



NUCLEAR WASTE SOCIÉTÉ DE GESTION  
MANAGEMENT DES DÉCHETS  
ORGANIZATION NUCLÉAIRES

## Emergency Services Study Report - Southwestern Ontario Community Study



**APM-REP-06300-0232**

**OCTOBER 2022**

*This report has been prepared under contract to the NWMO. The report has been reviewed by the NWMO, but the views and conclusions are those of the authors and do not necessarily represent those of the NWMO.*

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# Emergency Services Study Report

Southwestern Ontario Community Study

October 28, 2022

PREPARED FOR:

Nuclear Waste Management Organization  
NWMO Purchase Order Number 2001020



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## Revision History

Rev.	Issue Date	Description	Prepared By	Reviewed By	Approved By
0	March 17, 2022	Original Draft Report V1	Mehran Monabbati	Don Gorber	Vicki McCulloch
1	September 27, 2022	Revised Draft Report V2 per PR team comments	Mehran Monabbati	Don Gorber	Vicki McCulloch
2	October 28, 2022	Final Report V3 per MSB and NWMO comments	Mehran Monabbati	Don Gorber	Vicki McCulloch

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## List of Acronyms

AAZ .....	Automatic Action Zone
APM .....	Adaptive Phased Management
CBRNE.....	Chemical, Biological, Radiological, Nuclear, Explosives (RCMP)
CDR .....	Conceptual Design Report
CEMC.....	Community Emergency Management Coordinator
CNL .....	Canadian Nuclear Laboratories
CNSC .....	Canadian Nuclear Safety Commission
CPZ .....	Contingency Planning Zone
CSA.....	Canadian Standard Association
CTAS.....	Canadian Triage and Acuity Scale
CTEC .....	Canadian Transport Emergency Centre
DGR .....	Deep Geological Repository
DPRA .....	DPRA Canada Inc.
DPZ .....	Detailed Planning Zone
EMCPA .....	Emergency Management and Civil Protection Act
EMO .....	Emergency Management Ontario
EMS .....	Emergency Medical Services
ERAMG .....	Environmental Radiation and Assurance Monitoring Group
ERO .....	Emergency Response Organization
ERP.....	Emergency Response Plan
ERT .....	Emergency Response Team
GBHS .....	Grey Bruce Health Services
GHD .....	GHD Group
IEC .....	Independent Environmental Consultants
IA.....	Impact Assessment
IAEA .....	International Atomic Energy Agency
MAA .....	Mutual Aid Agreement
MOU.....	Memorandum of Understanding
MSB .....	Municipality of South Bruce
MRT .....	Mine Rescue Team
NFPA.....	National Fire Protection Agency
NWMO .....	Nuclear Waste Management Organization
OFMEM.....	Office of the Fire Marshal and Emergency Management
OPG .....	Ontario Power Generation
OPP.....	Ontario Provincial Police
PEOC .....	Provincial Emergency Operations Centre
PNERP.....	Provincial Nuclear Emergency Response Plan
RA .....	Risk Assessment
RCMP.....	Royal Canadian Mounted Police
SBGHC .....	South Grey Bruce Health Centre
TAC .....	Technical Advisory Committee (WSN)

TDG..... Transportation of Dangerous Goods  
UNF ..... Used Nuclear Fuel  
UTCC ..... Unified Transportation Coordination Centre  
WSN..... Workplace Safety North

# 1. Introduction

## 1.1 Background and Context

Since 2012, the Municipality of South Bruce (MSB) has been involved in a process of learning about the Nuclear Waste Management Organization's (NWMO) Adaptive Phased Management Project ('the Project') for the long-term management of Canada's used nuclear fuel. The two remaining siting areas in the process are the South Bruce Area and the Ignace Area. The NWMO plans to complete all preliminary assessment work and to select one community/area to host the Project by 2024. Preliminary studies suggest that the Project can be implemented safely in the South Bruce area for a repository that will contain and isolate used nuclear fuel from people and the environment for the long timeframes required.

Further detailed studies are required to fully assess the potential impacts of the Project in the community and regionally. Building on previous work, engagement completed to-date, and the MSB's 36 Guiding Principles, the NWMO and the MSB are working together to prepare a suite of community studies which will be shared broadly with the community. The list of socio-economic community studies is included in **Appendix A**. These studies were undertaken by the NWMO or MSB, with some being joint efforts. The MSB has retained consultants (the GHD team) to develop a number of studies and to peer review others developed by the NWMO and their consultants (the DPRA Canada Inc. (DPRA) team). The information acquired through these studies is expected to help South Bruce leadership and residents make informed decisions about whether the Project is a good fit for their community, and if they are willing to consider hosting it and under what circumstances and terms.

