

OPG's DEEP GEOLOGIC

# REPOSITORY

FOR LOW & INTERMEDIATE LEVEL WASTE

## **Aboriginal Interests Technical Support Document**

March 2011

Prepared by: AECOM Canada Ltd.

NWMO DGR-TR-2011-09





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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 past, 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 abandonment and long-term performance phase is 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 Aboriginal interests: the Regional Study Area, Local Study Area, Site Study Area and Project Area. Each study area includes the smaller study areas (i.e., they are not geographically separate).

### **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. For the purposes of this Aboriginal interests TSD, the VECs are intended to reflect a broad range of Aboriginal interests that relate to an environmental effect as defined by the CEAA. The Aboriginal interests from which VECs were identified through reviews of:

- correspondence between the proponent and Aboriginal representatives and minutes of meetings between the proponent and Aboriginal organizations between 2003 and 2010;
- literature pertaining to Aboriginal treaties, land claims, fishing and harvesting rights;
- Aboriginal communities expressing interests in the Regional Study Area;
- general ecological, socio-economic and cultural heritage interests for Ojibway and Métis peoples in Ontario; and
- previous EAs for projects at the Bruce nuclear site.

The following VECs are used in assessing the effects of the DGR Project on Aboriginal interests:

- Aboriginal communities;
- Aboriginal heritage and resources; and
- traditional use of land and resources.

### **ES.4 RESULTS**

The identified measurable changes are assessed to determine whether they are adverse. The following residual adverse effect is identified on the Aboriginal heritage and resources VEC:

- The DGR Project is likely to diminish the quality or value of activities undertaken by Aboriginal peoples at the Aboriginal burial site located at the Bruce nuclear site. As a



result, a residual adverse effect on the Aboriginal heritage resources VEC is expected to occur during all phases of the project. This results from changed aesthetics, and temporarily increased noise and dust. The DGR Project will not change the access to the Aboriginal burial site nor the ability of Aboriginal peoples to undertake their cultural/ceremonial activities at this site. This effect is not considered to be significant.

In addition, the following conclusions are made regarding Aboriginal interests:

- No residual adverse effects were identified for Aboriginal communities or the traditional use of land and resources VECs. The DGR Project is not likely to adversely affect the economic base, levels of service, social structure or the stability of Aboriginal communities. The DGR Project will not adversely affect the ability of Aboriginal people to use lands and resources for their personal and community needs.
- No residual adverse effects were identified for Aboriginal communities or the traditional use of land and resources VECs.
- The DGR Project will create new direct, indirect and induced employment opportunities and additional business opportunities for both Aboriginal and non-Aboriginal communities. There is potential for some Aboriginal communities to realize benefits from these opportunities.
- Climate change is not expected to have any effect on the conclusions reached regarding the effects of the DGR Project on Aboriginal interests, or the environment on the DGR Project.
- The DGR Project is not likely to measurably change the renewable commercial fisheries.
- Non-renewable resource uses associated with the DGR Project includes use of aggregate, and fuels for on-site vehicle and equipment operation. Local aggregate use and market effects will be limited as excavated rock will be kept on-site. Renewable resource uses associated with Aboriginal interests includes those fish species that are harvested by Aboriginal persons for commercial purposes. No renewable or non-renewable resource use effects were identified in the Aboriginal interests assessment that have the potential to adversely affect the sustainability of associated resources.

## **ES.5 PRELIMINARY FOLLOW-UP PROGRAM**

Follow-up monitoring programs are 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.

At this time, no follow-up activities beyond those identified in the Atmospheric Environment TSD relating to dust and noise are proposed.

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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 waste (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 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.

This TSD has been prepared using results from other TSDs, the EIS, secondary sources and communication records from the proponent. The conclusions reached in this document represent the professional judgement of the EA team, based on the available information.

### 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 DGR 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 address 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 DGR Project 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 DGR Project 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 report, 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 guidelines, human health assessment and 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., and 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 an 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 approach is that a single accident is likely to affect multiple elements of the environment. The analysis and conclusions reached in the Malfunctions, Accidents and Malevolent Acts TSD are relevant to both Aboriginal and non-Aboriginal peoples.

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 importance placed on radiation and radioactivity, and the combined effects to the receiving environment independent of the path of exposure. The analysis and conclusions reached in the Radiation and Radioactivity TSD are considered relevant to both Aboriginal and non-Aboriginal peoples.

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].

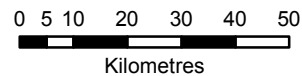
The abandonment and long-term performance phase is considered in Section 9 of the EIS. The analyses and conclusions reached in the Radiation and Radioactivity and Malfunctions, Accidents and Malevolent Acts TSDs are considered relevant to Aboriginal peoples and address Aboriginal interests related to human health and the health of non-human biota. These results are highlighted where appropriate and further information can be found in the human health assessment in Appendix C of the EIS.

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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		ABORIGINAL INTERESTS TECHNICAL SUPPORT DOCUMENT	
TITLE			
<b>LOCATION OF THE DGR PROJECT</b>			
PROJECT NO. 06-1112-037		SCALE: AS SHOWN	R000
DESIGN	ASB	17 Oct. 2007	<b>FIGURE 1-1</b>
GIS	BC	14 Apr. 2010	
CHECK	BC	14 Apr. 2010	
REVIEW	MAR	14 Apr. 2010	
 Golder Associates Mississauga, Ontario			

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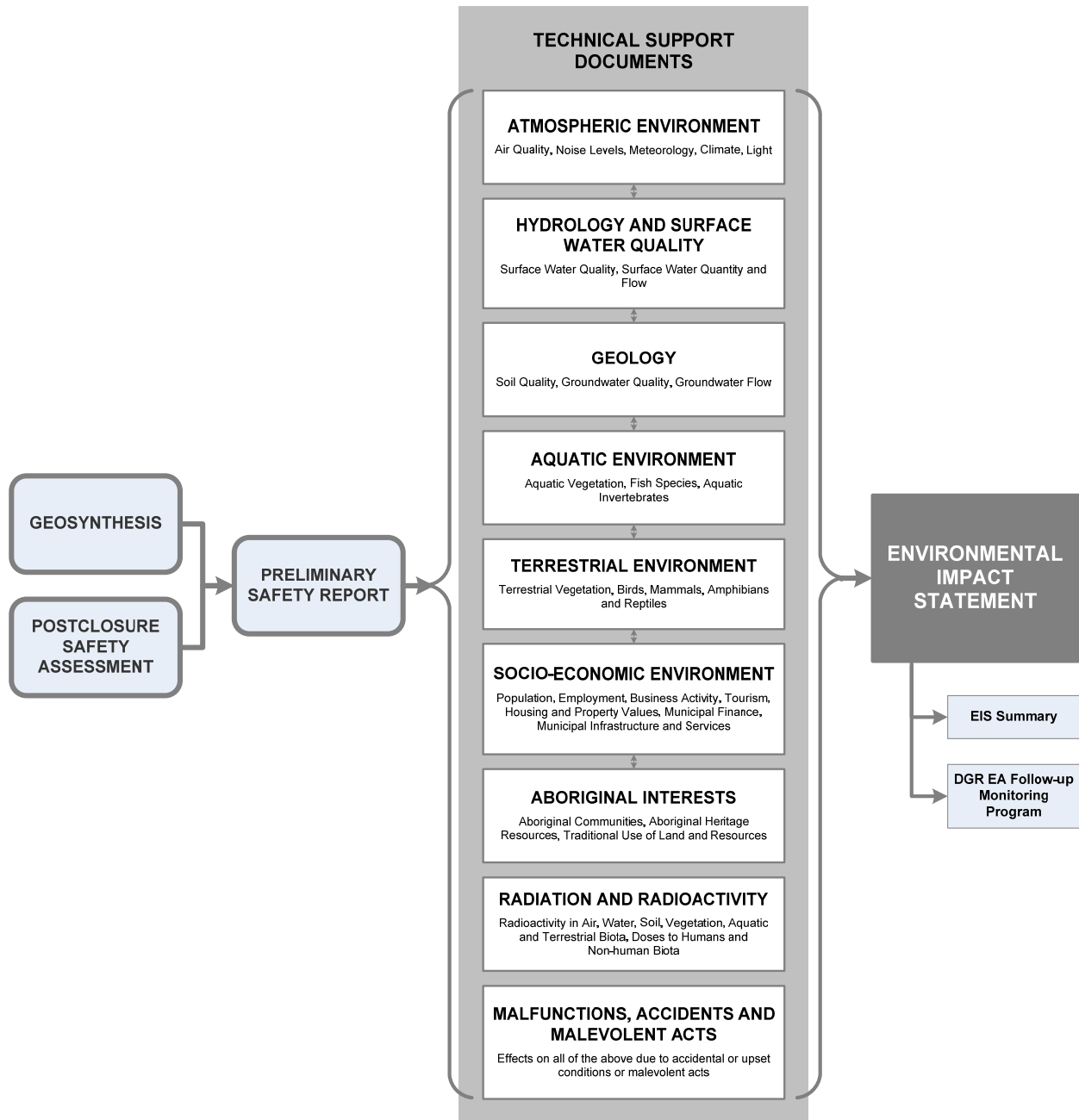


Figure 1.2-1: Organization of EA Documentation

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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 DGR 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, irreversibility and ecological and social context of the effect.
- **Propose Follow-up Programs.** Finally, follow-up monitoring (if warranted) 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 cultural or scientific reasons. Aboriginal interests VECs are defined and described in Section 4. Criteria for determining measurable changes and adverse effects are defined for relevant VECs. The detailed methods for each of these steps, including how they are applied in 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.

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., changes in employment during site preparation and construction could affect the VEC Aboriginal communities). 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 VEC Aboriginal communities because of nuisance-related effects).

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 Aboriginal interests VECs and where the indirect effects are evaluated. 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 presented 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 and Aboriginal traditional knowledge, where available. 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 15<sup>1</sup> 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 Aboriginal interests is provided at the end of the assessment section (Section 8).

---

<sup>1</sup> 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".

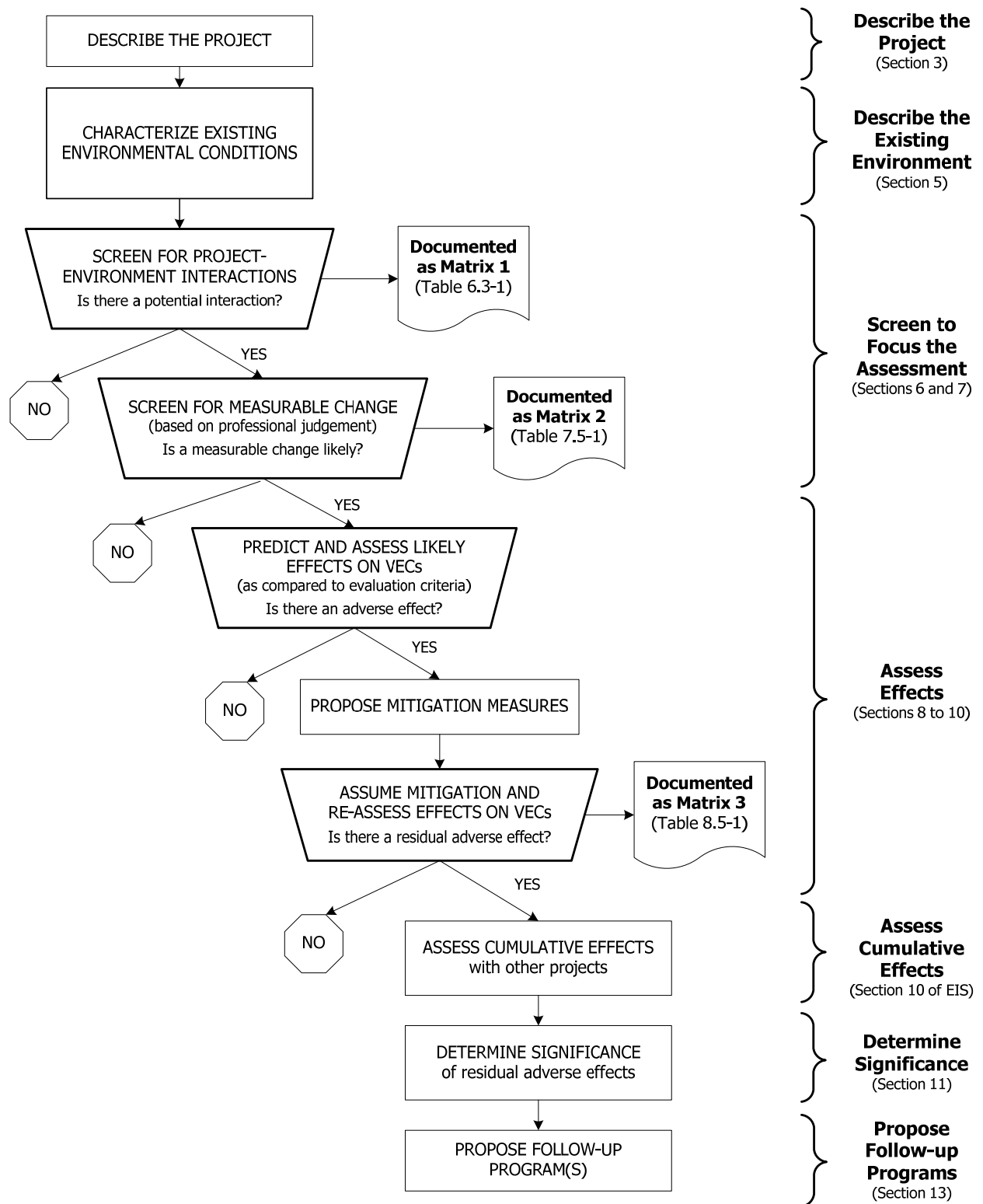


Figure 2.1-1: Methodology for Assessment of Effects

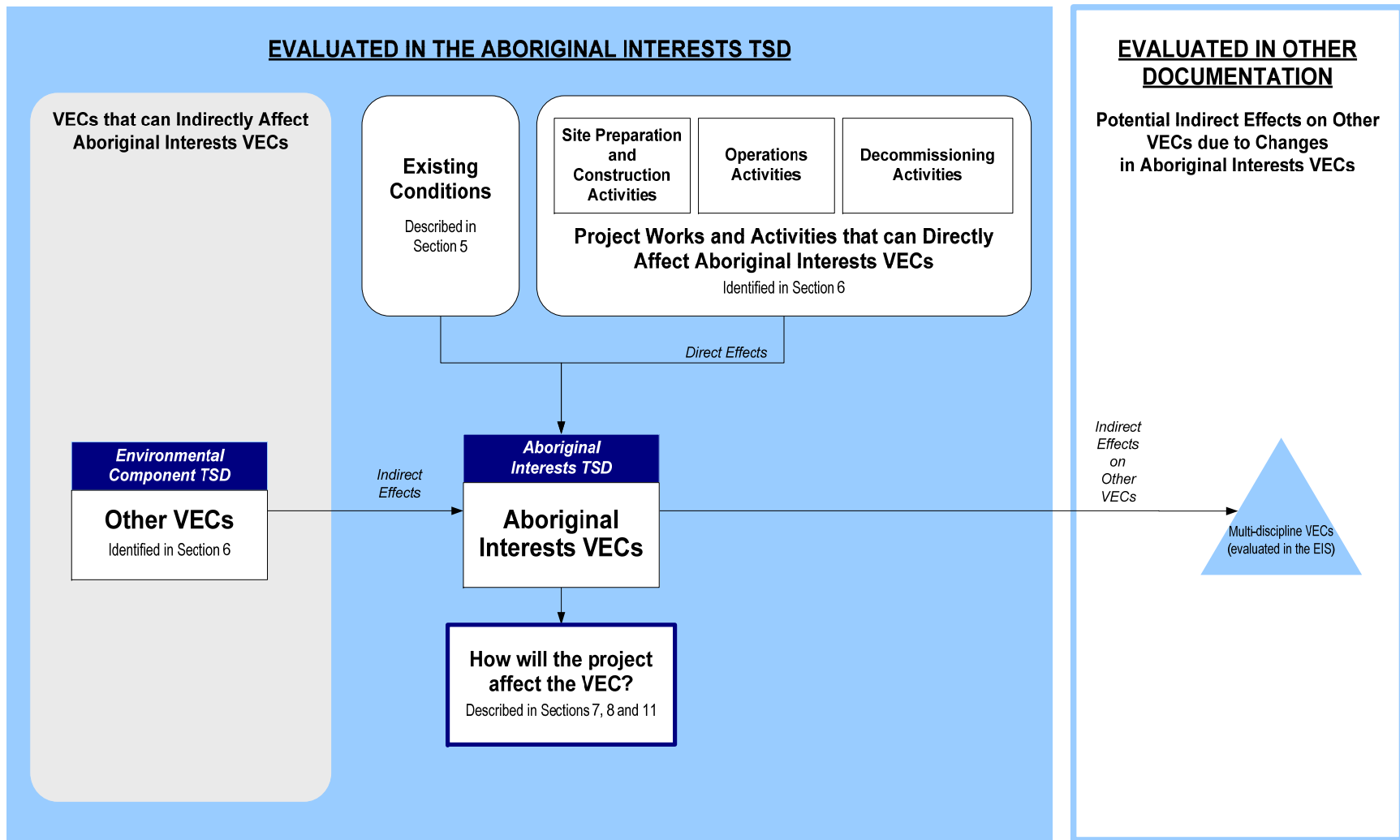


Figure 2.1-2: Information Flow Diagram for the Aboriginal Interests VECs

### **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 as knowledge that is held by and unique to, Aboriginal peoples [6]. 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.

Issues of importance to Aboriginal communities were identified as part of this TSD through examination of available information pertaining to general ecological, socio-economic and cultural heritage 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 with regards to previous studies;
- interests raised by Aboriginal communities in the context of dialogue for the DGR Project; and
- insights into traditional knowledge, and interests of general importance to local Aboriginal communities.

Through this examination, the Aboriginal communities identified as having interests in projects at the Bruce nuclear site include the Saugeen Ojibway Nation (SON), the Historic Saugeen Métis Community (HSMC) and Métis Nation of Ontario-represented citizens in the Georgian Bay Region (MNO).

### **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 Aboriginal interests 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, 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 of up to three hundred years.

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

### 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 (included as Appendix A of the EIS) 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 Aboriginal interests: the Regional Study Area, Local Study Area, Site Study Area and Project Area. The Project Area, although not specified in the DGR Project 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) adopted for the Aboriginal Interests TSD generally corresponds to the generic study area adopted for the EA. For the purposes of this TSD, Aboriginal communities who have expressed an interest in the DGR Project are also considered. For example, Figure 2.4.2-1 shows those lands relevant to the Saugeen Ojibway Nation (SON), the Historic Saugeen Métis Community (HSMC) and Métis Nation of Ontario-represented citizens in the Georgian Bay Region (MNO).

#### 2.4.2.2 Local Study Area

The Local Study Area (Figure 2.4.2-2) generally corresponds to the 10 km emergency planning zone, which is centred at the Bruce nuclear site, as identified by Emergency Management Ontario (EMO).

#### 2.4.2.3 Site Study Area

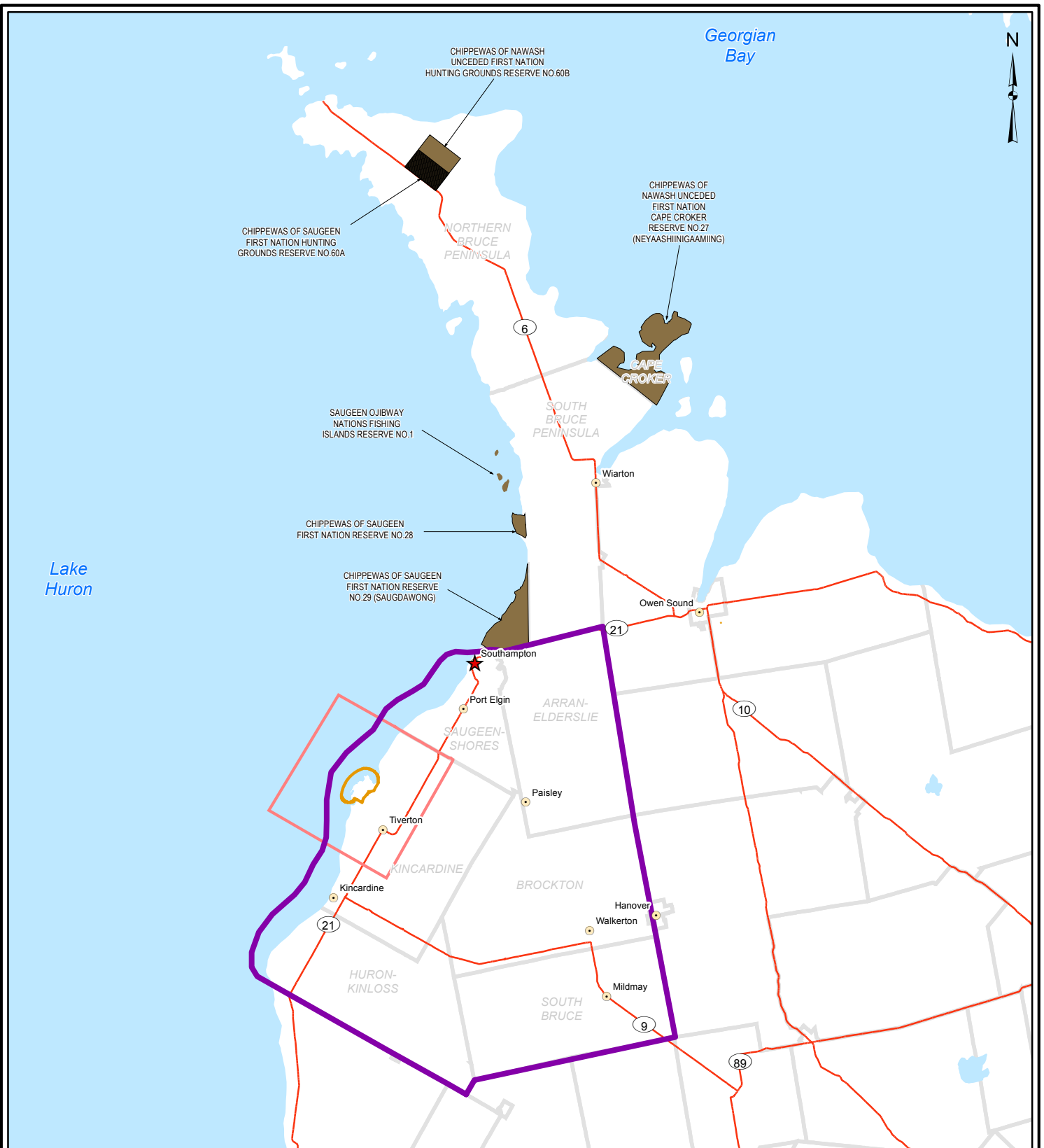
The Site Study Area, (Figure 2.4.2-3) corresponds to the property boundary of the Bruce nuclear site, including the exclusion zone on land and over water.

#### 2.4.2.4 Project Area

The Project Area (Figure 2.4.2-3) corresponds to the boundary of the OPG-retained lands at the centre of the Bruce nuclear site where the location of the DGR Project is proposed. This is the area that will be most directly affected by the project works and activities.

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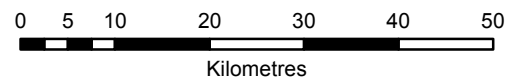


**LEGEND**

- Site Study Area
- Local Study Area
- Regional Study Area
- First Nations' Lands
- ★ Location of Former Hudson Bay Company Post Associated with Historic Métis Settlement

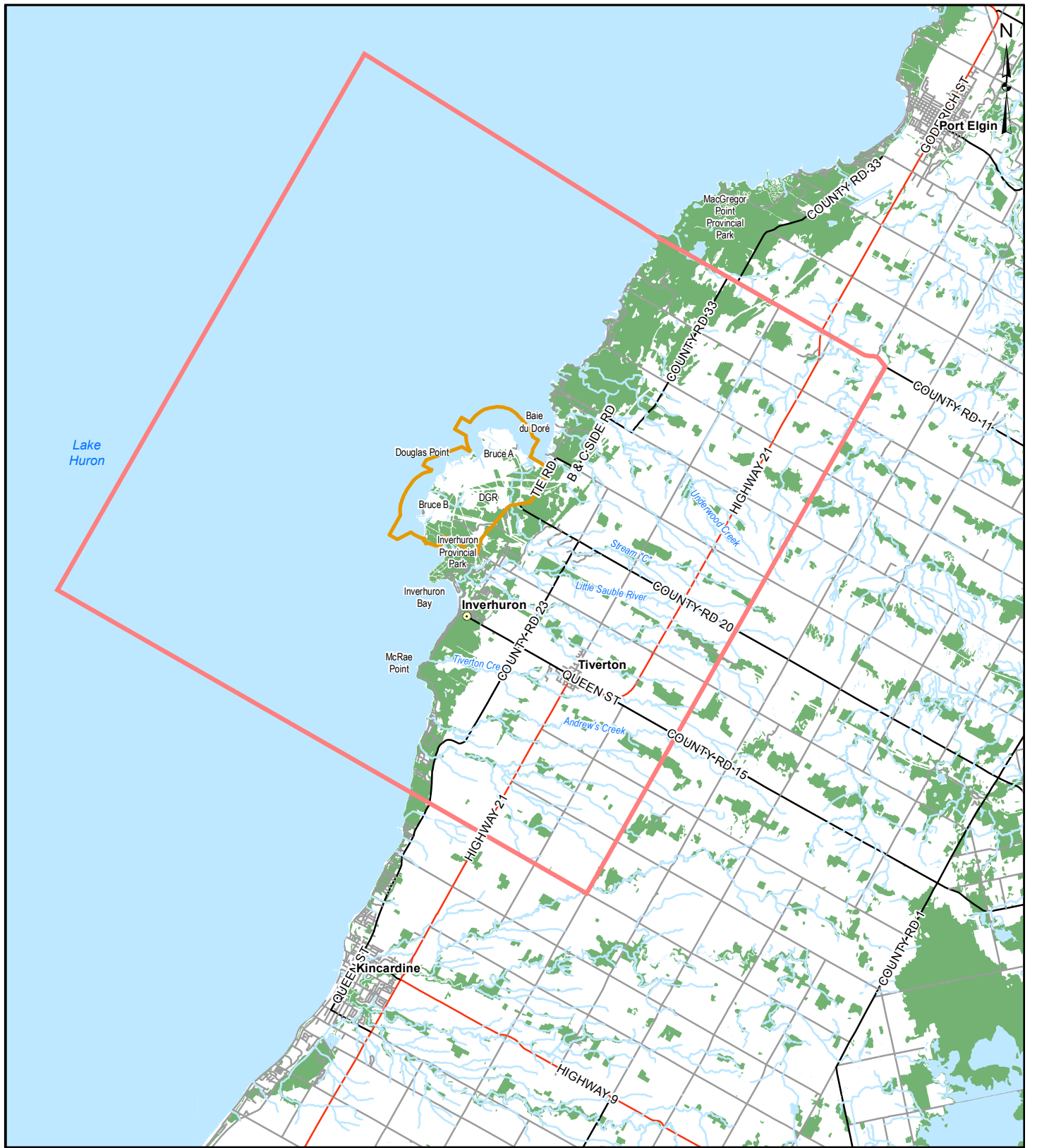
**REFERENCE**

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



<b>PROJECT</b>	ABORIGINAL INTERESTS TECHNICAL SUPPORT DOCUMENT		
<b>TITLE</b>	<b>REGIONAL STUDY AREA</b>		
 <b>Golder Associates</b> <small>Mississauga, Ontario</small>	PROJECT NO. 06-1112-037	SCALE: AS SHOWN	R000
	DESIGN ASB 22 Jan. 2008	<b>FIGURE 2.4.2-1</b>	
	GIS BC 7 Apr. 2010		
	CHECK KC 7 Apr. 2010		
REVIEW AB 7 Apr. 2010			

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**LEGEND**

- Site Study Area <sup>1</sup>
- 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  
 ABORIGINAL INTERESTS  
 TECHNICAL SUPPORT DOCUMENT

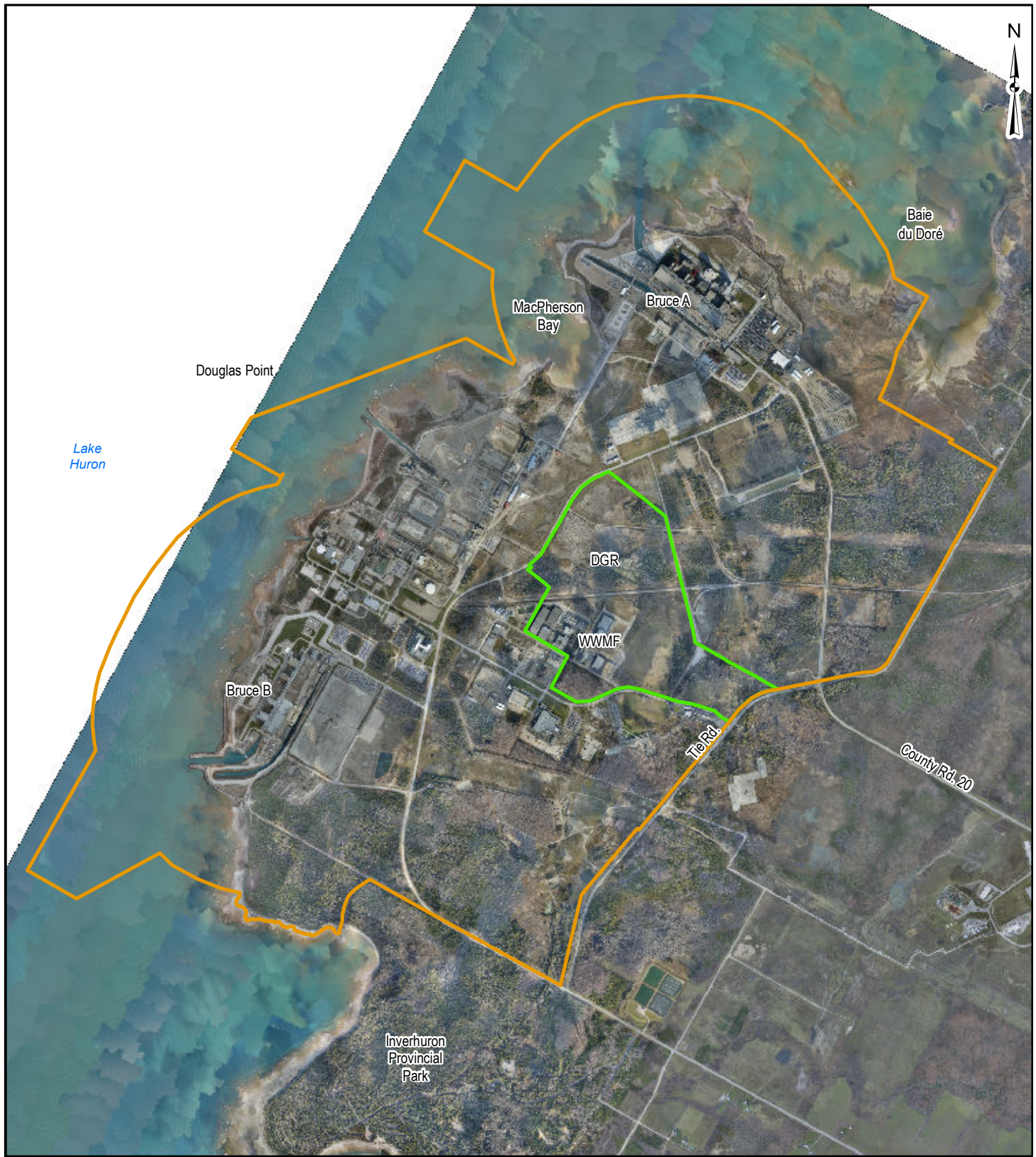
TITLE  
**LOCAL STUDY AREA**

PROJECT No. 06-1112-037			SCALE: AS SHOWN	R000
DESIGN	ASB	17 Oct 2007		
GIS	BC	7 Apr. 2010		
CHECK	KC	7 Apr. 2010		
REVIEW	AB	7 Apr. 2010		



**FIGURE 2.4.2-2**

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**LEGEND**

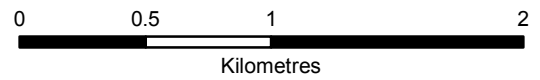
- Project Area (OPG-retained lands that encompass the DGR Project)
- Site Study Area <sup>1</sup>

**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	ABORIGINAL INTERESTS TECHNICAL SUPPORT DOCUMENT		
TITLE	<b>SITE STUDY AREA</b>		
PROJECT NO. 06-1112-037	SCALE: AS SHOWN	R000	
DESIGN ASB 17 Oct. 2007	<b>FIGURE 2.4.2-3</b>		
GIS BC 7 Apr. 2010			
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REVIEW AB 7 Apr. 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 nuclear generating stations. Low level waste (LLW) 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 (ILW) consists primarily of used reactor components and resins used to clean the reactor water circuits. The capacity of the DGR is a nominal 200,000 m<sup>3</sup> 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 DGR 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 alternative. 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 Aboriginal interests.

