust levels may be a nuisance during the site preparation and construction and decommissioning phases at the identified receptor locations; however, the occurrences will be so infrequent (less than 1% of the time) that no adverse effects on socio-economic environment VEC are anticipated.

8.8.1.2 Noise

For the purposes of this socio-economic assessment, the effects of changes in noise levels were evaluated based on the quantitative modelling completed as part of the Atmospheric Environment TSD. Human receptors, located at a residential dwelling on Albert Road (R1), a cottage located across Baie du Doré from Bruce A (R2), and Inverhuron Provincial Park (R3), were considered. Measurable increases in noise levels are predicted at each of the receptor locations during all phases of the DGR Project.

The existing off-site noise conditions are largely found to be reflective of a rural environment, with minimum hourly noise levels ranging between 35 and 37 dBA and are currently characterized by sounds of nature. The noise levels predicted through the modelling exercise were compared to existing baseline conditions in the Local Study Area and the difference was compared to the qualitative criteria for assessing noise effects, as presented in Table 8.8.1-2.

Table 8.8.1-2: Qualitative Criteria for Assessing Noise Effects

Increase Over Existing Noise Level	Loudness	Effect Rating
Up to 3 dBA	Hardly perceptible	Marginal to None
4 to 5 dBA	Noticeable	Low
6 to 10 dBA	Almost twice as loud	Moderate
>11 dBA	More than twice as loud	High

Noise levels at the receptors located at Albert Road and Inverhuron Provincial Park are predicted to increase by less than 3 dBA over the course of the DGR Project (Table 8.8.1-3). This increase would be hardly perceptible and would therefore have a marginal to no effect on the use and enjoyment of this private property and the park.

Table 8.8.1-3: Noise Level Predictions at Receptor Locations

Receptor	Baseline Noise Levels (dBA)	Predicted Noise Levels (dBA)	DGR Project-related Change Relative to Baseline (dBA)
Site Preparation and Construction Phase			
R1 – Albert Road	36	38	+2
R2 – Baie du Doré	37	42	+5
R3 – Inverhuron Provincial Park	35	37	+2
Operations Phase			
R1 – Albert Road	36	38	+2
R2 – Baie du Doré	37	40	+3
R3 – Inverhuron Provincial Park	35	37	+2

Source: Appendix J in the Atmospheric Environment TSD

During the site preparation and construction, and decommissioning phases of the DGR Project, noise levels at Baie du Doré are expected to increase by 5 dBA over baseline conditions, which is considered to be a noticeable change. This change is likely to have a low level of effect on the users of this area. During operations, the noise levels at this receptor location are expected to increase 3 dBA over baseline. This would be hardly perceptible.

Table 8.8.1-4 summarizes the results of the assessment of increased noise during the site preparation and construction and decommissioning phases on the socio-economic environment VECs. There is potential reduction in use and enjoyment of private property because of the increased noise levels in the localized Baie du Doré area.

Table 8.8.1-4: Summary of Adverse Effects on Socio-economic Environment VECs Attributed to Changes in Noise Levels

VEC	Adverse Effect
Other Human Assets	<ul style="list-style-type: none"> No adverse effect as activities at education facilities will not be disrupted because of change in noise levels
Tourism	<ul style="list-style-type: none"> No adverse effect as change in noise unlikely to change attractiveness of Baie du Doré as a tourist destination
Residential Property Values	<ul style="list-style-type: none"> No decrease in residential property values because of changes in public attitudes regarding noise
Other Physical Assets	<ul style="list-style-type: none"> Localized changes in noise levels in the Baie du Doré area are unlikely to adversely affect overall community character
Inverhuron Provincial Park	<ul style="list-style-type: none"> No adverse effect on Inverhuron Provincial Park is likely as change in noise is localized in the Baie du Doré area, north of the park

Table 8.8.1-4: Summary of Adverse Effects on Socio-economic Environment VECs Attributed to Changes in Noise Levels (continued)

VEC	Adverse Effect
Other Social Assets	<ul style="list-style-type: none"> • No adverse effects on the use or enjoyment of community and recreational facilities are anticipated as no such facilities exist in Baie du Doré area • There may be a reduction in the enjoyment of private property in the Baie du Doré area because of increased noise levels

8.9 SUMMARY OF EFFECTS ASSESSMENT

The results of the assessment are summarized in Table 8.9-1. Diamonds (◆) on this matrix represent likely DGR Project-environment interactions resulting in a residual adverse effect on a VEC. The results of the assessment are described in the sections, below.

8.9.1 Residual Adverse Effects

The single residual adverse effect of the DGR Project on the socio-economic environment is reduced enjoyment of private property in the Baie du Doré area located immediately north of the Bruce nuclear site. This adverse effect is the result of increased noise levels during the site preparation and construction, and the decommissioning phases. The change in noise levels is estimated to be approximately 5 dBA, which is a noticeable level of change and potentially disruptive to some people. This residual adverse effect is advanced to Section 11 for a consideration of its significance.

8.9.2 Beneficial Effects

The anticipated beneficial effects as a result of the DGR Project are as follows:

Human Assets

Population and Demographics

- Increased population associated with DGR Project-related employment. This positive effect will likely be experienced in all Regional Study Area municipalities, with the greatest benefit anticipated in Kincardine.

Other Human Assets

Education:

- Increased educational opportunities for students and others interested in nuclear technology through the presence of the DGR Project and the establishment of a centre of energy excellence.

Financial Assets

Employment):

- The DGR Project will create new direct, indirect and induced employment opportunities.

Business Activity

- A positive effect on business activity is anticipated during all DGR Project phases, which can be enhanced through policies to utilize local business services wherever practical and appropriate.

Municipal Finance and Administration:

- The DGR Project will result in increased municipal revenue because of payments of property taxes and other payments. The DGR Project will also contribute to municipal revenues through positive economic and population growth.

Other Financial Assets):

Income:

- The DGR Project will increase labour income through direct, indirect and induced employment in the Local and Regional Study Areas.

The summary of the third screening for potential socio-economic environment VEC interactions is illustrated in Matrix 3 (Table 8.9.1). As noted, only the one residual adverse effect is advanced for an evaluation of significance. The benefits summarized above are denoted as plus signs (+) on Matrix 3.

8.9.3 Application of a Precautionary Approach in the Assessment

Conservatism is built into the socio-economic assessment in a number of ways:

- Predictions and assumptions used in the economic modelling are based on broad Statistics Canada data from the Ontario economy and municipal projections. They assume current service ratios.
- At each of the three screening stages, potential DGR Project-related effects were advanced for further assessment if they could not be systematically removed from consideration through application of rigorous, sound and credible scientific evidence.
- Assumptions made about the effects of the DGR Project and mitigation measures to minimize these effects have been outlined and justified.
- With the exception of malfunctions and accidents, all identified residual adverse effects are assumed to occur (i.e., probability of occurrence is assumed to be 1.0), and are assessed for significance. The effects of accidents, malfunctions and malevolent acts are considered in the Malfunctions, Accidents and Malevolent Acts TSD.
- Recommendations for elements of the follow-up program have been made to validate the predictions made in this socio-economic assessment, and to confirm the effectiveness of mitigation measures (see Section 11).
- The socio-economic assessment of the DGR Project incorporates historic data collected from within the study areas identified for the EA. Accordingly, the parameters required to

present a sound scientific basis for the technical studies that support the EA are well established.

8.9.4 Cumulative Effects

Effects of the DGR Project have the potential to act cumulatively with those of other projects. The EIS Guidelines require that the EA considers the cumulative effects of past, present and reasonably foreseeable future projects. The description of the existing environmental conditions presented in Section 5 includes the cumulative effects of past and existing projects. The assessment completed in Section 8 considers the effects of the DGR Project in combination with those of past and present projects.

One residual adverse effect was identified during the assessment, namely, the effect of increased noise levels during the site preparation and construction, and decommissioning phases on the use and enjoyment of property. The potential for cumulative effects due to this residual adverse effect on the Other Social Assets VEC with past, present and reasonably foreseeable future projects is considered in Section 10 of the EIS.

Table 8.9-1: Matrix 3 – Summary of the Third Screening for Assessment of Effects on VECs

Project Work and Activity	Population and Demographics			Other Human Assets			Employment			Business Activity		
	C	O	D	C	O	D	C	O	D	C	O	D
Direct Effects												
Site Preparation		—	—	■	—	—		—	—		—	—
Construction of Surface Facilities		—	—	■	—	—		—	—		—	—
Excavation and Construction of Underground Facilities		—	—	■	—	—		—	—		—	—
Above-ground Transfer of Waste				—	■	—	—		—	—	—	—
Underground Transfer of Waste	—		—	—	■	—	—		—	—	—	—
Decommissioning of the DGR Project	—	—		—	—	■	—	—		—	—	
Abandonment of DGR Facility	—	—	—	—	—	—	—	—	—	—	—	—
Presence of the DGR Project	■	■	■									
Waste Management										■	■	
Support and Monitoring of DGR Life Cycle												
Workers, Payroll and Purchasing	+	+	+	■	■	■	+	+	+	+	+	+
Indirect Effects												
Changes in Air Quality				■	■	■				•	•	•
Changes in Noise Levels				■	•	■				•	•	•
Changes in Surface Water Quantity and Flow												
Changes in Surface Water Quality												
Changes in Soil Quality												
Changes in Groundwater Quality												
Changes in Groundwater Flow												
Changes in Aquatic and Terrestrial Environment												
Changes in Radiation and Radioactivity	•	■	■	•	■	■	•	■	■	•	■	■

Notes:

C = Site Preparation and Construction Phase

O = Operations Phase

D = Decommissioning Phase

The matrices are meant to indicate when the effect occurs and do not imply how long an effect will last. The duration of the effects is assessed in Section 11.

The abandonment and long-term performance phase is not included in the matrix as no activities occur during this phase. The abandonment of the DGR facility work and activity occurs immediately following decommissioning within the decommissioning phase and does not encompass the entirety of the abandonment and long-term performance phase.

Blank = No potential interaction

— Not Applicable

• Potential project-environment interaction

■ Measurable change

◆ Residual adverse effect

+ Beneficial effect

Table 8.9-1: Matrix 3 – Summary of the Third Screening for Assessment of Effects on VECs (continued)

Project Work and Activity	Tourism			Residential Property Values			Municipal Finance and Administration			Other Financial Assets		
	C	O	D	C	O	D	C	O	D	C	O	D
Direct Effects												
Site Preparation		—	—		—	—		—	—	■	—	—
Construction of Surface Facilities		—	—		—	—		—	—	■	—	—
Excavation and Construction of Underground Facilities		—	—		—	—		—	—	■	—	—
Above-ground Transfer of Waste	—		—	—		—	—		—		■	
Underground Transfer of Waste	—		—	—		—	—		—		■	—
Decommissioning of the DGR Project	—	—		—	—		—	—		—	—	■
Abandonment of DGR Facility	—	—	—	—	—	—	—	—	—	—	—	—
Presence of the DGR Project	■	■	■	■	■	■	+	+	+			
Waste Management							■	■				
Support and Monitoring of DGR Life Cycle												
Workers, Payroll and Purchasing	■	■	■	■	■	■	+	+	+	+	+	+
Indirect Effects												
Changes in Air Quality	■	■	■	■	■	■				•	•	•
Changes in Noise Levels	■	■	■	■	•	■				•	•	•
Changes in Surface Water Quantity and Flow	•	•	•	•	•	•				•	•	•
Changes in Surface Water Quality	•	•	•	•	•	•				•	•	•
Changes in Soil Quality												
Changes in Groundwater Quality	•	•	•	•	•	•				•	•	•
Changes in Groundwater Flow	•	•	•	•	•	•				•	•	•
Changes in Aquatic and Terrestrial Environment	•	•	•							•	•	•
Changes in Radiation and Radioactivity	•	■	■	•	■	■	•	■	■	•	■	■

Notes:

C = Site Preparation and Construction Phase

O = Operations Phase

D = Decommissioning Phase

The matrices are meant to indicate when the effect occurs and do not imply how long an effect will last.

The duration of the effects is assessed in Section 11.

The abandonment and long-term performance is not included in the matrix as no activities occur during this phase. The abandonment of the DGR facility work and activity occurs immediately following decommissioning within the decommissioning phase and does not encompass the entirety of the abandonment and long-term performance phase.

Blank = No potential interaction

— Not Applicable

• Potential project-environment interaction

■ Measurable change

◆ Residual adverse effect

+ Beneficial effect

Table 8.9-1: Matrix 3 – Summary of the Third Screening for Assessment of Effects on VECs (continued)

Project Work and Activity	Housing			Municipal Infrastructure and Services			Other Physical Assets			Inverhuron Provincial Park			Other Social Assets		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Direct Effects															
Site Preparation		—	—		—	—	■	—	—		—	—	■	—	—
Construction of Surface Facilities		—	—		—	—	■	—	—		—	—		—	—
Excavation and Construction of Underground Facilities		—	—		—	—	■	—	—		—	—		—	—
Above-ground Transfer of Waste	—		—	—		—	—		—	—		—	—		—
Underground Transfer of Waste	—		—	—		—	—		—	—		—	—		—
Decommissioning of the DGR Project	—	—		—	—		—	—	■	—	—		—	—	■
Abandonment of DGR Facility	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Presence of the DGR Project	■	■	■				■	■	■	■	■	■	■	■	■
Waste Management				■	■		■	■	■						
Support and Monitoring of DGR Life Cycle															
Workers, Payroll and Purchasing	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Indirect Effects															
Changes in Air Quality							■	■	■	■	■	■	■	■	■
Changes in Noise Levels							■	•	■	■	•	■	◆	•	◆
Changes in Surface Water Quantity and Flow				•	•	•	•	•	•	•	•	•	•	•	•
Changes in Surface Water Quality				•	•	•	•	•	•	•	•	•	•	•	•
Changes in Soil Quality															
Changes in Groundwater Quality				•	•	•	•	•	•				•	•	•
Changes in Groundwater Flow				•	•	•	•	•	•				•	•	•
Changes in Aquatic and Terrestrial Environment										•	•	•	•	•	•
Changes in Radiation and Radioactivity	•	■	■	•	■	■	•	■	■	•	■	■	•	■	■

Notes:

C = Site Preparation and Construction Phase
 O = Operations Phase
 D = Decommissioning Phase
 The matrices are meant to indicate when the effect occurs and do not imply how long an effect will last. The duration of the effects is assessed in Section 11.

The abandonment and long-term performance is not included in the matrix as no activities occur during this phase. The abandonment of the DGR facility work and activity occurs immediately following decommissioning within the decommissioning phase and does not encompass the entirety of the abandonment and long-term performance phase.

Blank = No potential interaction
 — Not Applicable
 • Potential project-environment interaction
 ■ Measurable change
 ◆ Residual adverse effect
 + Beneficial effect

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9. EFFECTS OF THE ENVIRONMENT ON THE PROJECT

9.1 ASSESSMENT METHODS

The EA must include a consideration of how the environment could adversely affect the DGR Project. For example, the EA evaluates how hazards such as severe weather are likely to affect the DGR Project. This was accomplished using the method illustrated on Figure 9.1-1. First, potential conditions in the environment that may affect the DGR Project are identified. Then, the level of effect these environmental conditions could have on the DGR Project are evaluated based on past experience at the site and professional judgement of the study team. The assessment of effects of the environment on the DGR Project focuses on those conditions associated with the socio-economic environment (e.g., land use). For each environmental condition that could potentially affect the DGR Project, the mitigation measures incorporated into the DGR Project design are identified and evaluated for effectiveness. This evaluation is based on the available data, and the experience and judgement of the study team.

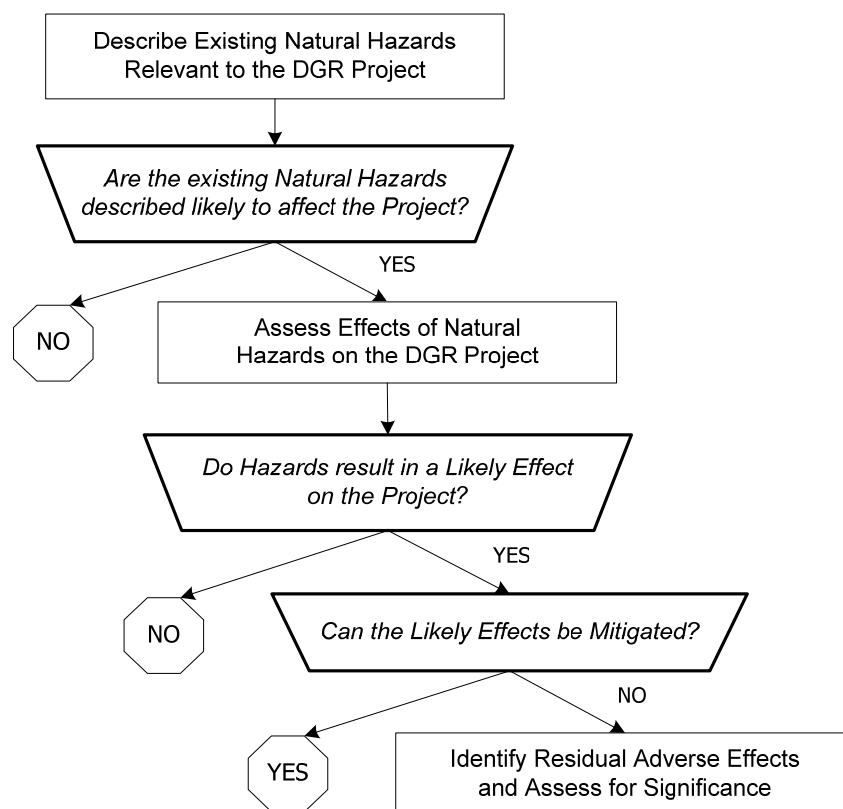


Figure 9.1-1: Method to Assess Effects of the Environment on the DGR Project

Identified residual adverse effects, if any, are then advanced to Section 11 for an assessment of significance.

From the socio-economic perspective, consideration is given to potential socio-economic conditions that could have an effect on the DGR Project. Several potential interactions for the DGR Project were considered:

- **Labour:** the DGR Project may be adversely affected if the DGR labour requirements are difficult to meet;
- **Land Uses:** the DGR Project may be adversely affected should residential development encroach upon the Bruce nuclear site; and
- **Services:** There may be insufficient infrastructure capacity or resources to support the DGR Project.

Existing conditions in the community as well as the DGR Project requirements were considered to assess these potential interactions of the socio-economic environment on the DGR Project.

9.2 LABOUR

Given existing labour supply conditions in Ontario and the relatively small DGR construction and operating staff requirements, no adverse effect on the DGR Project because of labour availability is anticipated. Accordingly, no effects are carried forward to Section 11.

9.3 LAND USES

Land uses in the vicinity of the Project Area include the existing energy-related uses of the balance of the Bruce nuclear site, industrial uses associated with the Bruce ECO-Industrial Park as well as residential areas within defined communities. Existing Official Plans do not envisage the encroachment of residential development upon the Bruce nuclear site. Accordingly, no effects are carried forward to Section 11.

9.4 SERVICES

The direct DGR Project water, wastewater and waste management requirements will be met without dependency on these municipal services. Unusual demands on local fire, EMS and policing services could reduce the ability to respond to an emergency associated with the DGR and this contingency should be included in the coordination of emergency services planning. Accordingly, no effects are carried forward to Section 11.

10. CLIMATE CHANGE CONSIDERATIONS

The EIS Guidelines require a consideration of whether the DGR Project and EA conclusions are sensitive to changes in climatic conditions. For the purposes of this TSD, climate change is considered over the life of the DGR Project spanning the site preparation and construction, operations, and decommissioning phases only. Shifts in climate that occur from one epoch to the next have been considered as part of the Postclosure Safety Assessment [2], and their effects on the DGR Project are described in the EIS (Section 9).

The requirement of the EIS Guidelines (see Appendix A of the EIS) to consider climate change is addressed through the following considerations:

- How will the future environment affect the DGR Project?
- How will the DGR Project affect the future environment? and
- How will the DGR Project affect climate change (e.g., contribution to climate change by the emission of greenhouse gases)?

The methods used to consider the effects of climate change are described in the following sections. Establishing how the climate may change over the life of the DGR Project is an initial requirement for addressing the first two considerations. A determination of how climate has been changing and how it might change over the DGR Project life considered in this TSD is made based on 30-year climate normals, literature review and the professional experience of the study team. The climate models used to predict high, medium and low climate change scenarios for the Regional Study Area are described in the Atmospheric Environment TSD. These predicted climate change scenarios are used by all environmental disciplines for the assessment of the consequences of climatic conditions on the first two considerations.

10.1 DESCRIPTION OF PREDICTED CHANGES IN CLIMATE

Climate represents the long-term expected values for parameters such as temperature, precipitation and winds. The climate of an area is described using normals, which are averages calculated over a 30-year period (the latest accepted normals period is from 1971 to 2000) [172]. It is now widely accepted that climate is changing; therefore, consideration of these changes needs to be incorporated in the EA carried out for the DGR Project. Traditionally, scientists looked to past weather records to provide guidance for predicting future conditions. Historic climate trends for the DGR Project are determined using the temperature archives observed at Warton Airport over the period from 1971 through 2000. While past trends have traditionally been used to provide guidance to the future, reliance is shifting to global climate models, which incorporate accepted understandings of climate mechanisms and standardized scenarios reflecting potential human development in the future.

Tables 10.1-1 and 10.1-2 provide a summary of the past and future trends for temperature and precipitation, respectively. The tables describe how climate in the region has been changing, as well as how it is projected to change over the life of the DGR Project through the end of the decommissioning phase. These data are used to evaluate how climate change may affect the conclusions reached regarding the assessment of the effects of the DGR Project on the selected VECs. The Atmospheric Environment TSD provides further detail on the predicted changes in climate.