This *Emergency Services Study* is one of the community studies being prepared. This study is organized as follows:

- Purpose and Scope (**Section 1.3**)
- Methodology (**Section 2**)
- NWMO Project Characteristics Relevant to Emergency Services (**Section 3**)
- Existing Conditions (**Section 4**)
- Preliminary Analysis/Effects Assessment (**Section 5**)
- Options Assessment (**Section 6**)
- Summary (**Section 7**)
- References (**Section 8**)

### Note to Reader:

This and other community studies are preliminary and strategic in nature, all intended to identify possible consequences (e.g., to emergency services) in the South Bruce Area based on our current level of understanding of the Project. Using information known at this point in time, these community studies will describe a range of possible consequences that are the subject of specific and separate studies. For each possible consequence, potential options are offered to leverage opportunities and/or mitigate possible negative consequences/effects.

It is important to note that these community studies (developed collaboratively by the NWMO and the MSB) being investigated at this time are not the formal or final baseline or effects studies that will be part of the Impact Assessment (IA). Those studies will be completed at a later date if the Project is located in the area. However, these current studies will inform the effects studies that will be initiated at a later date.

These community studies are intended to support current dialogue between the MSB and the NWMO regarding a potential hosting agreement by:

- a) Exploring in more detail the questions, aspirations and topics of interest expressed by the community through the Guiding Principles approved by the MSB following the project visioning process completed in the community;
- b) Assisting the NWMO and the MSB in developing a deeper understanding of the community aspirations/values and to work with the MSB in identifying possible programs and commitments which ensure that the Project will be implemented in a manner that fosters the well-being of the community and area;
- c) Advancing learning and understanding on topics of interest to the neighboring areas; and
- d) Providing the community with information it has requested to help them make an informed decision in 2024.

The NWMO is committed to collaboratively working with the communities to ensure questions, concerns and aspirations are captured and addressed through continuous engagement and dialogue.

The NWMO will independently engage with the Saugeen Ojibway Nation and any other Indigenous group expressing interest to understand how they wish to evaluate the potential negative effects and benefits that the Project may bring to their communities.

## 1.2 Land Acknowledgement

It is acknowledged that the lands and communities discussed in this report are situated on the Traditional Territory of the Anishinabek Nation: The People of the Three Fires known as Ojibwe, Odawa and Pottawatomie Nations. The Chippewas of Saugeen and the Chippewas of Neyaashiinigmiing (Nawash), now known as the Saugeen Ojibway Nation, are the traditional keepers of this land and water. It is also recognized that the ancestors of the Historic Saugeen Métis and Georgian Bay Métis communities shared this land and these waters.

## 1.3 Purpose and Scope

Objectives for this study are described in the *Emergency Services Study* work plan (DPRA, October 2021). The overall objective of the *Emergency Services Study* is to assess the effects of the Project on emergency services locally and regionally (Bruce County) in the construction and the operations periods. Specific objectives include:

1. NWMO will identify what changes may be required to the Bruce County Emergency Response Plan (ERP), including the nature of the nuclear emergency response capability would need to be maintained for the operations period of the Project.
2. The NWMO will identify the incremental fire and injury response capability that may be needed from Bruce County and the Municipality of South Bruce during the construction period.
3. The NWMO will identify the parties in the region that could participate in a Mine Safety and Rescue Emergency Services plan.

The *Emergency Services Study* is relevant to MSB Guiding Principles (2020) #10, 28 and #32:

- #10: “The NWMO will identify the potential for any positive and negative socio-economic impacts of the Project on South Bruce and surrounding communities and what community benefits it will contribute to mitigate any potential risks.”
- #28: “The NWMO will prepare a review of the existing emergency services in South Bruce and provide appropriate funding for any additional emergency services required to host the Project in South Bruce.”
- #32: “The NWMO, in consultation with the Municipality and other local and regional partners, will prepare strategy to ensure there are sufficient community services and amenities, including health, child-care, educational and recreational facilities, to accommodate the expected population growth associated with hosting the Project in South Bruce.”