#### **3.2 SITE DESCRIPTION AND PROJECT LAYOUT**

##### **3.2.1 Surface Facilities**

The surface DGR facilities will be located on vacant OPG-retained land 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). Throughout the EA documentation, these ditches are referred to as the South Railway Ditch and the North Railway Ditch. 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 drainage ditch 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 approximately 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.



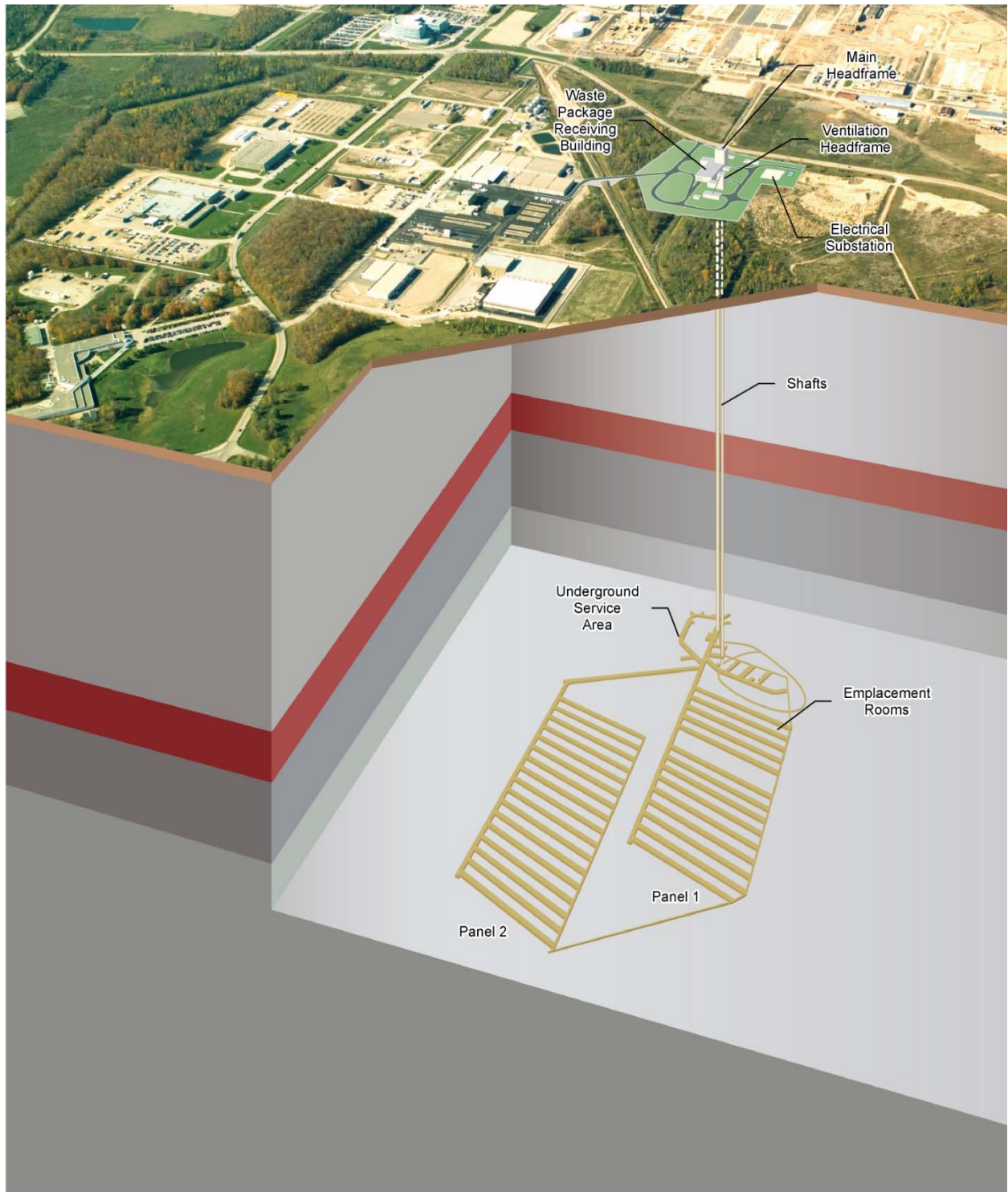
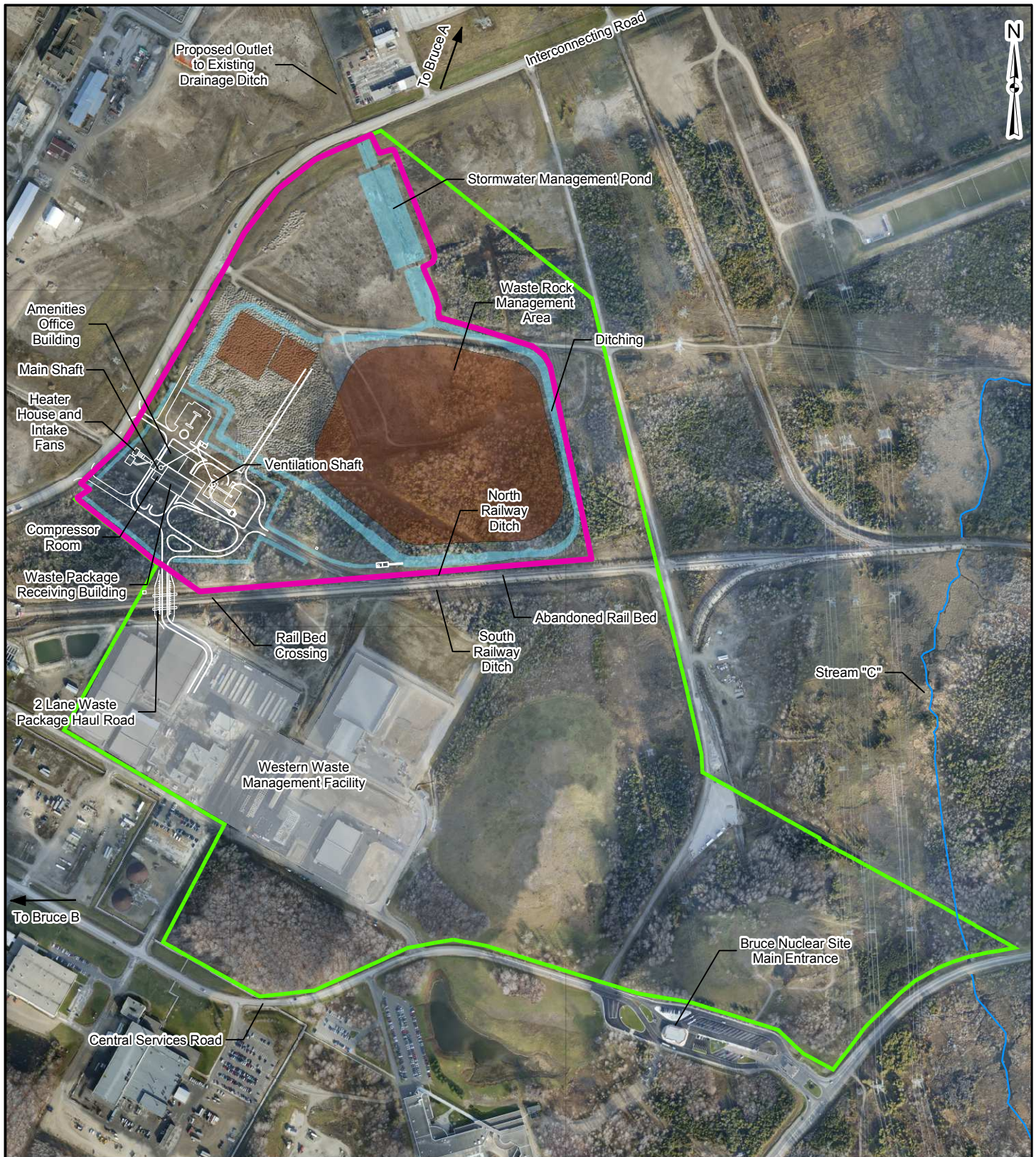


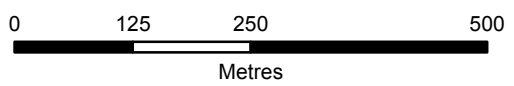
Figure 3.1-1: Schematic of DGR Project

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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	ABORIGINAL INTERESTS TECHNICAL SUPPORT DOCUMENT			
TITLE	<b>LAYOUT OF DGR SURFACE INFRASTRUCTURE</b>			
	PROJECT NO. 06-1112-037	SCALE: AS SHOWN	R000	
	DESIGN AB 16 Mar. 2010	<b>FIGURE 3.2.1-1</b>		
	GIS BC 25 Nov. 2010			
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	REVIEW AB 25 Nov. 2010			
 Golder Associates Mississauga, Ontario				

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#### 4. SELECTION OF VALUED ECOSYSTEM COMPONENTS (VECS)

While all components of the environment are important, it is neither practical nor necessary to assess every potential effect of a project on every component of the environment. An 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" [8]. Importance may be determined on the basis of cultural values or scientific concerns. VECs can be an individually valued component of the environment or a collection of components that represent one aspect of the environment (e.g., Aboriginal heritage resources).

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). In essence, these ecological feature VECs would encompass a number of individual VECs such as:

- an aspect of the physical environment (e.g., water quality);
- an individual wildlife species (e.g., mallard duck, lake whitefish or creek chub); or
- a range of species that serve as a surrogate for species that interact similarly with the environment (e.g., benthic invertebrates).

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 (e.g., Aboriginal population). Each indicator requires specific 'measures' that can be described, quantified and assessed (e.g., changes in population).

A list of VECs is identified using the expertise of the technical specialists. The list of VECs also includes consideration from other EA and environmental programs including VEC lists from EAs of projects involving the Bruce, Pickering or Darlington nuclear sites. The list of VECs for the DGR Project was available for discussion and comment at the open houses held in October 2007, November 2008 and November 2009 and summer/fall 2010. First Nations and the Métis community were invited to participate in these events. All attendees were 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 into the list of VECs as part of the public review of the draft guidelines. In addition, the 2007 Saugeen First Nation's Pow-Wow provided the opportunity to communicate with First Nation representatives. There was an opportunity to obtain information and gain a better understanding of the DGR Project, including VECs.

The following sections identify and describe the approach and selection of VECs for assessing the effects of the DGR Project on Aboriginal interests. The approach is grounded in the identification of Aboriginal interests (Section 4.1) and Aboriginal Traditional Knowledge (Section 4.2).

#### 4.1 IDENTIFICATION OF ABORIGINAL INTERESTS

The interests of Aboriginal peoples from which VECs were identified through reviews of the following:

- correspondence between the proponent and Aboriginal representatives and minutes of meetings between the proponent and Aboriginal organizations between 2003 and 2010;
- literature pertaining to Aboriginal treaties, land claims, fishing and harvesting rights;
- Aboriginal communities expressing interests in the Regional Study Area;
- general ecological, socio-economic and cultural heritage interests for Ojibway and Métis peoples in Ontario; and
- previous EAs at the Bruce nuclear site.

Discussions between OPG and Aboriginal people were initiated in 2003 in reference to the EA of the DGR Project. Records of communication, including correspondence, records of meetings, site visits and telephone calls were reviewed. The Aboriginal interests identified through the historic record of communication included the following:

- the need for the Crown to fulfill its duty to consult and accommodate;
- the preservation and access to Aboriginal burial grounds at the Bruce nuclear site;
- respect for cultural heritage, traditional knowledge and Ojibway spiritual interests, land claims, traditional territory and long-term use of lands and waters;
- fishing and harvesting rights;
- health of members of Aboriginal communities;
- environmental health; and
- economic benefits and/or effects (includes alternative energy, scholarships, employment, procurement, and tourism).

In addition, the Saugeen Ojibway Nation (SON)<sup>2</sup> has identified an issue with the siting of the original facilities at the Bruce nuclear site, previously known as the Bruce Nuclear Power Development (BNPD). The SON indicated that the First Nations had not been consulted in the past, when decisions were first made regarding the Bruce nuclear site, nor were they involved in subsequent decisions regarding the various nuclear waste management facilities at the site. Concern was also expressed over the effects of nuclear plant operations on the fishery and regarding health effects from nuclear plant operations.

OPG undertook to follow up on the legacy issue concerns. On January 28, 2010 OPG executive management met with the Chiefs of Nawash and Saugeen First Nations. At that meeting the Chiefs indicated that the First Nations had not been consulted in the past, when decisions were first made regarding the Bruce nuclear site, nor were they involved in subsequent decisions regarding the various nuclear waste management facilities at the site. Concern was also expressed over the impact of nuclear plant operations on the fishery, and regarding health effects from nuclear plant operations.

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<sup>2</sup> The Saugeen Ojibway Nation (SON) is the collective name for the Chippewas of Saugeen First Nation and the Chippewas of Nawash Unceded First Nation. These two First Nations share the same Aboriginal and treaty rights, including rights to fish commercially in the waters around the Bruce Peninsula (see Section 5.3.1)

OPG offered to implement an issue resolution process, based on its experience addressing past grievances raised by other First Nations. OPG provided SON with a draft memorandum of understanding that described the proposed process, including reporting, confidentiality and financial matters. OPG and SON have held regular meetings to develop and implement an issue resolution process to the mutual satisfaction of all parties.

An examination of previous EA studies for a variety of nuclear power generation, waste management and electricity transmission projects related to the Bruce nuclear site was also conducted to identify Aboriginal interests that may be relevant to the DGR Project. The following EAs, spanning the time period of 1997 to 2008, were examined:

- Bruce Used Fuel Dry Storage (BUFDS) Facility EA, December 1997 [9];
- Bruce A Units 3&4 Restart EA, August 2002 [10];
- Bruce Heavy Water Plant (BHWP) Decommissioning EA Study Report, December 2002 [11];
- Low Level Storage Buildings (LLSB) 9, 10 & 11 EA Study Report, March 2004 [12];
- New Fuel Project for Bruce B EA Study Report, October 2004 [13];
- Western Waste Management Facility (WWMF) Refurbishment Waste Storage Project EA Study Report, October 2005 [14];
- Bruce A Refurbishment for Life Extension and Continued Operations Project EA, December 2005 [15];
- Bruce New Nuclear Power Plant Project Environmental Impact Statement, September 2008 [16]; and
- Bruce to Milton Transmission Reinforcement Project, December 2008 [17].

The concerns and issues raised by Aboriginal peoples during these EA processes were considered by their respective proponents and relevant federal and provincial governments in reaching decisions regarding these projects. In addition, various activities and initiatives have been undertaken over the years to address the issues and concerns that have been raised by Aboriginal peoples. These include various studies of the Lake Huron fishery, Fishery Agreements, various protocols and ongoing dialogue between various parties.

Information regarding Aboriginal rights and treaty information was drawn from Indian Treaties and Surrenders, Volume 1: Treaties 1-138 [18] and various federal and provincial government documents. Additional information drawn from the literature is provided in Section 4.2, Aboriginal Traditional Knowledge and Section 5.2, Historical Context.

#### **4.1.1 Aboriginal Rights, Aboriginal Title or Treaty Rights**

First and foremost, among the Aboriginal interests communicated to OPG by Aboriginal people or documented in the literature and previous EAs are those related to Aboriginal rights and Aboriginal title.

As defined in the DGR Project EIS Guidelines, Aboriginal Rights mean those rights of Aboriginal peoples which are not found in treaties or land claims agreements. Aboriginal Title means the form of land ownership belonging to Aboriginal people and the rights coming from the Aboriginal relationship with the land. Aboriginal rights vary from group to group depending on the customs, practices and traditions that have formed part of their distinctive cultures. Aboriginal rights are protected under s.35 of the *Constitution Act*, 1982 [19].

In general, the concerns expressed by the SON have related to the need for all parties within their traditional territory to respect and acknowledge the SON's sovereignty and maintaining the relationship established by the treaties, their traditional land use and harvesting activities, and way of life. For example, the available documentation indicates that:

*“The First Nations feel it is of extreme importance that the land surrenders experienced did not affect or diminish their Aboriginal rights in the surrounding waters, which are part of their traditional territory, or the fishing rights traditionally exercised by their people since time immemorial. Rights in these waters and to their fishery have also been assured through treaty rights and these Aboriginal and treaty rights have been recognized and affirmed in s. 35 of the Constitution Act, 1982” [10].*

*“The land itself is important, but the lake bed is perhaps of even greater importance to us” [20].*

The HSMC have asserted the Aboriginal right to hunt and harvest in Regional Study Area.

MNO-represented citizens have asserted the Aboriginal right to hunt and harvest in the Regional Study Area.

#### 4.1.1.1 First Nations Treaties

The following treaty information is drawn from Indian Treaties and Surrenders, Volume 1: Treaties 1-138 [18] and various federal and provincial government documents. The treaties are illustrated on Figure 4.1.1-1.

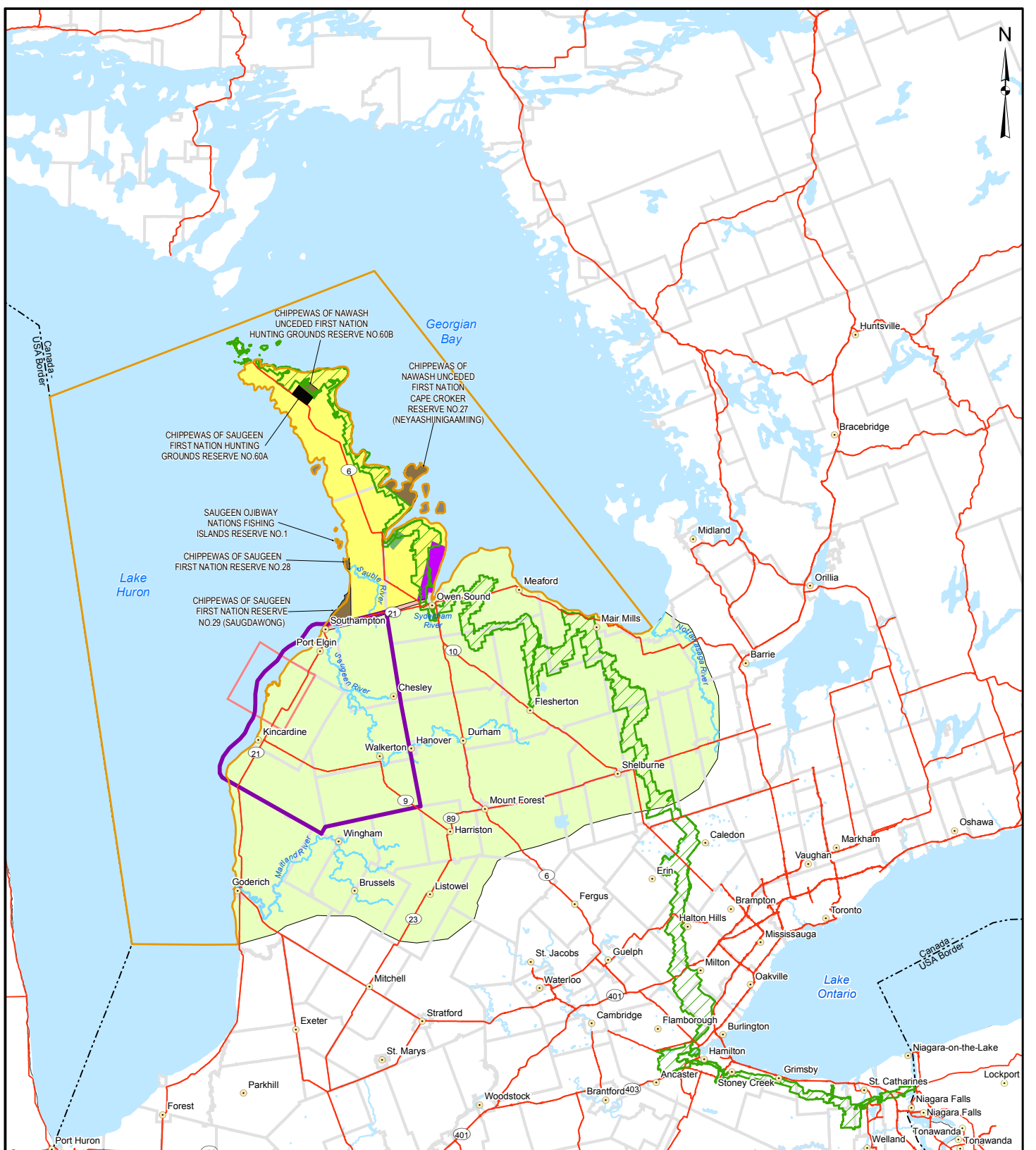
##### *The Bond Head Treaty 45½, August 9, 1836*

Surrender of the “Sauking Territory”, which includes the current Bruce County, Grey County, and portions of Huron, Wellington, Dufferin and Simcoe Counties. The area extends along the Lake Huron shoreline from Southampton in the north to south of Goderich. As a result of this treaty, the Aboriginal peoples within the area moved north of the treaty area, the northern border of which extends along a line roughly between Southampton and Owen Sound, into the Bruce Peninsula. In return for the surrender of the land, the Crown indicated that it would protect the Aboriginal lands on the Bruce Peninsula, the islands and fishing from settlers.

##### *Treaty 67, September 2, 1851*

Surrender of a one-kilometre-wide strip of land stretching between Southampton and Owen Sound (between the two SON reserves). This treaty was signed with the understanding that the government would build a road in between the two reserves to facilitate improved communications between the communities. The total land surrendered was approximately 1,940 ha (4,800 acres). The land was surrendered in trust for the purpose of being sold, with the proceeds to be invested by the Government of Canada for the benefit of the First Nations and their posterity.



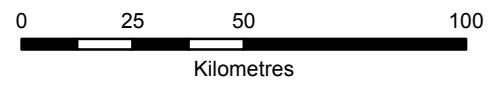


**LEGEND**

- Aboriginal Title Claim Area
- Regional Study Area
- Local Study Area
- Niagara Escarpment
- First Nations' Lands 2004
- Treaty 93 (1861) Area
- Treaty 67 (1851) Area
- Treaty 45 1/2 (1836) Area
- The Islands Around The Peninsula Were Subject To Various Treaties But Many Small Islands On The Lake Huron Side Were Returned To The First Nations In 1980
- Treaty 82 (1857) Area
- Treaty 72 (1854) Area

**REFERENCE**

Treaty areas approximated from [www.bmts.com ~dibaudjirneh / page 120.html](http://www.bmts.com/~dibaudjirneh/page_120.html) media release. "Nawash & Saugeen FN's lay claim to the lake bed of Lake Huron and Georgian Bay" Jan. 2004.  
Datum: NAD 83 Projection: UTM Zone 17N



<b>PROJECT</b>	<b>ABORIGINAL INTERESTS TECHNICAL SUPPORT DOCUMENT</b>		
<b>TITLE</b>	<b>SAUGEEN OJIBWAY NATION TRADITIONAL TERRITORY</b>		
 <b>Golder Associates</b> Mississauga, Ontario	PROJECT NO. 06-1112-037	SCALE: AS SHOWN	R000
	DESIGN ASB 12 Mar. 2007		
	GIS BC 14 Jun. 2010		
	CHECK AE 14 Jun. 2010		
REVIEW MAR 14 Jun. 2010	<b>FIGURE 4.1.1-1</b>		

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Treaty 72, October 13, 1854

Surrender of the Bruce Peninsula with the exception of the Saugeen Tract (reserve No. 29 at Southampton), Chief's Point reserve No. 28, Cape Croker reserve No. 27, Owen Sound reserve (Nawash), Colpoy's Bay reserve, and the hunting grounds (reserves No. 60A and 60B). The treaty indicated that the area of land at the mouth of the Saugeen River was to be divided into lots and sold immediately for the benefit of the First Nations. The interest of the principal sum arising from the sale of the ceded lands was to be regularly paid to the First Nations as long as community members exist.

Treaty 82, February 9, 1857

Surrender of the Owen Sound (Nawash) reserve. It was agreed that the surrendered land (approximately 4,050 ha or 10,000 acres) would be sold for the benefit of the First Nations. In return for the land surrender, every First Nation family was to receive 10 ha (25 acres) of land for cultivation at Cape Croker along with a house, and the community was to receive funds to erect a church and conduct other permanent improvements as approved by the Governor General. In addition, a plot of land was to be set aside for a burial ground.

Treaty 93, August 16, 1861

Surrender of the Colpoy's Bay reserve. The total area surrendered was approximately 2,400 ha (6,000 acres). This land was surrendered in trust to be sold for the benefit of the First Nations [18].

#### 4.1.1.2 Saugeen Ojibway Nation Land Claims

In 1973 the federal government recognized two broad categories of land claims: specific claims; and comprehensive claims. Specific claims result from the breach or non-fulfillment of government obligations found in treaties, agreements or statutes. Comprehensive claims are based on Aboriginal title that has not been dealt with through a treaty or other legal means, and include issues such as land title, Aboriginal rights, and financial compensation [21;22].

The SON attempted to resolve the land claims arising from the treaties in the late 1980s; however, the claims could not be classified as specific or comprehensive claims since they did not fit the criteria of either type of claim, and the discussions dwindled [23].

In 1994, the SON launched a claim on the Saugeen (Bruce) Peninsula for compensation for lands included under Treaty 72, alleging that the Crown had breached its fiduciary obligation to protect Native lands from the encroachment of non-Native settlers, which was something that Lieutenant Governor Francis Bond Head promised to do during the negotiations of Treaty Number 45½ in 1836. The SON is seeking the return of approximately 20,500 ha (50,000 acres) of lands that have not been paid for or that are now in the hands of governments. The majority of this land is road allowances and river and lake bottoms, which were never sold by the Crown after Treaty 72. Lands legitimately patented and owned by third parties are not to be included. In lieu of land not available for repatriation, the Bands are claiming its monetary value, plus compensation for loss of its use. The monetary value of the claim is \$90 billion [24]. This claim remains active at the time of writing.

At an international conference in Duluth, Minnesota, the Chief of the Saugeen First Nation announced the Duluth Declaration, which is an assertion of jurisdiction over the waters around the Saugeen/Bruce Peninsula in their entirety, the fisheries, lands and minerals, above and below the waters, including the lake bed. The declaration indicates that this jurisdiction extends to the median point in the water between the Saugeen Nation territory, water and land, and all other national territory [25].

Regarding this claim, the Chippewas of Saugeen First Nation stated:

*“This claim is a natural progression of how we have always felt about this area of the world and now we believe we have the evidence to test that in court. We owe it to our people to correct an old injustice. When First Nations’ people lose their lands, a good part of their identity – of themselves – is lost too”. [20]*

The Chippewas of Nawash Unceded First Nation said:

*“This claim is part of a long-term plan to return our people to complete self-sufficiency. If successful, we will be recognized as owners of much of our traditional territory, and therefore entitled to be compensated for lost territories. The land itself is important, but the lake bed is perhaps of even greater importance to us. From the waters we derived our livelihood by fishing, an activity we have pursued for thousands of years and one that reaches into the core of our culture”. [20]*

Finally, there are a number of claims in progress by SON, in pleading or discovery stage. These are understood to be related to claims of breaches in fiduciary responsibilities under various Treaties, including a claim to the lakebed.

#### 4.1.1.3 Saugeen Ojibway Nation Fishing and Harvesting Rights

Fishing rights of the SON in both Lake Huron and Georgian Bay have been a fundamental issue related to territorial rights and claims of the SON, history of their communities on the Bruce Peninsula, and in relation to the Bruce nuclear site activities and other EAs.

The Chippewas of Nawash Unceded First Nation describes its traditional territory as the waters and fisheries that surround their traditional lands. Further to this, they state that:

*“...along with indigenous peoples everywhere, the relationship with traditional lands, waters and resources is profound, ongoing and an essential part of their identity and culture as well as the economy of our people that sustains us to this day.” [26]*

The Chippewas of Nawash Unceded First Nation also state that:

*“The First Nations feel it is of extreme importance that the land surrenders experienced did not affect or diminish their Aboriginal rights in the surrounding waters, which are part of their traditional territory, or the fishing rights traditionally exercised by their people since time immemorial. Rights in these waters and to*

*their fishery have also been assured through treaty rights and these Aboriginal and treaty rights have been recognized and affirmed in s. 35 of the Constitution Act, 1982.” [26]*

The *Jones-Nadjiwon* decision on April 26, 1993, was a pivotal judgement that established claims rights for the SON to fish in the waters adjacent to the Bruce nuclear site. The judgement confirmed that the SON retained their rights to a commercial fishery in waters around the Bruce Peninsula [27]. The Chippewas of Nawash Unceded First Nation are of the position that:

*“Aboriginal and treaty rights, at least to the offshore areas and fishery of the Saugeen (Bruce) Peninsula are (among other things) rights of title, ownership and possession. From a legal perspective, the court in Jones-Nadjiwon recognized rights to this regard as “a right of access to, and use of their traditional fishing grounds” and “the right to fish in those waters and to enjoy the benefit of the resource to be found there.” Moreover, the recent Supreme Court ruling in the Delgamuukw case reaffirms the fundamental importance of, and Crown obligations of respect for, Aboriginal title and treaty rights, including the resource components of these rights and title”. [26]*

In June 2000, the first Fisheries Agreement to manage the commercial fishery in Lake Huron and Georgian Bay around the Bruce Peninsula was signed by members of the Chippewas of Nawash and Saugeen First Nations and the provincial and federal governments. In 2005 the Agreement was renewed for a further five years, including a protocol for how the parties will work together to ensure compliance and to exchange information about the commercial fishery [28]. The people of these two First Nations gained access to all of the peninsula's fisheries, and agreed not to fish in Owen Sound and Colpoy's Bay where recreational anglers are most active [29]. At the time of publication, the status of this Agreement was unknown.