Table 10.1-1: Historic and Future Temperature Trends

Criteria	1971-2000 Normals (°C)	1971-2000 Trend (°C/decade)	2011-2040 Forecast (°C/decade)			2041-2070 Forecast (°C/decade)			2071-2100 Forecast (°C/decade)		
			Low	Average	High	Low	Average	High	Low	Average	High
Annual	6.1	+0.31	+0.00	+0.41	+1.05	+0.15	+0.34	+0.66	+0.20	+0.33	+0.51
Spring	4.5	+0.50	+0.00	+0.45	+1.09	+0.14	+0.35	+0.69	+0.19	+0.34	+0.54
Summer	17.4	+0.26	+0.00	+0.43	+1.10	+0.15	+0.34	+0.69	+0.21	+0.34	+0.52
Fall	8.3	+0.05	+0.00	+0.36	+1.02	+0.12	+0.30	+0.63	+0.19	+0.32	+0.49
Winter	-5.7	+0.68	+0.00	+0.40	+0.99	+0.16	+0.33	+0.63	+0.21	+0.33	+0.50

Note:

The low and high data correspond to the forecasts for the scenario with the smallest and largest respective changes in temperature for each forecast horizon. The average represents the arithmetic average of the available forecasts. Refer to Appendix D of the Atmospheric Environment TSD for the derivation of climate data.

Table 10.1-2: Historic and Future Precipitation Trends

Season	1971-2000 Normals (mm)	1971-2000 Trend (mm/decade)	2011-2040 Forecast (%/decade)			2041-2070 Forecast (%/decade)			2071-2100 Forecast (%/decade)		
			Low	Average	High	Low	Average	High	Low	Average	High
Annual	1,041.3	+0.13%	+0.00%	+1.44%	+3.57%	+0.36%	+1.11%	+2.09%	+1.39%	+1.30%	+2.25%
Spring	216.8	+3.23%	+0.00%	+2.59%	+5.39%	+0.62%	+1.51%	+2.72%	+1.88%	+2.24%	+4.05%
Summer	230.8	-0.51%	+0.00%	-1.65%	-3.40%	-0.95%	-1.13%	-0.42%	-0.68%	-0.85%	-0.61%
Fall	310.9	+4.41%	+0.00%	+2.09%	+4.35%	+2.28%	+1.67%	+2.75%	+2.11%	+1.65%	+1.85%
Winter	282.8	-4.65%	+0.00%	+2.39%	+7.30%	-0.27%	+1.82%	+3.08%	+2.05%	+1.92%	+3.32%

Note:

The low and high data correspond to the forecasts for the scenario with the smallest and largest respective changes in temperature for each forecast horizon. The average represents the arithmetic average of the available forecasts. Refer to Appendix D of the Atmospheric Environment TSD for the derivation of climate data.

10.2 EFFECTS OF THE FUTURE ENVIRONMENT ON THE DGR PROJECT

10.2.1 Methods

Changes to the climate are predicted to occur over the lifetime of the DGR Project; therefore, it is also necessary to assess how the predicted future environment may affect the DGR Project. For example, climate change might result in new or more severe weather hazards. The method used to assess these changes is shown on Figure 10.2.1-1.

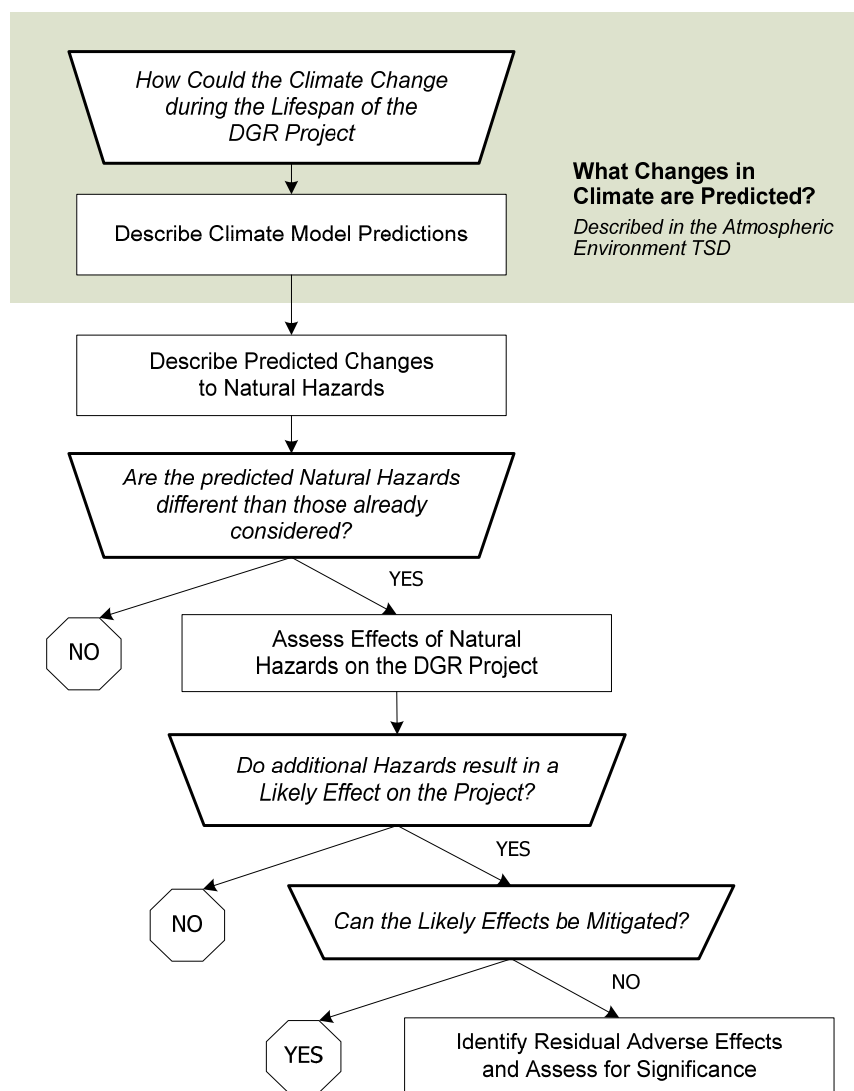


Figure 10.2.1-1: Method to Assess Effects of the Future Environment on the DGR Project

Once the future environment is established, the evaluation of changed and/or additional natural hazards on the DGR Project is carried out in a similar fashion to the assessment of effects of the current environment on the DGR Project (Section 9). The assessment addresses only predicted hazards that are different or in addition to those considered in the assessment of

existing natural hazards. The EA predictions of future hazards as a result of a changing climate relies upon both qualitative and quantitative evaluations based on available data and technical experience, with consideration for the design and contingency measures incorporated into the DGR Project to mitigate likely effects. Identified residual adverse effects, if any, are advanced to Section 11 for an assessment of significance.

10.2.2 Assessment of Effects of the Future Socio-economic Environment on the DGR Project

No potential interactions between the DGR Project and the future socio-economic environment are likely. No further consideration of this factor is required.

10.3 EFFECTS OF THE DGR PROJECT ON THE FUTURE ENVIRONMENT

10.3.1 Methods

Climate change may result in an environment that is different from the current environment as less severe winters or increased precipitation might alter the habitat or behaviour of terrestrial and aquatic VECs, affecting people's recreational activities such as wildlife and nature viewing, fishing and boating. Climate-related changes to VECs may result in changed or additional effects of the DGR Project compared with those predicted on the current environment (Consideration 2). The method used to assess these changes is shown in Figure 10.3.1-1.

The assessment of the effects of the DGR Project on VECs in a changed future environment begins with re-examining the EA predictions for the current environment by identifying whether or not the VECs might be altered as a result of climate change. The effects of the DGR Project on the altered VECs are then assessed to determine whether they are bounded by the predictions made for the effects assessment for the current environment (Section 8). All additional or different effects are fully assessed, using a similar method to that followed for assessing effects of the DGR Project on the current environment. Effects that cannot be fully mitigated will result in residual adverse effects and would be forwarded for an assessment of significance in Section 11, if they are identified.

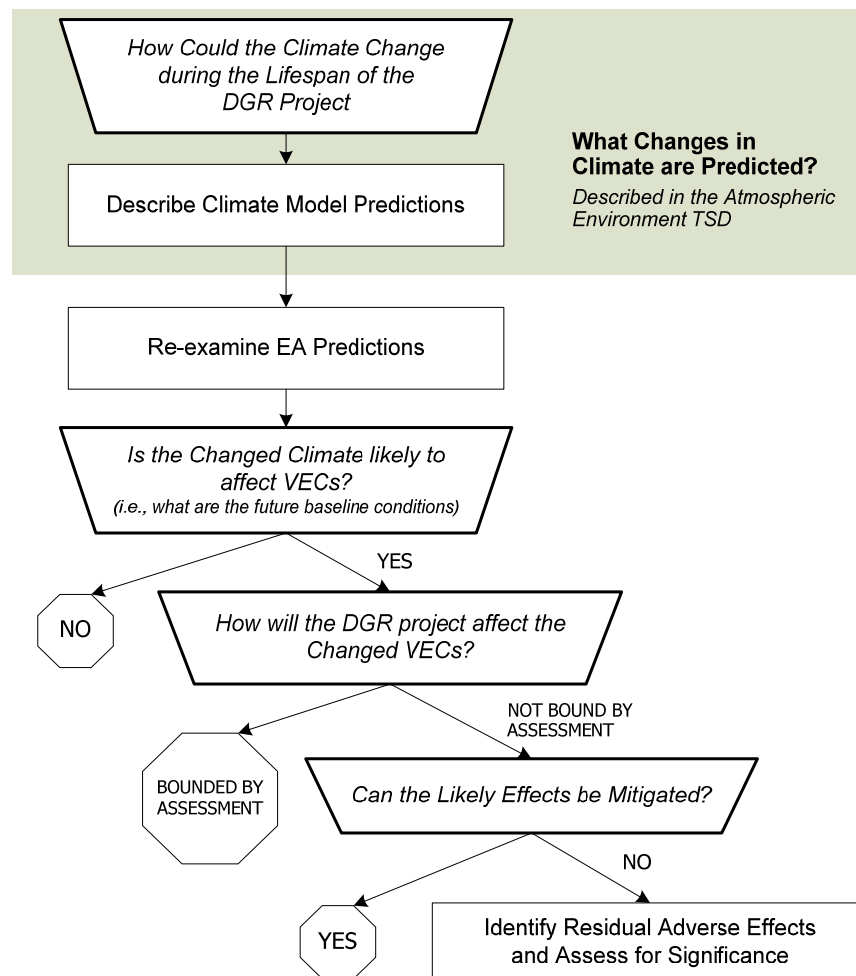


Figure 10.3.1-1: Method to Assess Effects of the DGR Project on the Future Environment

10.3.2 Assessment of the Future Effects of Climate Change on Socio-economic Environment VECs

No potential interactions between the DGR Project and the future effects of climate change regarding the socio-economic environment are likely. No further consideration of this factor is required.

10.4 EFFECTS OF THE DGR PROJECT ON CLIMATE CHANGE

10.4.1 Methods

The DGR Project may also contribute to how the climate is changing (e.g., through changes in the levels of greenhouse gas emissions). The assessment, which considers the direct and indirect changes as a result of the DGR Project is not relevant to the socio-economic environment, and is described in the Atmospheric Environment TSD.

10.4.2 Assessment of the Effects of the DGR Project on Climate Change

No potential interactions between the DGR Project and climate change regarding the socio-economic environment were identified. No further consideration of this factor is required.

11. SIGNIFICANCE OF RESIDUAL ADVERSE EFFECTS

This section includes an evaluation of the significance of the residual adverse effects identified for the DGR Project on the VECs for the socio-economic environment. An assessment of the cumulative effects associated with the DGR Project is addressed in Section 10 of the EIS.

11.1 ASSESSMENT METHODS

The single residual adverse effect identified in the assessment (Sections 8 through 10), is assessed to determine if the residual adverse effect is significant. Significance is rated using criteria applicable to the socio-economic environment. The criteria used for judging and describing the significance of the effect are shown in Table 11.1-1.

Table 11.1-1: Effects Criteria and Levels for Determining Significance

Effects Criteria	Effects Level Definition		
	Low	Medium	High
Magnitude (of effect)	Effect on a community asset is evident only when compared to existing conditions. There is not likely to be a change in the community asset's contribution to overall community well-being.	Effect on a community asset is evident only when compared to existing conditions. There is likely to be a measurable change in the community asset's contribution to overall community well-being but a measurable change in overall community well-being is not likely.	Effect on a community asset is clearly evident. The effect will result in a measurable change in overall community well-being.
Geographic Extent (of effect)	Effect is within the Local Study Area.	Effect extends into the Regional Study Area.	Effect extends beyond the Regional Study Area.
Timing and Duration (of conditions causing the effect)	Conditions causing effect are evident during the site preparation and construction phase, and/or during the decommissioning phase.	Conditions causing effect are evident during the operations phase.	Conditions causing effect are continuous throughout each DGR Project phase.

Table 11.1-1: Effects Criteria and Levels for Determining Significance (continued)

Effects Criteria	Effects Level Definition		
	Low	Medium	High
Frequency (of conditions causing effect)	Conditions or phenomena causing the effect occur infrequently (i.e., several times per year).	Conditions or phenomena causing the effect occur at regular, although infrequent intervals (i.e., several times per month).	Conditions or phenomena causing the effect occur at regular and frequent intervals (i.e., daily or continuously).
Degree of Irreversibility (of effect)	Effect is readily (i.e., immediately) reversible.	Effect is reversible with time.	Effect is not reversible (i.e., permanent).

Probability of occurrence was not explicitly included as a criterion for the assessment of significance. The assessment recognizes the widest, reasonable range of likely residual adverse effects without specific regard for their respective probability of occurrence⁴. The focus is on evaluating the possible effect on the environment as represented by VECs, and the consideration of feasible mitigation measures that can be incorporated to control, reduce or eliminate the effect.

The level of significance of the residual adverse effect is determined by using professional judgement to combine the magnitude, geographic extent, timing and duration, frequency, and degree of irreversibility.

11.2 SIGNIFICANCE OF RESIDUAL ADVERSE EFFECTS

One residual adverse effect of the DGR Project on enjoyment of personal property, included in the Other Social Assets VEC, was identified:

- Increases in off-site noise levels during the site preparation and construction phase and during the decommissioning phase will be approximately 5 dBA, which is a noticeable level of change. This change may reduce the enjoyment of private property in the Baie du Doré area, in close proximity to the Bruce nuclear site.

The overall assessment of the residual adverse effect on the use and enjoyment of personal property during site preparation and construction, and decommissioning (Table 11.2-1), is as follows:

- The magnitude for changes in the enjoyment of property is considered to be **low**. Although predicted changes in noise levels could be as high as 5 dBA relative to the quietest hour of the day, there would be no measurable change in noise levels during most portions of the day. In addition, noticeable changes in noise levels (i.e., >3 dBA) will occur less than 24% of the time. The noticeable changes were predicted to occur

⁴ As noted in Section 2.2 in regards to the application of the precautionary principle, all identified residual adverse effects, with the exception of malfunctions, accidents and malevolent acts, are assumed to occur for the purposes of this assessment.

late at night, when residents are more likely to be indoors and more likely to have windows closed during most times of the year. Indoor noise levels from the DGR Project would be much lower than those outdoors, and likely indistinguishable from existing levels indoors.

- Geographic extent is **low** as the effect is restricted to a small portion of the Local Study Area, specifically in the vicinity of Baie du Doré.
- The timing and duration is **low** since the effect is evident during the site preparation and construction phase. It is assumed that a comparable effect would also occur during the decommissioning phase. This effect was not evident during the operations phase of the DGR Project.
- The frequency was considered **medium** since the conditions or phenomena causing the effect occur at regular, although infrequent intervals.
- The degree of reversibility is **medium** as it will take time after the increased noise levels cease for people's enjoyment of their property to recover.

Therefore, based on the above, the residual adverse effect is assessed to be not significant.

Table 11.2-1: Summary of Residual Adverse Effect and Significance Levels for the Socio-economic Environment

Residual Adverse Effect	Magnitude	Geographic Extent	Timing and Duration	Frequency	Degree of Irreversibility	Overall Assessment
<i>Site Preparation and Construction and Decommissioning Phases</i>						
Effects of increased noise levels on the enjoyment of private property (Other Social Assets VEC)	Low <ul style="list-style-type: none"> There is not likely to be a measurable change in the community asset There is no change to the overall community well-being 	Low <ul style="list-style-type: none"> Effect is limited to a small portion of the Local Study Area 	Low <ul style="list-style-type: none"> Effect occurs during the site preparation and construction phase and the decommissioning phase 	Medium <ul style="list-style-type: none"> The effect occurs at regular, although infrequent intervals 	Medium <ul style="list-style-type: none"> Effect is reversible with time 	Not significant

12. EFFECTS OF THE PROJECT ON RENEWABLE AND NON-RENEWABLE RESOURCES

The DGR Project EIS Guidelines (Appendix A of the EIS) require the EA to consider the effects of the DGR Project on resource sustainability.

12.1 METHODS

Potential DGR Project-environment interactions (as identified for the assessment of effects of the DGR Project) are considered in a context of their likelihood to affect resource sustainability or availability through all time frames. Likely effects were predicted, described and their significance assessed (if necessary) by considering renewable resource use as one component within the Other Financial Assets VEC (see Section 8.4.6.2). This analysis concluded that no adverse effects were likely on the commercial fishery or the supply of aggregate or fuel resources.

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13. PRELIMINARY FOLLOW-UP PROGRAM

The EIS Guidelines stipulate the need for, and the requirements of, a follow-up program for the DGR Project be identified. A follow-up program may be required to determine that the environmental and cumulative effects of the DGR Project are consistent with predictions reported in the EIS. It can also be used to verify that mitigation measures are effective once implemented and determine whether there is a need for additional mitigation measures. A preliminary follow-up program development plan is provided below. The follow-up program is designed to be appropriate to the scale of the DGR Project and the effects identified through the EA process.

Follow-up monitoring programs are generally required to:

- verify the key predictions of the EA studies; or
- confirm the effectiveness of mitigation measures, and in so doing, determine if alternate mitigation strategies are required.

The CNSC will provide regulatory oversight to ensure that OPG has implemented all appropriate mitigation measures and that the follow-up monitoring is designed and carried out. The CNSC compliance program can be used as the mechanism for ensuring the final design and implementation of the follow-up program and reporting of the follow-up program results.

13.1 INITIAL SCOPE OF THE FOLLOW-UP PROGRAM

Given the central role that public attitudes play in determining whether or not socio-economic effects occur, follow up monitoring of public attitudes toward the DGR Project is warranted and results of the follow-up studies should be communicated to the public. To this end, it is recommended that OPG continue to monitor public attitudes toward the DGR Project. Public attitude research (PAR) should be undertaken to provide directly comparable results to the 2009 PAR, in terms of questions and approach to sampling. At a minimum, OPG should consider the need for PAR:

- once during the site preparation and construction phase;
- once during the decommissioning phase; and
- subsequent to any accidents or malfunctions involving the DGR Project that result in an unplanned release of radioactivity to the environment.

OPG will assess the need for PAR during the operations phase in conjunction with its ongoing programs.

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14. CONCLUSIONS

Based on the assessment provided in this TSD, the following conclusions are provided:

- No direct residual adverse effects to socio-economic environment VECs are expected as the result of the site preparation and construction, operation or decommissioning of the DGR Project.
- Increases in off-site noise levels during the site preparation and construction phase and during the decommissioning phase will be approximately 5 dBA, which is a noticeable level of change. This change in noise levels may reduce the enjoyment of private property in the Baie du Doré area, in close proximity to the Bruce nuclear site. This effect is not considered to be significant.
- The anticipated beneficial effects as a result of the DGR Project are as follows:
 - Increased population associated with DGR Project related employment will occur in all Regional Study Area municipalities, with the greatest benefit anticipated in Kincardine.
 - Increased educational opportunities for local students and others with an interest in nuclear technology.
 - The DGR Project will create new direct, indirect and induced employment opportunities. A positive effect on business activity is anticipated during all DGR Project phases, which can be enhanced through policies to utilize local business services wherever practical and appropriate.
 - The DGR Project may result in increased municipal revenue because of increases in property taxes and other revenues; as well as through one-time and annual payments agreed to in the 2004 Hosting Agreement.
 - The DGR Project will increase the direct, indirect and induced labour income in the Local and Regional Study Areas.
- No renewable resource use or effects were identified in the socio-economic assessment that have the potential to adversely affect the sustainability of associated resources.
- Climate change is not expected to have any effect on the conclusions reached regarding the effects of the DGR Project on socio-economic environment VECs.

In summary, the DGR Project is not expected to result in any significant adverse effects on the socio-economic environment. Beneficial effects will serve to enhance community well-being.