#### 4.1.1.4 Saugeen Ojibway Nation Reserve Lands

The Chippewas of Nawash Unceded First Nation reside on an approximately 7,200 ha (72 km<sup>2</sup>) reserve, the Cape Croker or Neyaashiinigamiing Reserve No. 27, on the eastern shore of the Bruce Peninsula. The reserve is approximately 26 km from Wiarton, 64 km from Owen Sound and approximately 80 km north of the Bruce nuclear site (Figure 4.1.1-1) [30].

The Chippewas of Saugeen First Nation reside on an approximately 3,800 ha (38 km<sup>2</sup>) reserve, the Saugeen Reserve No. 29, located adjacent to the community of Southampton on the shoreline of Lake Huron, between the mouths of the Saugeen and Sauble Rivers. The reserve is approximately 24 km north of the Bruce nuclear site (Figure 4.1.1-1). The Chippewas of Saugeen First Nation also includes reserve lands at Chief's Point Reserve No. 28, approximately 500 ha (5 km<sup>2</sup>), located to the north of reserve No. 29.

The SON use hunting grounds near the tip of the Bruce Peninsula on Highway 6 [31]. There are two hunting ground reserves located in this area: the Saugeen First Nation Hunting Grounds Reserve No. 60A; and the Cape Croker Hunting Grounds Reserve No. 60B. The hunting grounds are approximately 730 ha (7 km<sup>2</sup>) and 890 ha (9 km<sup>2</sup>), respectively [31;31] (Figure 4.1.1-1). Hunting is not permitted within the Bruce nuclear site because of security restrictions.

The SON have reserve lands at the Saugeen and Cape Croker Fishing Island Reserve No. 1, which consists of 89 islands in Lake Huron, east of the Bruce Peninsula townships of Albermarle, Amabel, Eastnor and St. Edmunds. The islands of the reserve make up approximately 0.1 km<sup>2</sup> [31] (Figure 4.1.1-1).

#### 4.1.1.5 Métis Communities and Métis Rights

The Métis are a distinct Aboriginal people with a unique history, culture, language and territory that includes the waterways of Ontario, surrounds the Great Lakes and spans what was known as the historic Northwest. In Ontario, the Métis people were interconnected by their highly mobile lifestyle, the fur trade network, seasonal rounds, extensive kinship connections, and a shared collective history and identity.

The Métis are included in s. 35 of the Canadian Constitution. Through inclusion in the Constitution, Canada recognizes and values the Métis and recognizes the importance of enhancing their survival as distinctive communities. The Métis view the purpose of s. 35 as protecting the "rights" practices that were historically important to the Métis, and which have continued to be important in modern Métis communities. The Supreme Court of Canada, in the historic Powley decision, describes these practices as "integral" to the Métis and provides Métis with harvesting rights [32]. The Court said that the framers of the *Constitution Act, 1982* recognized that the Métis must be protected along with other Aboriginal communities. In 1993 Steve and Roddy Powley, citizens, were charged for harvesting a moose without a licence outside of Sault Ste. Marie. The Ministry of Natural Resources supported the Powleys' hunting rights, and a decision was made in 2003 affirming that the Métis are a full-fledged rights-bearing people, and recognizing that communities have food harvesting rights protected by s. 35 of the *Constitution Act, 1982*.

With respect to the Powley decision, the Supreme Court discussed the fact that there may be more than one Métis people in Canada:

*"The Métis of Canada share the common experience of having forged a new culture and a distinctive group identity from their Indian or Inuit and European roots. This enables us to speak in general terms of "the Métis". However, particularly given the vast territory of what is now Canada, we should not be surprised to find that different groups of Métis exhibit their own distinctive traits and traditions. This diversity among groups of Métis may enable us to speak of Métis "peoples", a possibility left open by the language of s. 35(2), which speaks of the "Indian, Inuit and Métis peoples of Canada." [32]*

The Historic Saugeen Métis Community (HSMC) is a self-governed Métis community at the mouth of the Saugeen River, Southampton, Ontario. The HSMC is a rights-bearing community that asserts harvesting rights associated with the precedent-setting Powley case. They have historically hunted, fished, traded and lived in the traditional Saugeen territory since the early 1800s. The HSMC became independent and self-governing in 2008.

According to the HSMC website [33], the HSMC:

*"...are a distinctive Aboriginal community - descended from unions between our European traders and Indian women. We are the Lake Huron watershed Métis -*

*with a unique Métis history and culture who lived, fished, hunted, trapped, and harvested the lands and waters of the Bruce Peninsula, the Lake Huron proper shoreline and its watersheds, their traditional Métis territory.*

*The HSM[C] traded in a regional network since the early 1800s as far as the north shore of Lake Huron and have kinship with the Wikwemikong First Nations community and Killarney Métis community... The geographic scope of the contemporary community is described as covering over 275 kms of shoreline from Tobermory and south of Goderich, and includes the counties of Bruce, Grey and Huron... Upon the decline of the fur trade in the early 1820s, Métis families from the Northwest joined these early Métis at Goderich. The community traded in a cohesive regional trading network that extended from the Upper Detroit River system to the northern shoreline of Lake Huron, to the historic Métis community of Killarney, creating kinship along the network from Detroit to Killarney."*

The Métis Nation of Ontario includes MNO Community Councils. MNO Community Councils obtain their mandate to support local governance from the MNO through signed Community Charter agreements. According to the MNO website [34], MNO Community Councils:

*"...are the cornerstone of a strong foundation for the MNO in its push toward its inherent right to self-government. The local Councils are an important communication hub for MNO and play a significant role in fostering community empowerment and development for Métis citizens living within the geographic territory of that council. Community Councils operate in accordance with MNO Charter Agreements, which give councils the mandate to govern, while ensuring accountability, transparency, and consistency. The Charter Agreements along with the Community Code and Community Electoral Code are the policy documents Community Councils refer to when holding mandatory community elections. The documents also outline the rules and regulations for conducting council business, and for ensuring accountability through good fiscal management."*

In 1995 the MNO implemented the MNO Harvesters Policy as a way to facilitate the harvest in Ontario. This Policy includes a Captains of the Hunt system, provisions for the issuance of MNO Harvesters Cards, as well as the identification of traditional harvesting areas throughout Ontario [35].

Under the Harvesters Policy, registered citizens are permitted to take or transport wildlife or fish for the purpose of personal consumption or social or ceremonial purposes, or for barter in kind of wildlife or fish within or among First Nations, as long as this is not done for commercial purposes. There are also restrictions if conservation objectives might be considered to be put at risk, such as the destruction of habitat; fishing in fish sanctuaries that are closed at all times of the year; hunting in waterfowl sanctuaries; the taking or possession of rare, threatened or endangered species; the taking of wildlife or fish in quantities that will put conservation objectives at risk; or the wilful spoilage of wildlife or fish [36].

#### 4.1.2 Aboriginal Heritage Resources

Historically, the SON have expressed their interest in the preservation of Aboriginal heritage resources both on and off the Bruce nuclear site, and their interest in having ongoing access to burial sites.

The HSMC and the MNO have not identified any specific heritage resources in relation to the Bruce nuclear site. The closest known historic Métis activity in the vicinity of the Bruce nuclear site is associated with the historic settlement at Inverhuron. This settlement has been identified as a mid-nineteenth century settlement, “a Métis and a Scottish place...an important fishing, trading and hunting post and as well as a key shipping port, with a newly-established harbour...a thriving place for shipping and trading grain and other commodities such as furs and fish.” [37]

With respect to Aboriginal heritage resources at the Bruce nuclear site and the SON, during the Bruce Used Fuel Dry Storage (BUFDS) EA [9] conducted in 1997 for the proposed expansion of interim storage facilities at the Bruce nuclear site, the SON expressed concern regarding the disturbance of Aboriginal heritage resources and potential effects on burial grounds located at the Bruce nuclear site. To this end, the SON had requested access to the Bruce nuclear site to conduct either ceremonies or monitoring at the Jibegmegoong burial ground. In 1998, the SON received approval to access the site for these activities.

A report from the Chippewas of Nawash on Ontario Hydro’s Comprehensive Study of the proposed BUFDS facility [9] states that the archaeological assessment determined that the potential for archaeological sites was moderately low. The concern expressed by the First Nation was that the assessment did not consider the potential for additional Aboriginal burial grounds within the Bruce nuclear site. Further, the report states that:

*“...activities to protect and preserve our ancestors’ graves and our spiritual heritage are our right. They are also not a substitute for adequate assessment of the immediate and cumulative environmental effects of this proposed Facility.”* [26]

Similar concerns regarding the scope of archaeological studies were expressed during the Hydro One Networks Inc. EA process for the Bruce to Milton Transmission Reinforcement Project conducted in accordance with the Ontario *Environmental Assessment Act* (EAA). The purpose of this project was to implement the Ontario Power Authority (OPA) recommendation to construct a new double-circuit 500 kilovolt line between the Bruce nuclear site, near Kincardine and Hydro One’s existing Milton Switching Station located in the Town of Milton. The proposed right of way for this proposed electricity transmission project overlapped with a large portion of the SON’s traditional territory [17].

During the Bruce Heavy Water Plant (BHWP) Decommissioning EA [11] conducted in 2002 for OPG’s proposal to permanently retire the BHWP from service as a nuclear facility licensed for the production of heavy water, the SON expressed concern about increased pressures on traditional heritage sites in Municipality of Kincardine and Inverhuron Provincial Park operated by Ontario Parks adjacent to the Bruce nuclear site.



Most recently, during the EA process initiated by Bruce Power for the construction of a new nuclear power plant at the Bruce nuclear site [16], the SON expressed their interest in the maintenance of Aboriginal heritage and culture in the event of restricted access to the Bruce nuclear site that might result from a potential accident at the proposed new nuclear power plant.

#### 4.1.3 Traditional Use of Land and Resources

Aboriginal traditional use of land and resources in the Regional Study Area may include the use of lands for harvesting fish, wildlife and terrestrial plant species for foods, spiritual purposes, medicines, arts and crafts.

The SON have an interest in the traditional use of land and resources within their traditional territory and the relationship of their traditional activities to their lifestyle and culture. These interests have been consistently expressed by the SON during several EA processes, with particular emphasis being given to the waters and fisheries of Lake Huron and Georgian Bay. For example, during the Bruce A Units 3&4 Restart EA [10] conducted in 2002 for the proposed restart of two nuclear power generating units which were previously in a “lay-up” state, it was indicated that:

*“The relationship with traditional lands, waters and resources is profound, ongoing and an essential part of their identity and culture as well as the economy of our people that sustains us to this day” [10].*

The SON have emphasized that their specific relationship to the fisheries of Lake Huron and Georgian Bay is of vital importance to their cultural and economic health as First Nations [38]. The importance of fishing to the SON culture is illustrated by the following quotations:

*“From the waters we derived our livelihood by fishing, an activity we have pursued for thousands of years and one that reaches into the core of our culture” [20];*

*“...[the fishery is] a vital source of our cultural heritage, and of the values and attitudes that inform our spirituality” [26]; and*

*“...the connection between fish and our people is fundamentally a spiritual bond based on respect built over centuries” [38].*

Historically, lake whitefish have been one of Lake Huron’s most commercially valuable fish and they continue to be important to First Nations and other fisheries around Lake Huron. For example, the Chippewas of Nawash Unceded First Nation stated that the fish harvest, particularly lake whitefish, is the single largest component of the Nawash commercial fishery [26].

In addition, the Aboriginal interests that have been expressed by the SON have also related to:

- the potential health and safety implications for the natural environment, specifically the health of plants and animals [38];

- potential effects on animal species, migratory patterns, and the threat of species extinction [39];
- Lake Huron water quality and level of contaminants in fish [16];
- effects on the food chain and on all parts of the environment [16];
- effects of future lake water levels and climate change [16]; and
- the effects on future generations of Aboriginal people because of the potential for damage to traditional lands and their way of life [38].

Further, the First Nations have documented their concerns about the vulnerability of their communities to the increased exploitation of resources [13]. For example, during the Bruce A Units 3&4 Restart EA [10] they wrote:

*“This compression of the space we have in our traditional lands has subjected our people to great stresses. The pressures on the land itself have increased greatly. The pressure on the water has increased greatly, through overwhelming competition for resources from other people that came to our traditional lands. The pressure on our culture, on our capacity to survive as Aboriginal people, has also increased greatly.”* [26]

An examination of the BHWP Decommissioning EA [11] revealed concerns that past operations at the Bruce nuclear site have had adverse effects on the environment and, consequently, have been incompatible with Aboriginal lifestyle and culture. For example, concerns were expressed by the SON regarding the potential influence that operations at the Bruce nuclear site may have on commercial and traditional First Nations fisheries. In this regard, the First Nation indicated that additional activities at the Bruce nuclear site may affect their traditional resources, identity and self-esteem. Similar concerns were expressed during the Low Level Storage Buildings (LLSB) 9, 10 & 11 EA [12] conducted in 2004 for OPG’s proposal to construct and operate three additional LLSBs at the WWMF, and the WWMF Refurbishment Waste Storage Project EA [14] conducted in 2005 for OPG’s proposal to increase the storage capacity of the WWMF to accept and store wastes resulting from reactor refurbishment activities at the Bruce nuclear site as well as the on-going operation of OPG’s reactors.

An examination of the Bruce Power New Nuclear Power Plant Project EA [16] identified specific interests in relation to MNO-represented citizens. Here, these Métis people have claimed the Aboriginal right to hunt and harvest in their traditional territory, which encompasses the area of the Bruce nuclear site; and an interest in the maintenance of Métis culture. Métis culture is to a large extent defined by practices of traditional hunting, fishing and harvesting. The operation of a new nuclear power plant was seen as having the potential to affect the plants, trees, game species and fish, which are associated with the traditional harvesting practices and way of life of MNO-represented citizens.

The HSMC have lived, fished, hunted, trapped, and harvested the lands and waters in the Regional Study Area since the early 1800s, and those activities continue today. The HSMC are expected to retain their interest in these traditional uses of land and resources.

#### **4.1.4 Aboriginal Communities**

Aboriginal peoples have consistently expressed their interests regarding the health and safety of community members, and the stability and sustainability of their communities. For the purposes

of this EA, Aboriginal communities consist of those individuals who are officially recognized by the SON, HSMC or MNO and who have identified interests in the Regional Study Area. For First Nations, the term “Aboriginal communities” refers primarily to their settlement areas on-reserve, but also includes those individuals living off-reserve. For Métis, the term “Aboriginal community” refers to distinctive Métis collectives who have developed their own customs, way of life, and group identity separate from their European and First Nation forebears and who have interests in the Regional Study Area. This broad definition allows for the analysis to be conducted at both an individual and a community level, respecting the perspectives of both First Nation peoples and the Métis. Aboriginal interests related to Aboriginal communities have been expressed in previous EAs and include:

- air quality-related emissions;
- effects on human health and safety of Aboriginal communities, including the potential for an accident at the Bruce nuclear site affecting the health of Aboriginal community members as a result of radiation dose or from changes in feelings of safety and security;
- distribution and potential effects on the capacity of healthcare services because of an increased workforce;
- potentially decreased availability of rental housing and tourism accommodation because of an increased workforce;
- effects on the aesthetic value of shoreline views and vistas in relation to the long-term use of lands and waters;
- effects on traffic conditions;
- effects on water supply and distribution; and
- potential job and business opportunities for First Nations at the Bruce nuclear site and the effect of additional workers on First Nation communities.

## 4.2 ABORIGINAL TRADITIONAL KNOWLEDGE

As described in Section 2.3, guidance provided by the Canadian Environmental Assessment Agency [6] describes Aboriginal traditional knowledge as knowledge that is held by, and unique to, Aboriginal peoples. Further, according to the DGR Project EIS Guidelines, traditional knowledge (including traditional ecological knowledge or TEK) refers to the broad base of knowledge held by individuals and collectively by communities that may be based on spiritual teachings, personal observation and experience or passed on from one generation to another through oral and/or written traditions.

Peter Usher provides one of the most refined discussions of traditional knowledge, focused entirely on its role in EA. Usher distinguishes four categories of traditional knowledge [7]:

- **Knowledge about the environment.** “This includes statements of fact about such matters as weather, ice, coastal waters, currents, animal behaviour, traveling conditions...which are typically based on (a) empirical observations by individuals of specific events or phenomena; (b) generalized observations based on numerous experiences over a long time; or (c) generalized observations based on personal experience reinforced by accounts of others both living...and dead”. According to Usher, this category “ranges from specific observations to explanatory inferences, constituting explanations of what people observe and the relations and connections among them, or more broadly, an understanding of why things are as they are.” Knowledge concerning ecological systems and elements fall under this category.

- **Knowledge about the use of the environment.** Usher sees this category including “factual knowledge about past and current use of the environment (e.g., patterns of land use and occupancy, or harvest levels), or other statements about social or historical matters that bear on the traditional use of the environment and hence the rights and interests of the local Aboriginal population in the regional environment”.
- **Values about the environment.** These are “culturally based value statements about how things should be, and what is fitting and proper to do, including moral or ethical statements about how to behave regarding animals and the environment, and about human health and well-being in a holistic sense”. Knowledge concerning spiritual values may fall under this category.
- **The foundation of the knowledge system.** This category of traditional knowledge deals with the “culturally based cosmology – foundation of the knowledge system – by which information derived from observations, experience, and instruction is organized to provide explanations and guidance”.

For the purposes of this TSD, Usher’s four categories provided a useful framework for understanding the Aboriginal interests identified in Section 4.1.

#### 4.2.1 Traditional Ojibway Spiritual Worldview

Of particular relevance to the DGR Project EA is the traditional Ojibway spiritual worldview which, according to Usher’s traditional knowledge categorization, would constitute the foundation of the SON knowledge system.

The traditional Ojibway spiritual worldview is that the physical world, including the rock of the earth, is the first order of creation upon which the other orders of creation — the plant world, the animal world and the human world — depend upon for sustenance and existence. The following description focuses on their connection to the rock of the earth.

Ojibway author, story teller and scholar, Basil Johnson [40], provides the following words that describe the traditional Ojibway spiritual interest in the rock of the earth:

*“The rock [is] strong and enduring. Plant beings, animal beings and man come to an end, but the earth lives on. Mother Earth continues to be bountiful, sustaining all beings. All else changes; earth remains unchanging and continues to give life. It is a promise to the future, to those yet to be born.”*

*“Perhaps motherhood emanated from its elemental substance, rock. As such, it seemed to remain unchanged, enduring winds, winter and summer. It appeared immune to change that man could see immediately, unmoving as it were, so as to live on in order to give life. The same kind of character and quality was expected of motherhood whose foundation was love.”*

*“Like animal beings the Anishnabeg depend ultimately upon the earth and the sun. There are four orders in creation. First is the physical world; second, the plant world; third, the animal world; last, the human world. All four parts are so intertwined that they make up life and one whole existence. With less than the four orders, life and being are incomplete and unintelligible. No one portion is*

*self-sufficient or complete, rather each derives its meaning from and fulfils its function and purpose within the context of the whole creation.*

*From last to first, each order must abide by the laws that govern the universe and the world. Man is constrained by this law to live by and learn from the animals and the plants, as the animals are dependent upon plants which draw their sustenance and existence from the earth and the sun. All of them depend ultimately on the physical world. The place, sphere and existence of each order is predetermined by great physical laws for harmony. It is only by the relationships of the four orders that the world has sense and meaning; nor would he have much more meaning if he were not governed by some immutable law. For the well-being of all there must be harmony in the world to be obtained by the observance of this law.*

*While there is a natural predilection and instinct for conformity to the great law of balance in the world of plants and animals mankind is not so endowed by nature. But man possesses understanding by which he can know and abide by the law and so establish his place in the world order. Man must seek guidance outside himself. Before he can abide by the law, mankind must understand the framework of the ordinances. In this way, man will honour the order as was intended by Kitche Manitou.”*

#### **4.3 VALUED ECOSYSTEM COMPONENTS**

Based on the Aboriginal interests identified in Section 4.1 and what is known about the traditional Ojibway spiritual worldview, Table 4.3-1 presents the list of VECs along with a brief rationale for their selection and the specific indicators used in the assessment. The Aboriginal interests VECs are as follows:

- Aboriginal communities;
- Aboriginal heritage resources; and
- traditional use of lands and resources.

**Table 4.3-1: VECs Selected for Aboriginal Interests**

VEC	Summary Rationale for Selection	Indicators	Measures
Aboriginal Communities <sup>a</sup>	<ul style="list-style-type: none"> <li>The DGR Project may affect the economic base, levels of service, social structure, and/or community stability of Aboriginal communities and residents</li> </ul>	<ul style="list-style-type: none"> <li>Population levels</li> <li>Local employment</li> <li>Local business activity</li> </ul>	<ul style="list-style-type: none"> <li>Project-related change in population levels</li> <li>Project-related change in employment opportunities</li> <li>Project-related change in business opportunities</li> </ul>
Aboriginal Heritage Resources	<ul style="list-style-type: none"> <li>Aboriginal heritage resources such as archaeological sites may be affected by the excavation of previously undisturbed lands or deeply buried artifacts</li> <li>Specific cultural or spiritual sites (i.e., places that have historical, religious or cultural significance to Aboriginal people) may be affected</li> </ul>	<ul style="list-style-type: none"> <li>Archaeological sites/burials and artifacts</li> <li>Culturally-sensitive areas</li> </ul>	<ul style="list-style-type: none"> <li>Project-related change to archaeological/burial sites and artifacts</li> <li>Location of DGR Project in relation to culturally-sensitive areas</li> </ul>
Traditional Use of Land and Resources	<ul style="list-style-type: none"> <li>Aboriginal people have traditionally made use of lands and resources for their personal and community needs throughout the Regional Study Area</li> <li>The DGR Project may affect plants and animals that Aboriginal persons fish, hunt, trap or gather for food, cultural, or economic purposes</li> </ul>	<ul style="list-style-type: none"> <li>Atmospheric environment</li> <li>Hydrology and surface water quality</li> <li>Aquatic environment</li> <li>Terrestrial environment</li> <li>Geology</li> <li>Radiation and radioactivity</li> <li>Attitudes towards traditional use of lands and resources</li> </ul>	<ul style="list-style-type: none"> <li>Project-related change in natural environments</li> <li>Changes in attitudes towards traditional use of lands and resources due to the DGR Project</li> </ul>

## Note:

- a Aboriginal communities consist of those individuals who are officially recognized by the Saugeen Ojibway Nation (SON), or the Métis Nation of Ontario (MNO), or the Historic Saugeen Métis Community (HSMC). For First Nations, the term "Aboriginal communities" refers primarily to their settlement areas on-reserve, but also includes those individuals living off-reserve. For Métis, the term "Aboriginal community" refers to distinctive Métis collectives who have developed their own customs, way of life, and group identity separate from their European and First Nation forebears and who have interests in the Regional Study Area. This broad definition allows for the analysis to be conducted at both an individual and a community level, respecting the perspectives of both First Nation peoples and the Métis.

#### **4.3.1 Detailed Rationale for Selection of VECs, Indicators and Measures**

The detailed rationale for the selection of these VECs is based largely on the Aboriginal interests and traditional knowledge identified in Sections 4.1 and 4.2.

##### **4.3.1.1 Aboriginal Communities**

Aboriginal communities consist of those individuals who are officially recognized by the SON or Métis Nation of Ontario or the Historic Saugeen Métis Community. For First Nations, the term “Aboriginal communities” refers to their settlement areas, while for Métis, the term “Aboriginal community” refers to distinctive Métis collectives who have developed their own customs, way of life, and group identity separate from their European and First Nation forebears and who have interests in the Regional Study Area. This broad definition allows for the analysis to be conducted at both an individual and a community level, respecting the perspectives of both First Nation peoples and the Métis. Aboriginal communities were defined as a VEC because Aboriginal peoples have consistently expressed their interest in ensuring the stability and long-term well-being of their communities, particularly regarding the health and safety of community members, their traditional economy, lifestyle and culture, and the availability of employment opportunities.

Moreover, the DGR Project has the potential to directly affect Aboriginal communities and their members through changes in their population, employment, business activity and other community characteristics (e.g., community facilities and services). For example, First Nation reserve populations may increase should off-reserve members choose to return to the community as a result of project-related opportunities. The DGR Project also has the potential to indirectly affect Aboriginal communities through effects on the natural environment (i.e., changes in air quality, noise, surface water, soils and groundwater, and aquatic and terrestrial resources). Finally, the DGR Project EIS Guidelines require the consideration of effects on Aboriginal communities.

##### **4.3.1.2 Aboriginal Heritage Resources**

Aboriginal heritage resources were defined as a VEC because Aboriginal peoples have consistently expressed their interest in the protection of heritage resources from disturbance, particularly known archaeological sites and artifacts, cultural and spiritual sites, such as the burial sites located at the Bruce nuclear site and vicinity. The SON has explicitly stated their right to protect and preserve their ancestors’ graves and their spiritual heritage. These resources have historical, religious or cultural significance to Aboriginal peoples. The SON requires access to the Jiibegmegoong burial ground at the Bruce nuclear site as a means of maintaining their lifestyle and culture and their inherent and distinct land and cultural rights. Moreover, the DGR Project will involve physical activities that could directly disturb heritage resources, including unknown or deeply buried artifacts. The DGR Project works and activities have the potential to indirectly affect the natural environment, which could result in a change in the quality or value of these resources to Aboriginal peoples as cultural or spiritual sites. Finally, the DGR Project EIS Guidelines require that particular attention be given to Aboriginal cultural, archaeological and historical resources since there is documented evidence of the presence of such resources in the study areas.

#### 4.3.1.3 Traditional Use of Land and Resources

Traditional use of land and resources was defined as a VEC because Aboriginal people have traditionally made use of lands and resources for their personal and community needs. Aboriginal persons continue to fish, hunt and trap animals, or gather plants for food, cultural, or economic purposes as they have done for centuries. Aboriginal peoples have stated that their traditional lands, waters, and resources are a fundamental part of their culture, identity, economy, and are essential to the sustainability of their communities. The importance of the fish harvest, particularly lake whitefish, has consistently been identified as an activity and resource that requires protection. The DGR Project has the potential to directly affect the land, waters, plants and animals on and in the vicinity of the Bruce nuclear site, and consequently the use of these lands and resources for traditional purposes. Measurable project-related changes to the land, water, plants and animals used by Aboriginal peoples are identified in other TSDs and the results of those analyses are considered in relation to this VEC.

In addition, the use of land and resources by the SON may also be affected given the traditional Ojibway spiritual worldview. For example, the quality or value of the plants and animals harvested by Aboriginal people may be considered by some Aboriginal people as being diminished (e.g., contaminated), thereby affecting their desire to continue their traditional use.

Finally, the DGR Project EIS Guidelines require the consideration of effects to hunting, trapping, fishing and gathering.



## **5. DESCRIPTION OF THE HISTORICAL AND EXISTING CONDITIONS RELEVANT TO ABORIGINAL PEOPLES**

This section provides a description of the existing conditions. The Aboriginal interests component of the study uses the Regional, Local, and Site Study Areas and Project Area (defined in Section 2.4.2) to characterize the existing conditions. The Project Area is the portion of the Bruce nuclear site that is being considered for the DGR Project. For the purposes of this TSD, “existing conditions” are defined as those generally present in the study areas and at the site and may reflect effects of the Bruce A and B nuclear generating stations, activities at the WWMF, Douglas Point generating station, Hydro One transmission activities and previous activities within the Bruce nuclear site. The characterization of the existing environment serves as the baseline condition for which the potential environmental effects of the DGR Project are predicted and assessed.

### **5.1 EXISTING ENVIRONMENT DESCRIPTION METHODS**

The description of the historical and existing conditions relevant to Aboriginal peoples relied on three key methods: literature review, collection and analysis of secondary source information, and archaeological assessments.

#### **5.1.1 Literature Review**

A review of available literature pertaining to SON, HSMC and MNO interests in the study areas; and literature pertaining to general ecological, socio-economic and cultural heritage interests for Ojibway and Métis peoples in Ontario was undertaken. This literature review was undertaken primarily with the intention of better understanding the historical context of Aboriginal interests. This TSD provides references for key source documents.

#### **5.1.2 Collection and Analysis of Secondary Source Information**

Statistics Canada data from the most recent available census was collected and analyzed to provide a description of existing population, demographic, educational and economic characteristics of the Saugeen First Nation and the Chippewas of Nawash Unceded First Nation. Other relevant information was collected from a variety of secondary sources, including EA documents from previous EAs involving projects at the Bruce nuclear site, various Federal and Provincial government agencies and non-governmental organizations. Secondary source data collection was undertaken primarily through Internet searches and downloading of required information available online. This TSD provides references for key source documents.

#### **5.1.3 Archaeological Assessments**

Archaeological assessments comprising Stage 1 and Stage 2 investigations of the Bruce nuclear site were completed by a licensed archaeologist.

The Stage 1 Archaeological Assessment [41] was completed for the central OPG-retained lands at the Bruce nuclear site (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. The Stage 1 Archaeological Assessment included:

- an overview of the potential for the presence of Native habitation, resource procurement, ritual, and burial sites within the Bruce nuclear site, based on past and present landscape features, and more than fifty years of archaeological research in and around the Bruce nuclear site; and
- an overview of the study area's 19<sup>th</sup> 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 [42] was then completed in May 2009 concerning the Bruce Power New Build Project and the DGR Project addressing Part Lots 11-31 Concession A (Lake Range) of Bruce Township. The culturally sensitive areas were understood to be lands where there is a likelihood of additional burial sites because of the terrain and traditional burial practices.

With the recognition that burial sites, in general, are sacred to the Aboriginal people, all attempts were made to ensure their integrity during the completion of the Stage 2 Archaeological Assessment. Therefore, the Stage 2 Archaeological Assessment included field investigations based on the nature of the landscape, current land use and field conditions, the anticipated type of cultural site that might be present, and respecting the request by the SON that localities that may contain burial sites not be subjected to further disturbance [42].

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 finally on April 2, 2008. The approach to the field work conducted for the Stage 2 Archaeological Assessment was unique to the Bruce nuclear site and it intended to respect Aboriginal interests for the protection of culturally sensitive areas while being as consistent as possible with the Ministry of Culture guidelines [43]. It was formulated on the grounds that the standard Ministry of Culture test pitting approach along the predominantly sandy Nipissing Great Lakes shoreline complex and adjacent Main Lake Algonquin lakebed would be culturally inappropriate and methodologically ineffectual. Thus, the approach emphasized non-invasive techniques to define culturally sensitive areas. The results were submitted to the Ministry of Culture in May 2009 [42].

## **5.2 HISTORICAL CONTEXT**

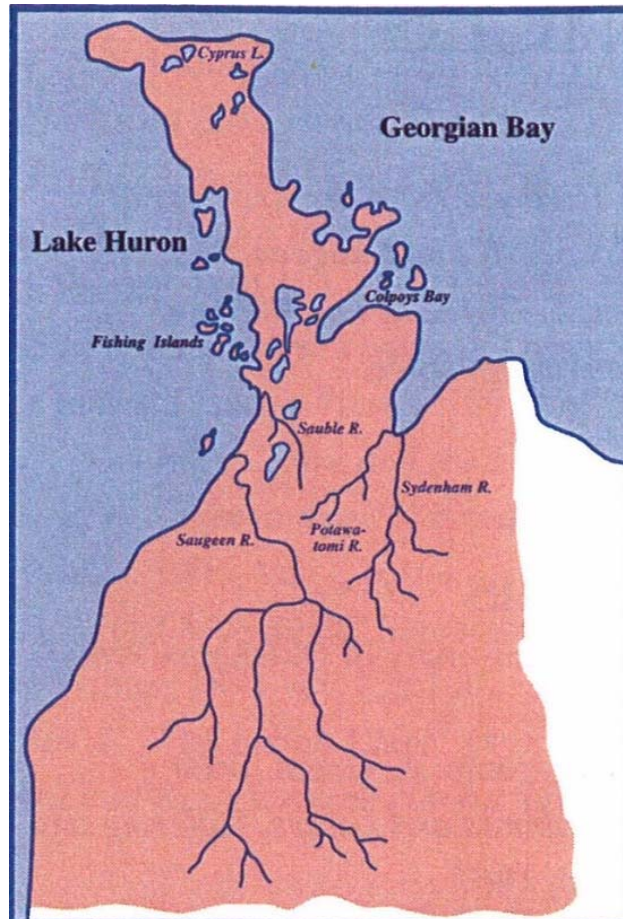
The following section provides a brief history of the Aboriginal peoples in the Saugeen Region. It represents a high level summary of the available published literature on the subject. It is acknowledged that there may not be consensus among First Nations, Métis peoples, the federal or provincial governments, and others on the completeness or accuracy of the historical accounts, certain terms (e.g., surrenders) and mapping contained in published literature cited and/or summarized below. This historical overview is presented here for contextual purposes only.

### **5.2.1 The History of the Ojibway People in the Saugeen Region**

First Nations people have lived in the Great Lakes region for at least 12,000 years. Historically, the two primary languages in the area were Algonquian and Siouan [44]. The Ojibway, also

known as the Chippewa, are part of the Algonquian language group, the most widespread native language group in North America [45].

The traditional territory of the Ojibway in the Saugeen region covers the watersheds bounded by the Maitland River and the Nottawasaga River east of Collingwood on Georgian Bay, two million acres of farmland and a portion of the Niagara Escarpment (see Figure 5.2.1-1, and see Figure 4.1.1-1 for environmental features). The area includes the Bruce Peninsula, all of Grey and Bruce Counties, and parts of Huron, Dufferin, Wellington and Simcoe Counties. Its shoreline is over 800 km long and, according to SON accounts, is the breeding ground for over 170 species of birds and supports more than 40 species of wild orchids. It is also home to grouse, rabbits, ducks, Canada geese, white-tailed deer and black bears. The surrounding waters still have large populations of whitefish, steelhead, hybrid lake trout, Chinook salmon, pike, bass and perch. Their traditional territories also include the land under the waters of Lake Huron to the international boundary, and the land under the waters of Georgian Bay to the midpoint [24].



Source: [39]

**Figure 5.2.1-1: The Nawash First Nation and Saugeen First Nation Traditional Territories**

French explorers and missionaries connected with the Ojibway in the mid-seventeenth century at Sault Ste. Marie. The French, who were accustomed to nations with strong centralized

governments, did not realize that the First Nations communities in the region formed a single people. The French treated the First Nations communities as separate nations, but later tried to classify them into tribes and create organizations that had not previously existed. As a result, loosely allied groups of Ojibway were drawn together and became more united as a people [45].

The Odawa (Ottawa) lived on Manitoulin Island and the Saugeen (“mouth of river”) peninsula, the Ojibway on the north shore of Georgian Bay and Lake Superior, and the Potawatomi in the thumb of Michigan. Together, these tribes were known as “The Council of the Three Fires” or “The Nations of the Three Fires” [44].

Trade with French settlers brought new tools to the First Nations people, which they traded for fur. This led to more concentrated hunting and trapping. Skills like pottery making and basket weaving became less important and the traditional balance of Ojibway life was altered [45;46].

As immigration from Europe increased, rivalries among the French, the Dutch, and later the British led these nations to ally themselves with different First Nations groups on the eastern seaboard. Each tribe needed new and wider hunting grounds as fur-bearing animals in demand by Europeans became scarce. The pressure for hunting territory led to wars among the tribes. Hostility increased between the Hurons and the Iroquois, long-time enemies, when the latter sided with the English and the former with the French. In 1649–50 intertribal wars over the fur trade resulted in the decimation of the Hurons by the Iroquois. In 1653, the Iroquois were defeated by the Ojibway in a battle north of Manitoulin Island [47].

Around the beginning of the 1700s, Ojibway people used the lands in southern Ontario to harvest, hunt and fish [48]. The Ojibway migrated into southern Ontario from north of Lake Superior after the fur trade wars. For example, the battle of Skull Mound was a decisive Ojibway-Iroquois battle that took place at the mouth of the Saugeen River around 1696 [48].

At the mouth of the Saugeen River (known as Sahgeenh in Ojibway) [48] there was an important Ojibway settlement [49]. This historic settlement is about 25 km to the northeast of the Bruce nuclear site. Fish were plentiful near the mouth of the Saugeen River and the area became an important gathering point. Each spring, summer and fall the waters were harvested for sturgeon, salmon, trout, pickerel, herring, whitefish, bass and suckers. During the winter, the Ojibway trapped and hunted [49].

Throughout the eighteenth century, most of southwestern Ontario was Ojibway territory [47]. The Odawa returned to the Manitoulin area while the Potawatomi went back to the south shores of Lake Huron and Lake Michigan. The Mississauga Ojibway settled mainly on the north shore of Lake Ontario while other Ojibway people settled in the Saugeen territory and in other parts of southern Ontario [50].

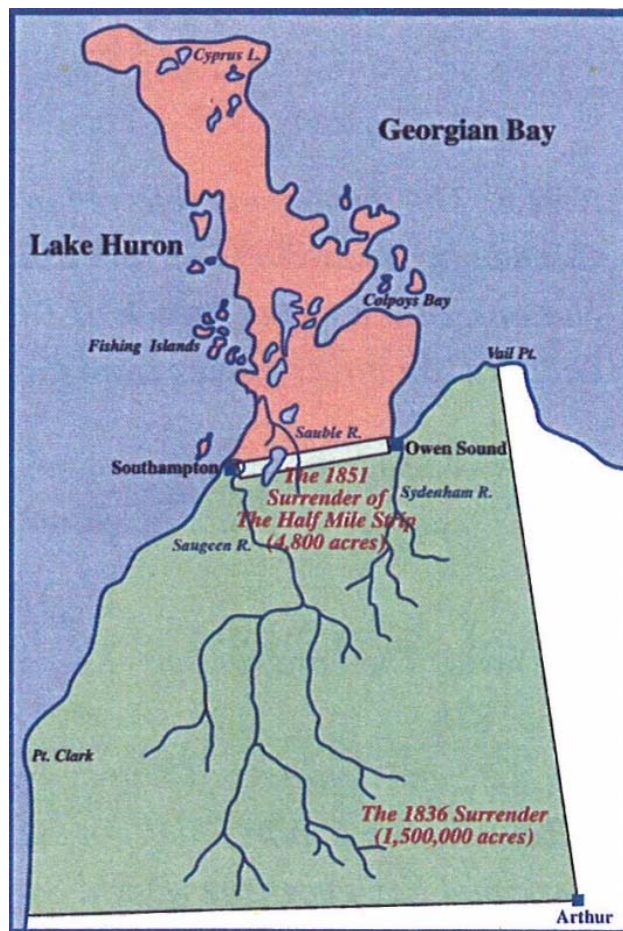
The Nations of the Three Fires fought for the French against the British for about one hundred years. This came to an end in 1763 when the French were defeated in The Seven Years War. In 1763, following The Seven Years War, the British government outlined an approach to work with First Nations people. The Royal Proclamation of 1763 rested on four main points:

- establishment of a fixed boundary between First Nations and Crown lands;
- purchase of First Nations’ land only through treaties made by the central government;
- government regulation of all trade with First Nations people; and

- a special government official (or department) to handle all political and diplomatic relations with First Nations tribes [45].

According to scholarly literature [45], underlying these points was the legal assumption that First Nations people had a valid right of property in the land they occupied. Boundaries were drawn along the Appalachian Barrier. The entire area west of the Proclamation Line and the colony of Quebec was reserved for the First Nations people and the fur trade. The European settlers were prohibited to access this area. If for any reason the First Nations people wanted to sell their land, they could only sell to the Crown. The First Nations people in the Great Lakes area considered this honourable treatment and became allies of the British [50].

In the late 1830s, there was a large influx of American First Nations people that resulted in them outnumbering the Canadian First Nations people by six to one [50]. First Nations people from Upper Canada who were displaced because of an increase in British settlers were also arriving to the Bruce area [50]. Following Lieutenant Governor Sir Francis Bond Head's visit to Manitoulin Island for the purpose of distributing annual presents to the nearly 1,500 First Nations people, seven Europeans and four First Nations people signed Treaty Number 45½ on August 9, 1836 in relation to 1.5 million acres of land (Figure 5.2.1-2) [18].



Source: [39]

**Figure 5.2.1-2: Changes in First Nations Lands (1836 to 1851)**

There are different interpretations regarding the manner in which this treaty was signed. For example, Joseph Stinson, a missionary and a witness to the proceedings stated:

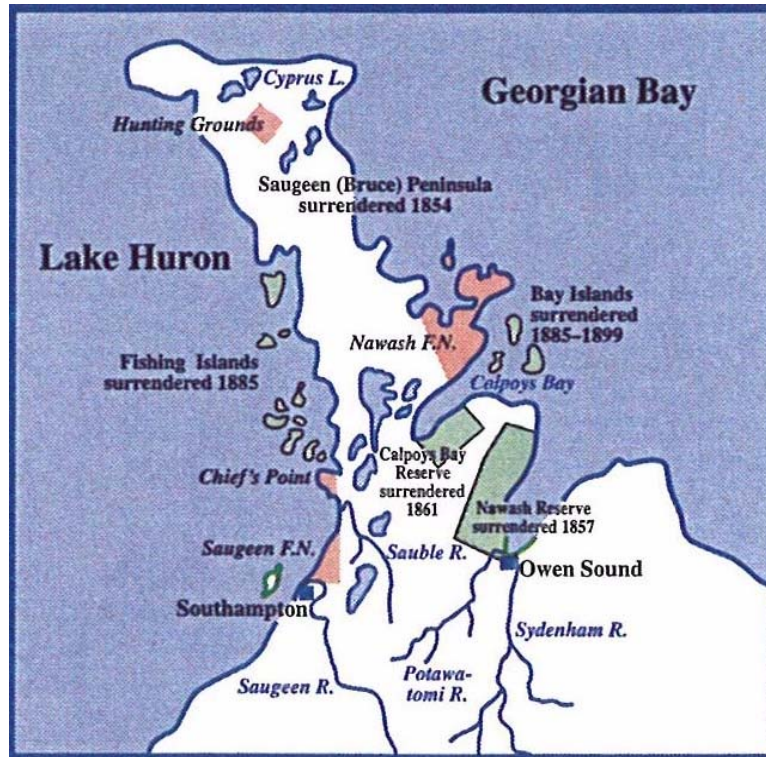
*“Sir Francis wished the Indians to surrender the whole of that territory to him; they declined; he endeavored to persuade them, and even threatened them by telling them that he could not keep the white people from taking possession of their land, that they (the Indians) had no right to it only as hunting-ground. They told him that they could not live on the Munedoolin (Manitoulin) Island, that they would not go there, that they wanted land they could call their own... The Council of the Saugeen Indians separated. About an hour or two after, Sir Francis called them together again, renewed his proposals, persuasions and threats. The Indians refused. Sir Francis then proposed that if they would surrender to him the territory adjoining the Canada Company’s Huron tract, he would secure to them and their children the territory north of Owen Sound ... and build them houses on it from the proceeds of the sales of the territory... To this purpose... the poor Indians did not readily accede with tears in their eyes...” [50]*

Of their two million acres of land the Treaty of 1836 left them with 450,000. The Saugeen First Nation people petitioned the Secretary of State to obtain compensation for the land and a guarantee that their remaining land would not be taken from them. In 1846–47, a Royal Deed of Declaration was issued stating that the Saugeen First Nation people and their descendants would have rights to the remaining land and a small compensation was paid for the land that was dispossessed [50;39].

The Ojibway in the Bruce Peninsula area had developed a portage route across the base of the peninsula to facilitate travel between Lake Huron and southern Georgian Bay. To avoid the long water route around the Bruce Peninsula the portage crossed the base of the peninsula, with an eastern section from around the Town of South Bruce Peninsula and Colpoy’s Bay at Wiarton, and a western section with one route running south across Boat Lake and along the Rankin and Sauble Rivers to Lake Huron, and a second route running south across Boat Lake to Spry Lake and overland to the Lake Huron shore opposite the Fishing Islands [51].

The route from Boat Lake along the Rankin and Sauble Rivers was followed by Ojibway people visiting the historic Aboriginal village that was once situated at the mouth of the Saugeen River. This portage route was well used for social visits and for fishing, hunting and trading between the Ojibway communities that are now known as the Chippewas of Nawash Unceded First Nation and the Saugeen First Nation [51].

Between 1851 and 1852 the British engaged the Saugeen First Nation people regarding a half-mile strip between the Nawash and Saugeen settlements for the purposes of a road to be constructed between the two nations (Figure 5.2.1-2) [50;39]. Treaty No. 72 was eventually signed on October 13, 1854 [18;39], with the Saugeen First Nation people retaining 9,000 acres at Saugeen, 1,280 acres at Chief’s Point, 10,000 acres at Nawash, 6,000 acres at Colpoy’s Bay and 18,686 acres at Cape Croker [50] (Figure 5.2.1-3).



Source: [39]

**Figure 5.2.1-3: Changes in First Nations Lands (1854 to 1899)**

The Nawash and Saugeen First Nation's current land and fishing grounds can be seen in Figure 5.2.1-4. As indicated on the map, these do not include the land at Colpoy's Bay, Nawash and several islands in Lake Huron and Georgian Bay.



Source: [39]

**Figure 5.2.1-4: Current Nawash Unceded First Nation and Saugeen First Nation Lands and Fishing Grounds**

## 5.2.2 The History of Métis Peoples with Interests in the Regional Study Area

The Métis are a distinct Aboriginal people with a unique history, culture, language and territory that includes the waterways of Ontario, surrounds the Great Lakes and spans what was known as the historic Northwest. In Ontario, the Métis people were interconnected by their highly mobile lifestyle, the fur trade network, seasonal rounds, extensive kinship connections and a shared collective history and identity. As noted previously, the Supreme Court of Canada in the Powley decision discussed the fact that there may be more than one “Métis peoples” in Canada.

This brief historic summary does not attempt to delineate the specific histories of the Métis communities in the Regional Study Area. It is recognized that there may not be a consensus between the HSMC and the MNO with respect to the history of Métis peoples in the Regional Study Area.

The Royal Commission on Aboriginal Peoples describes the evolution of the Métis peoples in Canada as follows:

*“Intermarriage between First Nations and Inuit women and European fur traders and fishermen produced children, but the birth of new Aboriginal cultures took longer. At first, the children of mixed unions were brought up in the traditions of their mothers or (less often) their fathers. Gradually, however, distinct Métis*



*cultures emerged, combining European and First Nations or Inuit heritages in unique ways. Economics played a major role in this process. The special qualities and skills of the Métis population made them indispensable members of Aboriginal/non-Aboriginal economic partnerships, and that association contributed to the shaping of their cultures. . . . As interpreters, diplomats, guides, couriers, freighters, traders and suppliers, the early Métis people contributed massively to European penetration of North America. The French referred to the fur trade Métis as *coureurs de bois* (forest runners) and *bois brulés* (burnt-wood people) in recognition of their wilderness occupations and their dark complexions. The Labrador Métis (whose culture had early roots) were originally called “liveryers” or “settlers”, those who remained in the fishing settlements year-round rather than returning periodically to Europe or Newfoundland. The Cree people expressed the Métis character in the term *Otepayemsuak*, meaning the “independent ones”. [52]*

The Métis “Way of Life” is often associated with the life at the hub of the fur trade — adventure, travel, adaptability, harvesting of key species and processing and storage of food important to sustain the life of families at home and traders living for long periods of time away from home, and portages and the equipment necessary to transport goods over difficult terrain and various modes of water travel. Among features frequently associated with the Métis Way of Life are hunting and harvesting skills, and two key foods — pemmican and bannock. Pemmican, made from dried meat, grease and berries was an important food for its nutritional aspects and for its ability to take on long trips without worry about food rot. Bannock is a soda biscuit type of bread originating in Scotland, introduced and popularized among First Nations peoples by the Métis, but now eaten by Aboriginal peoples across Canada as an important starch in the family diet [53].

Historian Arthur Ray asserts that Métis communities began forming in the upper Great Lakes area sometime after the establishment of the earliest French trading posts in the area in the late 16<sup>th</sup> century [54]. Historian Jacqueline Peterson concludes that by the 1820’s, “a sizeable population of Métis, inhabiting a growing network of towns and villages, had established themselves as economic middlemen, intercultural brokers, and interpreters linking tribal peoples and Angloamerican patrons interested in the fur trade... the Great Lakes Métis artfully amalgamated elements of dissimilar cultures and belief systems and were in the process of developing a group consciousness and identity...” [55].

The post-contact fur trading economy of the Saugeen River area began with the arrival of trader Pierre Piché in 1818. By 1826 the Hudson’s Bay Company established a post as Saguingue (the name attached to the post near the mouth of the Saugeen River) and employed First Nations, Métis, French and British traders who sourced furs and skins from Ojibway hunters. By 1832 the supply of high quality furs was low and the Hudson’s Bay Company closed its post. However, fur trading continued into the mid-nineteenth century when Southampton was founded [49].

An account of early fur traders in the Saugeen River area was recorded by Norman Robertson in 1906 based on a story passed on through generations starting with Joseph Longe, Sr.:

*“One Pierre Piché, in the year 1818, came from Lower Canada to Mackinaw to take part in the adventures and profits of the fur trade. He engaged with one Dr. Mitchell ... Having heard of the richness of the Saugeen country in furs he went*

*there to establish a trading post. It was on the flat, on the south side of the Saugeen River, that he built for himself a house and store, and completed the establishment by taking to himself a wife from the tribe of Indians residing in that vicinity. He received his supply of goods for trading through Dr. Mitchell, and afterwards from his sons George and Andrew ... Piché was a man of great strength and bravery, and on account of these qualities he succeeded in obtaining and keeping control of the best part of the fur trade in the vicinity of Saugeen. He had many competitors, however, who obtained their supplies from W.S. Gooding, of Goderich, Joseph Longe, sen., who supplied these facts, being one of them.” [56]*

The presence of the Hudson’ Bay Company helped make the Southampton Métis community what historian David T. McNab referred to as “a hub of the Great Lakes and the centre of Aboriginal trade and trading until at least the late nineteenth century... the physical space of the community remains and with it the Métis people’s special understanding of the place — a place of meeting grounds. It is here that Aboriginal trade and trading occurred with ubiquity and also where sovereignty continued to reside.” [57]

McArthur notes that a:

*“...unique mixture of customs developed from decades of blending two cultures, European and Aboriginal. A unique mixture of customs adopted from dual heritage governed their lives and had social impact where they lived. From their Aboriginal ancestors, for example, was practiced the custom of migrating at particular seasons to engage in sustenance activities. Thus they can be seen to keep more than one residence, contrary to other newcomers who “settled” down in one location... They continued to engage in particular activities such as trading, hunting, fishing, sugar-making, and plant gathering.” [58]*

### **5.3 ABORIGINAL COMMUNITIES**

This section provides a description of existing conditions relevant to the SON, the HSMC and the MNO. It is noteworthy that the availability of data varies substantially among Aboriginal communities.

#### **5.3.1 The Saugeen Ojibway Nation**

The Saugeen Ojibway Nation (SON) is the collective name for the Chippewas of Saugeen First Nation and the Chippewas of Nawash Unceded First Nation. These two First Nations share the same Aboriginal and treaty rights, including rights to fish commercially in the waters around the Bruce Peninsula. The SON share the Saugeen and Cape Croker Fishing Island Reserve No. 1, which is located off the western shore of the Bruce Peninsula north of Chief’s Point.

The Chippewas of Saugeen First Nation Reserve No. 29 is located adjacent to the community of Southampton on the shoreline of Lake Huron between the mouths of the Saugeen and Sauble Rivers, approximately 25 km north of the Bruce nuclear site (Figure 2.4.2-1). The Saugeen First Nation Chief’s Point Reserve No. 28 is located at Chief’s Point to the north of Sauble Beach, at the base of the Bruce Peninsula. The First Nation also uses the Saugeen Hunting Grounds

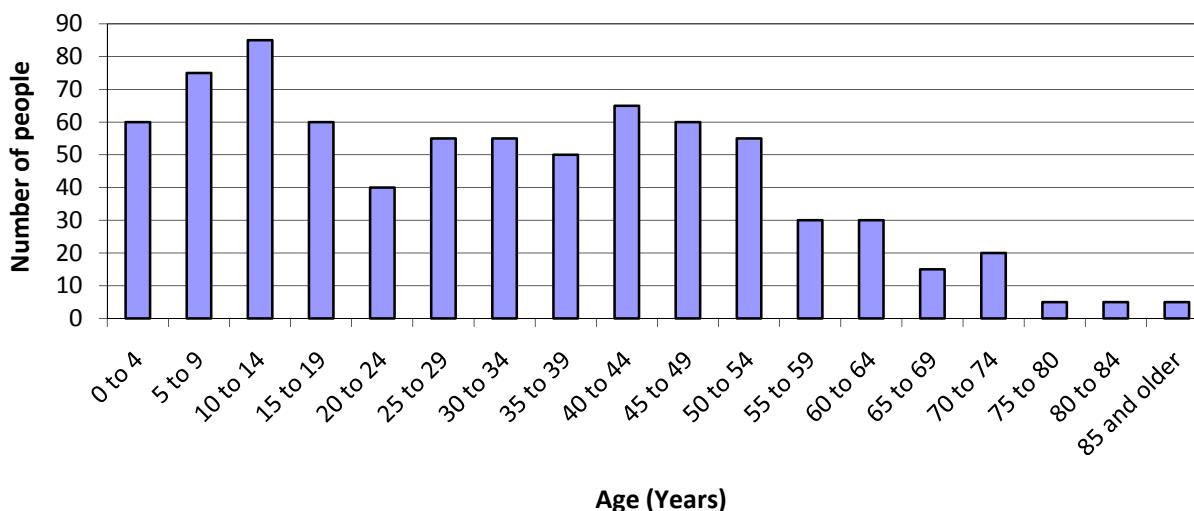
Reserve No. 60A, which is located along Highway 6 in the north of the Bruce Peninsula, adjacent to the Bruce Peninsula National Park.

The Chippewas of Nawash Unceded First Nation is centred at Cape Croker Reserve No. 27, located on the north side of Colpoy’s Bay and the east shore of the Bruce Peninsula north of the town of Wiarton, approximately 70 km north of the Bruce nuclear site. The First Nation uses the Cape Croker Hunting Grounds Reserve No. 60B, which is located along Highway 6 in the north of the Bruce Peninsula, adjacent to the Bruce Peninsula National Park (Figure 2.4.2-1). The present land base is 63.81 km<sup>2</sup>. The name Nawash is taken from a native Chief who fought to repel the American invasion of Canada in the War of 1812 [59].

5.3.1.1 Chippewas of Saugeen First Nation - Reserve No. 29

Population and Economic Base

According to 2006 Census data available from Statistics Canada, the Saugeen First Nation has an on-reserve population of 760 members, an increase of approximately 12% from the 2001 Census population of 677. The median age for the community is approximately 31 years, which is well below the Provincial average of 39 years. The three largest age cohorts are the 5 to 9 age group (75 persons), 10 to 14 age group (85 persons), and the 40 to 44 age group (65 persons) (Figure 5.3.1-1) [60].

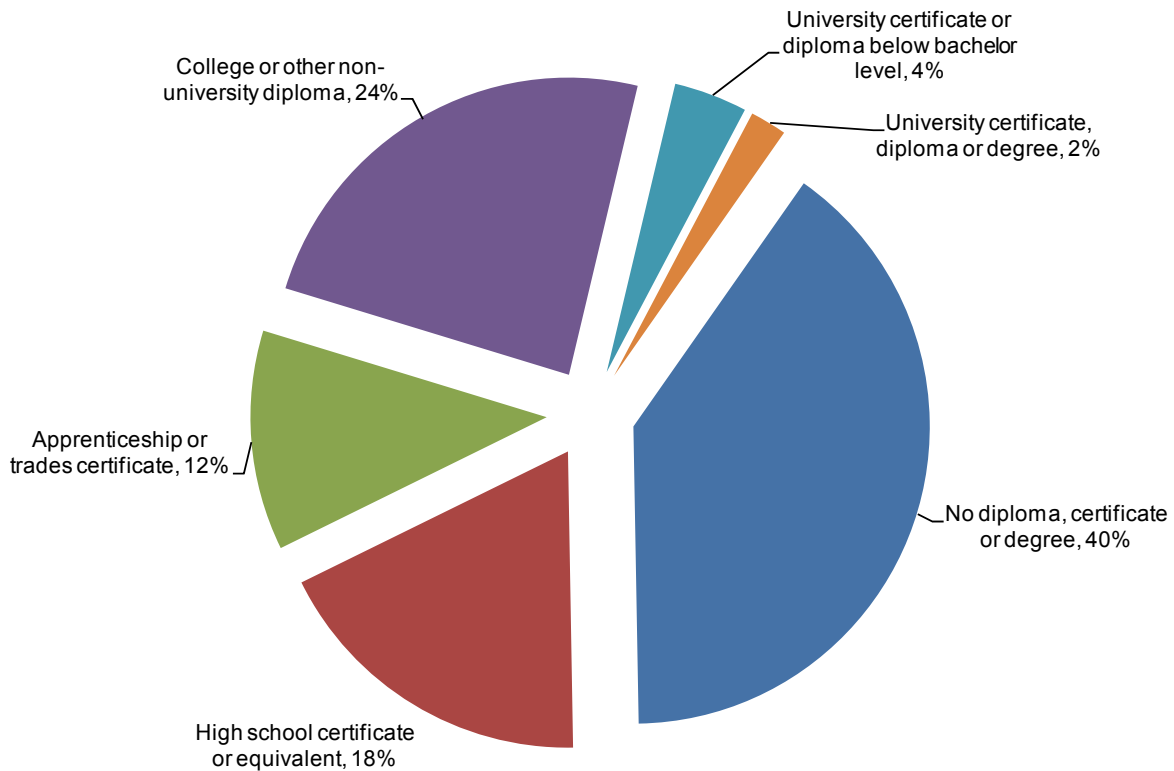


Source: [60]

**Figure 5.3.1-1: Age Characteristics of the Saugeen First Nation**

The 2006 Census data shows that the mother tongue of 590 of the 750 residents is English, while 155 identified their mother tongue as neither French nor English [60].

Data regarding the highest level of education attained by persons 15 years of age and over is presented on Figure 5.3.1-2. Approximately 60% of the total population 15 years of age and older hold a certificate, diploma, or degree from an educational institution. Of these, approximately 18% have a high-school certificate or equivalent, 12% have an apprenticeship or trades certificate or diploma, 24% have a college or other non-university certification, 4% have a university certificate or diploma below the bachelor level, and 2% have a university certificate, diploma or degree [60].



Source: [60]

**Figure 5.3.1-2: Highest Educational Attainment of the Saugeen First Nation Community**

Twenty five percent of the working population is employed in sales and service occupations; 23% in trades or in the transport and equipment operator occupations; and 14% in social science, education, government service, or religious occupations [60].

Community Infrastructure

The 2006 Census data indicate that the Saugeen reserve has 275 private dwellings, of which 65 households have children, 45 households are without children, 75 are one-person households, and 85 are classified as other household types. The 2006 Census data also indicates that of the total occupied private dwellings, 98% can be characterized as single detached. Of the total occupied private dwellings, 38% are in need of major repair [60].

Elementary school-aged children are bussed to public school in Southampton and secondary school students are bussed to Port Elgin, both of which are part of the Bluewater District School Board. The School Board hired an Aboriginal Advisor in January of 2006. The Aboriginal Advisor supports the development of learning environments that engage Aboriginal learners; improves communication with students, parents and staff; helps parents support their children's learning; contributes to creating a welcoming and inclusive environment for parents; and supports the development of learning circles and alternative support programs [61].

The Saugeen First Nation Education Department provides access to education opportunities and self-development for Saugeen First Nation members. The Education Department is located on the Saugeen Reserve [59].

The Saugeen Amphitheatre is located on Highway 21 in the village of Chippewa Hill. This unique outdoor amphitheatre is the vision of the late Reverend Earl Stotesbury whose goal was to develop a greater understanding and friendship between First Nations people and non-First Nations people. The Saugeen First Nation supplied the manual labour and technical expertise in the construction of the amphitheatre and it remains a source of pride for the band members. Capable of sitting 1,500 people, the Saugeen Amphitheatre is visited by thousands of people each year and has become popular for wedding ceremonies [62].

### Community Services

Table 5.3.1-1 lists the services available to community members and their locations.

**Table 5.3.1-1: List of Services On and Off-Reserve for the Chippewas of Saugeen First Nation**

Service	Location
Band Administration	On-Reserve
Health Centre	On-Reserve
Police Department and Fire Centre	On-Reserve
School	Off-Reserve
Recreation Centre	On-Reserve
Heat/hydro/water utility	On-Reserve
Garbage/sewer facility	Off-Reserve

Source: [59]

Several community service centres can be found on the Saugeen reserve. These include the G'Shawdagawin day care, the Kabaeashawim women's shelter, and an elders' facility [59]. Every August the community hosts an annual competition Pow Wow [63]. In 2010, the 40<sup>th</sup> Annual Saugeen First Nations contest Pow Wow was held in Southampton, Ontario.