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APPENDIX A: LIST OF ACRONYMS, UNITS AND TERMS

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LIST OF ACRONYMS

Acronym	Descriptive Term
AECL	Atomic Energy of Canada Limited
AM	Ante Meridiem (Latin for Before Noon)
ANSI	Area of Natural & Scientific Interest
B&B	Bed and Breakfast
BCFDC	Bruce Community Futures Development Corporation
BNPD	Bruce Nuclear Power Development
CANDU	Canada Deuterium Uranium (trademark of AECL)
CAW	Canadian Auto Workers
CEAA	Canadian Environmental Assessment Act
CNSC	Canadian Nuclear Safety Commission
CSA	Culturally Sensitive Area
DEER	Discover Energized Environmental Resources
DGR	Deep Geologic Repository
DPNGS	Douglas Point Nuclear Generating Station
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMS	Emergency Medical Services
FI	French Immersion
FTE	Full-time Equivalents
GBHS	Grey Bruce Health Services
GDP	Gross Domestic Product
GLL	Gartner Lee Limited
Hwy	Highway
ICI	Industrial, Commercial and Institutional
ILW	Intermediate Level Waste
L&ILW	Low and Intermediate Level Waste
LHIN	Local Health Integration Network
LLW	Low Level waste
MPAC	Municipal Property Assessment Corporation
MOU	Memorandum of Understanding
NAICS	North American Industry Classification System

LIST OF ACRONYMS (continued)

Acronym	Descriptive Term
NEW	Nuclear Energy Worker
NSL	Native Second Language
NWMO	Nuclear Waste Management Organization
OPG	Ontario Power Generation Inc.
OPP	Ontario Provincial Police
PAR	Public Attitude Research
PM	Post Meridiem (Latin for After Noon)
PSW	Provincially Significant Wetland
PWQO	Provincial Water Quality Objectives
RA	Responsible Authority
RV	Recreational Vehicle
SBGHC	South Bruce Grey Health Centre
SON	Saugeen Ojibway Nation
SPM	Suspended Particulate Matter
TSD	Technical Support Document
TSS	Total Suspended Solids
VEC	Valued Ecosystem Component
VFR	Visiting Friends and Relatives
WPCP	Water Pollution Control Plant
WPRB	Waste Package Receiving Building
WTP	Water Treatment Plant
WWMF	Western Waste Management Facility

LIST OF UNITS

Symbol	Units
a	Year
°C	Degrees Celsius
cm	Centimetre
dBa	Decibels
ha	Hectares
kg	Kilograms
km	Kilometres
km ²	Square Kilometres
m	Metres
m ³	Cubic Metres (volume)
m ³ /day	Cubic Metres per Day
mASL	Metres above sea level
µg/m ³	Microgram per Cubic Metre
mm	Millimetres
µSv	MicroSievert
µSv/a	MicroSievert per year
mSv	MilliSievert
mSv/a	MilliSievert per year
MW	Megawatt
person-mSv	Person-MilliSievert
t	Tonne
%	Percent

GLOSSARY OF TERMS

- Aboriginal Traditional Knowledge** – Knowledge that is held by, and unique to, Aboriginal peoples. Aboriginal traditional knowledge is a body of knowledge built up by a group of people through generations of living in close contact with nature. It is cumulative and dynamic and builds upon the historic experiences of a people and adapts to social, economic, environmental, spiritual and political change.
- Bruce Nuclear Site** – The 932 hectare (9.32 km²) parcel of land located within the administrative boundaries of the Municipality of Kincardine in Bruce County. Two operating nuclear stations are located on the site. The site is owned by OPG but has been leased to Bruce Power since May 2001. However, parts of the site, including land on which WWMF is located, have been retained by OPG. See also *OPG-retained Land*.
- Bruce Power** – The licensed operator of the Bruce A and Bruce B nuclear generating stations.
- Canadian Environmental Assessment Agency** – The federal body accountable to the Minister of the Environment. The Agency works to provide Canadians with high-quality environmental assessments that contribute to informed decision making, in support of sustainable development.
- Canadian Nuclear Safety Commission (CNSC)** – The Canadian federal agency responsible for regulating nuclear facilities and materials, including management of all radioactive waste in Canada.
- Decommissioning** – Those actions taken, in the interest of health, safety, security and protection of the environment, to retire a licensed activity/facility permanently from service and render it to a predetermined end-state condition.
- Deep Geologic Repository (or DGR, or Repository)** – The underground portion of the deep geologic repository facility for low- and intermediate-level waste. Initially, the repository includes the access-ways (shafts, ramps and/or tunnels), underground service areas and installations, and emplacement rooms. In the postclosure phase it also includes the engineered barrier systems. The repository includes the waste emplaced within the rooms and excludes the excavation damage zone.
- DGR Project Site** – The portion of the Project Area that will be affected by the site preparation and construction of surface facilities (i.e., the surface footprint).
- Direct Effect** – A direct effect occurs when the VEC is affected by a change that results from a project work and activity.
- Disposal** – The emplacement of waste in an appropriate facility without the intention of retrieval.
- Full-time Equivalent** – A unit that represents one full-time employee, derived from a combination of full-time and part-time employees.
- Geosynthesis** – The assembly of all the geologically-based evidence relevant to the repository safety case; the integration of multi-disciplinary geoscientific data relevant to the development of a descriptive conceptual geosphere model; explanation of a site-specific descriptive conceptual geosphere model within a systematic and structured framework.
- GIS** – Geographic Information System, a computer system designed to allow users to collect, manage and analyze large volumes of spatially referenced information and associated attribute data.

Indirect Effect – An indirect effect occurs when the VEC is affected by a change in another VEC.

Intermediate-Level Waste (ILW) – Radioactive non-fuel waste, containing significant quantities of long-lived radionuclides (generally refers to half-lives greater than 30 years).

Lower Tier Municipality – A local Ontario municipality that has another level of municipal government (such as County or Region) that also provides services to residents of this municipality.

Low Level Storage Building (LLSB) – Refers to a series of buildings at OPG's Western Waste Management Facility for the interim storage of low-level waste.

Low-Level Waste (LLW) – Radioactive waste in which the concentration or quantity of radionuclides is above the clearance levels established by the regulatory body (CNSC), and which contains primarily short-lived radionuclides (half-lives shorter than or equal to 30-years).

OPG-retained Land – The parcels of land on the Bruce nuclear site for which control has been retained by OPG. This includes the WWMF, certain landfills, and the Heavy Water Plant Lands.

Nuisance Receptor – A location at which detailed air quality and noise modelling results were generated for assessment purposes.

Person-Night – A night spent away from home by a person taking a trip. If two persons take a trip involving three nights away from home, that counts for six person nights.

Person-Visit – Travel to a place of overnight stay or to the location of the trip's destination (for same day trips) by a traveller taking a trip. If a person travelled twice to the same location during the same trip, only one person-visit is counted at that location.

Precautionary Approach – The precautionary approach is ultimately guided by judgement, based on values and is intended to address uncertainties in the assessment. This approach is consistent with Principle 15 of the 1992 Rio Declaration on Environment and Development. Principle 15 of 1992 Rio Declaration on Environment and Development and the Canadian government's framework for applying precaution in decision-making processes.

Private Household – Private household refers to a person or a group of persons (other than foreign residents) who occupy the same dwelling and do not have a usual place of residence elsewhere in Canada. It may consist of a family group (census family) with or without other persons, of two or more families sharing a dwelling, of a group of unrelated persons, or of one person living alone. Unless otherwise specified, all data in household reports are for private households only.

Radioactive Waste – Any material (liquid, gaseous or solid) that contains a radioactive "nuclear substance" as defined in Section 2 of Nuclear Safety and Control Act, and which the owner has declared to be waste. In addition to containing nuclear substances, radioactive waste may also contain non-radioactive "hazardous substances", as defined in Section 1 of the CNSC's General Nuclear Safety and Control Regulations.

Receptor – Any person or environmental entity that is exposed to radiation, or a hazardous substance, or both. A receptor is usually an organism or a population, but it could also be an abiotic entity such as surface water or sediment.

Risk – A multi-attribute quantity expressing hazard, danger or chance of harmful or injurious consequences associated with actual or potential exposures. It relates to quantities

such as the probability that specific deleterious consequences may arise and the magnitude and character of such consequences.

Safety Report – A key licensing document which provides an overview of the facility design and operations, summarizes the integrated results of individual safety assessments, and demonstrates that a facility can be constructed, operated, or continue to be operated, without undue risk to health and safety of the workers and the public, and the environment.

Preliminary Safety Report (PSR) is the Safety Report submitted to the CNSC in support of an application for a Site Preparation/Construction Licence.

Final Safety Report (FSR) is the Safety Report submitted to the CNSC in support of an application for a Licence to Operate.

Site Neighbour – For the purposes of the Site Neighbour survey, Site Neighbour is defined as a property owner, resident or business, whose property is located within the site neighbour survey area. The survey area includes all properties adjacent to the Bruce Nuclear site, the “next row” of adjacent properties and the area where the four closest noise, human health and nuisance receptors are located.

Stakeholder – Any person or organization that has an interest in a particular aspect of the project.

Traditional Ecological Knowledge – Traditional ecological knowledge is a subset of Aboriginal traditional knowledge. Traditional ecological knowledge refers specifically to all types of knowledge about the environment derived from the experience and traditions of a particular group of people. There are four traditional ecological knowledge categories: knowledge about the environment; knowledge about the use of the environment; values about the environment; and the foundation of the knowledge system.

Upper Tier Municipality – An Ontario municipality (such as region, district or county) that provides municipal services to an area that includes more than one local municipality.

Valued Ecosystem Component (VEC) – VECs are features of the environment selected to be a focus of the environmental assessment because of their ecological, social, or economic value, and their potential vulnerability to the effects of the DGR project.

Waste Package – The waste material, the container, and any external barriers (e.g. shielding material), as prepared in accordance with requirements for handling, transfer and emplacement in the repository. It is a discrete unit that can be individually identified and handled at the repository facility.

Waste Package Receiving Building (WPRB) – The building at the DGR surface where waste packages arrive for transfer underground.

Western Waste Management Facility (WWMF) – The centralized processing and storage facility on the Bruce nuclear site for OPG’s L&ILW and for the dry storage of used fuel from Bruce nuclear generating stations.

APPENDIX B: BASIS FOR THE EA

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Table B-1: Basis for EA of the DGR Project

Project Works and Activities	Description
Site Preparation	<p>Site preparation would begin after receipt of a Site Preparation Licence and would include clearing approximately 30 ha of the DGR Project site and preparing the construction laydown areas. Activities would include:</p> <ul style="list-style-type: none"> • Removal of brush and trees and transfer by truck to on-site storage; • Excavation for removal and stockpiling of topsoil and truck transfer of soil to stockpile on-site; • Grading of sites, including roads, construction laydown areas, stormwater management area, ditches; • Receipt of materials including gravel, concrete, and steel; • Installation of construction roads and fencing; • Receipt and installation of construction trailers and associated temporary services; and • Install and operate fuel depot for construction equipment.
Construction of Surface Facilities	<p>Construction of surface facilities will include the construction of the waste transfer, material handling, shaft headframes and all other temporary and permanent facilities at the site. Activities would include:</p> <ul style="list-style-type: none"> • establish a concrete batch plant; • receipt of construction materials, including supplies for concrete, gravel, and steel by road transportation; • excavation for and construction of footings for permanent buildings, and for site services such as domestic water, sewage, electrical; • construction of permanent buildings, including headframe buildings associated with main and ventilation shafts; • receipt and set up of equipment for shaft sinking; • construction of abandoned rail bed crossing between WWMF and the DGR site; • fuelling of vehicles; and • construction of electrical substation and receipt and installation of standby generators.
Excavation and Construction of Underground Facilities	<p>Excavation and construction of underground facilities will include excavation of the shafts, installation of the shaft and underground infrastructure (e.g., ventilation system) and the underground excavation of the emplacement and non-storage rooms. Activities will include:</p> <ul style="list-style-type: none"> • drilling and blasting (use of explosives) for construction of main and ventilation shafts, and access tunnels and emplacement rooms; • receipt and placement of grout and concrete, steel and equipment; • dewatering of the shaft construction area by pumping and transfer to the above-ground stormwater management facility; • temporary storage of explosives underground for construction of emplacement rooms and tunnels; • receipt and installation of rock bolts and services; and • installation of shotcrete.

Project Works and Activities	Description
Above-ground Transfer and Receipt of Waste	<p>Above-ground handling of wastes will occur during the operations phase of the DGR Project and will include receipt of L&ILW from the WWMF at the staging area in the DGR Waste Package Receiving Building (WPRB) and on-site transfer to shaft. Above-ground handling of waste includes:</p> <ul style="list-style-type: none"> • receipt of disposal-ready waste packages from the WWMF by forklift or truck • offloading of waste packages at the WPRB; • transfer of waste packages within the WPRB by forklift or rail cart; • temporary storage of waste packages inside the WPRB.
Underground Transfer of Waste	<p>Underground handling of wastes will take place during the operations phase of the DGR Project and will include:</p> <ul style="list-style-type: none"> • receipt of waste packages at the main shaft station; • offloading from cage and transfer of waste packages by forklift to emplacement rooms; • rail cart transfer of some large packages (Heat Exchangers/Shield Plug Containers) to emplacement rooms; • installation of end walls on full emplacement rooms; • remedial rock bolting and rock wall scaling; • fuelling and maintenance of underground vehicles and equipment; • receipt and storage of fuel for underground vehicles. <p>Emplacement activities will be followed by a period of monitoring to ensure that the DGR facility is performing as expected prior to decommissioning.</p>
Decommissioning of the DGR Project	<p>Decommissioning of the DGR Project will require a separate environmental assessment before any activities can begin. Decommissioning of the DGR Project will include all activities required to seal shafts and remove surface facilities including:</p> <ul style="list-style-type: none"> • removal of fuels from underground equipment; • removal of surface buildings, including foundations and equipment; • receipt and placement of materials, including concrete, asphalt, sand, bentonite for sealing the shaft; • construction of concrete monolith at base of two shafts, removal of shaft infrastructure and concrete liners, and reaming of some rock from the shafts and shaft stations; • sealing the shaft; and • grading of the site. <p>The waste rock pile (limestones) will be covered and remain on-site.</p>
Abandonment of the DGR Facility	<p>Timing of abandonment of the DGR facility will be based on discussion with the regulator. Activities may include removal of access controls.</p>
Presence of the DGR Project	<p>Presence of the DGR Project represents the meaning people may attach to the existence of the DGR Project in their community and the influence its operations may have on their sense of health, safety and personal security over the life cycle of the DGR Project. This includes the aesthetics and vista of the DGR facility.</p>

Project Works and Activities	Description
Waste Management	<p>Waste management represents all activities required to manage waste during the DGR Project. During construction waste management will include managing the waste rock along with conventional waste management. During operations, waste management would include managing conventional and radiological wastes from the underground and above-ground operations. Decommissioning waste management may include management of conventional and construction wastes. Activities include:</p> <ul style="list-style-type: none"> • transfer of waste rock, by truck to the WRMA; • placement of waste rock on the storage pile; • collection and transfer of construction waste to on-site or licensed off-site facility; • collection and transfer of domestic waste to licensed facility; • collection, processing and management of any radioactive waste produced at the DGR facility; • collection, temporary storage and transfer of toxic/hazardous waste to licensed facility.
Support and Monitoring of DGR Life Cycle	<p>Support and monitoring of DGR life cycle will include all activities to support the safe construction, operation, and decommissioning of the DGR Project. This includes:</p> <ul style="list-style-type: none"> • operation and maintenance of the ventilation fans, heating system, electrical systems, fire protection system, communications services, sewage and potable water system and the standby generator; • collection, storage, and disposal of water from underground sumps, and of wastewater from above-and below ground facilities; • management of surface drainage in a stormwater management facility; • monitoring of air quality in the facility, exhaust from the facility, water quality of run-off from the developed area around the shafts and Waste Rock Management Area, water quality from underground shaft sumps and geotechnical monitoring of various underground openings; • maintenance and operation of fuel depots above-ground (construction only) and below-ground; and • administrative activities above- and below-ground involving office space, lunch room and amenities space.
Workers, Payroll and Purchasing	<p>Workers, payroll and purchasing will include all workers required during each phase to implement the DGR Project. Activities include:</p> <ul style="list-style-type: none"> • spending in commercial and industrial sectors; • transport of materials purchased to the site; and • workers travelling to and from site.

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APPENDIX C: PROTOCOLS FOR STAKEHOLDER INTERVIEWS

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C1. PROTOCOL FOR STAKEHOLDER INTERVIEWS

C1.1 OBJECTIVES

Interviews with stakeholders are required to collect both quantitative and qualitative data needed for the characterization of baseline socio-economic conditions and effects assessment. A wide variety of stakeholder interviews and surveys are necessary to ensure a current and comprehensive database is available and to augment the information collected from secondary sources.

C1.2 STAKEHOLDER IDENTIFICATION

Based on the groups of stakeholders identified in the proposed work package scope of work, AECOM staff researched relevant organizations and individual stakeholders in the Local Study Area and Regional Study Area. Consideration was given to the following factors in selecting the stakeholders for interviews:

- proximity to Bruce nuclear site/presences in the Local Study Area/Bruce nuclear site neighbour;
- direct linkages to the biophysical environment (e.g., outdoor components), and/or the Bruce nuclear site (e.g., fishing or boating activity);
- known linkages or potential linkages to the Bruce nuclear site operations (e.g., links through shared or funded programs, use of Bruce nuclear site property);
- size/importance of the operation in the Local Study Area and Regional Study Area; and
- representation of an important segment of the population (e.g., youth, elders, cultural organization, etc.).

A large pool of potential stakeholders was identified and this pool was screened for relevance resulting in the final identification of 130 stakeholders to be contacted.

C1.3 SURVEY APPROACH

Stakeholder interviews were conducted either in person or by phone. Personal interviews were undertaken at the discretion of AECOM socio-economic project staff in consultation with NWMO.

Senior AECOM staff developed and administered two training sessions for interviewers which covered the following:

- generic project information and scope of project discussion with stakeholder;
- interview protocol;
- role play exercises; and
- data recording and reporting.

Stakeholder interviews involved the following steps:

1. Contacting the individual identified in the Local Study Area stakeholder contact list and inquiring as to whether this individual is willing to be interviewed in person by a AECOM socio-economist. The interviewee shall be read the following information at the initial telephone call:

Hello, my name is NAME and I am calling from AECOM. We are a consulting firm that has been retained by the Nuclear Waste Management Organization (or the NWMO) to conduct interviews in your community.

I would like to speak with you or someone at your organization regarding:

- *your Business/organization*
- *your role in the community and the overall community well-being*
- *the existing Bruce nuclear site and Western Waste Management Facility and;*
- *the proposed Deep Geologic Repository (DGR)*

Your individual responses will be held strictly confidential to AECOM and reported only in aggregate format together with other responses. Our discussion today will only take approximately 20 minutes of your time.

2. Should the individual not feel that he/she should be interviewed; the AECOM interviewer shall inquire whether there is someone else in his or her organization that should or could be interviewed. If yes, thank the individual and obtain the contact information for the recommended individual. Contact the recommended individual for a personal/telephone interview.
3. Should the individual need more information about the interview and kinds of questions, the interviewer shall provide more details and suggest that a set of questions can be emailed or faxed in advance of the meeting/telephone interview.
4. Agree on date and time for the interview and obtain contact information (including street address / mailing address and email address).
5. Confirm date and time of the interview via email immediately upon termination of telephone call and at least one day in advance of the meeting/telephone interview date.
6. Upon meeting/calling the individual, the interviewer shall begin the interview. Each section of the interview includes an introduction at which point background information is given (ie., Bruce nuclear site, Western Waste Management Facility and/or the proposed Deep Geologic Repository project).
7. Once the interview is completed a follow-up email was sent out to all participants in order to thank them for their time and provide a project website.

C1.4 INTERVIEW GUIDES

Interview Guides were prepared to illicit information on some or all of the following areas:

- generic business/organization information;
- general questions relating to community well-being (CWB);
- questions regarding the existing Bruce nuclear site; and
- questions regarding the DGR Project.

Questions in the interview guides were tailored for each stakeholder group. All Stakeholder Interview Guides are included in Attachment C-1.

C1.5 OUTCOMES

Telephone interviews were conducted by AECOM staff from October 13, 2009 to November 23, 2009. A total of 130 people were contacted with 77 interviews completed. Out of the 77 completed interviews, two were completed in-person on November 26th and 27th for the Real Estate Workers and Tourist Attractions groups.

Table C1.5-1 summarizes the general groupings of stakeholders and number of participants contacted.

Table C1.5-1: Interview Outcomes

Stakeholder Group	Total Participants Called	Interviews Completed	Participant Declined	Participant Unavailable
Agricultural Service Providers	20	6	3	11
Boating and Fishing Businesses	7	6	1	-
Community Facilities	16	9	2	5
Cottage Rental Agencies	6	1	4	1
Emergency Management Coordinators	4	4	-	-
Fish License Holders	10	2	6	2
Health & Safety Providers	7	6	-	1
Power Workers' Union	2	2	-	-
Real Estate Workers	1	1**	-	-
Recreational & Community Organizations	8	5	1	2
Regional Construction & Trades Council	2	1	1	-
School Boards & Nearest Schools	5	4	1	-
Tourist Accommodation Providers	34	22	6	6
Tourist Attractions	8	8**	-	-
Total	130	32	25	28

Note: **reflects Personal Interview

A complete list of the names of all organizations interviewed, organized by stakeholder group is included in Attachment C-2.

C2. PROTOCOL FOR SITE NEIGHBOUR SURVEY

C2.1 OBJECTIVES

For the purposes of this socio-economic assessment it was considered important to characterize the manner in which local residents, businesses and neighbours to the Bruce nuclear site use and enjoy their property, whether this is for family or leisure, farming /agricultural or other business purposes. In addition, the socio-economic assessment requires that local residents and site neighbours are provided an opportunity to undertake a preliminary 'self-assessment' of the potential effects of the DGR Project on their **use and enjoyment of property** and/or **business activity**. The survey responses will also support the description of community character and cohesion.

This protocol describes the approach to the characterization of the use and enjoyment of property among site neighbours and to gaining a preliminary self-assessment of the potential effects of the DGR Project.