High-speed Internet is used in the Band administration office, health centre and police detachment. There is a community access point for high-speed Internet at the on-reserve library. There are no SchoolNet sites on the reserve. Less than 25% of households subscribe to the Internet at home and less than 25% of households subscribe to satellite television [59].

Access to major non-Native radio and television stations and newspapers is available to the community; telephone service is provided by Bell Canada. Community members have access to NATIVEBEAT, a First Nations newspaper. The SON also publishes and distributes a community newsletter [64].

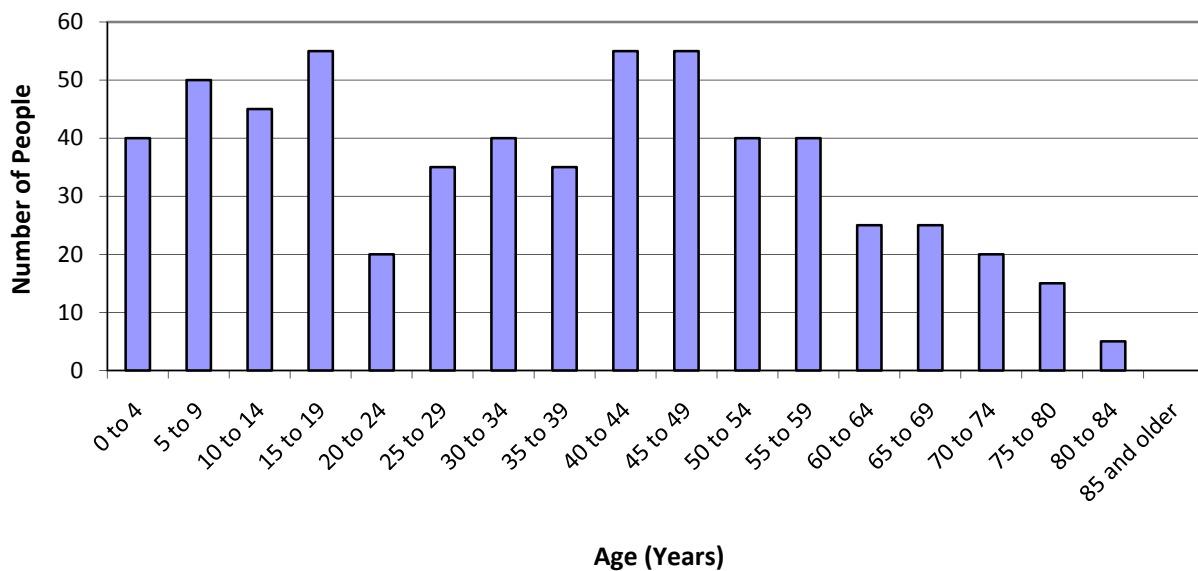
Community Government and Administration

Saugeen First Nation Government consists of a Chief and nine Councillors. The Chippewas of Saugeen elect a new Chief and Council every two years. In 2010, a representative of the Saugeen First Nation was appointed by the Band Council to sit on the Bluewater District School Board as an Appointed Trustee [65]. According to the Chiefs of Ontario [64], the Chippewas of Saugeen operate independently of Ontario’s four Provincial territorial organizations. The Saugeen First Nation community is located within the Provincial and Federal electoral districts of Huron-Bruce and Bruce-Grey-Owen Sound, respectively.

5.3.1.2 Chippewas of Nawash Unceded First Nation – Cape Croker Reserve No. 27

Population and Economic Base

According to 2006 Census data available from Statistics Canada, Nawash has an on-reserve population of 591 members, up slightly from the 2001 Census population of 587. The median age for the community is approximately 37 years, which is slightly below the provincial average of 39 years. The three largest age cohorts are the 15 to 19 age group (55 persons), 40 to 44 age group (55 persons), and the 45 to 49 age group (55 persons) (see Figure 5.3.1-3) [60].

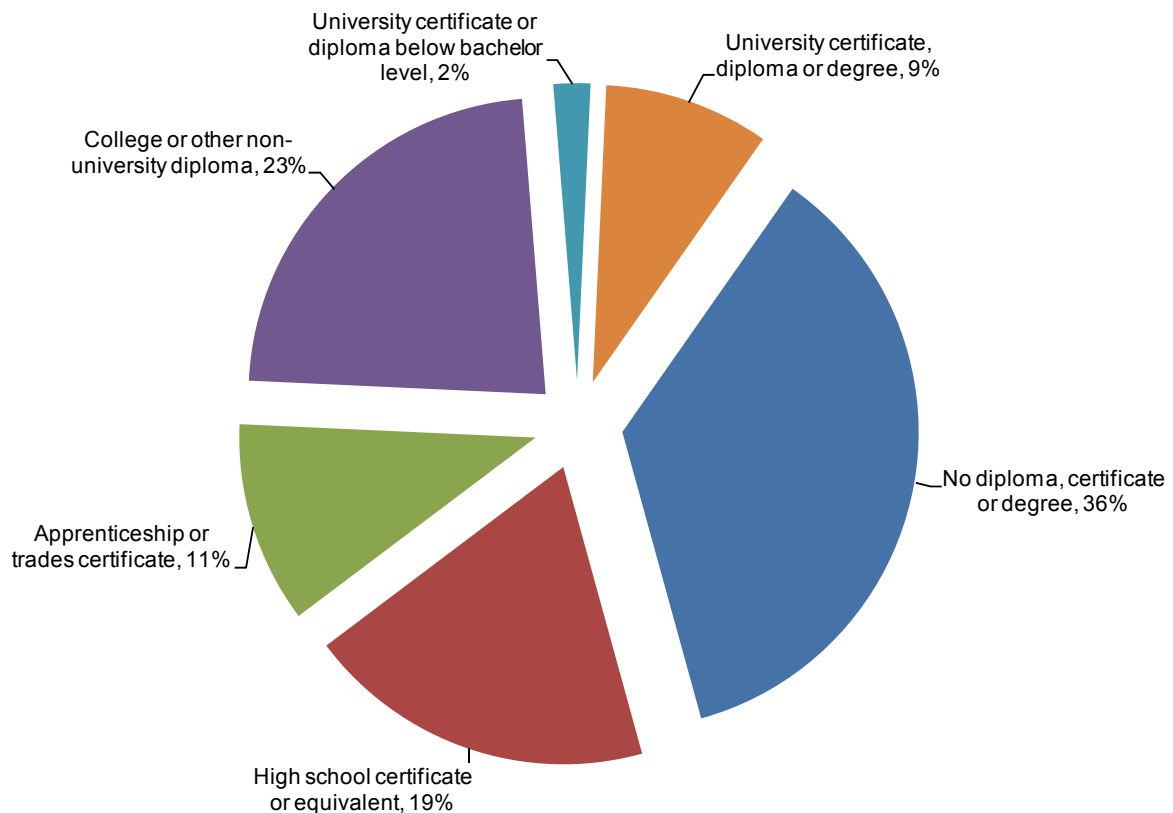


Source: [60]

**Figure 5.3.1-3: Age Characteristics of the Nawash First Nation community**

The linguistic affiliation of the community is Algonkian, with a mother tongue being Ojibwa [64]. The first language of 515 of the 590 community members is English, while 70 identified their first language as neither French nor English [60].

Data regarding the highest level of education attained by persons 15 years of age and over is presented on Figure 5.3.1-4. Approximately 64% have a certificate, diploma or degree from an educational institution; of these, approximately 19% attained a high-school or equivalent diploma, 11% have an apprenticeship, trades certificate or diploma, 23% have a college or other non-university diploma, 2% hold a university certificate or diploma below the bachelor level, and 9% have a university certificate, diploma or degree [60].



Source: [60]

**Figure 5.3.1-4: Highest Educational Attainment of the Nawash First Nation Community**

A total of 16% of the workforce is employed in health care and social services, 14% in business services, 12% in agriculture and other resource-based industries, 8% in construction, 7% in education, 5% in retail, and the remaining 38% in other services [60].

The SON lake whitefish fishery represents a source of livelihood for many community members. The traditional fishing waters of the SON represent approximately 10,600 km<sup>2</sup> in surface area and cover the eastern main basin of Lake Huron extending to the Canada-United States border and the western half of Georgian Bay [66].

### Community Infrastructure

The 2006 Census data indicate that the reserve has approximately 245 private dwellings, of which 60 households have children, 50 households are without children, 80 are one-person households, and 50 are classified as other household types [60]. The 2006 Census data also indicates that of the total occupied private dwellings, 94% can be characterized as housing and 6% can be characterized as apartments in buildings with fewer than five stories. Of the total occupied private dwellings, 26% are in need of major repair [60].

Elementary school-aged children attend the Cape Croker Elementary School, which employs 17 full and part time staff. High-school aged students are bussed to Wiarton and Lion's Head. In March 2009 the Government of Canada announced funding towards the building of a new school in the community, with support from Canada's Economic Action Plan. It is envisaged the new school, which will replace the existing school, will include a new 2,350 m<sup>2</sup> facility, complete with play areas, soccer field, track, and basketball court. Once constructed, the new school will replace the current Cape Croker Elementary School, which provides Junior Kindergarten to Grade 8 education. The existing school is located near MacGregors' Harbour and consists of the main building and two portables [64].

Community services and facilities include a fire hall, pumper and tanker fire trucks; one Roman Catholic, one United and one Wesley United Church; a community centre, a recreation centre, and a library; a health clinic with a Community Health Representative; a day care centre; homemakers program, counselling services; and Ontario First Nations Policing Arrangements with four constables [64].

Access to major non-Native radio and television stations and newspapers is available to the community; telephone service is provided by Bell Canada. Community members have access to NATIVEBEAT, a First Nations newspaper. The SON also publishes and distributes a community newsletter [64].

### Community Services

The community has a water main system with a pumping system, a sewage system that is under construction, a refuse site on-reserve, and is provided with electricity by Hydro One. Table 5.3.1-2 lists the services available to community members and their locations.

**Table 5.3.1-2: List of Services On and Off-site for the Chippewas of Nawash Unceded First Nation**

Service	Location
Band Administration	On-Reserve
Health Centre	On-Reserve
Police Department and Fire Centre	On-Reserve
School	On-Reserve
Recreation Centre	On-Reserve
Heat/hydro/water utility	On-Reserve
Garbage/sewer facility	On-Reserve

Source: [59]



Many of community services can be found within the community itself. There is dial-up Internet available at no charge to residents at the Band Administration Office. A broadband Internet connection is available at the Cape Croker Health Centre and dial-up Internet is used at the police department. There are two SchoolNet sites and a community access point for high-speed Internet at the library and at the M'Wikwedong Friendship Centre (see Section 5.3.1.3). Less than 25% of households subscribe to the Internet at home. Between 51 and 75% of households subscribe to satellite television [59].

Services and programs available to community members include:

- Band Representation Program;
- Capital Planning;
- D'binooshnowin Crisis Centre and 24-hour Crisis Line (a temporary shelter for women and their children that provides counselling and outreach services);
- CHRN 100.1 FM radio station;
- Cape Croker Park;
- Youth Work Experience;
- Workshops: General Educational Development (GED), computer training, project submission training, job enhancement maintenance training, business plan development;
- Home and Community Care Program;
- Nawash Lands Management;
- Literacy;
- Public Works;
- Recreation;
- Maadookii Seniors Centre;
- Senior's apartment complex;
- Nawash Native Child Welfare;
- Nawah N'shiime Day Care; and
- Ninda Kiksendjigae Wigammik Library. [67]

Every August the community hosts an annual competition Pow Wow. In 2010, the Cape Croker traditional Pow Wow was held in Neyaashingaming, Ontario.

### Community Government and Administration

Chief and Council are elected every two years. The Administration Building for the Chippewas of Nawash Unceded First Nation houses several different programs, including Accounts Payable, Payroll, Lands, Estates and Membership, Social Services (Ontario Works), Fisheries Assessment and Biology, Bylaw, Housing, Capital Planning, Band Representatives, Public Works, and Reception. The Chief's Office, the Tribal Secretary and the Band Administrator are also housed in this building [67].

The Bluewater District School Board includes a position for an Appointed Trustee who will be identified by the Chippewas of Nawash First Nation. This position on the Board's list of trustees was vacant at the time of publication of this report [61]. The Chippewas of Nawash Unceded First Nation community is located within the Provincial and Federal electoral districts of Huron-Bruce and Bruce-Grey-Owen Sound, respectively.

### 5.3.1.3 M'Wikwedong Native Cultural Resource Centre

Supplementing programs and services provided within the Chippewas of Nawash and Chippewas of Sauguen communities is the M'Wikwedong Native Cultural Resource Centre (Friendship Centre) located in Owen Sound, Ontario. Some of the off-reserve programs and services operated by the Centre include [68]:

- *The Community Action Program for Children (CAP-C)*
  - The off-reserve Aboriginal CAP-C program goal is to strengthen families and communities and support community development and healing by assisting organizations/groups to design and deliver community-based, culturally relevant programs that aim to improve the physical, mental, emotional and spiritual well-being of off-reserve Aboriginal children aged zero to six years and their families.
- *Canada Prenatal Nutrition Program*
  - Provides programs and services for pregnant and postnatal Aboriginal women and their families in a culturally sensitive and supportive manner. Programs provided include cooking and nutrition, infant development, traditional crafts, exercise and prenatal classes. Services offered are home and hospital visits, fresh food bags, weekly food vouchers, breastfeeding counselling, and connections to Elders and Traditional ceremonies.
- *AKWE:GO*
  - This program has been specifically designed to provide a comprehensive program to urban Aboriginal children between the ages of 7 and 12. The goal of the program is to provide these children with the support, tools and healthy activities that will build upon and foster their ability to make healthy choices.
- *Aboriginal Healing and Wellness Strategy*
  - Objectives include: reducing family violence through community awareness, education and peer counselling; providing crisis intervention for women and children at risk; addressing underlying mental/emotional issues that contribute to violence and dysfunction. Services include: crisis intervention, advocacy, culturally appropriate services, and support groups.
- *Life Long Care*
  - A holistic model that incorporates the physical, mental, emotional and spiritual needs of the individual, family and community over a multi-generational period. It encompasses prevention, crisis intervention, rehabilitation, and promotion of health, training, and supportive resources for clients and their caregivers.
- *UMAYC Youth FX Project*
  - A program to empower the Owen Sound urban Aboriginal youth population to reclaim their Aboriginal cultures and practices. The program provides heritage, cultural and health promoting programs, workshops and services and welcomes all interested youth participants. The project also provides tools and resources for youth to identify and attain positive life goals.
- *Community access to high-speed Internet.*

### 5.3.2 The Métis

Métis people having interests in the Regional Study Area may be represented by the Métis Nation of Ontario (MNO) or by the Historic Saugeen Métis Community (HSMC).

According to the 2006 Census information from Statistics Canada [69], 360 Métis persons reside in Bruce County, and 825 Métis persons reside in Grey County. The Métis people participate fully in the community and for the purposes of this TSD are assumed to be enumerated within the regional population. Because of this, the effects of the DGR Project on Métis people are assumed to be included in the effects on the broader community as presented in the Socio-economic Environment TSD and the human health assessment (included in Appendix C of the EIS), with the exception of effects on traditional harvesting activities or culture.

Discussions with the HSMC and the MNO about the proposed DGR Project have been initiated to facilitate their participation in the EA and approval process.

#### 5.3.2.1 Great Lakes Métis Council of the Métis Nation of Ontario

The Métis Nation of Ontario (MNO) was initially formed in 1994 and considers itself to be a representative body of Métis people at the provincial and national levels within Canada and at the international level. Its principles are based on the right of self-determination and inherent right of self-government. The MNO has a province-wide governance structure. The MNO delivers a range of programs and services in the areas of health, labour market development, education and housing to Ontario Métis and other Aboriginal groups.

In April 2009, the MNO created a Regional Consultation Protocol that covers the Métis traditional territory of Georgian Bay for the regional rights-bearing Métis community that lives in, uses and relies on the Georgian Bay Métis traditional harvesting territory [70].

The Great Lakes Métis Council operates a community centre at 380 9<sup>th</sup> Street East, Owen Sound.

#### 5.3.2.2 Historic Saugeen Métis Community

The Historic Saugeen Métis Community (HSMC) people are an independent rights-bearing community. This Métis community is one of the formally organized Métis communities in Ontario that is not represented by the MNO. They have historically lived, fished, hunted and traded alongside the local First Nations [71].

The HSMC has been recognized by the Canadian government, as well as the Ministry of Natural Resources (MNR), to have an asserted claim of Aboriginal rights, and consequently the community asserts that there is a duty to consult with the community [72]. The HSMC has its offices at 204 High Street, Southampton.

## 5.4 ABORIGINAL HERITAGE RESOURCES

### 5.4.1 Archaeological and Burial Sites

Archaeological investigations have been conducted in and around the Bruce nuclear site since the 1950s. These studies reveal that the shorelines of Lake Huron and its ancestors — Lake Algoma, the Nipissing Great Lakes and Main Lake Algonquin — have been the foci of intense cultural activity during the past 11,000 years. As such, there are numerous registered archaeological sites in the Regional Study Area. Based on the Stage 1 Archaeological Assessment [41] there are 16 registered archaeological sites either on or within 7.5 km of the Bruce nuclear site, most of which are located on or in the immediate vicinity of Inverhuron Provincial Park. The scarcity of identified archaeological sites within the Bruce nuclear site is in contrast to the high density of registered and unregistered sites of Aboriginal people's habitation, resource-procurement, ritual and burial below the Lake Algonquin shoreline and along the shore of Inverhuron Bay and the Little Sauble River. The Stage 2 Archaeological Assessment [41] identified and confirmed two registered archaeological sites, Upper Mackenzie and Dickie Lake, within the confines of the Bruce nuclear site.

#### 5.4.1.1 Upper Mackenzie (BbHj-6)

The Upper Mackenzie (BbHj-6) site is located just inside the south entrance to the Bruce nuclear site on the north side of the South Access Road. Aerial photographs from 1938 show that the Upper Mackenzie site was an expansive, exposed sandy terrace along the Nipissing Great Lakes shoreline. Based on the location of the site, and in the absence of dated artifacts, Upper Mackenzie likely dates somewhere within the 2500 – 800 BC Late Archaic period [41]. The extent of the site has never been defined.

In 1961, the site was damaged during the construction of the South Access Road into the Bruce nuclear site. Bulldozing had disturbed an area of about one acre on the north side of the road, exposing at least two cultural features. The scarcity of cultural artifacts on the site was noted during investigations by Wright, Lee and Knechtel [41].

The areas on either side of the South Access Road have not been appreciably modified since the road was constructed in the 1960s. Therefore, if any of the site survived the road construction, it should remain intact today.

#### 5.4.1.2 Dickie Lake/Jiibegmegoong (BbHj-12)

The Dickie Lake site, which dates from the Late Archaic (1000 – 800 BC) or Early Woodland (800 – 300 BC) [41], is located along the Nipissing Great Lakes shore complex. Investigations at the site in the 1950s and 1960s found two wind-exposed human burials and an abundance of crude cobble tools, but found little evidence of habitation or related activities. The burial site was opened in the 1950s and the remains of two individuals buried there were moved from the site in 1957.

In the 1970s, it was believed that a third heritage area, the “Indian Burial Ground” was identified by Ontario Hydro and demarcated by signposts in the early 1980s. A joint council meeting of the Chippewas of Nawash and Chippewas of Saugeen on March 10, 1998 resolved that the site previously known as Dickie Lake and the “Indian Burial Ground”, were in fact the same site and

were assigned an Ojibway name. The Dickie Lake site is now referred to as Jiibegmegoong (Spirit Place). The Jiibegmegoong site is located approximately 3 km from Bruce A and 1 km from Bruce B, the WWMF and the road leading to the main gate. It is approximately 1.3 km from the DGR Project site. Historical documentation may identify the name of the site with the alternative spelling of Chiibegmegoong.

The human remains removed from Jiibegmegoong were reinterred in 1998 [41]. Both Chippewas of Nawash and Chippewas of Sauguen have requested and have received approval to access the Bruce nuclear site to conduct ceremonies or monitoring at the Jiibegmegoong burial ground. The condition of the Jiibegmegoong site was examined in 2007. The on-going erosion at the site did not appear to be appreciable from the last observation [43].

#### **5.4.2 Culturally Sensitive Areas**

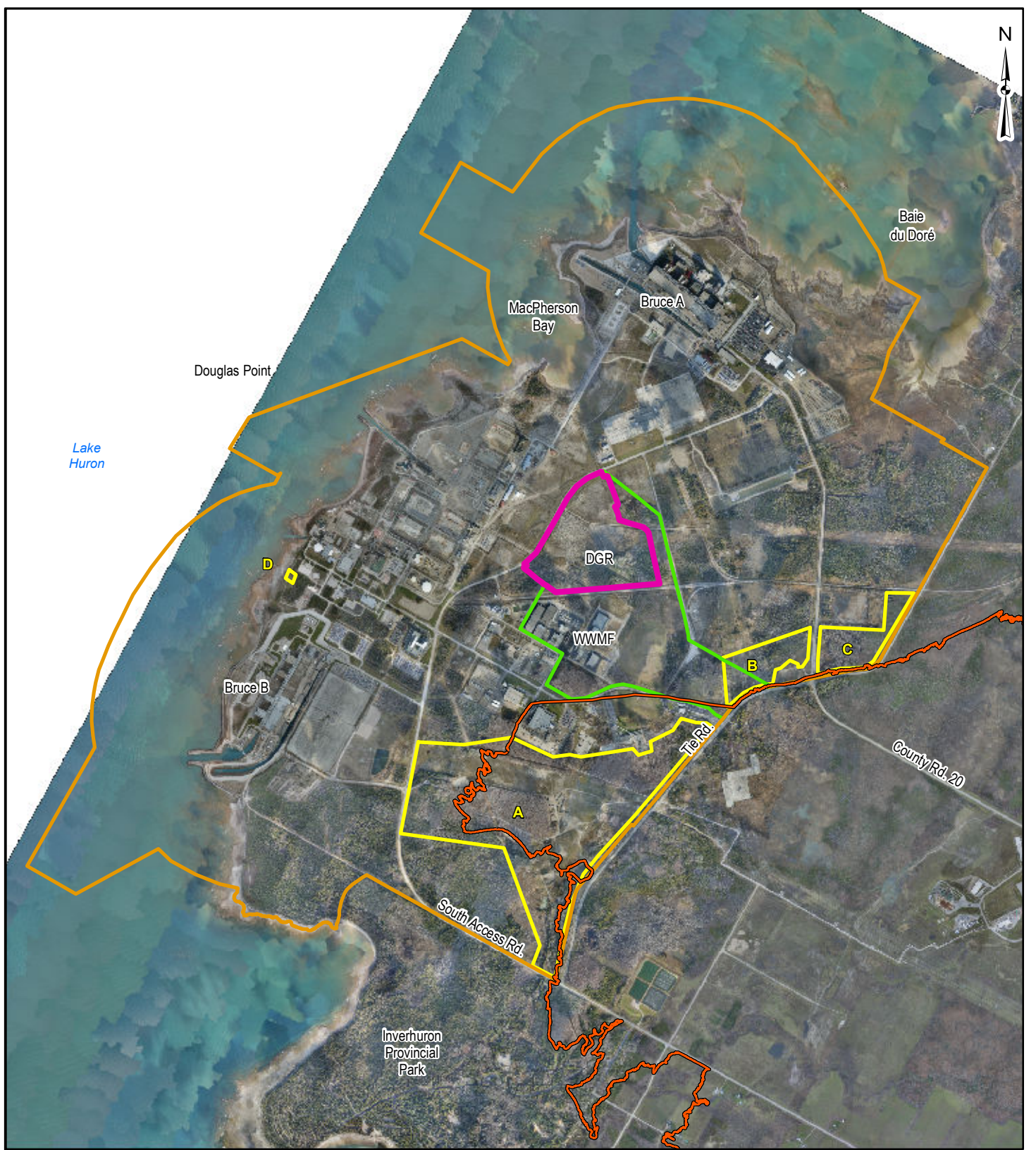
As part of the Stage 2 Archaeological Assessment, culturally-sensitive areas were defined on the basis of a field inspection strategy presented in July 2007 to the Chiefs and Councils of the SON. The completion of the Stage 2 Archaeological Assessment resulted in the definition of four culturally-sensitive areas (A, B, C and D) within the Bruce nuclear site (Figure 5.4.2-1). With respect to Aboriginal interests, a culturally sensitive area was considered one at which there was a known archaeological site or feature (e.g., portage route) or where there may be deeply buried archaeological sites or burials.

The approach to the field work conducted for the Stage 2 Archaeological Assessment was unique to the Bruce nuclear site and it intended to respect Aboriginal interests for the protection of culturally sensitive areas while being as consistent as possible with the Ministry of Culture guidelines [43]. It was formulated on the grounds that the standard Ministry of Culture test pitting approach along the predominantly sandy Nipissing Great Lakes shoreline complex and adjacent Main Lake Algonquin lakebed would be culturally inappropriate and methodologically ineffectual. This conclusion was reached because:

1. Burials have often been encountered within the sandy landscapes in and around the Bruce nuclear site [41]. Invasive shovel test-pitting could unintentionally disturb additional unmarked graves.
2. The excavation of shallow, 25 cm diameter shovel test-pits spaced at five metre intervals is unlikely to provide an accurate indication of the extent of subsurface cultural deposits and features from small habitation, ritual, or burial sites, sites of short duration, or sites that may be deeply buried by wind- or water-deposited sand.

Culturally-sensitive area (CSA) A is composed of a section of the sandy Nipissing Great Lakes shoreline complex and the abutting Main Lake Algonquin lakebed (Figure 5.4.2-2). The Late Archaic period Jiibegmegoong burial site (BbHj-12), Late Archaic period Upper Mackenzie (BbHj-6) site, and post-1854 Smith (BbHj-33) site are located within CSA A. The post-1854 Smith site is a non-Aboriginal archaeological site and not considered further in this assessment. Much of its central section has been previously disturbed by earlier aggregate extraction.

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**LEGEND**

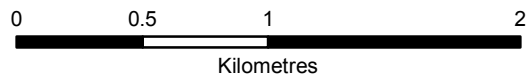
- 4200-2200 B.C. Nipissing Great Lakes Shoreline
- DGR Project Site
- Culturally Sensitive Area
- Project Area (OPG-retained lands that encompass the DGR Project)
- Site Study Area<sup>1</sup>

**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

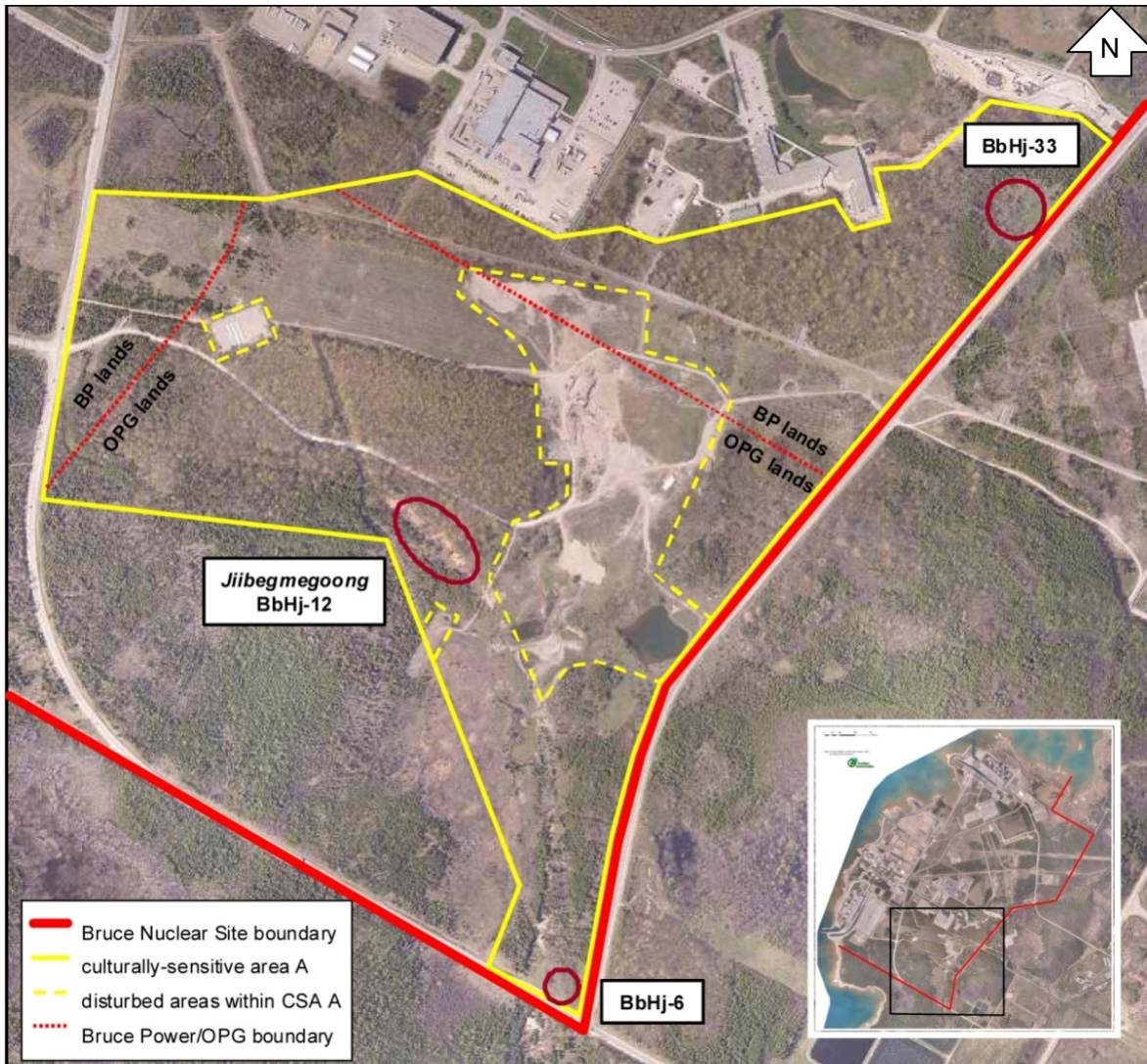


<b>PROJECT</b>	ABORIGINAL INTERESTS TECHNICAL SUPPORT DOCUMENT			
<b>TITLE</b>	<b>CULTURALLY SENSITIVE AREAS IN THE SITE STUDY AREA</b>			
<b>PROJECT</b> No. 06-1112-037	<b>SCALE:</b> AS SHOWN	<b>R000</b>		
<b>DESIGN</b> ASB 17 Oct. 2007	<b>FIGURE 5.4.2-1</b>			
<b>GIS</b> BC 7 Apr. 2010				
<b>CHECK</b> KC 7 Apr. 2010				
<b>REVIEW</b> AB 7 Apr. 2010				



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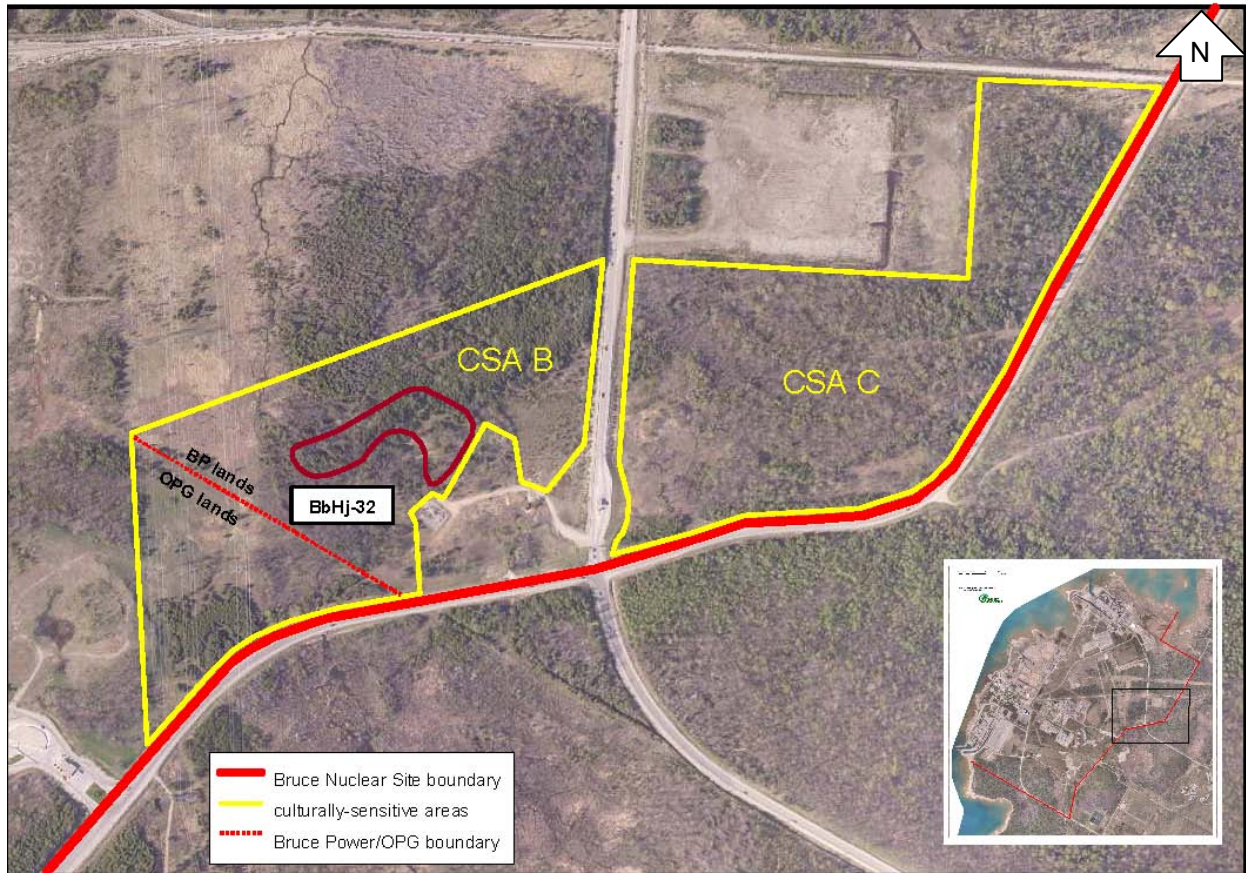
Source: [42]

**Figure 5.4.2-2: Culturally Sensitive Area A**

Culturally-sensitive area B contains Brough’s 1851 “Indian portage” and overlaps with the extreme southeastern corner of the DGR Project Area (Figure 5.4.2-3). In addition, a rail fence and probably the cobble features of the Bonnett (BbHj-32) site along the edge of the wetland are also located in CSA B. These latter features are attributable to the post-1854 Euro-Canadian occupation of Lot 21. Construction at the Bruce nuclear site has altered substantial sections of CSA B (i.e., within the high-water and recessional strandlines of the Nipissing Great Lakes).

Culturally-sensitive area C 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) (Figure 5.4.2-3). Its physiography is identical to that

found at the sandy head of Inverhuron Bay where Aboriginal cultural sites spanning the Late Archaic to Late Woodland periods are concentrated.



Source: [42]

**Figure 5.4.2-3: Culturally Sensitive Areas B and C**

Culturally-sensitive area D (Figure 5.4.2-4) has been defined because of the presence of the post-1854 Lime Kiln (BbHj-31) site, rather than for the potential presence of deeply-buried or sensitive Aboriginal cultural or spiritual sites. In this area of the Bruce nuclear site there is no accumulation of sand that would obscure cultural heritage resources. This CSA is not discussed further in this TSD as it is not related to Aboriginal interests.



Source: [42]

#### Figure 5.4.2-4: Culturally Sensitive Area D

##### 5.4.2.1 Areas of No Further Archaeological Concern

With the exception of the four culturally-sensitive areas (A, B, C, D), the remainder of the Bruce nuclear site, including the footprint for the DGR Project can be cleared of further archaeological concerns for the following reasons:

1. Aboriginal heritage resources that may have existed in areas that have been affected by industrial development would likely have been previously disturbed.

2. Unaltered landscapes that are currently seasonal or permanent wetlands (i.e., the cobble and boulder Nipissing Great Lakes, Lake Algoma and Baie du Doré lakebeds) possess no archaeological potential. Traversable sections of these areas were inspected during the Stage 2 Assessment to confirm the lack of archaeological potential.
3. The intact Lake Huron and Lake Algoma cobble beach ridges, along with the Nipissing Great Lakes cobble terrace and cobble pavement of the Main Lake Algonquin lakebed were subjected to appropriate Stage 2 assessment. The lack of, or minimal soil development would not have obscured cultural features or material.

## 5.5 TRADITIONAL USE OF LAND AND RESOURCES

A description of traditional use of land and resources for the purposes of an EA would typically be applied to the traditional territories of the First Nations and Métis people with an interest in the study areas. In this case, these are the SON, the HSMC and the MNO-represented citizens. However, at this time, there is limited information available regarding the traditional use of land and resources by individual First Nation or the Métis in the study areas.

Aboriginal traditional use of land and resources in the Regional Study Area may include the use of lands for harvesting fish, wildlife and terrestrial plant species for foods, spiritual purposes, medicines, arts and crafts.

The HSMC and the MNO-represented citizens with interests in the Regional Study Area have lived, fished, hunted, trapped, and harvested the lands and waters of the Bruce Peninsula, the Lake Huron shoreline and its watersheds since the early 1800s, and those activities continue today.

The SON have asserted their interests with regard to the traditional use of lands and resources in several forums. In 1995, at an international conference in Duluth, Minnesota, the Chief of the Chippewas of Saugeen First Nation announced the Duluth Declaration, which is an assertion of jurisdiction over:

*“The waters around the Saugeen/Bruce Peninsula in their entirety, which includes the fisheries, lands and minerals, above and below the waters, including the lake bed. We do so for the immediate purpose of the full regulation and management of these resources, over which we have inherent rights, treaty rights and unextinguished sovereign authority. This jurisdiction extends to the median point in the water between the Saugeen Nation territory, water and land, and all other national territory”. [25]*

The Chippewas of Nawash Unceded First Nation describes its traditional territory as the waters and fisheries that surround their traditional lands [73]. The Métis who have a potential interest in the DGR Project study area is the Georgian Bay regional rights-bearing Métis community, with two community areas within 60 km of the DGR Project Area. Based on an examination of the Bruce New Nuclear Power Plant EA [16] and the Bruce to Milton Transmission Reinforcement Project EA [17], the traditional use of land and resources by Métis people include hunting, fishing and harvesting of plants.

Therefore, the following description is based on available secondary source information, largely focussed on the perspectives of the Chippewas of Nawash Unceded First Nation.

The Chippewas of Nawash Unceded First Nation have stated that during the fur trade, hunting and trapping was an important resource-based activity. Animals traditionally hunted were deer, beaver, rabbit, groundhog, porcupine, raccoon, muskrat, partridges and wild turkey, and furs were sold in Owen Sound [29]. The importance of these activities to the Chippewas of Nawash Unceded First Nation is illustrated by the following quotations:

*"...along with indigenous peoples everywhere, the relationship with traditional lands, waters and resources is profound, ongoing and an essential part of their identity and culture as well as the economy of our people that sustains us to this day." [20]*

*"We work to fish, to hunt, to gather and prepare medicine, to build houses. And with this work comes a responsibility to the environment and all our relations by which we mean the animals, the plants, the fish, the birds...all living things on which we rely....If we are to claim to be stewards of the land, we must act like it; if we are to practice our rights we must also exercise our responsibilities." [23]*

In 2005, the Ontario Ministry of Natural Resources (MNR) announced that a five-year agreement had been signed with the SON to manage the commercial fishery in the waters of Lake Huron and Georgian Bay around the Bruce Peninsula. At the time of publication, the status of this Agreement was unknown. The terms of the agreement state that the SON will be responsible for using catch sampling to monitor the commercial fishery, and will designate community fishers. It was agreed that commercial gill nets will not be used by the First Nations in most of Owen Sound Bay and Colpoy's Bay and no commercial fishing will take place between August 1st and Labour Day because of the Owen Sound Salmon Spectacular fish derby. The agreement applies only to commercial fishing rights, and does not affect traditional fishing activities [74].

The MNR reports annually on the major commercial fish species in Lake Huron. The catch of the commercial fishery is predominately composed of lake whitefish (main target species), lake trout (by-catch<sup>3</sup>), and chinook and coho (Pacific) salmon (by-catch). Gill nets are the primary nets used in commercial fisheries; however, occasionally trap nets have been used. There are four commercial fishing tugs in operation on the Saugeen First Nation, which employ approximately 12 people. All four boats do not operate simultaneously. The Chippewas of Nawash Unceded First Nation has four fishing tugs and three punts, and employs 18 people directly in fishing activities [73]. Between 50 and 60 members of the Chippewas of Nawash Unceded First Nation are employed in fishing and related activities, and an economic analysis prepared for the First Nation found that the fishery accounted for about one half of all private commercial earnings in Cape Croker between 1996 and 1997. The net benefit of the fishery was estimated to be \$387,584 over the same period [75].

In 2009, the total quota (including lake trout and lake whitefish allowance) issued on commercial fishing licenses and other commercial allocations in all of Lake Huron amounted to 4,116,343 kg. Harvest of all fish species under quota control in Lake Huron in 2009 was 2,006,050 kg with an estimated value of \$5,408,187. An additional 3,500 kg of fish of no commercial value was reported harvested in 2009. In the main basin of Lake Huron, the 2009 total quota on commercially caught fish species was 2,863,480 kg, and the harvest of quota controlled species was 1,390,071 kg with an estimated value of \$3,970,108. Lake whitefish

<sup>3</sup> By-catch meaning that it is not targeted by commercial anglers.

comprises approximately 73% of this harvest. An additional 2,327 kg of fish of no commercial value was reported harvested in the main basin in 2009 [76].

The Chippewas of Nawash Unceded First Nation have stated that the fish harvest, particularly lake whitefish from Lake Huron in the vicinity of the Bruce nuclear site is the single largest component of the Nawash commercial fishery [26]. This is consistent with MNR's estimates of the total dollar value of eight major species of fish caught in the Lake Huron Management Area 4-4. Management Area 4-4 is the area of Lake Huron in the vicinity of the Bruce nuclear site. Within this Management Area, MNR estimated that the total value of the commercial catch was estimated at \$646,706 in 2008, with \$615,318 from lake whitefish [77].

During the Bruce Used Fuel Dry Storage EA review process, representatives of the Chippewas of Nawash First Nation expressed concern about the monitoring of lake whitefish in Lake Huron as part of the overall Bruce Nuclear environmental monitoring program because of the importance of this species to the First Nations lifestyle and economy. In follow-up correspondence to a meeting with the Chippewas of Nawash on June 26, 1997, and in response to a letter of proposal from the Nawash First Nation (October 7, 1997), Ontario Hydro (OPG's predecessor) sent a letter (October 20, 1997) accepting the proposal and initiating a collaborative effort to jointly review the available scientific information on the ecology and population dynamics of both lake whitefish and round whitefish in Lake Huron [78].

A collaborative effort between OPG, Chippewas of Nawash Unceded First Nation, Bruce Power, and the Axelrod Institute of Ichthyology at the University of Guelph resulted in a three year project called WINGS (Whitefish Interactions with Nuclear Generating Stations), which was initiated in 1999. The long-term research goals of the WINGS project included: (1) investigating key ecological uncertainties related to dynamics of harvested fish populations in the Great Lakes; (2) developing and evaluating Adaptive Resource Management as a basis for Great Lakes fisheries management; and (3) improving relationships between Traditional Aboriginal Knowledge and Western Science, especially with reference to Great Lakes ecology.

Since the WINGS studies, many studies have been completed that provide additional understanding of lake whitefish ecology in Lake Huron, and particularly around the Douglas Point headland [10;15;16;79;80;81;82;83;84].

Further collaboration between OPG and the Chippewas of Nawash Unceded First Nation involved addressing concerns related to the potential effect of radiological emissions from the Bruce nuclear site on fish. In 2002, University of Guelph professor Meg Thorburn in the School of Population Medicine and Peter Bath, Nutrition Advisor from PATH Canada, undertook a study of the levels of radioactive chemicals and other contaminants in fish harvested in the vicinity of the Bruce nuclear site. The study was conducted in response to the Bruce Used Fuel Dry Storage Project and was aimed at determining the risk from eating fish caught in Lake Huron north of the Bruce nuclear site. The research indicated that fish, and in particular whitefish, were a staple of the diet of the Nawash First Nation people, with people eating fish about once or twice a month. The study concluded that levels of radiation and other contaminants in locally harvested fish were found to be very low.

Specifically, the research indicated that very low amounts of some radionuclides such as tritium, carbon-14, strontium-90, and cesium-137 were found in fish sampled for the study. These levels were similar to those in fish caught a large distance from nuclear power stations. They

were low enough that they should not affect the health of fish, or the people eating fish. However, some of the strontium-90 and carbon-14 concentrations were considered to result from the activities at the Bruce nuclear site.

As part of Bruce Power's REMP, concentrations of key radionuclides in fish tissue (tritium, carbon-14, organically bound tritium, potassium-40, cobalt-60, cesium-134 and cesium-137) are collected at various locations in the vicinity of the Bruce nuclear site and along the shore of Lake Huron. The REMP program is conducted annually and the results are reported to the CNSC on May 1<sup>st</sup> of each year. In 2009, concentrations of key radionuclides in fish tissue were similar to provincial background or at or near historical levels [85]. Additional information on radioactivity in the natural environment can be found in the Radiation and Radioactivity TSD.

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## **6. INITIAL SCREENING OF PROJECT-ENVIRONMENT INTERACTIONS**

The first screening considers whether there is a potential for the DGR Project to interact with the Aboriginal interests VECs.

### **6.1 INITIAL SCREENING METHODS**

Following the description of the DGR Project, identification of VECs and description of the existing environment, the project works and activities are screened to determine those with the potential to interact with the Aboriginal interests VECs. The screening is conducted based on the general description of the existing environmental conditions. This allows the EA to focus on issues of key importance where potential interactions between the DGR Project and Aboriginal interests are likely. The analyses are based on the experience of the technical specialists supported by information collected from field studies and information from earlier EAs carried out for projects at the Bruce nuclear site. This screening is conducted by project work or activity for each VEC and for site preparation and construction, operations, and decommissioning phases of the DGR Project.

Aboriginal interests VECs can interact with the DGR Project directly (e.g., disturbance of archaeological features) and indirectly (e.g., effects on traditional uses of lands and resources resulting from a change in surface water quality and/or an aquatic species). Both direct and indirect interactions are considered in this assessment. Where a mechanism for interaction is identified, the individual project work or activity is advanced for further consideration of measurable changes. Where no potential interaction is identified, no further screening or assessment is conducted. Section 2.1 provides more details regarding this method.

The results of the screening are documented in 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 project work and activity and a VEC, that project work or activity 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 potential interactions with the Aboriginal interests 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.

### **6.2.1 Direct Interactions**

Each of the identified DGR Project works and activities are screened, below, to determine potential direct interactions between the project and the Aboriginal interests VECs. This screening considers the life cycle of the project, including those activities that occur in several phases (e.g., waste management).

#### **6.2.1.1 Site Preparation**

Site preparation activities occur during the site preparation and construction phase and would begin after receipt of a Site Preparation Licence. This work primarily involves clearing approximately 30 ha of the DGR Project site and preparing the construction laydown areas. Specific activities include the following:

- 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 facility and 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.

#### *Aboriginal Communities*

Effects from site preparation are expected to be contained largely within the DGR Project Area and/or Site Study Area. Site preparation activities do not involve additional land disturbance (Figure 2.4.2-3), and are therefore not expected to have any direct interactions with settlement areas associated with Aboriginal communities located some 25 km from the Bruce nuclear site. Accordingly, no further consideration is warranted.

#### *Aboriginal Heritage Resources*

Site preparation, grading and land clearing activities have the potential to uncover and disturb archaeological sites/burials and artifacts, particularly deeply buried artifacts in culturally-sensitive areas. Therefore, a project-environment interaction between site preparation and Aboriginal heritage resources is identified, and is carried forward to Section 7 for the second screening.

### Traditional Use of Lands and Resources

As noted above, direct effects resulting from site preparation are expected to be contained largely within the DGR Project Area and/or Site Study Area, and are therefore not expected to have any direct interactions with traditional use of lands and resources, which do not occur in the Site Study Area (which includes the Project Area – see Figure 2.4.2-3). Accordingly, no further consideration is warranted.

#### 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 facilities at the site. Specific activities include the following:

- 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 crossing over the abandoned rail bed between the WWMF and the DGR Project site;
- fuelling of vehicles; and
- construction of electrical substation, and receipt and installation of standby generators.

### Aboriginal Communities

Effects from the construction of surface facilities are expected to be contained largely within the DGR Project Area and/or Site Study Area. They do not involve additional land disturbance at surface, and are therefore not expected to have any direct interactions with settlement areas associated with Aboriginal communities located some 25 km from the Bruce nuclear site. Accordingly, no further consideration is warranted.

### Aboriginal Heritage Resources

Construction of surface facilities have the potential to uncover and disturb archaeological sites/burials and artifacts, particularly deeply buried artifacts in culturally-sensitive areas. The greatest potential for this effect is from the excavation and construction of footings for permanent buildings, and for site services such as domestic water, sewage, electrical; and possibly for the construction of a crossing over the abandoned rail bed between the WWMF and the DGR Project site which may also require excavation and construction of footings. Therefore, a project-environment interaction is identified between construction of surface facilities and this VEC, and carried forward to Section 7 for the second screening.

### Traditional Use of Lands and Resources

Effects from the construction of surface facilities are expected to be contained largely within the DGR Project Area and/or Site Study Area, and are therefore not expected to have any direct interactions with traditional use of lands and resources, which do not occur in these study areas. Accordingly, no further consideration is warranted.

#### 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. Specific activities include the following:

- 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.

Similar to the construction of surface facilities, activities and any potential associated effects will largely be contained within the DGR Project Area and/or the Site Study Area. This work and activity does not involve additional land disturbance beyond the Project Area, and therefore not expected to have any direct interaction with Aboriginal communities, or traditional use of lands and resources, and no further consideration of these two VECs in relation to excavation and construction of underground facilities is warranted.

### Aboriginal Heritage Resources

The excavation and construction of underground facilities could directly interact with the Aboriginal heritage resources VEC as it involves excavation activities. There is a potential to uncover and disturb archaeological sites/burials and artifacts, particularly deeply buried artifacts in culturally-sensitive areas. Therefore, a project-environment interaction is identified between this VEC and excavation and construction of underground facilities, and carried forward to Section 7 for the second screening.

#### 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 WWMF at the staging area in the DGR Waste Package Receiving Building (WPRB) and on-site transfer to shaft. Specific activities include the following:

- receipt of disposal-ready waste packages from the WWMF by forklift or truck;

- offloading of waste packages at the Waste Package Receiving Building (WPRB);
- transfer of waste packages within the WPRB by forklift or rail cart; and
- temporary storage of waste packages inside the WPRB.

Activities associated with the above-ground transfer of waste will be contained within the Project Area and do not involve additional land disturbance. Therefore, this work and activity is not expected to have any direct interaction with Aboriginal interests VECs, and no further consideration is warranted.

#### 6.2.1.5 Underground Transfer of Waste

Underground handling of waste will take place during the operations phase of the DGR Project and specific activities include the following:

- 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 (i.e., 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 is performing as expected prior to decommissioning. As with above-ground transfer of waste, the underground transfer of waste will be confined within the Project Area and does not involve additional land disturbance. Therefore, this work and activity is not expected to have any direct interaction with Aboriginal interests VECs, and no further consideration is warranted.

#### 6.2.1.6 Decommissioning of the DGR Project

Decommissioning of the DGR Project includes all activities required to seal shafts and remove surface facilities, and will be the subject of a separate environmental assessment prior to the initiation of the decommissioning phase. Specific activities include the following:

- 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 shaft;
- construction of a concrete monolith at the 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 shaft; and
- grading of the site.

The activities necessary to decommission the DGR will be contained within the Project Area, and do not involve additional land disturbance. Therefore, this work and activity is not expected

to have any direct interaction with Aboriginal interests VECs, and no further consideration is warranted.

#### 6.2.1.7 Abandonment of the DGR Facility

Abandonment involves very few activities, such as the possible removal of access controls (e.g., fences), that will be confined to the Project Area. Further, abandonment will not involve any additional land disturbance. Therefore, this work and activity is not expected to have any direct interaction with Aboriginal communities, Aboriginal heritage resources, and traditional use of lands and resources.

#### 6.2.1.8 Presence of the DGR Project

This work or activity not only represents the physical presence of the DGR facility on the land (i.e., including the aesthetics and visibility of the surface structures associated with the DGR) but also, based on available traditional knowledge, the special meaning the presence of the DGR Project, as a whole, may have to some Aboriginal peoples and therefore, how it is seen by some in relation to their world view.

##### Aboriginal Communities

The presence of the DGR Project is not related to land disturbance and its visibility is not expected to have any direct interactions with settlement areas associated with Aboriginal communities located some 25 km from the Bruce nuclear site. Accordingly, no further consideration is warranted.

##### Aboriginal Heritage Resources

The presence of the DGR Project is not related to land disturbance and is therefore not expected to have any direct interactions with Aboriginal heritage resources. However, its visibility may diminish the quality or value of activities undertaken at Aboriginal burial sites in the vicinity of the Bruce nuclear site during the site preparation and construction and operations phases. All surface facilities will be removed during the decommissioning phase; however, the waste rock pile will remain. Therefore, a project-environment interaction is identified between this VEC and the presence of the DGR Project during all project phases, and is carried forward to Section 7 for the second screening.

##### Traditional Use of Lands and Resources

The presence of the DGR Project is not related to land disturbance and is therefore not expected to have any direct interactions with traditional use of lands and resources. However, as mentioned previously, the traditional Ojibway spiritual worldview is that the physical world, including the rock of the earth, is the first order of creation upon which the other orders of creation — the plant world, the animal world and the human world — depend upon for sustenance and existence. The DGR Project, which directly affects this first order of creation (i.e., the rock of the earth) may have special meaning to some Aboriginal peoples and therefore, may be seen by some Aboriginal people as incompatible with their world view, affecting how Aboriginal people value the plants and animals that they harvest for traditional purposes.

Therefore, a project-environment interaction is identified between this VEC and the presence of the DGR Project for all DGR Project phases, and is carried forward to Section 7 for the second screening.

#### 6.2.1.9 Waste Management

Waste management represents all activities required to manage waste during the DGR Project. During site preparation and 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 includes primarily management of conventional and construction wastes. Specific activities include the following:

- 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.

Activities associated with waste management will largely be contained within the DGR Project Area and do not involve additional land disturbance at the Bruce nuclear site. The transfer of some construction, domestic and/or toxic/hazardous wastes to licensed facilities is also not expected to result in additional land disturbance off-site. Therefore this project work and activity is not expected to have any direct interaction with Aboriginal interests VECs. As such, no further consideration is warranted.

#### 6.2.1.10 Support and Monitoring of DGR Life Cycle

Support and monitoring of the DGR life cycle will include all activities to support the safe site preparation and construction, operation and decommissioning of the DGR Project. Specific activities include the following:

- 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 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.

These support and monitoring activities are typical activities at many construction sites or industrial facilities, such as landfills or mines and are not unique to the DGR Project. Effects from the support and monitoring of the DGR will be contained largely within the DGR Project Area and/or Site Study Area. Support and monitoring activities do not involve additional land disturbance, and are therefore not expected to have any direct interactions with Aboriginal interests VEC. Accordingly, no further consideration is warranted.

#### 6.2.1.11 Workers, Payroll and Purchasing

Workers, payroll and purchasing include all workers required during each phase of the DGR Project. Specific activities include the following:

- spending in commercial and industrial sectors;
- transport of purchased materials to the site; and
- workers travelling to and from site.

There is a potential for employment opportunities, increased business activity and income to be generated by project expenditures on payroll and purchased goods and services. Accordingly, the workers, payroll and purchasing work and activity potentially interacts with the Aboriginal communities VEC, and is carried forward to Section 7 for the second screening. No potential mechanism exists for this work and activity to interact with the Aboriginal heritage resources or traditional use of land and resources VECs. No further consideration in regard to this work and activity and these VECs is warranted.

### 6.2.2 Indirect Interactions

The following sections identify the potential indirect interactions with the Aboriginal interests VECs. The incremental radiological exposure of Aboriginal people associated with the DGR Project's releases to the air, surface water and ground water are addressed in the Radiation and Radioactivity TSD.

#### 6.2.2.1 Changes in Air Quality

Changes in air quality, particularly increased dust, during the site preparation and construction, operations and decommissioning phases have the potential to indirectly interact with Aboriginal communities because of nuisance-related effects. Increased dustfall at the Aboriginal burial site at the Bruce nuclear site may diminish the quality and/or value of activities undertaken by Aboriginal peoples, thereby indirectly affecting this Aboriginal heritage resource. Therefore, potential indirect interactions between changes in air quality and Aboriginal communities and Aboriginal heritage resources are carried forward to Section 7 for the second screening. No potential indirect interactions are identified for traditional use of lands and resources. Accordingly, no further consideration is warranted for this VEC.

#### 6.2.2.2 Changes in Noise Levels

Changes in noise levels during the site preparation and construction, operations and decommissioning phases have the potential to indirectly interact with Aboriginal communities because of nuisance-related effects. Increased noise levels at the Aboriginal burial site at the



Bruce nuclear site may diminish the quality and/or value of activities undertaken by Aboriginal peoples, thereby indirectly affecting this Aboriginal heritage resource. Changes in noise levels also have the potential to indirectly interact with traditional use of land and resources as a result of potential disruption to terrestrial VECs and resulting reduction in harvesting success in the area in close proximity to the Bruce nuclear site, should harvesting occur there. Therefore, the potential indirect interactions between these Aboriginal interests VECs are carried forward to Section 7 for the second screening.

#### 6.2.2.3 Changes in Surface Water Quantity and Flow

Changes in surface water quantity and flows throughout the project life could potentially interact with Aboriginal communities if they were to affect water supply. Therefore, a potential indirect interaction between changes in surface water quantity and flow and Aboriginal communities is carried forward to Section 7 for the second screening. No potential indirect interactions are identified for the other Aboriginal interests VECs.

#### 6.2.2.4 Changes in Surface Water Quality

Changes in surface water quality have the potential to indirectly affect Aboriginal communities if they were to affect water supply at any point during the project life cycle. Therefore, a potential indirect interaction between changes in surface water quality and Aboriginal communities are carried forward to Section 7 for the second screening. Changes in surface water quality could also affect traditional use of land and resources if they were to affect the aquatic VECs. Changes in aquatic VECs are considered in Section 6.2.2.8. No potential indirect interactions are identified for Aboriginal heritage resources.

#### 6.2.2.5 Changes in Soil Quality

Changes in soil quality could affect traditional use of land and resources if they were to affect terrestrial communities. Changes in terrestrial VECs are considered in Section 6.2.2.8. A change in soil quality at an archaeological/burial site at the Bruce nuclear site may affect its long-term preservation and/or diminish its quality and/or value to Aboriginal peoples, thereby indirectly affecting the Aboriginal heritage resources VEC. There is no other potential mechanism for an indirect interaction between changes in soil quality and the Aboriginal interests VECs.

#### 6.2.2.6 Changes in Groundwater Quality

Changes in groundwater quality during the various project phases have the potential to indirectly interact with the Aboriginal communities VEC if groundwater drinking water wells or irrigation wells are affected. Therefore, this potential indirect interaction between this pathway and Aboriginal communities is carried forward to Section 7 for the second screening. No potential indirect interactions exist with the remaining Aboriginal interests VECs and the groundwater quality pathway.

#### 6.2.2.7 Changes in Groundwater Flow

An indirect interaction with Aboriginal communities is possible if flow in groundwater drinking water wells or irrigation wells are affected during the site preparation and construction, operations, or decommissioning phases. Therefore, this potential indirect interaction between changes in groundwater flow and Aboriginal communities is carried forward to Section 7 for the second screening. No potential indirect interactions are identified for the other Aboriginal interests VECs.

#### 6.2.2.8 Changes in Aquatic and Terrestrial VECs

Changes in populations of aquatic and terrestrial species important to Aboriginal peoples may interact with the use of these resources for traditional purposes as a change in population could affect harvest. Such changes may occur during the site preparation and construction, operations, or decommissioning phases of the DGR Project. Adverse effects on the harvest of aquatic and terrestrial species important to Aboriginal peoples may affect Aboriginal communities through economic means (e.g., changes to income and employment). Therefore, the potential indirect interaction between Aboriginal communities and traditional use of lands and resources and changes in aquatic and terrestrial VECs are carried forward to Section 7 for the second screening.

No potential indirect interactions are identified for Aboriginal heritage resources. Accordingly, no further consideration is warranted for this VEC.

### **6.3 SUMMARY OF FIRST SCREENING**

Table 6.3-1 provides a summary of the initial screening for the DGR Project. Small dots (•) on this matrix represent potential DGR Project-environment interactions involving VECs. These interactions are advanced to Section 7 for a second screening to determine those interactions likely to result in a measurable change to the Aboriginal interests VECs.

Following the screening of potential DGR Project-environment interactions, all identified VECs had a potential interaction with the DGR Project. Therefore, as summarized in Table 6.3-2, all of the VECs included in Table 4.3-1 are carried forward for further assessment.

**Table 6.3-1: Matrix 1 – Summary of the First Screening for Potential Interactions with VECs**

Project Work and Activity	Aboriginal Communities			Aboriginal Heritage Resources			Traditional Use of Lands and Resources		
	C	O	D	C	O	D	C	O	D
<b>Direct Measurable Changes</b>									
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									
Workers, Payroll and Purchasing	•	•	•						
<b>Indirect Measurable Changes</b>									
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 VECs	•	•	•				•	•	•

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 the effect will last. The duration of the effect is assessed in Section 11.