The objectives of the Site Neighbour Survey were to:

1. obtain a better understanding of the characteristics of the immediate neighbour to the Bruce nuclear site, the ways in which they use their properties and the local neighbourhood;
2. obtain an understanding of the things that influence site neighbours' use and enjoyment of their property and their activities in the neighbourhood;
3. obtain a self-assessment of site neighbour's overall level of satisfaction with living in their neighbourhood;
4. gain an understanding of how the existing Bruce nuclear site and ongoing operation affect site neighbours' use and enjoyment of property; and
5. gain a self-assessment of likely implications and effects of the DGR Project on site neighbours' use and enjoyment of property and their overall satisfaction with neighbourhood.

C2.2 SURVEY AREA

The survey area was bounded:

- to the south by Bruce Road 15;
- to the west by Lake Huron;
- to the north by Concession 8; and
- to the east by Bruce Road 23 or Hwy 23.

This area was selected because it includes all of the immediate neighbours of the Bruce nuclear site. In general, this neighbourhood is characterized by rural residential properties, farms and light industrial and commercial businesses. Figure 1 provides an overview of the site area and specific properties.

AECOM staff identified sites adjacent to the Bruce nuclear site and the ownership information was obtained from the Bruce County Planning office.

C2.3 SURVEY APPROACH

All neighbours were contacted by phone and if possible appointments were set up to administer the survey. If AECOM staff was unable to reach the contact, AECOM staff would proceed to drive along identified route. AECOM staff departed for the Local Study Area on Thursday November 26th and returned on Friday November 27th. In-person interviews and survey drops took place from 9:00 am to 5:00 pm over the course of the two days.

AECOM staff stopped at each of the identified houses or business and inquired for the designated contact. The survey instrument was handed out and AECOM staff asked if help was needed in completing the survey. If help was required, staff took approximately 20 to 30 minutes administering the survey and completing the form. If no one opened the door, AECOM staff dropped-off the survey in the mail slot and left the property.

Attachment C-3 provides a sample of the Survey Instrument that was implemented. A Reminder Postcard is included in this attachment as this was given to all site neighbours with the survey instrument.

C2.4 SURVEY OUTCOMES

In total there were 14 surveys administered in person, dropped off or mailed to site neighbours resulting in a total of 8 completed surveys. Table C2.4-1 summarizes the outcomes of all the Site Neighbour Surveys administered.

Table C2.4-1: Site Neighbour Survey Outcomes

	Total Administered	Total Completed/Returned
In person surveys	5	5
Survey Mailed	4	1
Survey's dropped	4	2

C3. PROTOCOL FOR TOURIST/ DAY USER SURVEY

C3.1 OBJECTIVES

A need for a Tourist / Day User Survey at the Conservation Areas and Provincial parks located in the Regional Study Area and Local Study Area was identified as one component of the baseline data collection program. The following three conservation areas/parks are considered major tourist attractions and also community and recreational facilities in the study area:

- Brucedale Conservation Area – located between Kincardine and Port Elgin; approximately ½ hour drive north of the Bruce nuclear site;
- Inverhuron Provincial Park – located on the shores of Lake Huron in the village of Inverhuron; park borders the Bruce nuclear site; and
- MacGregor Point Provincial Park – located on the shores of Lake Huron.

This protocol describes the approach to the characterization of the use and enjoyment of tourists visiting these three areas and/or day users of these areas. For the purposes of this survey, all of the questions were geared towards tourists and day users.

The objectives of the Provincial Park/Conservation Areas Tourist/Day User Survey were to:

- identify the ways in which tourists and day users use and enjoy the recreational and/or natural resources/amenities of the two Provincial parks and Conservation Area;
- to quantify the frequency of visitation and the average amount of monies spent by tourists visiting the two Provincial parks and Conservation Area;
- identify the factors that currently affect people's use and enjoyment of these recreational and/or natural resources/amenities; and
- identify current issues and concerns regarding the Bruce nuclear site and those associated with the DGR Project.

C3.2 SURVEY APPROACH

The field survey was intended to be undertaken as a "roving" survey, namely the interviewer/surveyor moved from location to location within the boundaries of the two Provincial parks and Brucedale Conservation Area and approached people using the recreational resources. The survey was implemented during daylight hours only. The protocol for implementing the survey was as follows:

- once date and time was confirmed, AECOM staff contacted/left a message with the Provincial Park Superintendent to inform them of plans for being on-site and activities prior to commencement of each field visit;
- upon arrival at the parks and conservation area, interviewers conducted an initial walk-about to identify areas that were currently being used to the greatest extent;
- interview processes began at the areas where the most adults were present and interviewers roved across other locations within the area conducting interviews where possible. They avoided approaching individual campers at their campsite. Rather it was preferred that Park users be approached in common areas within the park/conservation area (i.e., along roads, trails, beaches, kiosks, etc.);
- interviewers followed the script of the interview guide introductory and background section; and
- all comments were documented within the survey form.

Attachment C-4 provides a sample of the survey instrument that was implemented.

C3.3 SURVEY OUTCOMES

A total of 121 Tourist / Day User Surveys were administered. Table C3.3-1 details the outcomes for the Provincial Park/Conservation Areas Tourist/Day User Survey.

Table C3.3-1: Tourist/Day User Survey Outcomes

Survey Location	Dates Administered	Total Number Surveyed
Bruce Dale Conservation Area	September 26 and October 10, 2009	18
Inverhuron Provincial Park and MacGregor Point Provincial Park	September 4, 2009	103

C4. PROTOCOL FOR COMMUNITY LEADER SURVEY

C4.1 OBJECTIVES

There is a long history of community interaction with regard to various activities surrounding the Bruce nuclear site and OPG's DGR Project. An important first step is to develop a "baseline" assessment of community issues and perspectives regarding OPG and the proposed DGR Project from which future community engagement activities can be developed.

It should be noted that this is the second of two Community Leader Surveys for the DGR Project. The first was conducted in October 2006 by Gartner Lee Limited (GLL), now operating as AECOM. This second Community Leader Survey, three years later, has been refined to provide updated community perspectives and to reflect upon the current use of *community well-being* and its support of *Sustainable Development* within the context of the EIS for this project.

The objectives of the Community Leader Survey were to gain a better understanding of:

- background information and issues facing communities;
- perspectives on the contribution of the DGR Project to community well-being;
- awareness of the NWMO and its current roles and responsibilities; and
- challenges and opportunities regarding the DGR Project within the context of Sustainable Development.

C4.2 SURVEY APPROACH

The method employed to obtain information was an in-depth survey of selected community leaders. Twenty-seven (27) community leaders were identified by the NWMO for participation in this study.

AECOM and the NWMO considered community leaders to be persons with unique knowledge of the communities potentially affected by the DGR Project that hold political office in potentially affected communities, are involved in community organizations within the affected communities,

who have organized community activities and events, have broad businesses or commercial interests and knowledge within potentially affected communities and/or otherwise have knowledge of public opinions and attitudes towards OPG, the NWMO or the DGR Project. To this end, the community leaders interviewed included a mix of:

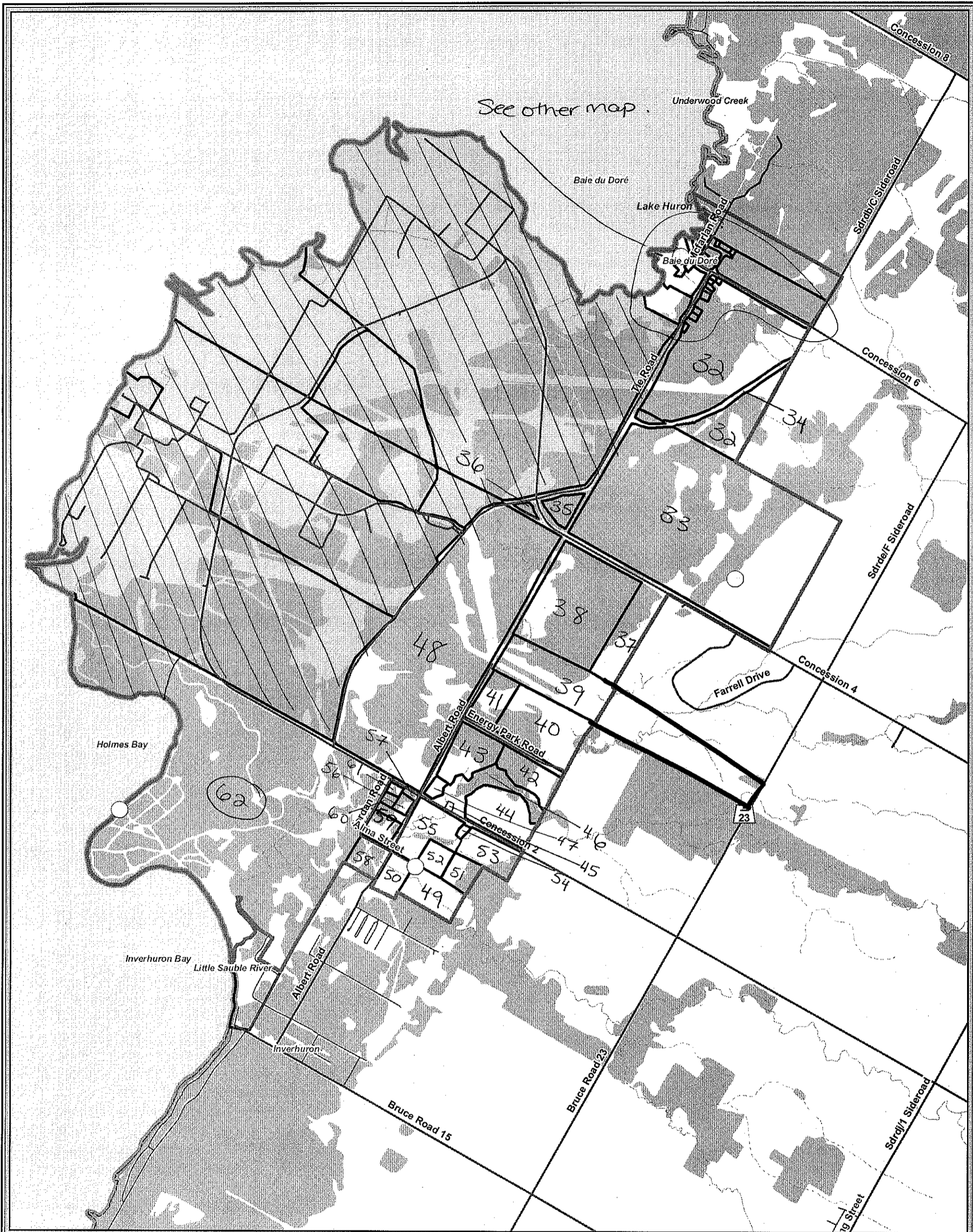
- local and regional politicians, including Mayors and Councillors;
- Provincial and federal politicians representing the areas;
- municipal administrators of communities within the area;
- local business owners and business associations;
- representatives of community service organizations (e.g. health and tourism);
- media representative; and
- community events coordinators.

It is noteworthy that no members of local First Nations or Métis communities were interviewed as part of this consultation activity as such communications and consultation with these groups were to be undertaken separately.

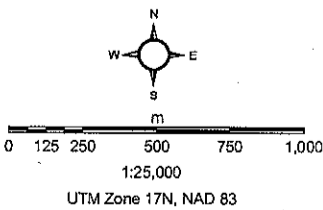
Multiple attempts were made by AECOM to make contact with identified community leaders and encourage participation. A total of 23 Community Leader Surveys were completed. Four community leaders did not complete the survey for a range of reasons, including illness and non-responsiveness.

The 29 questions in the Community Leader Survey asked the community leaders to reflect on key issues facing their community, the DGR Project and their awareness of the NWMO and Sustainable Development. The interviews took between 30 and 60 minutes to complete depending on the amount of discussion the respondent wished to undertake. AECOM did not limit the duration of the interview in any way. The interview guide is presented in Attachment C-5.

A total of 23 surveys were completed by phone and were conducted by senior AECOM project staff. Responses from all questions were summarized and are reported in the main report. Because AECOM indicated to each respondent that their individual responses would be held strictly confidential to AECOM, they are reported only in aggregate and a final list of respondents has not been included in this report.



Basemapping from Ontario Ministry of Natural Resources
Orthophotography.



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Legend

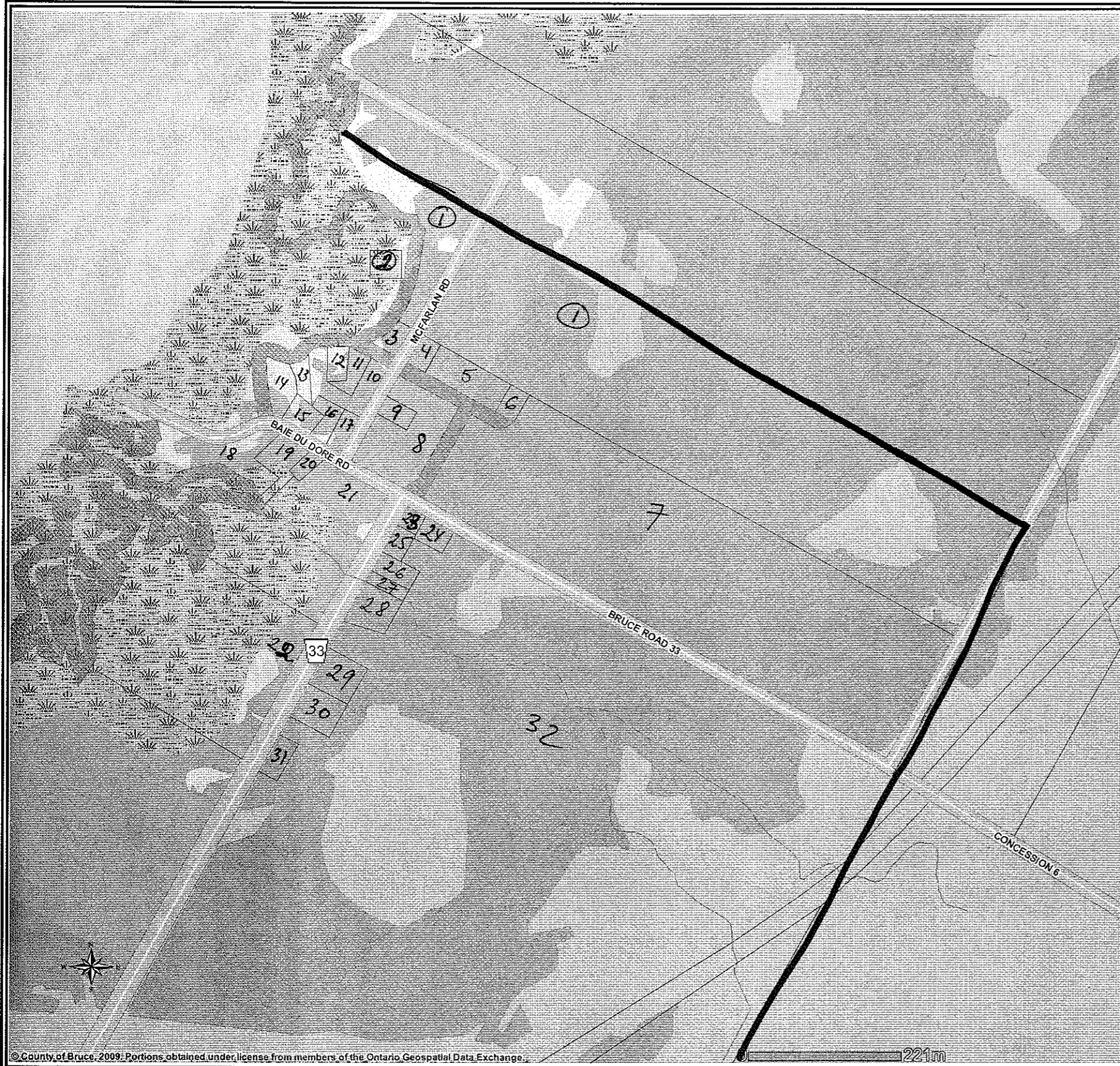
- Human Health / Noise / Nuisance Receptors
- Site Neighbour Area
- Property Fabric
- Bruce Nuclear Site Study Area

Deep Geologic Repository
Proposed Site Neighbour Study Area

October 2009
107412

AECOM

Figure 1



County of Bruce

Legend

- Airports
- Rural Communities
- Major Highways
- County Roads
- Road Allowances
 - Open Road Allowance
 - Unopened Road Allowance
 - Right-Of-Way
 - Private Road Allowance
- Deemed Lots
- Subdivisions
 - Final Approved
 - Draft Approved
- Severances
 - Severed Portion
 - Retained Portion
- Property Parcels
- Waterbodies
- Evaluated Wetlands
- Provincial Parks
- Fathom Five Boundary
- National Park
- County Forests
- Wooded Areas
- Golf Courses
- Parkland
- Built-up areas

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DISCLAIMER: The County of Bruce expressly disclaims responsibility for damages or liability that may arise from the use of this map.

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ATTACHMENT C-1: INTERVIEW GUIDE

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Attachment C-1: Interview Guide

Agricultural Services and Products Providers

PART ONE – Generic Business or Organization Information

1. Can you please describe your organization in terms of the activities and services that you provide?

PART TWO – General Questions Related to Community Well-Being

2. From your perspective, what is the most important attribute of the Southern portion of Bruce County that needs to be maintained or enhanced to support farming in the next decade?
3. From your perspective, what do you feel is the greatest threat to community well-being in the Southern portion of Bruce County in the next decade and beyond?

PART THREE – Information Regarding Existing Bruce Nuclear Site

4. Can any of your organization's activity be attributed to the presence of the Bruce Nuclear Site, its employees or activities? If yes, how much or in what ways?
5. Do you think your members or customers associate the Southern portion of Bruce County with the presence of the Bruce Nuclear Site or the Western Waste Management Facility? If yes, why?

PART FOUR – Information Regarding a Deep Geologic Repository

6. In what ways, if any, do you think that a Deep Geologic Repository project might change the image of the Southern portion of Bruce County?
7. In what ways, if any, do you think a Deep Geologic Repository Project might change or affect your organization its activities, events, or future plans?
8. If a Deep Geologic Repository project were to proceed, what might be the most important thing you would want OPG to know? What is the most important concern or comment you have regarding this project?

Boating and Fishing Businesses/Organization

PART ONE – Generic Business or Organization Information

1. Please briefly describe your business/organization in terms of the full range of products and services you provide and the facilities you operate.
2. How long have you been in operation?

3. What kinds of clients / members does your business/organization primarily serve (local vs. tourist etc.)?
4. What is the geographic area that your business/organization serves?
5. What is the geographic area from which your clients/members come?

Question 6 for CHARTER BUSINESSES and MARINAS/HARBOUR ONLY

6. Can you please estimate your annual sales? During which month(s) is your business/organization and sales highest? Do you foresee any capacity for growth?

Everyone else continue with the rest of the questions

7. In your opinion, what factors or issues influence the success of your business/operation operation the most?
8. What are the future plans for your business/organization, in terms of expansions, closures, or amalgamations?
9. Over the past five years, has your business/organization generally increased, decreased, or stay the same?

PART TWO – General Questions Related to Community Well-Being

10. From your perspective, what is the most important attribute of your community that needs to be maintained or enhanced to support community well-being in the next decade?
11. From your perspective, what do you feel is the greatest threat to your community's overall well-being in the next decade and beyond?
12. From your perspective, in what ways does your business/organization contribute to the overall well-being of the community in which you operate?

PART THREE – Information Regarding Existing Bruce Nuclear Site

13. Do you or your business/organization have any formal or informal links to the Bruce Nuclear Site? If yes, please describe.
14. In what ways, if any, does your business/organization operation use the areas nearest to the Bruce Nuclear Site?
15. Can any of your business/operation activity be attributed to the presence of the Bruce Nuclear Site or Western Waste Management Facility, its employees or activities? If yes, how much or in what ways?
16. Do you think your clients / customers link your business/operation with the presence of the Bruce Nuclear Site? If yes, why?

PART FOUR – Information Regarding a Deep Geologic Repository

17. In what ways, if any, do you think that the Deep Geologic Repository project might change the image of your community?

18. In what ways, if any, do you think the Deep Geologic Repository Project might change or affect your business, its activities, events, or future plans?
19. If the Deep Geologic Repository project were to proceed, what might be the most important thing you would want OPG to know? What is the most important concern or comment you have regarding this project?

Community Facilities/Nearest facilities

PART ONE – Generic Facility Information

1. Please briefly describe your facility in terms of the full range of services you provide and the facilities you operate.
2. How long have you been in operation?
3. What kinds of visitors does your facility primarily serve?
4. What is the geographic area that your facility serves?
5. What are the future plans for your facility, in terms of range of services you would like to provide or any expansions, closures or amalgamations?
6. Over the past five years, has facility use generally increased, decreased, or stay the same?

PART TWO – General Questions Related to CWB

7. From your perspective, what is the most important attribute of your community that needs to be maintained or enhanced to support community well-being in the next decade?
8. From your perspective, what do you feel is the greatest threat to your community's overall well-being in the next decade and beyond?
9. From your perspective, in what ways does your facility contribute to the overall well-being of the community in which you operate?
10. What types of outdoor activities are conducted at your facility?
11. From your perspective, in what ways does your facility contribute to the overall well-being of the community in which you operate?

PART THREE – Information Regarding Existing BN Site

12. Does your facility have any formal or informal links to the Bruce Nuclear Site? If yes, please describe.
13. Can any of your facility's uses be attributed to the presence of the Bruce Nuclear Site, its employees or activities? If yes, how much or in what ways?
14. Do you think your visitors link your operation with the presence of the Bruce Nuclear Site? If yes, why?
15. Does your facility have an emergency plan, specialized equipment and/or staff that require training because of the presence of the Bruce Nuclear Site? If yes, please describe.