The abandonment and long-term performance phase is not included in the matrix as there are no activities 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.

• Potential project-environment interaction

— Activity does not occur during this phase

Blank No potential interaction

**Table 6.3-2: Advancement of Aboriginal Interests VECs**

VEC	Retained?	Rationale
Aboriginal Communities	Yes	<ul style="list-style-type: none"> <li>• Potential for direct interactions with workers, payroll and purchasing.</li> <li>• Potential for indirect interactions with changes in air quality, noise levels, surface water quantity and flow, surface water quality, groundwater quality and flow, aquatic and terrestrial VECs.</li> </ul>
Aboriginal Heritage Resources	Yes	<ul style="list-style-type: none"> <li>• Potential for direct interactions with site preparation, construction of surface facilities, excavation and construction of underground facilities and the presence of the DGR Project.</li> <li>• Potential for indirect interactions with changes in air quality, noise levels and soil quality.</li> </ul>
Traditional Use of Land and Resources	Yes	<ul style="list-style-type: none"> <li>• Potential for the presence of the DGR Project to affect traditional Aboriginal harvesting activities.</li> <li>• Potential for indirect interactions with changes in noise levels, aquatic and terrestrial VECs</li> </ul>

## **7. SECOND SCREENING OF PROJECT-ENVIRONMENT INTERACTIONS**

The second screening considers the DGR Project works and activities advanced from Section 6 to determine if the identified interactions are likely to cause a measurable change to the Aboriginal interests VECs.

### **7.1 SECOND SCREENING METHODS**

Each of the identified potential interactions identified in the first screening is evaluated to determine those likely to result in a measurable change in the environment. For the purposes of this assessment, a measurable change in the environment is defined as a change that is real, observable or detectable compared with existing conditions.

To determine likely direct measurable changes, a judgement is made using qualitative and quantitative information, as available. For potential indirect changes, a measurable change was considered possible if there is a likely measurable change identified on the other VEC in question.

A predicted change that is trivial, negligible or indistinguishable from background conditions would not be considered measurable. A likely measurable change to a VEC is marked with a '■' on Matrix 2 (Section 7.5).

### **7.2 ABORIGINAL COMMUNITIES**

#### **7.2.1 Direct Changes**

The worker, payroll and purchasing activity throughout the site preparation and construction, operations and decommissioning phases will likely result in a beneficial change on Aboriginal communities, should Aboriginal people take advantage of the opportunities generated by the DGR Project. Although the skills and expertise for mining and underground work are not likely to be available in the study areas or among many Aboriginal people, the DGR Project will generate direct, indirect and induced employment opportunities.

Expenditures on payroll will generate business activity through household spending. Purchasing of goods and services will generate business activity. Should Aboriginal people take advantage of the opportunities generated by the DGR Project, there is a likely measurable change to Aboriginal communities. Therefore these interactions are advanced to Section 8 for assessment.

Measurable population change within Aboriginal communities associated with the DGR workforce is not expected. This is because the relatively small workforce will likely be drawn from across the Local and Regional Study Areas, and beyond. Projects that require a relatively small workforce do not tend to attract large numbers of workers seeking employment and settling in communities near the project site.

## 7.2.2 Indirect Changes

The following sections identify the indirect interactions with the Aboriginal communities VEC. The incremental radiological exposure of Aboriginal people associated with the DGR Project's releases to the environment is addressed in the Radiation and Radioactivity TSD.

### 7.2.2.1 Changes in Air Quality

For the consideration of likely effects on Aboriginal communities resulting from changes in air quality, suspended particulate matter (SPM) (i.e., dust) was selected as the nuisance-related air quality parameter. As described in the Atmospheric Environment TSD, measurable changes in SPM are expected during the site preparation and construction, and operations phases. Changes in air quality during the decommissioning phase are expected to be similar to those predicted during the site preparation and construction phase. Measurable changes to Aboriginal communities are likely to occur as a result of project-related changes in air quality, and these interactions are advanced for assessment in Section 8.

### 7.2.2.2 Changes in Noise Levels

As described in the Atmospheric Environment TSD, measurable changes in noise levels during the site preparation and construction phase and operations phase are expected. Changes in noise levels associated with the decommissioning phase are expected to be similar to those during the site preparation and construction phase. Such measurable changes are likely to occur as a result of project-related changes in noise levels, and need to be considered further for Aboriginal communities. Therefore, these interactions are advanced for assessment in Section 8.

### 7.2.2.3 Changes in Surface Water Quality

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. Aboriginal communities do not obtain their water supply from the Site Study Area. Furthermore, since access to the Bruce nuclear site (i.e., the Site Study Area) is strictly controlled, Aboriginal community members are not likely to come into contact with surface water resources in the Site Study Area. No further consideration is warranted.

### 7.2.2.4 Changes in Surface Quantity and Flow

As described in the Hydrology and Surface Water Quality TSD, no measurable changes in surface water quantity and flow outside of the Site Study Area are expected during any phase of the DGR Project. Therefore, this interaction is not considered further.

### 7.2.2.5 Changes in Groundwater Quality

As described in the Geology TSD, changes influencing groundwater quality were identified during the site preparation and construction phase and operations phase including effects from dissolved minerals from infiltration through the waste rock pile; however, these changes are considered negligible regarding the underlying shallow groundwater resource. Therefore,

measurable changes to Aboriginal communities are not likely through the groundwater quality pathway, and further evaluation is not warranted.

#### 7.2.2.6 Changes in Groundwater Flow

As described in the Geology TSD, measurable changes to groundwater flow that are attributable to the DGR Project during the site preparation and construction phase are identified as a result of dewatering during the excavation and underground construction works. In Section 6, potential interactions with Aboriginal communities associated with changes to groundwater flow through effects on drinking water wells in the First Nation settlements were identified. However, the predicted changes in groundwater flow are restricted to the Site Study Area, and there are no down gradient First Nation settlements nor any other groundwater users. Therefore, the Aboriginal communities VEC is not likely to be measurably changed, and no further consideration of groundwater flow in relation to this VEC is warranted.

#### 7.2.2.7 Changes in Aquatic and Terrestrial VECs

As discussed in the Terrestrial Environment TSD and in the Aquatic Environment TSD, no adverse effects were identified on terrestrial and aquatic VECs that might be harvested or otherwise used by Aboriginal peoples for traditional purposes. Measurable changes to the populations of aquatic and terrestrial species important to Aboriginal peoples' harvests will not be affected by the DGR Project; thus, adverse effects on Aboriginal communities through economic means (e.g., changes to income and employment) are also considered to be unlikely. Therefore, there is no need to further evaluate potential effects from changes in aquatic and terrestrial VECs.

### 7.3 ABORIGINAL HERITAGE RESOURCES

#### 7.3.1 Direct Changes

The site preparation, excavation and construction activities to be undertaken at surface and for underground facilities could uncover or disturb archaeological sites/burials and artifacts, particularly deeply buried artifacts in culturally-sensitive areas. The Stage 1 and Stage 2 archaeological assessments [41;42] identified a number of known archaeological sites/burials at the Bruce nuclear site and culturally-sensitive areas at the Bruce nuclear site, including two known archaeological sites: the Upper Mackenzie (BbHj-6), and the Dickie Lake or Jiibegmegoong (BbHj-12), which includes a burial site (refer to Section 5.4.1 for a description of these sites).

The Upper Mackenzie (BbHj-6) site, located just inside the south entrance to the Bruce nuclear site on the north side of the South Access Road and the Dickie Lake/Jiibegmegoong (BbHj-12) site are located approximately one kilometre from the WWMF outside of the Project Area and are not likely to be directly affected by the DGR Project works and activities. Therefore, the DGR Project will not result in a direct measurable change to these Aboriginal heritage resources.

The Stage 2 archaeological assessment [41;42] concluded that that the extreme southeastern corner of the Project Area overlaps with culturally-sensitive area B (CSA B). Because the site preparation, excavation and construction activities are to be limited to the DGR Project site (see

Figure 5.4.2-1) and are therefore well removed from this portion of CSA B, it is unlikely that any archaeological remains or artifacts, including deeply buried artifacts, would be disturbed. As a precaution, in the event that human remains are encountered in this portion of CSA B or elsewhere in the Project Area, OPG will ensure that all activity in the vicinity of the discovery is temporarily suspended and that the Ministry of Tourism and Culture, the Registrar of Cemeteries, the SON Environmental Office, HSMC and MNO headquarters, the South Bruce detachment of the Ontario Provincial Police and the local coroner are contacted immediately and a plan is developed to mitigate effects. Therefore, there is no need to further evaluate effects from site preparation, excavation and construction activities on Aboriginal heritage resources.

Finally, because an Aboriginal burial site is located one kilometre from the WWMF outside of the Project Area, it is likely that the DGR facility will be visible from this location when the site is visited for ceremonial purposes. It is considered likely that the visibility of the Project may diminish the quality or value of cultural/ceremonial activities undertaken by Aboriginal peoples at the burial site. Therefore, the presence of the DGR Project may measurably change the Aboriginal heritage resources VEC, and is advanced to Section 8 for further assessment.

### **7.3.2 Indirect Changes**

#### **7.3.2.1 Changes in Air Quality**

Given the proximity of the burial site to the Project Area and the likelihood for measurably increased dust levels at this location, the quality and/or value of activities undertaken by Aboriginal peoples at this Aboriginal heritage resource could be diminished. Therefore, there is a likely measurable change to Aboriginal heritage resources as a result of the project-related changes in air quality and this interaction is advanced for assessment in Section 8.

#### **7.3.2.2 Changes in Noise Levels**

Given the proximity of the burial site to the Project Area and the likelihood for measurably increased noise levels at this location, the quality and/or value of activities undertaken by Aboriginal peoples at this Aboriginal heritage resource could be diminished. Therefore, there is a likely measurable change to Aboriginal heritage resources as a result of project-related noise, and this interaction is advanced to Section 8 for further assessment.

#### **7.3.2.3 Changes in Soil Quality**

A change in soil quality at an archaeological/burial site at the Bruce nuclear site may affect its long-term preservation and/or diminishing its quality and/or value to Aboriginal peoples when undertaking activities at the site, thereby indirectly affecting the Aboriginal heritage resources VEC. As discussed in the Geology TSD, measurable changes to soil quality are possible within the Project Area. Any potential for this to occur exists within the DGR Project site (see Figure 3.2.1-1), well away from known archaeological/burial site or culturally sensitive areas. Therefore, there is no need to further evaluate potential effects on Aboriginal heritage resources from changes in soil quality.



## **7.4 TRADITIONAL USE OF LAND AND RESOURCES**

### **7.4.1 Direct Changes**

The presence of the DGR Project is not related to land disturbance and is therefore not expected to have any direct interactions with traditional use of lands and resources. Further, the Bruce nuclear site is an operating nuclear site on which traditional fishing, hunting, trapping and gathering activities are not undertaken. As discussed in Section 7.4.2.2, no adverse effects have been identified on the terrestrial environment VECs that might be harvested or otherwise used by Aboriginal peoples for traditional purposes (e.g., muskrat, white-tailed deer, wild turkey, mallard, bald eagle). Similarly, no adverse effects were identified on the other aquatic environment VECs that might be harvested or otherwise used by Aboriginal peoples for traditional purposes (i.e., brook trout, lake whitefish, spottail shiner, smallmouth bass). All plants and animals will continue to be exposed to radiation from a variety of natural and man-made sources, and the radiation doses they receive from the DGR Project are expected to be less than the levels at which there may be potential effects on populations. Therefore, there are no tangible reasons for Aboriginal people to change how they value the plants and animals that they harvest for traditional purposes as a result of their spiritual or otherwise worldview.

Moreover, OPG has stated in its Aboriginal Relations Policy that it is “committed to building long-term mutually beneficial working relationships with Aboriginal communities proximate to its present and future operations. OPG is committed to developing these relationships on a foundation of respect for the languages, customs, and political, social and cultural institutions of Aboriginal communities.” [86]

The Saugeen Ojibway Nation (SON) and the Historic Saugeen Métis Community have each signed a separate agreement with OPG/NWMO relating to relationship building and facilitating participation in the regulatory approvals process for the DGR Project. For example, in 2009 a Protocol Agreement was signed by the SON, OPG and the NWMO for OPG’s proposed DGR Project regarding the opportunity for the SON to fully participate in the EA and regulatory approval processes. It is anticipated that a Participation Agreement will also be signed with the Métis Nation of Ontario and will form the basis for the establishment of a joint working committee between the Métis Nation of Ontario, OPG and the NWMO, and provide a mechanism for continued direct communication. These agreements may serve as a basis for dialogue regarding potential effects of the DGR Project on Aboriginal hunting, fishing, trapping, gathering activities and other uses of the land. Given the results described above and OPGs ongoing engagement efforts, there is no need to further evaluate effects from the presence of the DGR Project on traditional use of land and resources.

### **7.4.2 Indirect Changes**

The following sections identify the indirect interactions with the traditional use of land and resources VEC. The incremental radiological exposure of Aboriginal people and non-human biota associated with the DGR Project’s releases to the air, surface water and groundwater are addressed in the Radiation and Radioactivity TSD.

#### 7.4.2.1 Changes in Noise Levels

As described in the Atmospheric Environment TSD, changes in noise levels during the site preparation and construction, operations and decommissioning phases are likely to be measurable. Should this change be of sufficient magnitude, it may result in noticeable disruption to terrestrial VECs at receptor locations in close proximity to the Bruce nuclear site and potentially a reduction in harvesting success in this area, should harvesting occur here. This would be a measurable change in the traditional use of lands and resources and needs to be considered further. Therefore, this interaction is advanced for assessment in Section 8.

#### 7.4.2.2 Changes in Aquatic and Terrestrial VECs

As discussed in the Terrestrial Environment TSD, 8.9 hectares (ha) of mixedwoods forest will be removed on-site during site preparation and construction. Although this represents a residual adverse effect on eastern white cedar (a VEC in the Terrestrial Environment TSD), it will not adversely affect any terrestrial VEC species that use this habitat. Eastern white cedar is a common and abundant species of tree both within the study areas and within the Province. The removal of forested habitat within the Project Area will not affect larger habitat units in the Site Study Area or off-site. The identified loss of habitat is only expected on inaccessible areas of the DGR Project site. No adverse effects were identified on the other terrestrial environment VECs that might be harvested or otherwise used by Aboriginal peoples for traditional purposes (e.g., muskrat, white-tailed deer, wild turkey, mallard, bald eagle).

The Aquatic Environment TSD identifies that a portion of non-critical fish habitat will be removed in the Project Area during site preparation and construction. This represents a residual adverse effect on those VECs in the South Railway Ditch (i.e., burrowing crayfish, redbelly dace, creek chub, benthic invertebrates and variable-leaf pondweed). This loss will be limited to within the Project Area in the location where the approximately 20 m wide crossing over the abandoned rail bed is constructed. No off-site effects on the aquatic environment are anticipated as a result of the project. No adverse effects were identified on the other aquatic environment VECs that might be harvested or otherwise used by Aboriginal peoples for traditional purposes (i.e., brook trout, lake whitefish, spottail shiner, smallmouth bass).

The Radiation and Radioactivity TSD and the Malfunctions, Accidents and Malevolent Acts TSD identifies that doses to aquatic and terrestrial biota are expected to be less than the levels at which there may be potential effects on populations.

Furthermore, there is no indication that Aboriginal people rely on the Project or Site Study Areas for the hunting, fishing or gathering of food. Harvesting and land use rights and access occur within the Regional Study Area. Therefore, there is no need to further evaluate potential effects on traditional use of lands and resources resulting from changes in aquatic and terrestrial VECs.

### 7.5 SUMMARY OF THE SECOND SCREENING

Table 7.5-1 provides a summary of the second screening for the DGR Project. Squares (■) on this matrix represent likely DGR Project-environment interactions resulting in a measurable change in a VEC. These interactions are advanced to Section 8 for assessment to determine those interactions that may result in a likely effect on Aboriginal interest VECs.

**Table 7.5-1: Matrix 2 – Summary of the Second Screening for Measurable Change to VECs**

Project Work and Activity	Aboriginal Communities			Aboriginal Heritage Resources			Traditional Use of Lands and Resources		
	C	O	D	C	O	D	C	O	D
<b>Direct Measurable Changes</b>									
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									
Workers, Payroll and Purchasing	■	■	■						
<b>Indirect Measurable Changes</b>									
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 VECs							•	•	•

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 the effect will last. The duration of the effect is assessed in Section 11.

The abandonment and long-term performance phase is not included in the matrix as there are no activities 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.

- Potential project-environment interaction
- Measurable change
- Activity does not occur during this phase
- Blank No potential interaction

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## **8. IDENTIFICATION AND ASSESSMENT OF ENVIRONMENTAL EFFECTS**

The assessment of effects predicts and describes the likely environmental effects, mitigation measures and residual adverse effects on Aboriginal interests 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 within the framework of the applicable VECs. Consistent with accepted EA practice, quantitative and qualitative methods, including professional expertise and judgement, are used to predict and describe the DGR Project-specific effects to allow for a detailed assessment.

Where a likely environmental effect is identified, the effect is assessed as being either beneficial or adverse. All adverse effects on VECs attributable to the DGR Project are advanced for consideration of possible mitigation measures. Beneficial effects are also identified during this step and marked with a '+' on the matrix, but are not considered further in this TSD.

#### **8.1.2 Consider Mitigation Measures**

When the assessment of effects indicates that an adverse effect on one of the Aboriginal interests VECs is likely to result from one or more project works and activities, technically and economically feasible mitigation measures are proposed to reduce, control, or eliminate the identified effect.

#### **8.1.3 Identify Residual Adverse Effects**

Once mitigation measures are proposed, the likely adverse effects are re-evaluated with the mitigation measures in place to identify any residual adverse effects. If a residual adverse effect on a VEC is identified, it is marked with a '◆' on Matrix 3 (Section 8.5). Residual adverse effects are advanced to Section 11 for an assessment of significance.

## **8.2 EFFECTS ON ABORIGINAL COMMUNITIES**

### **8.2.1 Likely Effects**

For the purposes of this Aboriginal interests TSD, Aboriginal communities consist of those individuals who are officially recognized by the SON or Métis Nation of Ontario or the Historic Saugeen Métis Community. For First Nations, the term "Aboriginal communities" refers primarily to their settlement areas on-reserve, but also includes those individuals living off-reserve. For Métis, the term "Aboriginal community" refers to distinctive Métis collectives who have developed their own customs, way of life, and group identity separate from their European and First Nation forebears and who have interests in the Regional Study Area. Therefore, effects have been assessed at both individual and community levels, respecting the perspectives of both First Nation peoples and the Métis.

Aboriginal peoples have consistently expressed their interest regarding the health and safety of community members. For the purposes of this EA, DGR Project effects on the health of Aboriginal people are presented in Appendix C of the EIS. The focus of the health assessment was on determining the exposures of Aboriginal peoples to DGR Project emissions, and giving consideration to a variety of socio-economic and cultural factors. With respect to radiation and radioactivity, it was determined that all predicted doses to members of Aboriginal communities as a result of the DGR Project are below the OPG dose target of 0.01 mSv/a set for the facility, and well below the 1 mSv/a regulatory limit. Of all the other DGR Project emissions examined, potential exposure to acrolein in the air was identified to result in an adverse effect to members of the public, including Aboriginal peoples. The evaluation of this effect determined that it is not significant. For further information, including the detailed evaluation of significance, refer to Appendix C of the EIS.

#### 8.2.1.1 Direct Effects

The Socio-economic Environment TSD indicates that the DGR Project would create new employment opportunities, including: direct employment (i.e., on-site jobs), indirect employment (i.e., jobs created at suppliers of goods and services for the DGR Project), and induced employment (i.e., jobs resulting from income spending by project-associated employees). Project expenditures on payroll will generate business activity through household spending. Purchasing of goods and services will generate business activity.

For Aboriginal communities, the availability of employment and business opportunities determine, in part, the ability of Aboriginal peoples to participate in the economic life of their community and that of the Province as a whole. To individuals, families or households, employment and the income generated through business activity provides quality of life, a sense of personal security and has a symbolic value which contributes to a person's own self-image and their status within their community. This contributes to the stability and long-term health and overall well-being of Aboriginal communities.

The site preparation and construction phase is assumed to take approximately five to seven years and will require an average of around 160 workers per year. The operations phase is assumed to last approximately 40 to 45 years with a workforce of approximately 40 staff. Decommissioning will last approximately six years and will require an average workforce of approximately 115 workers. It is noteworthy that a substantial number of these jobs will be distributed throughout the Province and in some cases beyond.

The employment and business opportunities generated by the DGR Project would be available to members of both Aboriginal and non-Aboriginal communities. Direct employment opportunities would be subject to OPG human resources policies and procedures, while the availability of indirect employment opportunities and business opportunities would be, to some extent, influenced by OPG supply chain policies and procedures, and standards for competitive purchasing applicable to OPG. Should Aboriginal people take advantage of the opportunities generated by the DGR Project, an overall benefit to Aboriginal communities is likely. OPG and NWMO continue to engage First Nation and Métis organizations on a variety of DGR Project-related issues, including employment and business opportunities. As the DGR Project is implemented, information regarding employment and business opportunities for Aboriginal communities will be made available through established liaison mechanisms, special events (e.g., meetings, workshops) and other communications.

### 8.2.1.2 Indirect Effects

This section provides a summary of the results of the indirect effects assessments for other biophysical environmental disciplines as they relate to Aboriginal communities. Further details regarding these assessments are provided in their respective TSD. An example of a biophysical effect is dust produced by excavation or waste rock storage activities. This effect can interact with the local and Aboriginal communities when dust levels become a nuisance (i.e., become noticeable or intolerable) to people. For the purposes of this assessment, excavation or waste rock storage activities are considered the “source” of the effect, while the change in dust levels is considered the “pathway” by which the effect manifests itself in the environment.

The effects on the natural environment that are considered further in this assessment are changes in air quality resulting from suspended particulate matter (SPM) and changes in noise levels during the site preparation and construction, operations, and decommissioning phases of the DGR Project. Should these measurable changes in air quality and noise levels be of sufficient magnitude, they may adversely affect Aboriginal communities.

#### Changes in Air Quality

For the purposes of this assessment, the effects of changes on air quality were evaluated based on the quantitative modelling completed as part of the Atmospheric Environmental TSD. In particular, SPM, as nuisance dust, was considered at receptors located at the burial site located at the Bruce nuclear site, a residential dwelling on Albert Road (east of the DGR Project Area), a cottage located across Baie du Doré from Bruce A (north of the DGR Project Area) and at Inverhuron Provincial Park (south of the DGR Project Area). An increase in nuisance dust is only expected to be measurable during the site preparation and construction, and decommissioning phases of the project.

Adverse effects on Aboriginal communities resulting from changes in air quality are only considered to occur when concentrations exceed both the baseline concentrations in air and the thresholds established to be protective of the receiving environment.

Since suspended particulate matter (SPM) is comprised of larger particles that are not readily inhaled, it is considered primarily to be a nuisance compound. The national Ambient Air Quality Objective for 24-hour SPM is 120  $\mu\text{g}/\text{m}^3$ . A maximum existing SPM of 58.0  $\mu\text{g}/\text{m}^3$  is reported for the Local Study Area. The maximum predicted SPM concentrations during the site preparation and construction phase were determined to be 155.8  $\mu\text{g}/\text{m}^3$  and during the operations phase were determined to be 59.0  $\mu\text{g}/\text{m}^3$ . These results are summarized in Table 8.2.1-1.

In determining the dust effects of the DGR Project, consideration was given to those mitigation measures that were considered to be integral to the design and implementation of the works and activities. These mitigation measures, which are considered to be typical and consistent with best practices, were incorporated into the effects predictions presented in the table above. They include measures such as watering of unpaved roadways, unpaved construction laydown areas, and unpaved construction work areas, and maintaining on-site vehicles and equipment.

**Table 8.2.1-1: Maximum Predicted Concentrations ( $\mu\text{g}/\text{m}^3$ ) of SPM**

Location	Indicator	Existing Concentration	Site Preparation and Construction Phase Concentration	Operations Phase Concentration	Criteria
Nuisance Receptors	24-hour SPM	58.0	168.0	58.5	120
Burial Site	24-hour SPM	58.7	155.8	59.0	120

Source: Dispersion modelling, as presented in Appendix J of the Atmospheric Environment TSD. Locations of nuisance receptors and the burial site are shown in the appendices to the Atmospheric Environment TSD. Results for dust levels are not listed by nuisance receptor; therefore, the dust levels presented are the maximum receptor concentrations.

Overall, these results indicate that increased dust levels are expected to be a nuisance during the site preparation and construction phase both on and in the immediate vicinity of the Bruce nuclear site, but no adverse effects will be experienced at any First Nation settlement area within the Regional Study Area. Rather, only those Aboriginal persons (i.e., off-reserve First Nation members and Métis persons) who reside in the immediate vicinity of the Bruce nuclear site would be affected. Although it is not known with certainty if any off-reserve First Nation members or Métis persons currently reside in the immediate vicinity of the Bruce nuclear site, this is not considered to be likely because of the small off-site area affected by dust. Therefore, no adverse effects on Aboriginal communities are anticipated, and no further consideration is warranted.

#### Changes in Noise Levels

For the purposes of this assessment, the effects of changes on noise levels were evaluated based on the quantitative modelling completed as part of the Atmospheric Environmental TSD. Human receptors located at a residential dwelling on Albert Road (R1, east of the DGR Project Area), a cottage located across Baie du Doré from Bruce A (R2, north of the DGR Project Area) and Inverhuron Provincial Park (R3, south of the DGR Project Area) were considered.

The existing off-site noise conditions are largely found to be reflective of a rural environment ranging between 35 and 37 dBA and are characterized by the 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 8.2.1-2.

**Table 8.2.1-2: Qualitative Criteria for Assessing Noise Effects**

Increase over Background Sound Level	Loudness	Magnitude Rating
Up to 3 dB	Hardly perceptible	Marginal to None
4 to 5 dB	Noticeable	Low
6 to 10 dB	Almost twice as loud	Moderate
11+ dB	More than twice as loud	High



Noise levels east and south of the DGR Project Area during all stages of the DGR Project increase by less than 3 dBA (Table 8.2.1-3). This noise increase would be hardly perceptible and therefore have a marginal to no effect on any First Nation settlement or Aboriginal person residing in the Local Study Area and/or visiting Inverhuron Provincial Park.

During the site preparation and construction phase of the project, noise levels at Baie du Doré (north of the DGR Project Area) are expected to increase by 5 dBA over baseline conditions, but no noticeable adverse effects will be experienced at any First Nation settlement area within the Regional Study Area. Rather, only those Aboriginal persons (i.e., off-reserve First Nation members and Métis persons) who reside in the immediate vicinity of the Bruce nuclear site would be affected. Although it is not known with certainty if any off-reserve First Nation members or Métis persons currently reside in the immediate vicinity of the Bruce nuclear site, this is not considered to be likely because of the small off-site area affected by noise. As such, no adverse effects on Aboriginal communities are anticipated, and no further consideration is warranted.

**Table 8.2.1-3: Existing and Predicted Noise Levels in the Local Study Area**

Receptor	Existing Noise Levels (dBA)	Site Preparation and Construction Phase		Operations Phase	
		Predicted Ambient Noise Levels (dBA)	Predicted Change (dB)	Predicted Ambient Noise Levels (dBA)	Predicted Change (dB)
R1 – Albert Road	36	38	+2	38	+2
R2 – Baie du Doré	37	<b>42</b>	<b>+5</b>	40	+3
R3 – Inverhuron Provincial Park	35	37	+2	37	+2

Notes: **Bold** indicates a noticeable change, as defined in Table 8.2.1-2. The decommissioning phase is expected to be similar to or less than the site preparation and construction phase.

Source: Appendix J of the Atmospheric Environment TSD

## 8.2.2 Mitigation Measures

In-design mitigation measures to reduce air quality and noise effects are specified in the Atmospheric Environment TSD. No further mitigation is warranted since no adverse effects on Aboriginal communities from dust or noise are anticipated.

## 8.2.3 Residual Adverse Effects

No residual adverse effects on the Aboriginal Communities VEC are anticipated as a result of the DGR Project.

## 8.2.4 Positive Effects

The DGR Project will create new direct, indirect and induced employment opportunities and additional business opportunities for both Aboriginal and non-Aboriginal communities. There is potential for some Aboriginal communities to realize benefits from these opportunities. Because this is a positive effect, it is not carried forward for the assessment of significance.

## **8.3 EFFECTS ON ABORIGINAL HERITAGE RESOURCES**

### **8.3.1 Likely Effects**

#### **8.3.1.1 Direct Effects**

Although the existing Aboriginal burial site at the Bruce nuclear site is already located within an existing industrialized site, the DGR Project will strengthen the existing industrial character of the Bruce nuclear site. Moreover, the main shaft headframe structure will likely be in the foreground of northerly views from the burial site. The visibility of the DGR structures may diminish the quality or value of activities undertaken by Aboriginal peoples at the burial site located approximately one kilometre from the DGR Project Area and 1.5 km from the tallest DGR building or structure (i.e., the main shaft headframe). This effect will occur during the site preparation and construction and operations phases. As noted previously, all surface facilities will be removed during the decommissioning phase, but the waste rock pile will remain in place. Therefore, an adverse effect on Aboriginal heritage resources is identified as a result of the presence of the DGR Project during all phases.

#### **8.3.1.2 Indirect Effects**

As discussed in Section 8.2, the DGR Project is likely to result in increased dust and noise levels both on and off-site. These nuisance effects will strengthen the existing industrial character of the Bruce nuclear site, which will diminish the quality or value of activities undertaken by Aboriginal peoples at the burial site located approximately one kilometre from the DGR Project Area. This is because noise and dust from an industrial source are not considered compatible with the intended function of a burial ground, that is, a place where human remains of Aboriginal ancestors have likely been respectfully and ceremonially laid. Therefore, an adverse effect on Aboriginal heritage resources is identified.

### **8.3.2 Mitigation Measures**

In-design mitigation measures to reduce air quality and noise effects are specified in the Atmospheric Environment TSD. In-design mitigation measures to reduce the visual effect of the DGR Project include a setback or buffer of 200 m from the Interconnecting Road to the long-term waste rock management area and other visual screening (e.g., berm and/or trees). As mentioned previously, the SON has requested access to the Bruce nuclear site to conduct either ceremonies or monitoring at the Jiibegmegoong burial ground. In 1998, the SON received approval to access the site for these activities. With the DGR Project, the SON will continue to have access to this burial site.

### **8.3.3 Residual Adverse Effects**

The DGR Project is likely to diminish the quality or value of activities undertaken by Aboriginal peoples at the Aboriginal burial site located at the Bruce nuclear site. This is as a result of changed aesthetics (i.e., presence of the DGR Project), temporarily increased noise and dust. This residual adverse effect is advanced for an assessment of significance in Section 11.