PART FOUR – Information Regarding a DGR

16. In what ways, if any, do you think that the Deep Geologic Repository project might change the image of your community?
17. In what ways, if any, do you think the Deep Geologic Repository Project might change or affect your facility, its activities, events, or future plans?
18. If the Deep Geologic Repository project were to proceed, what might be the most important thing you would want OPG to know? What is the most important concern or comment you have regarding this project?

Cottage Rental Agencies**PART ONE – Generic Business or Organization Information**

1. Do you currently rent cottages in the Southern portion of Bruce County (excluding Bruce Peninsula North and Bruce Peninsula South)?

(If the answer is NO – do NOT continue interview)

2. What is the geographic area from which your clients come?
3. Can you please describe the numbers/trends in cottage rentals?
4. Over the past five years, has the business at your agency generally increased, decreased, or stayed the same?

PART TWO – General Questions Related to Community Well-Being

5. From your perspective, what is the most important attribute of Southern portion of Bruce County that needs to be maintained or enhanced to support cottaging in the next decade?
6. From your perspective, what do you feel is the greatest threat to cottaging in the Southern portion of Bruce County in the next decade and beyond?

PART THREE – Information Regarding Existing Bruce Nuclear Site

7. Can any of your agency's business activity be attributed to the presence of the Bruce Nuclear Site, its employees or activities? If yes, how much or in what ways?
8. Do you think your clients / customers associate the Southern portion of Bruce County with the presence of the Bruce Nuclear Site or the Western Waste Management Facility? If yes, why?

PART FOUR – Information Regarding a Deep Geologic Repository

9. In what ways, if any, do you think that a Deep Geologic Repository project might change the image of the Southern portion of Bruce County?
10. In what ways, if any, do you think a Deep Geologic Repository Project might change or affect your agency, its activities, events, or future plans?

11. If a Deep Geologic Repository project were to proceed, what might be the most important thing you would want OPG to know? What is the most important concern or comment you have regarding this project?

Emergency Management Co-ordinators

PART ONE – Generic Business or Organization Information

1. Please briefly describe your organization terms of your mandate and the full range of services you provide and the facilities you operate.
2. How long have you been in operation?

PART TWO – General Questions Related to Community Well Being

3. From your perspective, what is the most important attribute of your community that needs to be maintained or enhanced to support community well-being in the next decade?
4. From your perspective, what do you feel is the greatest threat to your community's overall well-being in the next decade and beyond?
5. From your perspective, in what ways does your organization contribute to the overall well-being of the community in which you operate?

PART THREE – Information Regarding Existing BN Site

Note to interviewer...leave this section very open ended and encourage dialogue for Part 3.

6. Does your organization have any formal or informal links to the Bruce Nuclear Site? If yes, please describe.
7. Has there been an incident or event, related to the presence of the Bruce Nuclear Site that has required a response from your facility or organization? If yes, please describe.

PART FOUR – Information Regarding a Deep Geologic Repository (DGR)

8. In what ways, if any, do you think the Deep Geologic Repository project might change or affect your organization, its activities, events, or future plans?
9. Does the fact that the Deep Geologic Repository project is effectively a mining operation during its construction phase, pose any special issues with respect to emergency management?
10. If the Deep Geologic Repository project were to proceed, what might be the most important thing you would want OPG to know? What is the most important concern or comment you have regarding this project?

PART FIVE – Document Requests

11. Could you please provide any documents you may have that describe your emergency management plans and procedures that apply to the Bruce Nuclear Site?

Fish Licence Holders**PART ONE – Generic Business or Organization Information**

1. Do any of your commercial fishing activities occur in Lake Huron, adjacent to the Southern portion of Bruce County?

If the answer is NO: Where do you fish? **If they fish in the study area, continue with interview.**

If they don't fish in the Southern portion of Bruce County ask:

- If they don't fish in the area ask why this may be?
 - And then ask if the presence of the Bruce Nuclear site in any way influences where you fish.
 - **Then conclude interview (do not proceed).**
2. Please describe your operation in terms of the full range of products and services you provide and the facilities you operate.
 3. How long have you been in operation?
 4. What kinds of clients / customers does your operation primarily serve (local vs. tourist etc.)?
 5. What is the geographic area of your operation?
 6. What is the geographic area from which your clients come?
 7. What are the harvest volumes / tonnes and value of your harvest or sales? Do you have any data that you can share?
 8. During which month(s) is your operation the most active?
 9. In your opinion, what factors or issues influence the success of your operation the most?
 10. Over the past five years, have your business activities generally increased, decreased, or stayed the same?
 11. What are the future plans for your operation, in terms of expansions, closures, or amalgamations?

PART TWO – General Questions Related to Community Well-Being

12. From your perspective, what is the most important attribute of your community that needs to be maintained or enhanced to support community well-being in the next decade?
13. From your perspective, what do you feel is the greatest threat to your community's overall well-being in the next decade and beyond?
14. From your perspective, in what ways does your operation contribute to the overall well-being of the community in which you operate?

PART THREE – Information Regarding Existing Bruce Nuclear Site

15. In what ways, if any, does your operation use the areas nearest to the Bruce Nuclear Site?
16. Can any of your business activity be attributed to the presence of the Bruce Nuclear Site, its employees or activities? If yes, how much or in what ways?
17. Do you think your clients / customers link your operation with the presence of the Bruce Nuclear Site? If yes, why?

PART FOUR – Information Regarding a Deep Geologic Repository

18. In what ways, if any, do you think that a Deep Geologic Repository project might change the image of your community?
19. In what ways, if any, do you think a Deep Geologic Repository Project might change or affect your business, its activities, events, or future plans?
20. If a Deep Geologic Repository project were to proceed, what might be the most important thing you would want OPG to know? What is the most important concern or comment you have regarding this project?

Health & Safety Facilities and Service Providers**PART ONE – Generic Business or Organization Information**

1. Please briefly describe your organization/facility?
2. How long have you been in operation?
3. What are the key issues facing your organization/facility today?
4. What is the geographic area that your services and/or facility serve?

PART TWO – General Questions Related to CWB

5. From your perspective, what is the most important attribute of your community that needs to be maintained or enhanced to support community well-being in the next decade?
6. From your perspective, what do you feel is the greatest threat to your community's overall well-being in the next decade and beyond?
7. From your perspective, in what ways does your service/facility contribute to the overall well-being of the community in which you operate?

PART THREE – Information Regarding Existing BN Site

8. Do your service and/or facility have any formal or informal links to the Bruce Nuclear Site? If yes, please describe.
9. Has your organization participated in any activities or events organized by OPG on the Bruce Nuclear Site? If yes, please describe.
10. Does your facility have an emergency plan, specialized equipment and/or staff that require training because of the presence of the Bruce Nuclear Site? If yes, please describe.
11. Has there been an incident or event, related to the presence of the Bruce Nuclear Site that has required the use of your facility or your services? If yes, please describe.

PART FOUR – Information Regarding a DGR

12. In what ways, if any, do you think that the Deep Geologic Repository project might change the image of your community?
13. In what ways, if any, do you think the Deep Geologic Repository project might change or affect your organization, its activities, events, or future plans?
14. Does the fact that the DGR project is effectively a mining operation during its construction phase, pose any special issues with respect to health and safety?
15. If the Deep Geologic Repository project were to proceed, what might be the most important thing you would want OPG to know? What is the most important concern or comment you have regarding this project?

Power Workers Union & The Society of Energy Professionals**PART ONE – Generic Organization Information**

1. What is your organization's role or mandate at the Bruce Nuclear site?
2. How long have you been in operation?

PART TWO – General Questions Related to CWB

3. Many OPG and Bruce Nuclear Power site employees live in the Southern portion of Bruce County. Would you agree?
4. How would you say that your organization contributes to community well-being in the Southern portion of Bruce County?

PART THREE – Information Regarding Existing BN Site

5. AECOM is interested in understanding employee issues and concerns the Bruce Nuclear site. From your perspective, what are the most important issues facing OPG and Western Waste Management Facility site employees today? Please explain.
 - From your understanding, what is OPG doing to address these issues?
 - From your understanding, what is your organization doing to address these issues?
6. What are the things or features of the Bruce Nuclear Site that are valued by your members and should be protected or enhanced?

PART FOUR – Information Regarding a DGR

7. The types of jobs and job skills needed for this particular project are unique to nuclear facility operations (e.g., this is both a mining project (requiring mining expertise) plus handling of nuclear materials during operations):
 - What is your perspective on this in terms of you union?
 - Is there anything special that your organization would need to do because of this?
8. In what ways, if any, do you think that the construction a Deep Geologic Repository (DGR) at the Western Waste Management site might affect your members or their workplace, regardless if they are OPG, AECL (Atomic Energy of Canada Ltd) or Bruce Power?
 - Do you foresee any adverse effects of the proposed DGR on your membership or their workplace? If yes, what would these be?
 - Do you foresee any positive effects of the proposed DGR on your membership or their workplace? If yes, what would these be?
9. Do you have any suggestions for OPG to consider in order to address these potential effects?
10. If the Deep Geologic Repository project were to proceed, what might be the most important thing you would want OPG to know? What is the most important concern or comment you have regarding this project?

Real Estate Workers**PART ONE – Generic Business/Organization Related Questions**

1. In which municipalities do you tend to work most in (i.e., what geographic area do you serve)?
2. Which types of properties do you mainly specialize in (i.e., residential, commercial, industrial, agricultural properties)?
3. What are the main issues or factors that determine (SELECT residential, commercial, industrial, agricultural properties) property values in your area?
4. Are people generally moving into or out of your area? What are the demographics of people buying and selling property in your area (i.e., own / rent; families / couples/ singles; older / younger; high density / low density)?

PART TWO – General Questions Related to Community Well Being (CWB)

5. From your perspective, what is the most important attribute of your community that needs to be maintained or enhanced to support community well-being in the next decade?
6. From your perspective, what do you feel is the greatest threat to your community's overall well-being in the next decade and beyond?
7. From your perspective, in what ways does your operation contribute to the overall well-being of the community in which you operate?

PART THREE – Questions Regarding Existing Bruce Nuclear Site

8. Can any of your agency's business activity be attributed to the presence of the Bruce Nuclear Site, its employees or activities? If yes, how much or in what ways?
9. What is the current trend in property values in the vicinity of the Bruce Nuclear site? How long do you expect this trend to continue?
10. Do you think your clients / customers associate the Southern portion of Bruce County with the presence of the Bruce Nuclear Site or the Western Waste Management Facility? If yes, why?

PART FOUR – Questions Regarding the Deep Geologic Repository (DGR) Project?

11. In what ways, if any, do you think that a Deep Geologic Repository project might change the image of the Southern portion of Bruce County?
12. In what ways, if any, do you think that the Deep Geologic Repository project may change or affect your agency, its activities, events, or future plans?

13. If the Deep Geologic project were to proceed, what might be the most important thing you would want OPG to know? What is the most important concern or comment you have regarding this project?

Recreational and Community Organizations / Clubs

PART ONE – Generic Business or Organization Information

1. Please briefly describe your organization in terms of the full range of services you provide, the activities or events you undertake and the facilities you operate.
2. How long have you been in operation?
3. Does your organization operate any facilities if so, where are the facilities and please describe them?
4. What is the geographic area that your organization serves?
5. Can you please estimate your current membership/attendance, annually?
6. Over the past five years, have your programs/uses generally increased, decreased, or stay the same?

PART TWO – General Questions Related to CWB

7. From your perspective, what is the most important attribute of your community that needs to be maintained or enhanced to support community well-being in the next decade?
8. From your perspective, what do you feel is the greatest threat to your community's overall well-being in the next decade and beyond?
9. From your perspective, in what ways does your organization contribute to the overall well-being of the community in which you operate?
10. From your perspective, in what ways does your organization contribute to the overall well-being of the community in which you operate?

PART THREE – Information Regarding Existing BN Site

11. Does your organization have any formal or informal links to the Bruce Nuclear Site? If yes, please describe.
12. In what ways, if any, does your organization use the areas nearest to the Bruce Nuclear Site?
13. Has your organization participated in any activities or events organized by OPG on the Bruce Nuclear Site? If yes, please describe.

PART FOUR – Information Regarding a DGR

14. In what ways, if any, do you think that the Deep Geologic Repository project might change the image of your community?
15. In what ways, if any, do you think the Deep Geologic Repository project might change or affect your organization, its activities, events, or future plans?
16. If the Deep Geologic Repository project were to proceed, what might be the most important thing you would want OPG to know? What is the most important concern or comment you have regarding this project?

Regional Construction Trades Councils/Training Boards**PART ONE – Generic Organization Information**

1. What is your council's/training board role or mandate in the construction industry and what is the geographic region that you serve.
2. How long have you been in operation?
3. Are you aware of any major construction projects in Bruce County that are likely to be undertaken in the next 3 to 5 years for which the construction industry and possibly your council / board is preparing?

PART TWO – AECOM is interested in understanding the current issues and trends into the foreseeable future for Ontario's construction industry.

4. From your perspective, what are the most important issues facing the construction industry in Bruce County today? Please explain.
5. With respect to the future labour market in Bruce County, what trends do you foresee looking into the future?
6. For any major construction project, does your organization play any specific role to ensure a sufficient supply of skilled and unskilled trades people?

PART THREE – Information Regarding Existing Bruce Nuclear Site and proposed Deep Geologic Repository (DGR)

7. Does your organization have any formal or informal links with OPG or Bruce Power with respect to the Bruce Nuclear site? If yes, please describe.
8. Does the fact that the DGR project is effectively a mining operation during its construction phase, pose any special issues with respect to the construction industry or the labour market?
9. For a project such as the proposed Deep Geologic Repository, what do you think are the key effects on the construction industry and labour market?

10. If the proposed DGR project were to proceed, what might be the most important thing you would want OPG to know? What is the most important concern or comment you have regarding this project?

School Boards & Nearest Schools

PART ONE – Generic Business or Organization Information

1. Please briefly describe your school in terms of the full range of services you provide and the facilities you operate, your grades and any special programs that you may have?
2. Can you please estimate your current enrolment?
3. Over the past five years, has your enrolment generally increased, decreased, or stay the same?
4. What is the student capacity of your school?
5. What are the future plans for your school?

PART TWO – General Questions Related to CWB

6. From your perspective, what is the most important attribute of your community that needs to be maintained or enhanced to support community well-being in the next decade?
7. From your perspective, what do you feel is the greatest threat to your community's overall well-being in the next decade and beyond?
8. Apart from day to day school operations, do members of the community use your school for any community purposes? If yes, for what purposes and how often?
9. What types of outdoor activities are conducted at your facility?
10. From your perspective, in what ways does this school contribute to the overall well-being of the community in which you operate?

PART THREE – Information Regarding Existing BN Site

11. Does this school have any formal or informal links to the Bruce Nuclear Site? If yes, please describe.
12. In what ways, if any, does your school use the areas nearest to the Bruce Nuclear Site?
13. Has your school participated in any activities or events organized by OPG on the Bruce Nuclear Site or have you organized visits to the Bruce Nuclear Site Visitors' Centre? If yes, please describe.
14. Do you think your students or their parents link your school with the presence of the Bruce Nuclear Site? If yes, why?

15. Does your school have an emergency plan, specialized equipment and/or staff that require training because of the presence of the Bruce Nuclear Site? If yes, please describe.
16. Has there been an incident or event, related to the presence of the Bruce Nuclear Site that has required a fully mobilized response from your facility or organization? If yes, please describe.

PART FOUR – Information Regarding a DGR

17. In what ways, if any, do you think that the Deep Geologic Repository project might change the image of your community?
18. In what ways, if any, do you think the Deep Geologic Repository Project might change or affect your school, its activities, events, or future plans?
19. If the Deep Geologic Repository project were to proceed, what might be the most important thing you would want OPG to know? What is the most important concern or comment you have regarding this project?

Tourist Accommodation Providers

PART ONE – Generic Business or Organization Information

1. Please briefly describe your business/organization in terms of the full range of products and services you provide and the facilities you operate.
2. How long have you been in operation?
3. What kinds of visitors / clients does your facility primarily serve?
4. What is the geographic area from which your visitors/clients come?
5. What trends do you see in tourism accommodations in this area?
6. What are the future plans for your facility, in terms of expansions, closures, or amalgamations?
7. Over the past five years, has your business generally increased, decreased, or stayed the same?

PART TWO – General Questions Related to Community Well-Being

8. From your perspective, what is the most important attribute of your community that needs to be maintained or enhanced to support community well-being in the next decade?
9. From your perspective, what do you feel is the greatest threat to your community's overall well-being in the next decade and beyond?
10. From your perspective, in what ways does your operation contribute to the overall well-being of the community in which you operate?

PART THREE – Information Regarding Existing Bruce Nuclear Site

11. Can any of your business be attributed to the presence of the Bruce Nuclear Site, its employees or activities? If yes, how much or in what ways?
12. Do you think your visitors / clients customers associate your operation with the presence of the Bruce Nuclear Site or Western Waste Management Facility? If yes, which one why?

PART FOUR – Information Regarding a Deep Geologic Repository

13. In what ways, if any, do you think that a Deep Geologic Repository project might change the image of your community?
14. In what ways, if any, do you think a Deep Geologic Repository Project might change or affect your business, its activities, events, or future plans?
15. If a Deep Geologic Repository project were to proceed, what might be the most important thing you would want OPG to know? What is the most important concern or comment you have regarding this project?

Tourist Attractions**PART ONE – Generic Business or Organization Information**

1. Please briefly describe your organization/facility/operation (select most appropriate) in terms of the full range of products and services you provide and the facilities you operate.
2. How long have you been in operation?
3. What kinds of visitors/clients/customers does your operation/attraction primarily serve?
4. What is the geographic area from which your clients come?
5. Can you please estimate your annual activity or visitation rate? During which season(s) is your visitation rate the least? Do you foresee any capacity for growth? (Visitation Numbers)
6. What are the future plans for your operation, in terms of expansions, closures, or amalgamations?
7. Over the past five years, has visitation to business/organization generally increased, decreased, or stayed the same?
 - Why do you think this has occurred?

PART TWO – General Questions Related to Community Well-Being

8. From your perspective, what is the most important attribute of your community that needs to be maintained or enhanced to support community well-being in the next decade?
9. From your perspective, what do you feel is the greatest threat to your community's overall well-being in the next decade and beyond?
10. From your perspective, in what ways does your attraction contribute to the overall well-being of the community in which you operate?

PART THREE – Information Regarding Existing Bruce Nuclear Site

11. Do you or your operation have any formal or informal links to OPG or Bruce Power? If yes, please describe.
12. Can any of your attraction's visitations be attributed to the presence of the Bruce Nuclear Site, its employees or activities? If yes, how much or in what ways?
13. Do you think your visitors associate your operation with the presence of the Bruce Nuclear Site or the Western Waste Management Facility? If yes, which one and why?

PART FOUR – Information Regarding a Deep Geologic Repository

14. In what ways, if any, do you think that a Deep Geologic Repository project might change the image of your community?
15. In what ways, if any, do you think a Deep Geologic Repository Project might change or affect your attraction, its activities, events, or future plans?
16. If a Deep Geologic Repository project were to proceed, what might be the most important thing you would want OPG to know? What is the most important concern or comment you have regarding this project?