## **8.4 EFFECTS ON TRADITIONAL USE OF LAND AND RESOURCES**

### **8.4.1 Likely Effects**

#### **8.4.1.1 Indirect Effects**

Based on the results of the first and second screenings, no direct measurable changes to the traditional land use and resources VEC were considered likely. The only indirect measurable change was identified as a result of changes in noise levels. It was hypothesized that should a change in off-site noise levels be of sufficient magnitude, it may result in noticeable disruption to terrestrial VECs, in particular, those wildlife species harvested or important to Aboriginal people for traditional purposes. However, the Terrestrial Environment TSD concluded that the minor changes in noise levels anticipated as a result of the DGR Project would not have an appreciable effect on wildlife, especially given that existing daytime noise levels vary by as much as 39 dB and night time noise levels vary as much as 21 dB. The number of individuals using the areas on and off-site affected by noise is limited when compared with the populations found elsewhere in the Site and Local Study Areas. Because traditional hunting is not permitted within the Bruce nuclear site boundary and because noise levels that may arise from the DGR Project are not likely to affect terrestrial environment wildlife species, no reduction in harvesting success of Aboriginal peoples is anticipated and no adverse effects on the traditional use of land and resources VEC are likely.

### **8.4.2 Mitigation Measures**

No adverse effects on the traditional land use and resources VEC are expected from the DGR Project; therefore, no mitigation measures are warranted.

### **8.4.3 Residual Adverse Effects**

There are no residual adverse effects on the traditional land use and resources VEC expected as a result of the DGR Project.

## **8.5 SUMMARY OF THE ASSESSMENT**

Table 8.5-1 provides a summary of the third screening for the DGR Project. Diamonds (◆) on this matrix represent likely DGR Project-environment interactions resulting in a residual adverse effect on a VEC. In this case, the residual adverse effect of the DGR Project is the diminishing of the quality or value of activities undertaken by Aboriginal peoples at the Aboriginal burial site located at the Bruce nuclear site. This results from changed aesthetics, temporarily increased noise and dust. This residual adverse effect is advanced to Section 11 for a consideration of its significance.

### **8.5.1 Application of a Precautionary Approach in the Assessment**

The assessment of the DGR Project incorporates historic data collected from within the study areas identified for the EA and presents a sound scientific basis for the technical studies that support the EA. In the Aboriginal Interests TSD, conservatism has been built into the assessment. The following points outline the conservatisms used in the assessment:

- The VECs defined for this assessment considered a broad range of Aboriginal interests identified from multiple sources rather than relying solely on DGR specific communications. As such, the Aboriginal interests identified reflect not only those articulated at present, but also those articulated by Aboriginal people in the past.
- For the purposes of the assessment, Aboriginal communities have been defined as consisting of those individuals who are officially recognized by the SON or Métis Nation of Ontario or the Historic Saugeen Métis Community, rather than limiting the definition to the political or jurisdictional boundaries of First Nation reserve lands.

### **8.5.2 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 diminished quality or value of cultural/ceremonial activities undertaken by Aboriginal peoples at the Aboriginal burial site located at the Bruce nuclear site. The potential for cumulative effects due to this residual adverse effect on Aboriginal heritage resources with past, present and reasonably foreseeable future projects is considered in Section 10 of the EIS.

**Table 8.5-1: Matrix 3 – Summary of the Third Screening for Assessment of Effects on VECs**

Project Work and Activity	Aboriginal Communities			Aboriginal Heritage Resources			Traditional Use of Lands and Resources		
	C	O	D	C	O	D	C	O	D
<b>Direct Effects</b>									
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									
Workers, Payroll and Purchasing	+	+	+						
<b>Indirect Effects</b>									
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 VECs							•	•	•

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 the effect will last. The duration of the effect is assessed in Section 11.

The abandonment and long-term performance phase is not included in the matrix as there are no activities 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.

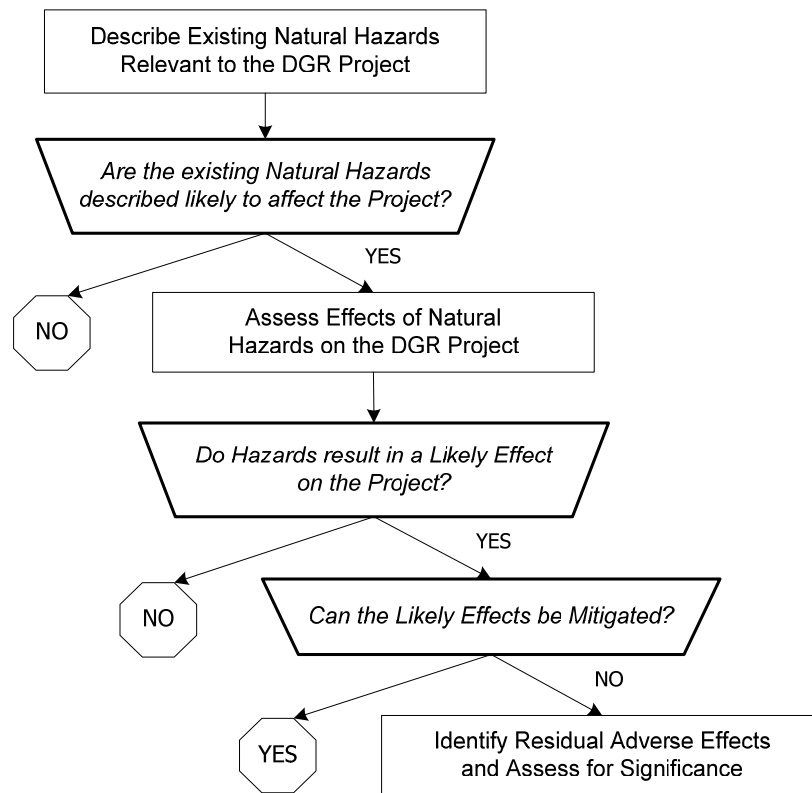
- Potential project-environment interaction
- Measurable change
- ◆ Residual adverse effect
- Activity does not occur during this phase
- Blank No potential interaction
- + Positive Effect

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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 assessment was accomplished using the method illustrated on Figure 9.1-1. First, potential conditions in the environment that may affect the project are identified. Then, the level of effect these environmental conditions could have on the DGR Project is 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 Aboriginal interests. For each environmental condition that could potentially affect the DGR Project, the mitigation measures incorporated into the 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.

## **9.2 ASSESSMENT OF EFFECTS OF THE CURRENT ABORIGINAL INTERESTS ENVIRONMENT ON THE DGR PROJECT**

There is no potential for effects of current Aboriginal interests on the DGR Project in terms of the manner in which the facility is designed and operated. Taking into account mitigation measures, the design and operation of the facility will not be affected by the presence of Aboriginal communities in the Regional Study Area or Aboriginal heritage resources at the Bruce nuclear site. The traditional use of lands and resources by Aboriginal peoples does not affect how the facility is designed and operated. No further consideration of this factor is required.



## **10. CLIMATE CHANGE CONSIDERATIONS**

The guidelines require a consideration of whether the DGR Project and EA conclusions are sensitive to changes in climatic conditions. For the purpose 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 guidelines 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 gasses)?

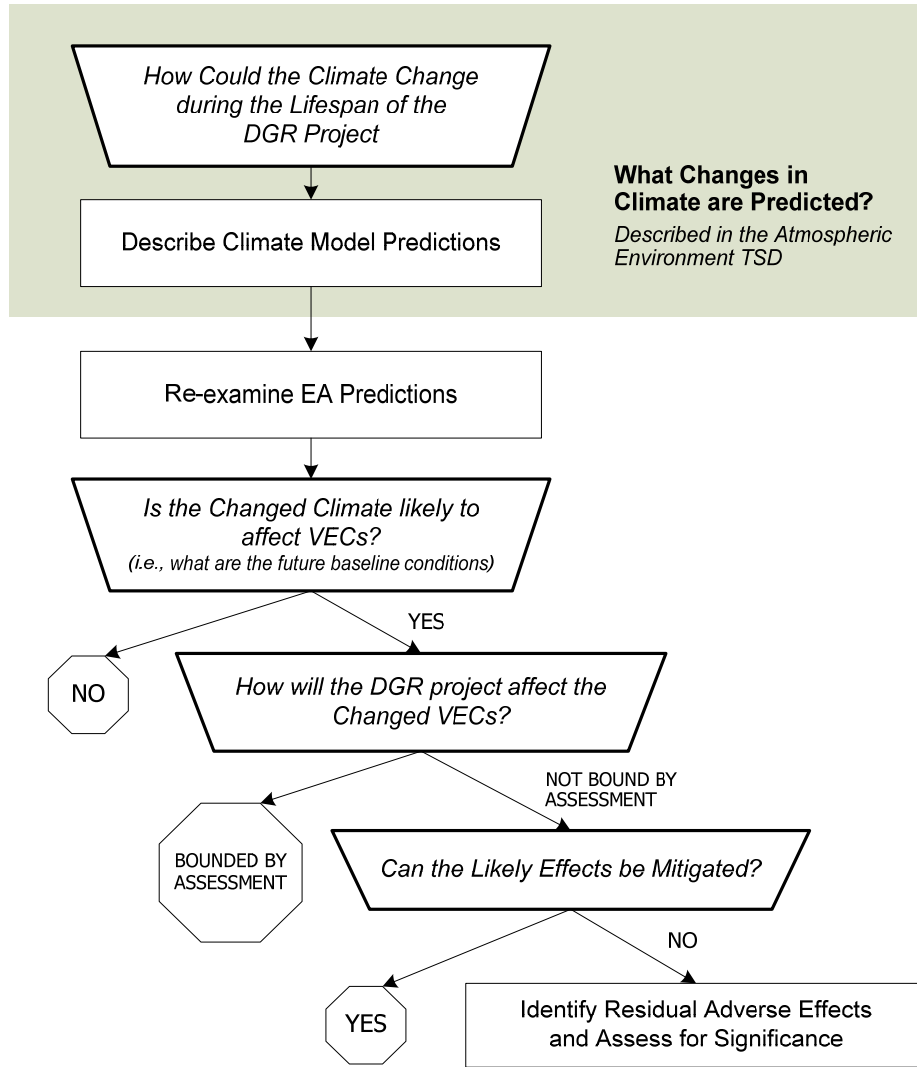
This TSD focuses on how climate change may influence the conclusions of the effect of the DGR Project on Aboriginal interests VECs (second consideration). The first consideration is concerned with effects of the environment on the project, and as described in Section 9, Aboriginal interests do not influence the design or operation of the facility. The third consideration is evaluated in the Atmospheric Environment TSD only.

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 second consideration. A determination of how climate has been changing and how it might change over the DGR Project life considered in this TSD is 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.

### **10.1 THE FUTURE EFFECTS OF CLIMATE CHANGE ON ABORIGINAL INTERESTS VECs**

#### **10.1.1 Methods**

Climate change may result in an environment that is different from the current environment as less severe winters or increased precipitation might alter populations of terrestrial and aquatic VECs used or important to Aboriginal people for traditional purposes. Climate-related changes to VECs may result in changed or additional effects of the DGR Project compared with those predicted on the current environment (second consideration). The method used to assess these changes is shown on Figure 10.1.1-1.



**Figure 10.1.1-1: Method to Assess Effects of the DGR Project on the Future Environment**

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, which are forwarded for an assessment of significance in Section 11.

Climate represents the long-term expected values for parameters such as temperature and precipitation. The Atmospheric Environment TSD provides further details on the long-term predicted changes in these parameters.

### 10.1.2 Assessment of the Future Effects of Climate Change on Aboriginal Interests VECs

Changes in temperature and precipitation may have an indirect effect on Aboriginal interests VECs. Table 10.1.2-1 summarizes the potential effects of climate change on Aboriginal interests VECs, and describes whether these changes could affect the conclusions of the assessments presented for assessment of effects in Section 8.

**Table 10.1.2-1: Effects of Climate Change on Aboriginal Interests VECs**

VEC	Potential Interaction of Climate Change with VEC	Likely Effect	Change to EA Conclusion?
Aboriginal Communities	Changes in temperatures and precipitation have the potential to affect community services (e.g., water supply).	No measurable changes in surface water quality, groundwater quality or surface water quantity and flow VECs are identified in the other TSDs as a result of climate change. Therefore, no measurable change to Aboriginal communities is anticipated.	None
Aboriginal Heritage Resources	There are no mechanisms for changes in climate to interact with Aboriginal heritage resources.	No measurable change to Aboriginal heritage resources likely.	None
Traditional Use of Land and Resources	Changes in temperature and precipitation have the potential to affect aquatic and terrestrial VECs used for fishing, hunting, trapping and gathering.	No measurable changes in aquatic or terrestrial VECs were identified as a result of climate change in other TSDs. Therefore, no measurable change in traditional use of land and resources is anticipated.	None

## 10.2 SUMMARY

No effects of climate change related to Aboriginal interests are identified. Therefore, no further consideration is required.

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## 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 Aboriginal interests VECs. An assessment of the cumulative effects associated with the DGR Project is addressed in Section 10 of the EIS. As mentioned earlier in this TSD, the report has been prepared with no direct engagement with Aboriginal communities. Therefore, all data, interpretations, and evaluations presented herein have not been verified by the Aboriginal communities, and should be considered preliminary.

### 11.1 ASSESSMENT METHODS

One residual adverse effect on the Aboriginal heritage resources VEC is identified. This effect results from changes in aesthetics, and increased noise and dust at the burial site located at the Bruce nuclear site, which may adversely affect the activities undertaken by Aboriginal peoples at the burial site. This residual adverse effect is evaluated for significance using criteria applicable to the specific VEC (i.e., Aboriginal heritage resources) that is affected. 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 Assigning Significance**

Effects Criteria	Effects Level Definition		
	Low	Medium	High
<b>Magnitude</b> (of effect – Aboriginal heritage resources VEC)	No physical disturbance occurs to any Aboriginal heritage resources. A single identified Aboriginal heritage resource is affected through other direct means and/or indirect environmental change.	No physical disturbance occurs to any Aboriginal heritage resources. Multiple identified Aboriginal heritage resources are affected through other direct means and/or indirect environmental change.	An Aboriginal heritage resource will be physically disturbed.
<b>Geographic Extent</b> (of effect)	<b>Low</b> Effect is within the Site Study Area.	<b>Medium</b> Effect extends into the Local Study Area.	<b>High</b> Effect extends into the Regional Study Area.
<b>Timing and Duration</b> (of conditions causing effect)	<b>Low</b> Conditions causing effect are evident during the site preparation and construction phase, or during the decommissioning phase.	<b>Medium</b> Conditions causing effect are evident during the operations phase.	<b>High</b> Conditions causing effect extend beyond any one phase.
<b>Frequency</b> (of conditions causing effect)	<b>Low</b> Conditions or phenomena causing the effect occur infrequently (i.e., several times per year).	<b>Medium</b> Conditions or phenomena causing the effect occur at regular, although infrequent intervals (i.e., several times per month).	<b>High</b> Conditions or phenomena causing the effect occur at regular and frequent intervals (i.e., daily or continuously).

**Table 11.1-1: Effects Criteria and Levels for Assigning Significance (continued)**

Effects Criteria	Effects Level Definition		
Degree of Irreversibility (of effect)	Low	Medium	High
	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 of residual adverse effects. The assessment recognizes the widest, reasonable range of likely residual adverse effects without specific regard for their respective probability of occurrence<sup>4</sup>. The focus is on evaluating the possible impact of such effects on the environment and VECs, and the consideration of feasible mitigation measures that can be incorporated to control, reduce or eliminate the effect.

The level of significance is assigned to residual adverse effects by using professional judgement to combine the magnitude, geographic extent, timing and duration, frequency, and degree of irreversibility. For example, a residual adverse effect would be considered to be significant if it has a high magnitude, high irreversibility and a high value to society or the environment.

**11.2 SIGNIFICANCE OF RESIDUAL ADVERSE EFFECTS**

This section presents the assessment of the significance of the residual adverse effects identified for the DGR Project on the Aboriginal interests VECs. As described in Section 8, one residual adverse effect of the DGR Project on Aboriginal interests VECs was identified:

- The DGR Project is likely to diminish the quality or value of activities undertaken by Aboriginal peoples at the Aboriginal burial site located at the Bruce nuclear site. This results from changed aesthetics, temporarily increased noise and dust.

The overall assessment of the residual adverse effect on Aboriginal heritage resources during all three phases of the project lifecycle, found that this effect is not likely to be significant primarily because the burial site is located on an existing industrial site, and may be affected by dust and noise infrequently. It is considered unlikely that ceremonies would occur during these times. Moreover, apart from the visibility of the waste rock pile, adverse effects over the long term are not anticipated.

<sup>4</sup> 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.

**Table 11.2-1: Summary of Residual Adverse Effect and Significance Level**

<b>Residual Adverse Effect</b>	<b>Magnitude</b>	<b>Geographic Extent</b>	<b>Timing and Duration</b>	<b>Frequency</b>	<b>Degree of Irreversibility</b>	<b>Overall Assessment</b>
The DGR Project is likely to diminish the quality or value of activities undertaken by Aboriginal peoples at the Aboriginal burial site located at the Bruce nuclear site. This results from changed aesthetics, increased noise and dust.	<b>Low</b>	<b>Low</b>	<b>High</b>	<b>Low</b>	<b>Medium</b>	<b>Not Significant</b>
	No physical disturbance occurs to the existing Aboriginal burial site at the Bruce nuclear site. It will be affected through other direct means (i.e., change in aesthetics) and/or indirect environmental change (i.e., dust and noise)	Effect is limited to the Site Study Area (i.e., Bruce nuclear site)	Effect extends beyond any one phase	Conditions or phenomena causing the effect occur at regular, although infrequent intervals and because the burial site is visited and used for ceremonial purposes infrequently	Effect is reversible with time.	

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## **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. For context, non-renewable resources are also discussed in this section.

### **12.1 METHODS**

Potential project-environment interactions (as identified for the assessment of effects of the DGR Project) are reconsidered in a context of their likelihood of affecting resource sustainability or availability through all time frames. Likely effects are predicted, described and their significance assessed by considering “renewable resources” and “non-renewable resources” as VECs. In addition, the ability of the present generation and future generations to meet their own needs is evaluated, based on the professional judgement of the technical specialists.

One goal of the assessment is to determine whether renewable and non-renewable resources would be affected by the DGR Project to the point where they are not sustainable or become appreciably depleted. Sustainability is defined in a manner consistent with the United Nation’s definition of sustainable development as “*economic development that meets the needs of the present without compromising the ability of future generations to meet their own needs*”.

Potential DGR Project-environment interactions identified in the screening matrices were reviewed to determine the likelihood of interactions between the DGR Project and resource sustainability and availability. For the purpose of this assessment, the likely residual adverse effects of the DGR Project’s physical works and activities on the environment were considered as having the potential to adversely affect the sustainability of associated resources.

### **12.2 LIKELY EFFECTS**

#### **12.2.1 Non-renewable Resources**

Non renewable resource use associated with the DGR Project is expected to include use of aggregate and fuels. The availability of aggregate may be of interest to Aboriginal communities as a resource for their own use and/or a business opportunity. Aggregate required during the site preparation and construction phase will be sourced from off-site aggregate operations. The project assumes that any waste rock not used for the DGR Project 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 for the site preparation and construction, operations, and decommissioning phases. The consumption of fuels for the DGR Project is not expected to deplete the existing supply. Heating of intake air in winter for DGR ventilation will be achieved using electric heating. Therefore, there will be no requirements for non-renewable resources for heating purposes.

#### **12.2.2 Renewable Resources**

The renewable resources considered in this analysis are those fish species (e.g., lake whitefish) that are harvested by Aboriginal people for commercial purposes. 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 SON have exclusive rights to the commercial fishery in the vicinity of the Bruce nuclear site through a commercial fishing agreement in place with the MNR. As described in the Aquatic Environment TSD, no residual adverse effects to the fish species harvested by Aboriginal people for commercial purposes were identified as the result of the project. Accordingly, the project is not expected to affect the sustainability of the Aboriginal fishery, and no further assessment is warranted.

### **13. PRELIMINARY FOLLOW-UP PROGRAM**

The DGR Project EIS Guidelines stipulate that the need for, and the requirements of, any follow-up program for the DGR Project be identified. A follow-up program is required to determine that the environmental and cumulative effects of the DGR Project are consistent with predictions reported in the EIS. It is also 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 issues 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 program 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**

At this time, no follow-up activities beyond those recommended in the Atmospheric Environment TSD are proposed in relation to Aboriginal interests. The preliminary follow-up monitoring program for the DGR Project has been prepared and is submitted along with the EIS.

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## 14. CONCLUSIONS

Based on the assessment provided in this TSD, the following conclusions are provided:

- No residual adverse effects were identified for Aboriginal communities or the traditional use of land and resources VECs. The DGR Project is not likely to adversely affect the economic base, levels of service, social structure or the stability of Aboriginal communities. The DGR Project will not adversely affect the ability of Aboriginal people to use lands and resources for their personal and community needs.
- The DGR Project is likely to diminish the quality or value of activities undertaken by Aboriginal peoples at the Aboriginal burial site located at the Bruce nuclear site. As a result, a residual adverse effect on the Aboriginal heritage resources VEC is expected to occur during all phases of the project. This results from changed aesthetics, and temporarily increased noise and dust. The DGR Project will not change the access to the Aboriginal burial site nor the ability of Aboriginal peoples to undertake their cultural/ceremonial activities at this site. This effect is not considered to be significant.
- The DGR Project will create new direct, indirect and induced employment opportunities and additional business opportunities for both Aboriginal and non-Aboriginal communities. There is potential for some Aboriginal communities to realize benefits from these opportunities.
- Climate change is not expected to have any effect on the conclusions reached regarding the effects of the DGR Project on Aboriginal interests, or the environment on the DGR Project.
- The DGR Project is not likely to measurably change the renewable commercial fisheries.
- Non-renewable resource uses associated with the DGR Project includes use of aggregate, and fuels for on-site vehicle and equipment operation. Local aggregate use and market effects will be limited as excavated rock will be kept on-site. Renewable resource uses associated with Aboriginal interests includes those fish species that are harvested by Aboriginal persons for commercial purposes. No renewable or non-renewable resource use effects were identified in the Aboriginal interests assessment that have the potential to adversely affect the sustainability of associated resources.

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**APPENDIX A: LIST OF ACRONYMS, UNITS AND TERMS**

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**LIST OF ACRONYMS**

<b>Acronym</b>	<b>Descriptive Term</b>
AECOM	AECOM Canada Limited
ATK	Aboriginal Traditional Knowledge
BUFDS	Bruce Used Fuel Dry Storage
BHWP	Bruce Heavy Water Plant
BNPD	Bruce Nuclear Power Development
CAP-C	Community Action Plan for Children
CEAA	<i>Canadian Environmental Assessment Act</i>
CNSC	Canadian Nuclear Safety Commission
CSA	Culturally Sensitive Area
DGR	Deep Geologic Repository
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMO	Emergency Management Ontario
FN	First Nation
FSR	Final Safety Report
HSMC	Historic Saugeen Métis Community
INAC	Indian and Northern Affairs Canada
ILW	Intermediate Level Waste
L&ILW	Low & Intermediate Level Waste
LLSB	Low Level Storage Building
LLW	Low level waste
MNO	Métis Nation of Ontario
MOU	Memorandum of Understanding
NWMO	Nuclear Waste Management Organization
OPG	Ontario Power Generation Inc.
PSR	Preliminary Safety Report
RA	Responsible Authority
SON	Saugeen Ojibway Nation
SPM	Suspended Particle Matter
TEK	Traditional Ecological Knowledge
TSD	Technical Support Document
VEC	Valued Ecosystem Component

**LIST OF ACRONYMS (continued)**

<b>Acronym</b>	<b>Descriptive Term</b>
WPRB	Waste Package Receiving Building
WWMF	Western Waste Management Facility

**LIST OF UNITS**

<b>Symbol</b>	<b>Units</b>
°C	Degrees Celsius
cm	Centimetre
dB(A)	Decibels
ha	Hectares
kg	Kilograms
km	Kilometres
km <sup>2</sup>	Square Kilometres
m	Metres
m <sup>3</sup>	Cubic Metres (volume)
µg/m <sup>3</sup>	Microgram per Cubic Metre
mm	Millimetres



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## GLOSSARY OF TERMS

**Aboriginal Communities** - Aboriginal communities consist of those individuals who are officially recognized by the SON or Métis Nation of Ontario or the Historic Saugeen Métis Community. For First Nations, the term “Aboriginal communities” refers primarily to their settlement areas on-reserve, but also includes those individuals living off-reserve. For Métis, the term “Aboriginal community” refers to distinctive Métis collectives who have developed their own customs, way of life, and group identity separate from their European and First Nation forebears and who have interests in the Regional Study Area. This broad definition allows for the analysis to be conducted at both an individual and a community level, respecting the perspectives of both First Nation peoples and the Métis.

**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.

**Biosphere** - The physical media (atmosphere, soil, surface waters and associated sediments) and the living organisms (including humans) that interact with them.

**Bruce nuclear site** - The 932 hectare (9.32 km<sup>2</sup>) 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 lands*.

**Bruce Power** - The licensed operator of the Bruce A and Bruce B nuclear generating stations.

**Canadian Environmental Assessment Agency (CEAA)** – 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 changed from its existing condition because a project work and activity has occurred.

**Direct Employment** - refers to the on-site workforce, that is OPG personnel at the DGR Project site and construction workers employed at the DGR Project site.

**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.

**Indirect Effect** - An indirect effect occurs when the VEC is affected by a change in another VEC.

**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 jobs that are the result of income spending by 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 needs of the household.

**Interaction** – refers to the situation where a project work or activity is deemed to have the potential to result in an environmental effect.

**Intermediate-Level Waste (ILW)** - Radioactive non-fuel waste, containing significant quantities of long-lived radionuclides (generally refers to half-lives greater than 30 years).

**Kitchie Manitou** - The Ojibwa name for a being known as the Great Mystery or God.

**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 at the Bruce nuclear site for which control has been retained by OPG. This includes the WWMF, certain landfills, and the Heavy Water Plant Lands.

**Precautionary Approach** - The precautionary approach is ultimately guided by judgement, based on values and priorities, and it recognizes that the absence of full scientific certainty should not be used as a reason to postpone decisions in the presence of

serious or irreversible harm, consistent with Principle 15 of the 1992 Rio Declaration on Environment and Development. Principle 15 of 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".

**Protocol Agreement** - a 2009 agreement signed by the Saugeen Ojibway Nation, Ontario Power Generation and the Nuclear Waste Management Organization for OPG's proposed Deep Geologic Repository project regarding the opportunity for the SON to fully participate in the environmental assessment and regulatory approval processes.

**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 CNSC in support of an application for a Site Preparation/Construction Licence.

**Final Safety Report (FSR)** is the Safety Report submitted to CNSC in support of an application for a Licence to Operate.

**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.

**Stakeholder** - Any person or organization that has an interest in a particular aspect of the project.

**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 at 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 the EA**

<b>Project Works and Activities</b>	<b>Description</b>
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"> <li>• Removal of brush and trees and transfer by truck to on-site storage;</li> <li>• Excavation for removal and stockpiling of topsoil and truck transfer of soil to stockpile on-site;</li> <li>• Grading of sites, including roads, construction laydown areas, stormwater management area, ditches;</li> <li>• Receipt of materials including gravel, concrete, and steel;</li> <li>• Installation of construction roads and fencing;</li> <li>• Receipt and installation of construction trailers and associated temporary services; and</li> <li>• Install and operate fuel depot for construction equipment.</li> </ul>
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"> <li>• establish a concrete batch plant;</li> <li>• receipt of construction materials, including supplies for concrete, gravel, and steel by road transportation;</li> <li>• excavation for and construction of footings for permanent buildings, and for site services such as domestic water, sewage, electrical;</li> <li>• construction of permanent buildings, including headframe buildings associated with main and ventilation shafts;</li> <li>• receipt and set up of equipment for shaft sinking;</li> <li>• construction of abandoned rail bed crossing between WWMF and the DGR site;</li> <li>• fuelling of vehicles; and</li> <li>• construction of electrical substation and receipt and installation of standby generators.</li> </ul>
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"> <li>• drilling and blasting (use of explosives) for construction of main and ventilation shafts, and access tunnels and emplacement rooms;</li> <li>• receipt and placement of grout and concrete, steel and equipment;</li> <li>• dewatering of the shaft construction area by pumping and transfer to the above-ground stormwater management facility;</li> <li>• temporary storage of explosives underground for construction of emplacement rooms and tunnels;</li> <li>• receipt and installation of rock bolts and services; and</li> <li>• installation of shotcrete.</li> </ul>

**Table B-1: Basis for the EA (continued)**

<b>Project Works and Activities</b>	<b>Description</b>
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&amp;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 wastes includes:</p> <ul style="list-style-type: none"> <li>• receipt of disposal-ready waste packages from the WWMF by forklift or truck</li> <li>• offloading of waste packages at the WPRB;</li> <li>• transfer of waste packages within the WPRB by forklift or rail cart;</li> <li>• temporary storage of waste packages inside the WPRB.</li> </ul>
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"> <li>• receipt of waste packages at the the main shaft station;</li> <li>• offloading from cage and transfer of waste packages by forklift to emplacement rooms;</li> <li>• rail cart transfer of some large packages (Heat Exchangers/Shield Plug Containers) to emplacement rooms;</li> <li>• installation of end walls on full emplacement rooms;</li> <li>• remedial rock bolting and rock wall scaling;</li> <li>• fuelling and maintenance of underground vehicles and equipment;</li> <li>• receipt and storage of fuel for underground vehicles.</li> </ul> <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"> <li>• removal of fuels from underground equipment;</li> <li>• removal of surface buildings, including foundations and equipment;</li> <li>• receipt and placement of materials, including concrete, asphalt, sand, bentonite for sealing the shaft;</li> <li>• 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;</li> <li>• sealing the shaft; and</li> <li>• grading of the site.</li> </ul> <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>



**Table B-1: Basis for the EA (continued)**

<b>Project Works and Activities</b>	<b>Description</b>
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"> <li>• transfer of waste rock, by truck to the WRMA;</li> <li>• placement of waste rock on the storage pile;</li> <li>• collection and transfer of construction waste to on-site or licensed off-site facility;</li> <li>• collection and transfer of domestic waste to licensed facility;</li> <li>• collection, processing and management of any radioactive waste produced at the DGR facility; and</li> <li>• collection, temporary storage and transfer of toxic/hazardous waste to licensed facility.</li> </ul>
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"> <li>• 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;</li> <li>• collection, storage, and disposal of water from underground sumps, and of wastewater from above- and below ground facilities;</li> <li>• management of surface drainage in a stormwater management facility;</li> <li>• 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;</li> <li>• maintenance and operation of fuel depots above-ground (construction only) and below-ground; and</li> <li>• administrative activities above- and below-ground involving office space, lunch room and amenities space.</li> </ul>
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"> <li>• spending in commercial and industrial sectors;</li> <li>• transport of materials purchased to the site; and</li> <li>• workers travelling to and from site.</li> </ul>

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