**ATTACHMENT C-2: ORGANIZATIONS INTERVIEWED IN LOCAL AND REGIONAL STUDY
AREAS**

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Organizations Interviewed in Local and Regional Study Areas

Record #	Large Category	Stakeholder Group	Study Area	Stakeholder Name
Human Assets				
42	Gov't/ Community Services	School Boards & Nearest Schools	Local	Elgin Market Public School
43	Gov't/ Community Services	School Boards & Nearest Schools	Local	Huron Heights Public School
44	Gov't/ Community Services	School Boards & Nearest Schools	Local	Kincardine District Secondary School
45	Gov't/ Community Services	School Boards & Nearest Schools	Local	St Anthonys School
23	Gov't/ Community Services	Emergency Management Coordinators	Local	Kincardine Emergency Management
24	Gov't/ Community Services	Emergency Management Coordinators	Regional	Emergency Management Ontario - Bruce County
25	Gov't/ Community Services	Emergency Management Coordinators	Regional	Bruce County Emergency Management
26	Gov't/ Community Services	Emergency Management Coordinators	Regional	Saugeen Shores Emergency Management
29	Gov't/ Community Services	Health & Safety Providers	Local	South Bruce OPP Kincardine Detachment
30	Gov't/ Community Services	Health & Safety Providers	Local	Kincardine Fire-Rescue
31	Gov't/ Community Services	Health & Safety Providers	Both	South Bruce-Grey Health Centre
32	Gov't/ Community Services	Health & Safety Providers	Regional	Saugeen Shores Police Department
33	Gov't/ Community Services	Health & Safety Providers	Regional	Saugeen Shores Fire Department
34	Gov't/ Community Services	Health & Safety Providers	Regional	Southampton Hospital
Financial Assets				
1	Business/ Tourism	Agriculture Service Providers	Local	Canadian Agra Corporation
2	Business/ Tourism	Agriculture Service Providers	Local	Tiverton Agricultural Society
3	Business/ Tourism	Agriculture Service Providers	Local	Kincardine Agricultural Society
4	Business/ Tourism	Agriculture Service Providers	Regional	Prance Miramichi Farms
5	Business/ Tourism	Agriculture Service Providers	Regional	Food Link Grey and Bruce
6	Business/ Tourism	Agriculture Service Providers	Regional	McLarty Farms
7	Business/ Tourism	Boating & Fishing Businesses/ Organizations	Local	Kincardine Yacht Club
8	Business/ Tourism	Boating & Fishing Businesses/ Organizations	Local	Dwindles Dream Fishing Charters
9	Business/ Tourism	Boating & Fishing Businesses/ Organizations	Local	Mac Fishing Charters
10	Business/ Tourism	Boating & Fishing Businesses/ Organizations	Regional	Offshore Adventures
11	Business/ Tourism	Boating & Fishing Businesses/ Organizations	Regional	Port Elgin Yacht Club
12	Business/ Tourism	Boating & Fishing Businesses/ Organizations	Regional	Pine River Boat Club
27	Business/ Tourism	Fishing License Holders	Regional	Goodison Fisheries Ltd.
28	Business/ Tourism	Fishing License Holders	Regional	Purdy Fisheries Limited
35	Business/ Tourism	Power Workers Union	Regional	Canadian Nuclear Workers Council

Record #	Large Category	Stakeholder Group	Study Area	Stakeholder Name
36	Business/ Tourism	Power Workers Union	Regional	The Society of Energy Professionals
41	Business/ Tourism	Regional Construction and Training Boards	Regional	Grey Bruce Labour Council
77	Business/ Tourism	Real Estate Agent	Local	Royal LePage Exchange
Social Assets				
13	Gov't/ Community Services	Community Facilities	Local	Davidson Centre
14	Gov't/ Community Services	Community Facilities	Regional	Chesley Community Centre
15	Gov't/ Community Services	Community Facilities	Regional	Paisley Community Centre
16	Gov't/ Community Services	Community Facilities	Regional	Tara Community Centre
17	Gov't/ Community Services	Community Facilities	Regional	Lucknow Sports Complex
18	Gov't/ Community Services	Community Facilities	Regional	Point Clark Community Centre
19	Gov't/ Community Services	Community Facilities	Regional	Ripley Huron Community Centre
20	Gov't/ Community Services	Community Facilities	Regional	Mildmay Carrick Recreation Complex
21	Gov't/ Community Services	Community Facilities	Regional	Formosa Recreation Centre
22	Business/ Tourism	Cottage Rental Agencies	Both	Home Away from Home
37	Gov't/ Community Services	Recreation & Community Organizations	Local	Kincardine Curling Club
38	Gov't/ Community Services	Recreation & Community Organizations	Regional	Easy Rider Snowmobile Club
39	Gov't/ Community Services	Recreation & Community Organizations	Regional	Paisley Paddlers Canoe Club
40	Gov't/ Community Services	Recreation & Community Organizations	Local	South Bruce Amnesty
74	Gov't/ Community Services	Recreation & Community Organizations	Regional	Tiverton Lions Club
74	Gov't/ Community Services	Recreation & Community Organizations	Regional	Tiverton Lions Club
75	Business/ Tourism	Tourist Accommodation Providers	Regional	Dreamaker Family Campground
76	Business/ Tourism	Tourist Attractions	Local	Inverhuron and MacGregor Point Provincial Parks

**ATTACHMENT C-3: SITE NEIGHBOUR SURVEY FOR DEEP GEOLOGIC REPOSITORY
(DGR) PROJECT AT THE BRUCE NUCLEAR SITE**

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Site Neighbour Survey for Deep Geologic Repository (DGR) Project at the Bruce Nuclear site



Date: _____

Your Name *(please print)* _____

Your Address *(please print):* _____

Postal Code: _____

The Nuclear Waste Management Organization (NWMO), on behalf of Ontario Power Generation (OPG), has been conducting an Environmental Assessment (EA) and licensing process, aimed at establishing a DGR for low and intermediate level waste at the Western Waste Management Facility at the Bruce Nuclear Site.

OPG/NWMO has retained the consulting firm AECOM to survey the neighbours closest to the DGR Site. OPG/NWMO invites you to participate in the Socio-Economic component of the EA of the DGR Project.

*This survey is one of the ways
in which you can provide input.
Your responses are very
valuable to the assessment of
the DGR project.*

The purpose of this survey is to understand:

- ▶ *the characteristics of your property and/or household;*
- ▶ *your property use and enjoyment;*
- ▶ *your overall satisfaction with living in your neighbourhood or otherwise using your property;*
- ▶ *your opinion on whether the existing Bruce Nuclear site and ongoing operations affect the current use and enjoyment of your property, and if so, how; and*
- ▶ *whether the effects associated with a new DGR project at the Bruce Nuclear site may affect your current use and enjoyment of your property and overall satisfaction with your neighbourhood, and if so, how.*

Your individual responses will be held strictly confidential to AECOM and reported only in aggregate format together with other responses.

**WE ASK THAT YOU PLEASE RETURN THIS SURVEY IN THE
ATTACHED STAMPED SELF-ADDRESSED ENVELOPE BY**

December 4, 2009

The following questions relate to gaining an understanding of the characteristics of your property, household and your neighbourhood, including property use such as recreational/leisure purposes, farming or other business purposes. For the purposes of this survey, “property” is defined as the lands upon which you own or rent.

1. Are there any physical structures that currently exist on your property? Please check one.

Yes No

If NO, please skip to Question #9

2. If yes, please describe the type of structure(s) (e.g. residence with X stories, and x square footage; working farm buildings, barn of x square footage)

3. Do you currently permanently reside at this property? Please check one.

Yes No

If NO please answer the following Question

4. Do you currently use this property for recreational use, Business, Agricultural activity, or other _____?

Please skip to question #8***

***Permanent Residents please complete Questions 4 through 7

5. How long have you lived at this property? Please check one.

Less than 2 years 11 – 20 years
 2 – 10 years more than 20 years

6. How many people currently live at this property? Please check one.

<input type="checkbox"/> None	<input type="checkbox"/> Three
<input type="checkbox"/> One	<input type="checkbox"/> More than Three _____
<input type="checkbox"/> Two	

7. How many children aged 18 or less currently live at this property? Please check one.

<input type="checkbox"/> None	<input type="checkbox"/> Three
<input type="checkbox"/> One	<input type="checkbox"/> More than Three _____
<input type="checkbox"/> Two	

8. How many adults aged 65 or more currently live at this property? Please check one.

<input type="checkbox"/> None	<input type="checkbox"/> Three
<input type="checkbox"/> One	<input type="checkbox"/> More than Three _____
<input type="checkbox"/> Two	

9. Please list or describe the main ways in which you and other members of your household use your property for outdoor activities (e.g., BBQs, swimming, vegetable gardening).

a) _____

b) _____

c) _____

d) _____

e) _____

f) _____

g) _____

10. Do you own or rent this property? Please check one.

<input type="checkbox"/> Own	<input type="checkbox"/> Rent
------------------------------	-------------------------------

*****If you "Rent" this property, please skip to Question #14*****

11. If you own, do you rent any portion of this property to someone else? Please check one.

Yes No

12. If yes, for what purpose is the rental property used for?

13. Was this property owned by another member of your family before you moved here? Please check one.

Yes No

14. If yes, how many years has the property been owned by another member of your family?

Years

With an understanding of the kinds of activities you undertake on your property, the following questions seek to understand the things that influence how you use and/or enjoy your property, and how satisfied you are with its location.

15. What are the three main things that influence your use or enjoyment of your property for any of the purposes you have identified?

1. _____
2. _____
3. _____

16. What are the three main things that you like most about owning or renting property in this area?

1. _____
2. _____
3. _____

17. What are the three main things that you dislike most about owning or renting property in this in this area?

1. _____
2. _____
3. _____

**18. In general, how satisfied are you with owning or renting property in this location?
Please check one.**

- | | |
|---|--|
| <input type="checkbox"/> <i>Very Satisfied</i> | <input type="checkbox"/> <i>Not Very Satisfied</i> |
| <input type="checkbox"/> <i>Somewhat Satisfied</i> | <input type="checkbox"/> <i>Not at all Satisfied</i> |
| <input type="checkbox"/> <i>Neither Satisfied or Dissatisfied</i> | |

**19. In your opinion, what is the most important issue facing your community today?
Please give up to 2 responses.**

1. _____
2. _____

20. What do you feel is the most important feature or attribute of your community that needs to be maintained or enhanced to support community well-being in the next decade? Please give up to 2 responses.

1. _____
2. _____

21. What do you feel is the greatest threat to your community's overall well-being in the next decade? Please give up to 2 responses.

1. _____
2. _____

At the Bruce Nuclear site, Ontario Power Generation (OPG) has been safely managing radioactive waste from Ontario's nuclear generating stations for over 30 years. At present, the Western Waste Management Facility (WWMF) at the Bruce Nuclear site provides processing and interim storage for all of the low and intermediate level radioactive wastes produced by OPG's nuclear generating stations. Currently, wastes are processed and stored in above-ground buildings. The Bruce Nuclear Site and the proposed DGR site is your neighbour. AECOM would like to understand whether this site currently affects you and your use and enjoyment of your property, and if so, how.

22. In your day-to-day living, how often do you think about the fact that you live near the Bruce Nuclear site? Please check one.

Very Often *Often* *Not Very Often*

23. Does the Bruce Nuclear Site and its current operations affect your use and/or enjoyment of your property? Please check one.

Yes *No* *Not sure*

24. If YES, please indicate in what ways your use and/or enjoyment of property has been affected.

POSITIVE effects on your use and enjoyment of property include:

- a) _____
- b) _____
- c) _____
- d) _____
- e) _____

25. NEGATIVE effects on your use and enjoyment of property include:

- a) _____
- b) _____
- c) _____
- d) _____
- e) _____

26. In the past five (5) years, have you considered moving from this property? Please check one.

Yes

No

27. If YES, what were the main reasons that you had considered moving?

28. If NO, what are the main reasons for remaining at this property?

AECOM would like to understand whether plans for the proposed DGR project at the Bruce Nuclear Site might affect you and the use and/or enjoyment of your property and your overall satisfaction with living here, and if so, how.

A Deep Geologic Repository would involve emplacement of these wastes in a rock cavern approximately 680 metres underground. Should approvals for the project be obtained, there will be a great deal of work undertaken for the construction and operation of a DGR. Construction of the proposed facility would commence around 2012, with operations starting five to seven years later. The project will generate up to 75 temporary construction jobs annually and up to 30 new permanent jobs on the site and ongoing spending by OPG on a variety of goods and services.



29. How familiar would you say you are with the proposed low and intermediate level waste Deep Geologic Repository (DGR) project at the Bruce Nuclear Site?

<input type="checkbox"/>	<i>Very Familiar</i>	<input type="checkbox"/>	<i>Not Very Familiar</i>
<input type="checkbox"/>	<i>Somewhat Familiar</i>	<input type="checkbox"/>	<i>Not at all Familiar</i>
<input type="checkbox"/>	<i>Not Sure</i>		

30. Do you understand the differences between low/intermediate level waste and high level nuclear waste?

<input type="checkbox"/>	<i>Yes</i>	<input type="checkbox"/>	<i>No</i>	<input type="checkbox"/>	<i>Not Sure</i>
--------------------------	------------	--------------------------	-----------	--------------------------	-----------------

31. When you think of the DGR project, what thing, issue or image comes to mind first?

32. Considering how you use and enjoy your property today, do you anticipate that your use and/or enjoyment of your property will change as a result of the DGR project? Please check one.

Yes No Not Sure

33. If yes, in what ways do you anticipate that DGR construction and operational activities might affect your use and/or enjoyment of property?

34. Do you anticipate that you will do anything differently on your property because of the DGR project?

35. Do you anticipate that your level of satisfaction with the area is likely to change because of the proposed DGR project? Do you anticipate that your level of satisfaction with your community will go:

Up a great deal *Down a great deal*
 Up somewhat *Down somewhat*
 No Change

36. Do you foresee yourself moving from this property because of the DGR construction or operational activities? Please check one.

Yes No Not Sure

AECOM would like to hear your ideas on what OPG/NWMO could do to help ensure that you are satisfied with living here should the proposal for a DGR at the Bruce Nuclear site be approved.

37. What suggestions or considerations can you offer OPG/NWMO so you can continue to use and/or enjoy your property?

38. What suggestions or considerations can you offer OPG/NWMO so you are satisfied with living in this area?

39. What other concerns or questions would you like addressed regarding OPG/NWMO's proposed DGR project?

If you would like to speak directly with someone about this survey, please contact:

▶ **Elise Foong**
Social Scientist
AECOM
1-905-477-8400 ext. 396
Email: *Elise.Foong@aecom.com*

▶ **Kevin Orr**
Nuclear Waste Management Organization
519-368-1644
Email: *korr@nwmo.ca*

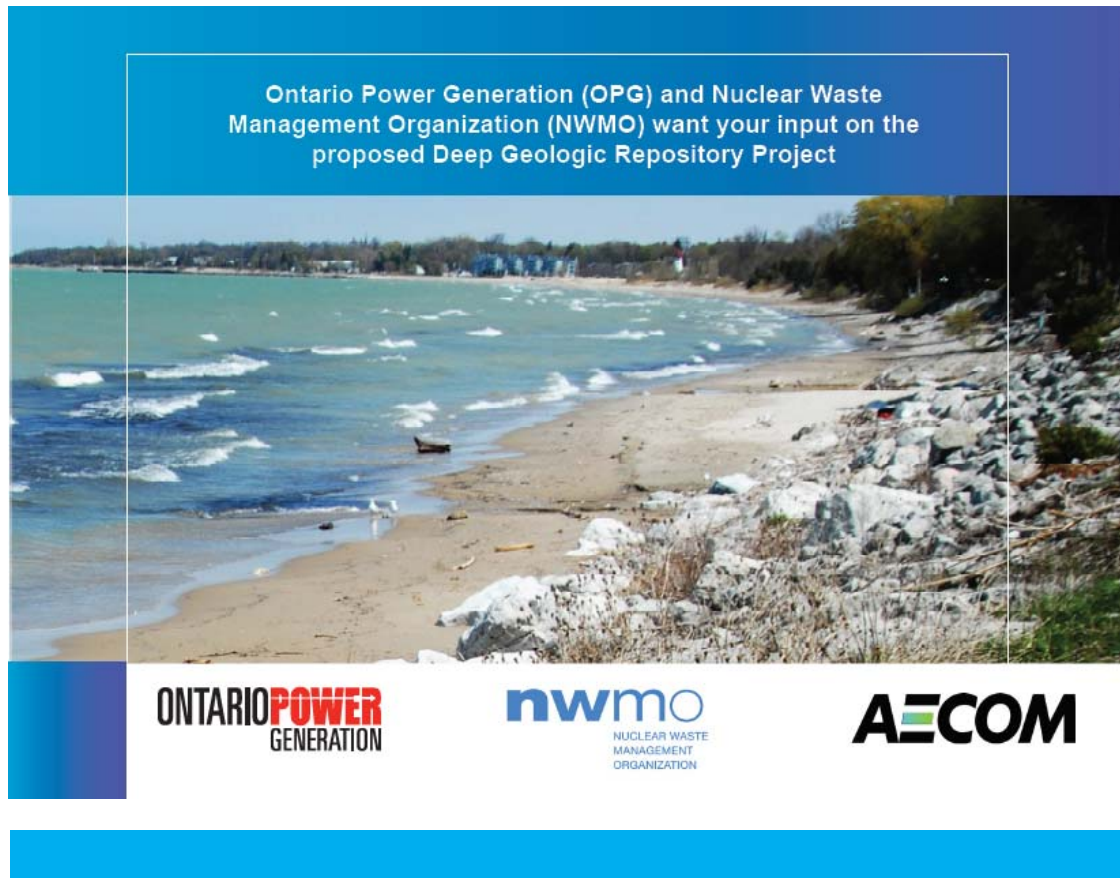


**Thank
You**



for taking the time to complete this survey.

Bruce Nuclear Site Neighbour – Reminder Postcard



Ontario Power Generation (OPG) and Nuclear Waste Management Organization (NWMO) invite your household to participate in the socio-economic assessment of the new Deep Geologic Repository (DGR) project at the Bruce Nuclear Site. OPG/NWMO has retained the consulting firm AECOM to survey households that are near the area of this new site.

AECOM has hand-delivered a hard copy of the survey to your house earlier this month. If you have already provided a response, we thank you for your cooperation. If you have not filled out the survey yet, please take 20 minutes to complete the survey and mail it back to AECOM in the postage-paid envelope that was enclosed in with survey. If you did not receive the survey, please contact...

Dr. Elise Foong at 905-477-8400 (x 396) or Ms. Kelsey Schram 905-477-8400 (x 312).

Thank you in advance for your interest in this project!

For more information, please visit <http://www.nwmo.ca/dgr>

**ATTACHMENT C-4: INVERHURON AND MACGREGOR POINT PROVINCIAL PARK
TOURIST / DAY USER SURVEY**

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Inverhuron and MacGregor Point Provincial Park Tourist / Day User Survey

Name of Park: _____ Number: _____ Date: _____

Introduction

Hello, my name is _____ and I am with AECOM Canada Limited. We are an environmental consulting firm that has been retained by the Nuclear Waste Management Organization on behalf of Ontario Power Generation (OPG) to interview people who use the Inverhuron and MacGregor Point Provincial Parks in the vicinity of the Bruce Nuclear site. We are particularly interested in how you use and enjoy the parks and their amenities. Our discussion today will only take 10 to 15 minutes of your time.

I'd like to ask you a few questions about your attitudes towards OPG's plans for the long term management of low and intermediate level radioactive waste at their Western Waste Management Facility at the Bruce Nuclear site.

1. How familiar are you with Ontario Power Generation's radioactive waste management operations at the Bruce Nuclear site ? (*Check One Box*)

- | | |
|---|---|
| <input type="checkbox"/> <i>Very Familiar</i> | <input type="checkbox"/> <i>Not Very Familiar</i> |
| <input type="checkbox"/> <i>Somewhat Familiar</i> | <input type="checkbox"/> <i>Not at All Familiar</i> |

2. Do you consider yourself a tourist to this area or a local day user of the park?

- Tourist Day User Other _____

FOR RESPONDENTS CLASSIFYING THEMSELVES AS TOURISTS OR OTHER CONTINUE INTERVIEW WITH ALL QUESTIONS.

FOR RESPONDENTS CLASSIFYING THEMSELVES AS NON-TOURISTS CONTINUE INTERVIEW AT QUESTION 10

ASK IF THE RESPONDENT WOULD LIKE TO KNOW MORE ABOUT THE SITE AND OPG'S PLANS, AND IF YES, PROVIDE THE FOLLOWING BACKGROUND. OTHERWISE, CONTINUE WITH INTERVIEW.

Background

Ontario Power Generation currently stores low and intermediate level radioactive wastes produced by all of Ontario's nuclear generating stations at its Western Waste Management Facility on the Bruce Nuclear site in the Municipality of Kincardine. This existing facility is regulated by the Canadian Nuclear Safety Commission and has been operating safely for more than 30 years. Low level waste includes such materials as rags, clothing, and floor sweepings that have become slightly contaminated during routine maintenance. They can be safely handled without radiation protection. Intermediate level waste includes used reactor core components, retube parts, and resins and filters used to keep reactor water systems clean. It requires shielding to protect workers during handling. Wastes are stored in above-ground buildings and structures, and also within in-ground structures. These storage methods, while very safe, are considered to be interim only, until a long term management facility is implemented. Ontario Power Generation's proposal, which is supported by the Municipality of Kincardine, for the long term management of low and intermediate level radioactive waste is a Deep Geologic Repository on the Bruce nuclear site near the Western Waste Management Facility.

A Deep Geologic Repository for low and intermediate waste only would involve the management of the waste in rooms built into the rock approximately 680 metres underground on the Bruce Nuclear site. Ontario Power Generation is undertaking geoscientific characterization and safety studies, along with an Environmental Assessment for the Deep Geologic Repository project. The Environmental Impact Statement and site preparation and construction licensing support documentation will be reviewed by a Joint Review Panel. This proposed DGR will not store used nuclear fuel.

DO YOU WISH TO CONTINUE WITH THIS INTERVIEW AT THIS TIME? IF YES, CONTINUE.

3. Where is your permanent residence?

4. When you think about the Town of Kincardine and the areas near this Provincial Park, what is the first thing or image that comes to mind?

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

Very positive

Very negative

Somewhat positive

Somewhat negative

6. If this is your first visit to the area, what was your impression of the area before your visit?

7. Do you consider the Town of Kincardine and the towns and areas near this Provincial Park, a very attractive, somewhat attractive, somewhat unattractive or a very unattractive place to visit as a tourist?

- Very attractive
- Somewhat attractive
- Very unattractive
- Somewhat unattractive

8. How did you hear about Inverhuron or MacGregor Point Provincial Park?

- Friends or relatives
- Media
- Tourist Information
- Other _____

9. Over the past 5 years how many times (including this trip) did you come to either the Inverhuron or MacGregor Point Provincial Park? (fill in appropriate numbers)

Inverhuron Provincial Park MacGregor Point Provincial Park

10. At any one time, how long (i.e. number of days) do you typically stay in this area? (fill in appropriate numbers)

Number of Days

11. On average, how much money do you spend per day (i.e. accommodations, food, transportation, entertainment, shopping) when a tourist in this area?

\$ per day

FOR TOURISTS AND OTHER DAY PARK VISITORS (QUESTIONS 10 TO 24)

12. When you come to the this Provincial Park, what activities do you undertake here? (check all relevant boxes)

- Camping
- Hiking
- Fishing or Boating
- Wildlife Viewing or Bird-Watching
- Park Programs and Organized Activities
- Organized Group Sporting or Social Activities
- Unorganized Sporting or Fitness Activities
- Other (Please Specify)

13. What are the three main things that affect your use or enjoyment of this Provincial Park?

- 1. _____
- 2. _____
- 3. _____

14. Is there anything particularly unique or special about this Provincial Park that is currently not present elsewhere?

15. In the past year, where else have you gone to undertake the camping and recreational activities that you also conduct here?

16. Has the presence of the nuclear generating stations on the Bruce Nuclear site and ongoing activities on-site affected your use and enjoyment of this Provincial Park?

Yes No

17. Has the presence of the existing storage facility for low and intermediate level radioactive wastes on the Bruce Nuclear site affected your use and enjoyment of this Provincial Park?

Yes No

18. If YES TO EITHER, in what ways has your use and enjoyment of this Provincial Park been affected?

19. With the understanding that there might be a long term low and intermediate level radioactive waste management facility, that is a Deep Geologic Repository, constructed on the Bruce Nuclear site in the next decade, would this change your image of the Town of Kincardine and the communities near this Provincial Park?

Yes No

20. If YES, in what ways would your image of the Town of Kincardine and the areas near this Provincial Park change?

21. With the understanding that there might be a long term low and intermediate level radioactive waste management facility, that is a Deep Geologic Repository, constructed on the Bruce Nuclear site in the next decade, do you foresee yourself doing anything differently in the future should these plans be implemented?

Yes No

22. If yes, what might you do differently?

23. What would be your three (3) main concerns with respect to the presence of a Deep Geologic Repository at the Bruce Nuclear site?

1. _____
2. _____
3. _____

24. Do you have any other questions or issues you wish to raise?

Optional Questions (Respondent does not need to answer)

25. What is your age?

26. Male or Female (By Observation)?

Male Female

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ATTACHMENT C-5: 2009 COMMUNITY LEADER SURVEY AND INTERVIEW GUIDE

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2009 Community Leader Survey and Interview Guide

Contact Name: _____ Date _____
Organization / Title : _____ Phone #: _____
Address: _____ Fax #: _____
Email: _____
Contacted By: _____

Introduction

Hello, my name is NAME and I am with AECOM. We are a consulting firm that has been retained by the Nuclear Waste Management Organization (or the NWMO) to conduct interviews with selected community leaders regarding:

1. The range of issues affecting your community today;
2. Issues and comments about the management of low and intermediate level waste by Ontario Power Generation at the Western Waste Management Facility located at the Bruce Nuclear Site;
3. The effectiveness of engagement/communication efforts in relation to the Low and Intermediate Level Waste Deep Geologic Repository, also known as the DGR, and opportunities for improvement; and
4. Your awareness/knowledge of NWMO's activities, on behalf of OPG, in particular the differentiation between the long-term management of Canada's used nuclear fuel vs. the long-term management of Ontario's low and intermediate level waste.

Your individual responses will be held strictly confidential to AECOM and reported only in aggregate format together with other responses. Our discussion today will only take approximately 30 minutes of your time.

Background

At the Bruce Nuclear site, Ontario Power Generation (OPG) has been safely managing radioactive waste from Ontario's nuclear generating stations for over 30 years. At present, the Western Waste Management Facility provides processing and interim storage facilities for all of the low and intermediate level radioactive wastes produced by OPG's nuclear generating stations, including those

leased to Bruce Power. Currently, wastes are processed by compaction or incineration and stored in above-ground buildings and structures or in-ground containers.

In 2004 the Municipality of Kincardine passed a Council Resolution affirming that a Deep Geologic Repository was the preferred approach to the long-term management of low and intermediate level radioactive waste. The NWMO, on behalf of OPG, has been conducting an Environmental Assessment and licencing process, over the past four years, aimed at establishing a DGR for low and intermediate level waste at the Western Waste Management Facility at the Bruce Nuclear Site.

With this background, I would like to ask you a few questions that will help the NWMO better understand community issues and concerns regarding the low and intermediate level waste DGR project. We are asking you to think about and answer from your perspective as someone familiar with and knowledgeable about your community.

Part 1: Background

To provide a context for questions regarding the DGR project. Note: these questions are not intended to be specific to the DGR project.)

Say: "Before turning to the Deep Geological Repository project, we wish to learn more about your community with the next 4 questions."

1. What local community would you say that you are most closely associated with?

Name of community: _____

2. What are the most important issues facing your community today?

1. _____

2. _____

3. _____

3. From your perspective, what are the most important attributes of your community that needs to be maintained or enhanced?

1. _____

2. _____

3. _____

4. From your perspective, what do you feel are the greatest threats to your community?

1. _____

2. _____

3. _____

Part 2 – The DGR project

Say: "Now we wish to ask you some questions specifically in relation to the DGR project."

5. Do you understand the differences between low/intermediate level waste and high level nuclear waste?

Yes No

6. How familiar would you say you are with the proposed low and intermediate level waste Deep Geologic Repository (DGR) project at the Bruce Nuclear Site?

Very Familiar *Somewhat Familiar* *Not Very Familiar* *Not At All Familiar*

7. When you think of the DGR project, what thing, issue or image comes to mind first?

8. Do you see the DGR project as having local, regional, provincial or international significance? (Respondent may check one, some or all)

Local *Regional* *Provincial* *Canada* *International*

9. Why do you say this?

10. What kinds of environmental effects (if any) do you foresee occurring during construction or operations as a result of the DGR project?

11. What kinds of social or economic outcomes (if any) do you foresee occurring during construction or operations as a result of the DGR project?

12. In the past year, have you been asked for your opinion with respect to the DGR project or had to describe it to others?

Yes No

13. If YES, who has asked you your opinion with respect to the DGR project? (check all appropriate boxes)

- | | |
|--|---|
| <input type="checkbox"/> Work Colleague | <input type="checkbox"/> Educational Facility / School Representative |
| <input type="checkbox"/> Media | <input type="checkbox"/> Client or Customer |
| <input type="checkbox"/> Member of the General Public | <input type="checkbox"/> Student |
| <input type="checkbox"/> Member of a Non-Governmental Organization | <input type="checkbox"/> Other (Please Specify) |

14. How comfortable are you in describing the DGR project or explaining its implications to others?

Very Comfortable Somewhat Comfortable Not Very Comfortable Not At All Comfortable

15. What kinds of information or training (if any) would you like to have to be in a better position to describe the DGR project and its implications to others?

16. A. On a scale of 1 to 10 how supportive are you of the DGR project at this time? One (1) is “Extremely Opposed” and Ten (10) is “Extremely Supportive” to the DGR project.

1	2	3	4	5	6	7	8	9	10
Extremely Opposed									Extremely Supportive

B. On a scale of 1 to 10 how supportive is your community of the DGR project at this time? One (1) is “Extremely Opposed” and Ten (10) is “Extremely Supportive” to the DGR project.

1	2	3	4	5	6	7	8	9	10
Extremely Opposed									Extremely Supportive

C. Why do you say this?

Part 3 – Awareness of NWMO

17. A. Are you aware that the Nuclear Waste Management Organization (or the “NWMO”) is taking the lead for the approval process for the low and intermediate level waste DGR?

Yes No

B. Are you aware that OPG is financing the low and intermediate level waste DGR project, and is also the owner and license applicant?

Yes No

C. Are you aware that the NWMO is also responsible for the siting and implementation of a long-term management plan for used nuclear fuel in Canada?

Yes No

D. Are you aware that the NWMO has a separate process and time frame for the siting and implementation of a long-term management plan for used nuclear fuel in Canada?

Yes No

E. Are you aware that no spent fuel (high level waste) will ever be stored in the low and intermediate level waste DGR at the Bruce Nuclear site?

Yes No

18. In your mind, is there a distinction between NWMO's role and activities regarding:

- A. The approval process for the low and intermediate level waste DGR, and
- B. The siting and implementation of a long-term management plan for used nuclear fuel in Canada

Yes No Don't Know

19. How good a job is being done by NWMO/OPG in answering questions and addressing community issues regarding the DGR project?

Excellent *Good* *Poor* *Don't Know*

20. Why do you say this?

21. What should NWMO be doing to better address issues and questions about the DGR project?

22. In your opinion, how would you rate the visibility of the DGR project in your community?

Very Visible *Somewhat Visible* *Not Very Visible* *Not At All Visible*

23. What things must OPG and the NWMO do, or avoid doing, to improve the level of support in your community for the DGR project?

Part 4 – Sustainable Development

Say: "We now wish to ask you some general questions that will help us to better understand sustainable development in your community."

24. What does the term "sustainable development" mean to you and your community?

25. How does the DGR project fit into plans for sustainable development in your community?

26. What do you see as being critical for the DGR in terms of what the project must do or not do in order to build and sustain the community's support?

As part of the Socio-economic Assessment of the DGR project, the EA Consulting Team is planning on conducting interviews with key stakeholders involved in the economic development, the service sector, tourism, land or housing development, and the aggregate industry to gain further information and perspective regarding the DGR project.

27. Who in particular should we interview or discuss the DGR project with? Can you please suggest a name of an individual or an organization?

28. As a community leader, what is the most important message you want the NWMO to hear with respect to the DGR project?

Ask participants if they are willing to be contacted in the future for this study, and note that in the tracking list.

Thank You

APPENDIX D: ILLUSTRATED COMMUNITY WELL-BEING SURVEY RESULTS

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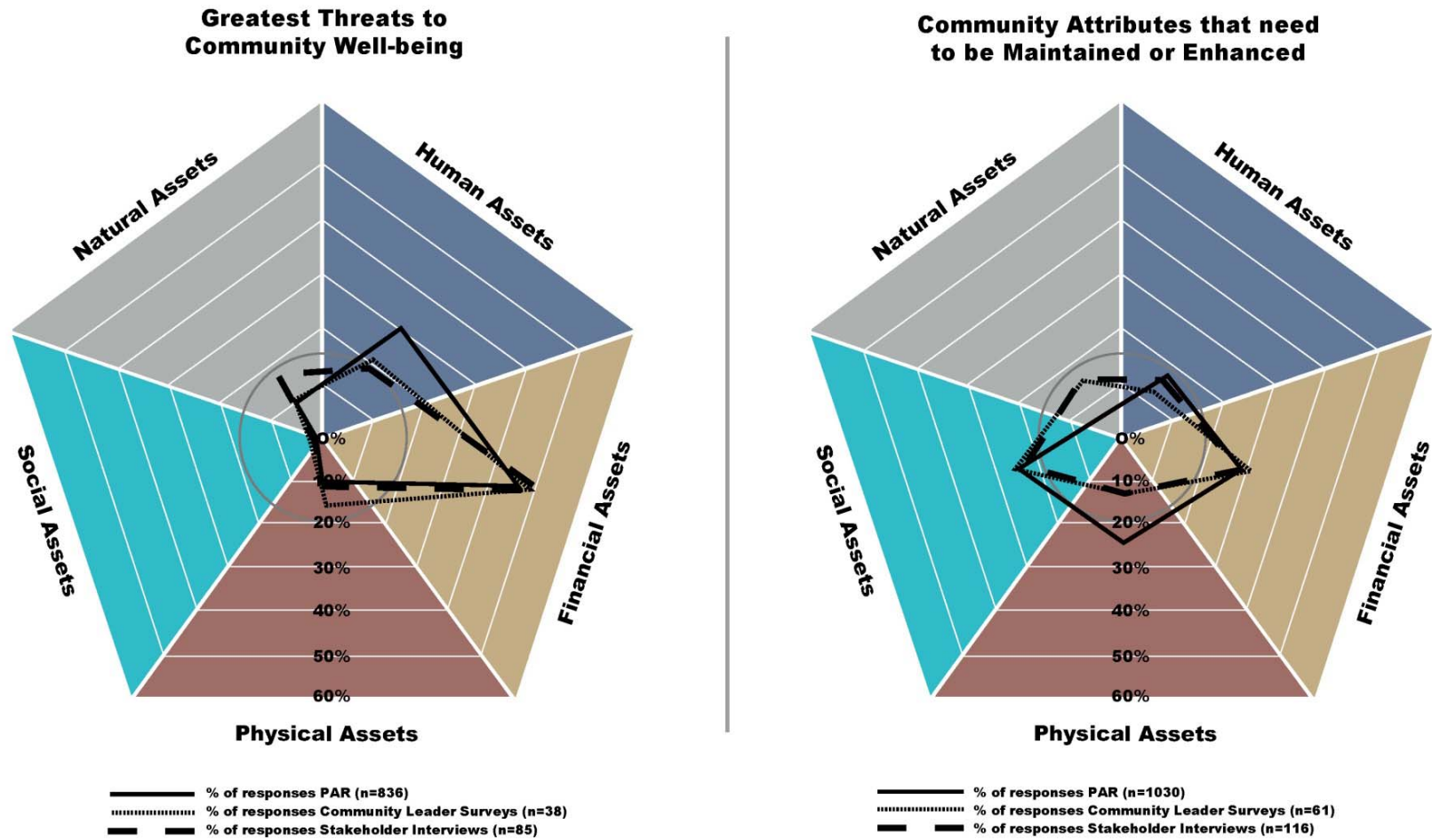
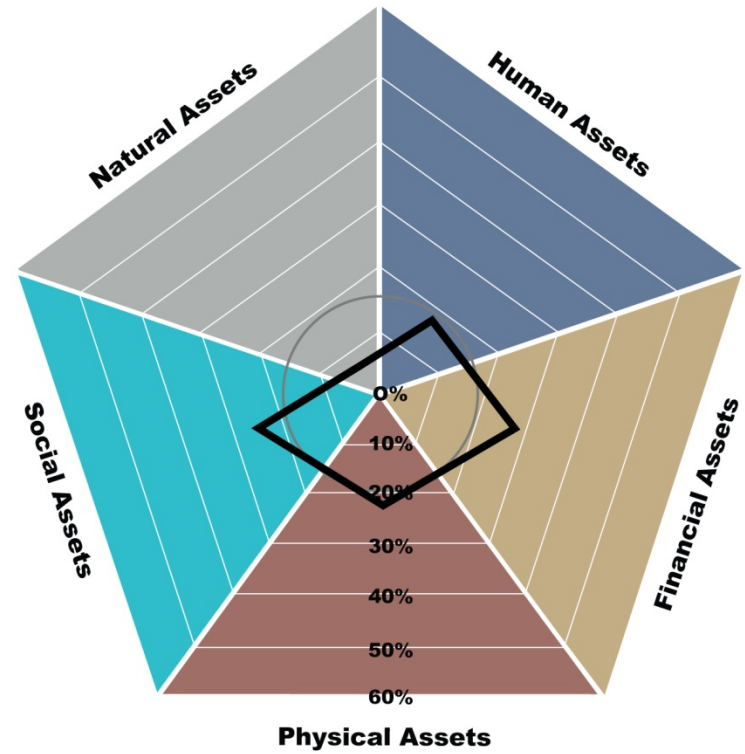
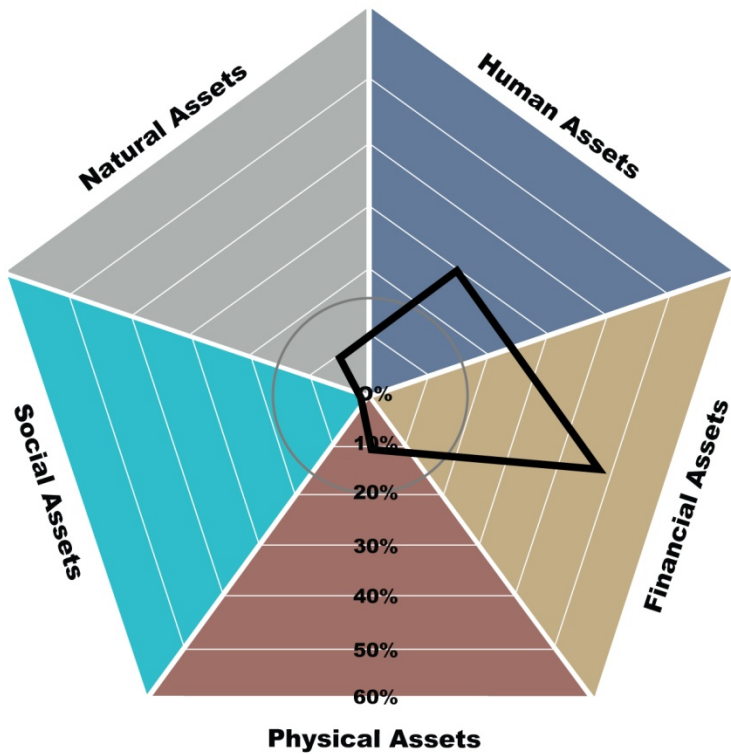


Figure D-1: Community Attributes that Need to be Maintained or Enhanced and Greatest Threats to Community Well-being (from PAR, Community Leader Surveys and Stakeholder Interviews)

Greatest Threats to Community Well-being from PAR, Community Leader Surveys and Stakeholder Interviews, Combined

Most Important Attributes to be Maintained or Enhanced from PAR, Community Leader Surveys and Stakeholder Interviews, Combined



% of responses (n=959)

% of responses (n=1207)

Figure D-2: Community Attributes that Need to be Maintained or Enhanced and Greatest Threats to Community Well-being (from PAR, Community Leaders Survey and Stakeholder Interviews, Combined)

APPENDIX E: ECONOMIC MODEL ASSUMPTIONS

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APPENDIX E: ECONOMIC MODEL ASSUMPTIONS

E1. INTRODUCTION

For the purpose of this Socio-economic Environment TSD, economic modelling was undertaken to provide quantitative data regarding the economic effects of the DGR Project on the Local and Regional Study Areas' municipalities. An economic model was designed by AECOM using Quantrix 3.7. The Quantrix 3.7 software is a business modeling and analytics tool that is used worldwide. It is currently used by over 900 companies in 50 countries for modeling and analysis. Quantrix has a proven track record for finance, forecasting, risk management and business planning applications as well as established presence in engineering, scientific and policy research fields.

The primary input parameters for the economic model designed for the DGR Project were derived from the Interprovincial Input/Output (I/O) Model, maintained and operated by Statistics Canada. Input-output (I/O) models are generally used to simulate the economic impact of an expenditure such as a major project or investment. Economic effects result from a "shock" to an economy resulting from the expenditure and are expressed as direct and indirect outputs in terms of FTE jobs, labour income, GDP and gross output.

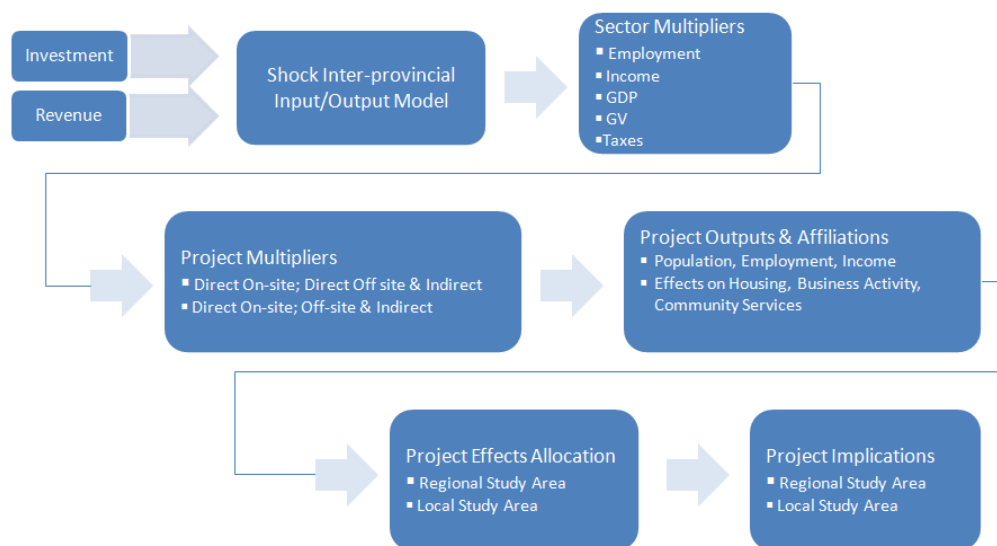
The economic allocation model designed for the DGR Project contains several modules that work in unison and iteratively to generate estimates of the economic effects of the subject project on various parameters, specifically:

- Population (i.e., associated population);
- Employment (e.g., direct, indirect and induced employment);
- Income (i.e., total household income);
- Business Activity (e.g., OPG spending, GDP and gross production, ICI floor space);
- Municipal Finance and Administration (i.e., property tax revenue from DGR Project associated population);
- Housing (i.e., associated housing stock);
- Health and Safety Services (e.g., indirect demands on fire services, police services and hospital beds); and
- Education (e.g., indirect school enrolment).

E2. CONCEPTUAL FRAMEWORK

An assessment of likely effects of the site preparation and construction, operations and decommissioning of the DGR was in part enabled by the use of an economic allocation model. This model was developed by AECOM using Quantrix 3.7.

The conceptual framework of the model is laid out in Figure E2-1. It is calibrated in the initial stages based on input assumptions about investment scale, and the statistics and multiplier derived from the Statistics Canada Inter-Provincial Input / Output Model. These inputs coupled with other economic and municipal considerations for the Regional and Local Study Areas are then channelled through a series of cascading calculations to produce a wide variety of project-related economic and municipal service effects tables or reports.



Notes:
 GDP = Gross Domestic Product
 GV = Gross Value

Figure E2-1. Economic Model Framework

In actuality, the model consists of nine linked modules (Figure E2-2). Model calibration was done with input from a variety of sources including Statistics Canada, municipal reports, and findings from field research. A series of switches permit analysis of alternative project configurations. The time frame covered by the model runs from 2006 to 2062, with the DGR project timeframe of 2013 to 2062. The ensuing text describes the component modules and their incorporation of key assumptions, performance of calculations and generation of tabular reports.

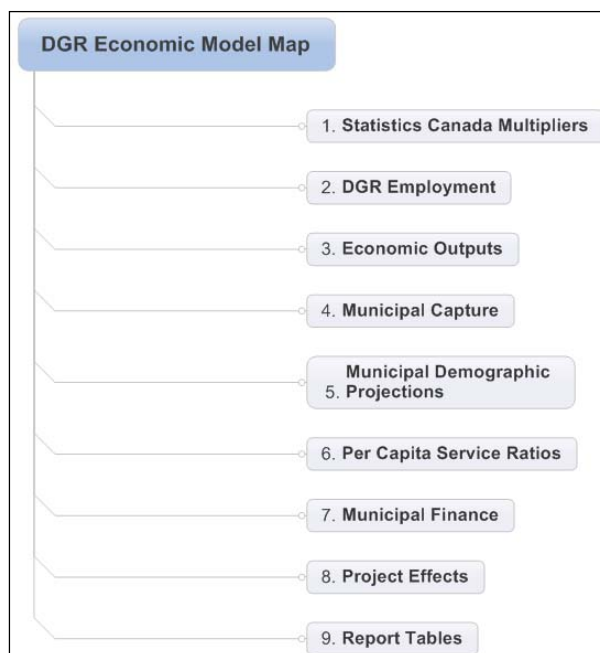


Figure E2-2. DGR Economic Model Map**E3. MODULE DESCRIPTIONS****E3.1 Statistics Canada Multipliers**

This module derives a set of economic multipliers for the site preparation and construction, operations and decommissioning phases of the DGR Project using data produced by Statistics Canada's Interprovincial Input/Output Model. Table E3.1-1 shows the direct, indirect and induced multipliers for GDP, labour income, full time equivalent (FTE) jobs and gross output based on a \$1 million expenditure.

Table E3.1-1: Direct, Indirect and Induced Multipliers

		Site Preparation and Construction	Operations	Decommissioning
GDP	Direct	\$480,000	\$580,000	\$480,000
	Indirect	\$250,000	\$230,000	\$250,000
	Induced	\$538,200	\$496,800	\$538,200
	Total	\$1,268,200	\$1,306,800	\$1,268,200
Labour Income	Direct	\$250,000	\$230,000	\$250,000
	Indirect	\$140,000	\$130,000	\$140,000
	Induced	\$312,000	\$288,000	\$312,000
	Total	\$702,000	\$648,000	\$702,000
FTE Jobs	Direct	5.97	3.15	5.97
	Indirect	3.01	2.52	3.01
	Induced	6.63	6.12	6.63
	Total	15.61	11.79	15.61
Gross Output	Direct	\$1,000,000	\$1,000,000	\$1,000,000
	Indirect	\$520,000	\$430,000	\$520,000
	Induced	\$897,000	\$828,000	\$897,000
	Total	\$2,417,000	\$2,258,000	\$2,417,000

E3.2. DGR Employment

The second module was calibrated with information obtained from the NWMO on projected employment over the life of the DGR Project starting with site preparation and construction beginning in 2013 and decommissioning being completed in 2062. Direct on-site person years of employment created during the site preparation and construction phase (2013 to 2018) total

958, during the operations phase (2017 to 2058) 1,640 and during the decommissioning phase 619. While these specific timeframes were used for modeling purposes, the actual start or completion of each phase will depend upon licencing approval from the CNSC and/or other applicable regulatory bodies.

Figure E3.2-1 shows the direct on-site employment generated by the DGR Project.

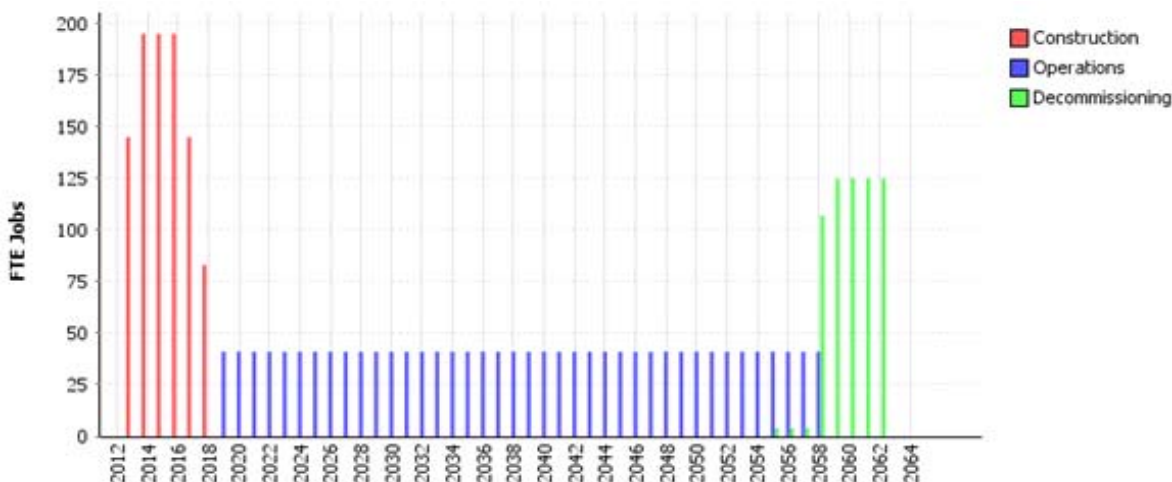


Figure E3.2-1: Direct On-Site DGR Employment (2013-2062)

E3.3. Economic Outputs

This module used the information from the two preceding modules to calculate a set of project related direct, indirect and induced economic outputs for GDP, labour income, FTE jobs and gross output.

E3.4. Municipal Capture

The fourth module was calibrated to enable allocation of the DGR Project-associated direct, indirect and induced economic outputs to municipalities in the Local and Regional Study Areas and beyond (Table E3.4-1). The information used for calibration was derived from NWMO estimates of the percentage of expenditure by geographic area and a set of employee residence data for the Western Waste Management Facility.

Table E3.4-1: DGR Project-Associated Employment - Allocation by Municipality

				Direct	Indirect	Induced
Construction	Study Areas	LSA	Kincardine	10.0%	10.0%	12.1%
			Arran-Elderslie	0.2%	0.2%	0.1%
		RSA	Brockton	0.8%	0.8%	0.7%
			Huron-Kinloss	1.3%	1.3%	1.0%
			Saugeen Shore:	7.4%	7.4%	5.8%
			South Bruce	0.3%	0.3%	0.3%
			Total RSA ^Σ	10.0%	10.0%	7.9%
	Total Study Areas ^Σ	20.0%	20.0%	20.0%		
	Outside Study Areas			80.0%	80.0%	80.0%
	Total All Areas ^Σ			100.0%	100.0%	100.0%
Operations	Study Areas	LSA	Kincardine	40.0%	40.0%	54.7%
			Arran-Elderslie	0.8%	0.8%	0.6%
		RSA	Brockton	4.2%	4.2%	3.0%
			Huron-Kinloss	6.7%	6.7%	4.7%
			Saugeen Shore:	36.7%	36.7%	25.8%
			South Bruce	1.6%	1.7%	1.2%
			Total RSA ^Σ	50.0%	50.0%	35.3%
	Total Study Areas ^Σ	90.0%	90.0%	90.0%		
	Outside Study Areas			10.0%	10.0%	10.0%
	Total All Areas ^Σ			100.0%	100.0%	100.0%
Decommission	Study Areas	LSA	Kincardine	40.0%	40.0%	54.7%
			Arran-Elderslie	0.8%	0.8%	0.6%
		RSA	Brockton	4.2%	4.2%	3.0%
			Huron-Kinloss	6.7%	6.7%	4.7%
			Saugeen Shore:	36.7%	36.6%	25.8%
			South Bruce	1.6%	1.7%	1.2%
			Total RSA ^Σ	50.0%	50.0%	35.3%
	Total Study Areas ^Σ	90.0%	90.0%	90.0%		
	Outside Study Areas			10.0%	10.0%	10.0%
	Total All Areas ^Σ			100.0%	100.0%	100.0%

E3.5. Municipal Demographic Projections

Municipal demographic projections (population and housing) out to 2031 were obtained from Bruce County. These projections were then extrapolated to 2062 using compound average annual growth rates determined for each municipality from the aforementioned County forecasts over the period 2006 to 2031.

Employment projections were calculated using the employment to population ratio in 2006 and population projections for the duration of the project.

Table E3.5-1 presents the municipal demographic projections used in the model. The 2006 baseline population was taken from the 2006 Canadian Census. For Kincardine, Huron-Kinloss and Saugeen Shores, projections for 2011, 2016 and 2021 were taken from the Bruce County Census update. Projections for Arran-Elderslie, Brockton and South Bruce were taken from Community Profiles for each municipality. Projections for 2026 for the Municipality of Brockton

were also taken from the Brockton Community Profile. Those years in between were projected using a linear trend.

The Population for 2022 (2027 for Brockton) to 2031 was projected using the growth rate from 2001 to 2006. The Population for 2032 to 2054 was projected using the growth rate from 2006 to 2031.

Table E3.5-1. Population Projections by Municipality (2006-2062)

	Study Areas							Total Study Areas ^z
	LSA	RSA					Total RSA ^z	
	Kincardine	Arran-Elderslie	Brockton	Huron-Kinloss	Saugeen Shores	South Bruce		
Population	Population	Population	Population	Population	Population	Population	Population	
2006	11,173	6,747	9,641	6,515	11,720	5,939	40,562	51,735
2007	11,582	6,783	9,637	6,383	12,105	5,913	40,822	52,403
2008	11,991	6,819	9,633	6,251	12,491	5,887	41,081	53,072
2009	12,399	6,856	9,630	6,120	12,876	5,862	41,344	53,743
2010	12,808	6,892	9,626	5,988	13,262	5,836	41,603	54,412
2011	13,217	6,928	9,622	5,856	13,647	5,810	41,863	55,080
2012	13,402	6,964	9,618	5,833	13,838	5,785	42,038	55,440
2013	13,587	7,001	9,615	5,809	14,029	5,761	42,216	55,803
2014	13,772	7,037	9,611	5,786	14,221	5,736	42,390	56,162
2015	13,957	7,074	9,608	5,762	14,412	5,712	42,568	56,525
2016	14,142	7,110	9,604	5,739	14,603	5,687	42,743	56,885
2017	14,199	7,147	9,600	5,716	14,661	5,663	42,787	56,986
2018	14,255	7,185	9,597	5,693	14,720	5,639	42,834	57,089
2019	14,312	7,222	9,593	5,670	14,778	5,615	42,878	57,190
2020	14,368	7,260	9,590	5,647	14,837	5,591	42,925	57,293
2021	14,425	7,297	9,586	5,624	14,895	5,567	42,969	57,394
2022	14,454	7,331	9,397	5,682	14,961	5,542	42,914	57,367
2023	14,483	7,365	9,208	5,740	15,028	5,517	42,858	57,341
2024	14,511	7,399	9,018	5,799	15,094	5,493	42,803	57,314
2025	14,540	7,433	8,829	5,857	15,161	5,468	42,747	57,288
2026	14,569	7,467	8,640	5,915	15,227	5,443	42,692	57,261
2027	14,598	7,501	8,637	5,973	15,293	5,418	42,823	57,420
2028	14,627	7,535	8,633	6,031	15,360	5,393	42,952	57,579
2029	14,655	7,569	8,630	6,090	15,426	5,369	43,084	57,739
2030	14,684	7,603	8,626	6,148	15,493	5,344	43,213	57,898
2031	14,713	7,637	8,623	6,206	15,559	5,319	43,344	58,057
2032	14,876	7,675	8,585	6,194	15,736	5,296	43,485	58,361
2033	15,041	7,713	8,546	6,182	15,916	5,272	43,629	58,670
2034	15,207	7,751	8,508	6,170	16,097	5,249	43,776	58,983
2035	15,375	7,790	8,470	6,158	16,281	5,226	43,925	59,300
2036	15,546	7,829	8,433	6,146	16,466	5,203	44,076	59,622
2037	15,718	7,868	8,395	6,134	16,654	5,180	44,231	59,948
2038	15,892	7,907	8,358	6,122	16,844	5,157	44,387	60,279
2039	16,068	7,946	8,321	6,110	17,036	5,135	44,547	60,615
2040	16,245	7,985	8,283	6,098	17,230	5,112	44,709	60,955
2041	16,425	8,025	8,247	6,087	17,426	5,090	44,874	61,299
2042	16,607	8,065	8,210	6,075	17,625	5,067	45,041	61,649
2043	16,791	8,105	8,173	6,063	17,826	5,045	45,212	62,003
2044	16,977	8,145	8,137	6,051	18,029	5,023	45,385	62,362
2045	17,165	8,186	8,101	6,039	18,234	5,001	45,561	62,726
2046	17,355	8,226	8,065	6,028	18,442	4,979	45,739	63,094
2047	17,547	8,267	8,029	6,016	18,652	4,957	45,921	63,468
2048	17,741	8,308	7,993	6,004	18,865	4,935	46,105	63,847
2049	17,938	8,350	7,957	5,993	19,080	4,913	46,293	64,230
2050	18,136	8,391	7,922	5,981	19,298	4,891	46,483	64,619
2051	18,337	8,433	7,887	5,969	19,518	4,870	46,676	65,013
2052	18,540	8,475	7,851	5,958	19,740	4,849	46,872	65,412
2053	18,745	8,517	7,816	5,946	19,965	4,827	47,072	65,817
2054	18,953	8,559	7,782	5,935	20,193	4,806	47,274	66,227
2055	19,162	8,602	7,747	5,923	20,423	4,785	47,479	66,642
2056	19,375	8,644	7,712	5,912	20,656	4,764	47,688	67,062
2057	19,589	8,687	7,678	5,900	20,891	4,743	47,899	67,488
2058	19,806	8,731	7,644	5,889	21,129	4,722	48,114	67,920
2059	20,025	8,774	7,610	5,877	21,370	4,701	48,332	68,357
2060	20,247	8,817	7,576	5,866	21,613	4,680	48,553	68,800
2061	20,471	8,861	7,542	5,854	21,860	4,660	48,778	69,249
2062	20,698	8,905	7,509	5,843	22,109	4,639	49,005	69,703

E3.6. Per Capita Service Ratios

Module 6 was calibrated with per capita ratio data for services and schools. Tables E3.6-1 and E3.6-2 respectively set out the service and school ratios employed in the model. Anticipated effects from the DGR project are calculated using the service and school ratios set out below and the anticipated increases in population due to project employment.

Table E3.6-1: Per Capita Service Ratios

Health Care	In-patient beds	0.001968
Emergency Services	EMS Workers	0.001874
	Police	0.001987
	Firefighters	0.004198

Table E3.6-2: Per Capita School Ratios

Kincardine	0.12453200
Saugeen Shores	0.13866700

E3.7. Municipal Finance

In this module the total tax assessment for each municipality was extracted from the respective Financial Information Returns for 2008. These sums were then divided by the 2008 population projection number to produce a per capita ratio. Table 3.7-1 presents the total assessment values. Table 3.7-2 shows the per capita ratios.

Table E3.7-1. Total Tax Assessment Base

LSA	Kincardine	\$1,298,965,725
RSA	Arran-Elderslie	\$487,232,600
	Brockton	\$726,424,488
	Huron-Kinloss	\$919,832,810
	Saugeen Shores	\$1,395,449,210
	South Bruce	\$513,225,600

Table E3.7-2. Per Capita Tax Assessment Base

LSA	Kincardine	\$101,417
RSA	Arran-Elderslie	\$70,465
	Brockton	\$75,465
	Huron-Kinloss	\$153,618
	Saugeen Shores	\$105,225
	South Bruce	\$87,941

E3.8. Project Effects

Module 8 produced a set of project direct, indirect and induced effect forecasts for the Local and Regional Study Areas' municipalities for the site preparation and construction, operations and decommissioning phases. These forecasts were the product of per capita ratios developed in modules 6 and 7 multiplied by the population forecasts established in module 5. The list of project effect forecasts included:

- Population;
- Housing;
- Employment;
- Health Services - inpatient beds;
- Emergency Services:
 - EMS – staff;
 - Fire – firefighters;
 - Police – police;
- Schools – enrolment; and
- Municipal Tax Assessment Base.

E3.9. Report Tables

The final module produced a series of tabular reports for inclusion in the Socio-economic Environment TSD (Tables E3.9-1 to E3.9-3).

Table E3.9-1: DGR Project Site Preparation and Construction Effects Summary Tables

Demographics

			Municipal Average			Project Average			Project Effect		
			Population	Employment	Housing	Population	Employment	Housing	Population	Employment	Housing
Study Areas	LSA	Kincardine	13,985	7,166	5,755	482	247	198	3.45%	3.45%	3.44%
		Arran-Elderslie	7,092	3,114	2,451	8	4	3	0.12%	0.12%	0.12%
	RSA	Brockton	9,606	4,572	3,623	36	17	14	0.38%	0.38%	0.38%
		Huron-Kinloss	5,751	2,947	2,293	52	27	21	0.90%	0.90%	0.90%
		Saugeen Shores	14,441	7,400	6,181	298	152	127	2.06%	2.06%	2.06%
		South Bruce	5,700	2,871	2,079	14	7	5	0.24%	0.24%	0.24%
		Total RSA	Σ 42,590	20,903	16,625	407	207	169	0.96%	0.99%	1.02%
	Total Study Areas	Σ 56,575	28,069	22,380	889	454	367	1.57%	1.62%	1.64%	

Services - Average Annual Demand

Health Care	Emergency Services		
In-patient beds	EMS Workers	Police	Firefighters
0.8	0.76	0.81	1.71

Tax Assessment Base

			Municipal Average	Project Average	Project Effect
Study Areas	LSA	Kincardine	\$ 1,688,337,321	\$ 7,156,153	0.42%
		Arran-Elderslie	\$ 572,685,221	\$ 85,321	0.01%
	RSA	Brockton	\$ 653,518,428	\$ 398,020	0.06%
		Huron-Kinloss	\$ 939,967,503	\$ 1,166,965	0.12%
		Saugeen Shores	\$ 1,849,756,765	\$ 4,581,295	0.25%
		South Bruce	\$ 466,463,888	\$ 173,895	0.04%
		Total RSA	Σ \$ 4,482,391,805	\$ 6,405,496	0.14%
	Total Study Areas	Σ \$ 6,170,729,126	\$ 13,561,648	0.22%	

Table E3.9-2: DGR Project Operations Effects Summary Tables

Demographics

	LSA	Kincardine	Municipal Average			Project Average			Project Effect		
			Population	Employment	Housing	Population	Employment	Housing	Population	Employment	Housing
Study Areas	RSA	Arran-Elderslie	8,101	3,214	2,397	2	1	1	0.03%	0.03%	0.03%
		Brockton	8,660	4,317	3,545	10	5	4	0.12%	0.12%	0.12%
		Huron-Kinloss	6,119	3,154	2,242	16	8	6	0.26%	0.26%	0.26%
		Saugeen Shores	17,579	9,123	8,646	86	44	41	0.49%	0.49%	0.48%
		South Bruce	5,304	2,544	2,036	4	2	2	0.08%	0.08%	0.08%
		Total RSA	Σ 45,763	Σ 22,352	Σ 18,866	Σ 118	Σ 60	Σ 54	Σ 0.26%	Σ 0.27%	Σ 0.28%
	Total Study Areas	Σ 62,410	Σ 30,882	Σ 27,128	Σ 251	Σ 128	Σ 118	Σ 0.40%	Σ 0.42%	Σ 0.44%	

Services - Average Annual Demand

Health Care	Emergency Services		
In-patient beds	EMS Workers	Police	Firefighters
0.23	0.022	0.23	0.5

Tax Assessment Base

			Municipal Average	Project Average	Project Effect
Study Areas	LSA	Kincardine	\$ 1,418,343,355	\$ 48,900,376	3.45%
		Arran-Elderslie	\$ 501,395,242	\$ 583,029	0.12%
	RSA	Brockton	\$ 724,902,614	\$ 2,719,802	0.38%
		Huron-Kinloss	\$ 883,440,747	\$ 7,974,259	0.90%
		Saugeen Shores	\$ 1,519,551,339	\$ 31,305,515	2.06%
		South Bruce	\$ 501,236,265	\$ 1,188,282	0.24%
	Total RSA	Σ \$ 4,130,526,208	Σ \$ 43,770,886	Σ 1.06%	
Total Study Areas	Σ \$ 5,548,869,563	Σ \$ 92,671,262	Σ 1.67%		

Table E3.9-3: DGR Project Decommissioning Effects Summary Tables**Demographics**

	LSA	Kincardine	Municipal Average			Project Average			Project Effect		
			Population	Employment	Housing	Population	Employment	Housing	Population	Employment	Housing
Study Areas	RSA	Arran-Elderslie	8,753	3,082	2,239	12	4	3	0.14%	0.14%	0.14%
		Brockton	7,627	3,770	3,310	46	22	20	0.60%	0.60%	0.60%
		Huron-Kinloss	5,883	3,068	2,092	68	36	24	1.16%	1.16%	1.16%
		Saugeen Shores	21,256	11,275	11,304	367	195	196	1.73%	1.73%	1.74%
		South Bruce	4,712	2,015	1,904	21	9	8	0.44%	0.44%	0.44%
		Total RSA	Σ	48,231	23,209	20,849	514	266	252	1.07%	1.15%
	Total Study Areas	Σ	68,153	33,417	31,843	1,064	548	557	1.56%	1.64%	1.75%

Services - Average Annual Demand

Health Care	Emergency Services		
In-patient beds	EMS Workers	Police	Firefighters
1.01	0.96	1.02	2.16

Tax Assessment Base

			Municipal Average	Project Average	Project Effect
Study Areas	RSA	Kincardine	\$ 2,020,382,378	\$ 55,723,479	2.76%
		Arran-Elderslie	\$ 618,778,411	\$ 882,494	0.14%
		Brockton	\$ 575,593,197	\$ 3,436,684	0.60%
		Huron-Kinloss	\$ 903,742,643	\$ 10,479,135	1.16%
		Saugeen Shores	\$ 2,236,689,481	\$ 38,634,162	1.73%
		South Bruce	\$ 414,355,896	\$ 1,830,628	0.44%
	Total RSA	Σ	\$ 4,749,159,628	\$ 55,263,103	1.16%
Total Study Areas	Σ	\$ 6,769,542,007	\$ 110,986,582	1.64%	

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