The *Emergency Services Study* provides information directly relevant to first part of Principle #28 and contributes more generally to Principles #10 and #32. The *Emergency Services Study* provides information that the NWMO and MSB can use to inform agreements and funding arrangements (e.g., as described by Principle #28) in the future as part of negotiations of a draft hosting agreement and/ or subsequent studies/ discussions if the South Bruce Area is ultimately selected as the Project location. For clarity, development of these types of agreements/arrangements is not part of the objectives / work plan for this study.

The NWMO is responsible for the completion of the *Emergency Services Study*. This study was undertaken by Independent Environmental Consultants (IEC), a sub-consultant to DPRA, the prime consultant to the NWMO on this study.

### 1.3.1 Peer Review Approach

An earlier draft of this *Emergency Services Study Report* was reviewed by MSB consultants according to their Peer Review Protocol. The Peer Review Protocol provides for a collaborative approach to conducting the peer review, with peer review activity occurring throughout the execution of the study. The *Emergency Services Study* is an NWMO-led study, and the NWMO determined the spatial Study Area, the data and inputs used to establish baseline conditions, and the assessment of the forecasted effects resulting from the Project.

The peer review has been carried out on the scope and framing of the study, data inputs, baseline conditions and the effects assessment.

Options developed by the NWMO to address potential effects or support future emergency services are provided in this report and will be reviewed by the MSB and NWMO.

For the *Emergency Services Study*, the peer review was led by GHD.

### 1.3.2 Spatial Boundaries

As shown in Figure 1-1, the spatial boundaries of the Study Area for the *Emergency Services Study* are:

- Bruce County:
  - The MSB;
  - Township of Huron-Kinloss;
  - Municipality of Brockton;
- Huron County:
  - Municipality of Morris-Turnberry;
  - Township of North Huron;
  - Township of Howick;
- Grey County:
  - Municipality of West Grey;
  - Town of Hanover;
- Wellington County:
  - Town of Minto.

In addition to the broad *Emergency Services Study* area (Study Area) shown in Figure 1-1, a 5-km radius (hereafter referred to as the 'Emergency Planning Zone') around the perimeter of the NWMO owned/optioned lands is to be used for the purpose of emergency response planning and evacuation, as determined by the NWMO as a planning assumption for the purpose of this study. For clarity, the Emergency Planning Zone is not exclusionary, that is, land uses and activities are not restricted in the EPZ. The current 5-km Emergency Planning Zone is based on the following considerations:

- Generic pre-closure safety assessment analysis of the fence line; from a potential dose perspective a 5 km radius from the fence line is more than sufficient for the purposes of the community studies.
- Socio-economic considerations for emergency planning purposes including current uses of land and resources for traditional purposes. This may also include existing facilities that could pose a potential risk/ disturbance to the Project facility.

According to Canadian Nuclear Safety Commission Nuclear Emergency (CNSC) Preparedness and Response, REGDOC-2.10-1 (CNSC, 2016), Nuclear Emergency Preparedness and Response, the emergency planning zone is defined as “the offsite area around a facility for which emergency planning and preparation are done in advance, to ensure that necessary and effective protective actions can be taken to protect the public, property or the environment in case of an accident.” This is to ensure that necessary and effective protective actions can be taken to protect the public, property or the environment in case of an accident.

Figure 1-2 (MHBC and DPRA, 2022) shows the 5 km Emergency Planning Zone (yellow line) around the perimeter of the NWMO owned/optioned lands . The 5 km Emergency Planning Zone includes lands within of the Municipality of South Bruce (including Teeswater) and the Township of Huron-Kinloss.

If the Project comes to the South Bruce Area, selection of a different Emergency Planning Zone radius may be justified following collection of additional data and more specific site characterization including information regarding dose limits, security and robustness design considerations, meteorological conditions and emergency preparedness considerations that are affected by the land use around the site. It is noted that a new Canadian Standards Association standard, CSA N292.7 (CSA 2022) *Deep geological disposal of radioactive waste and irradiated fuel* would have to be reviewed to understand any relevance/ implications for emergency planning. Further, the preparation of the Project ERP along with the PNERP Implementing Plan for the Project will have to comply with provincial and federal regulations governing emergency response. This process, to be conducted at a later date, could result in refinement of the Emergency Planning Zone.

It should also be noted that there are counties (e.g., Perth County), communities and organizations/ facilities outside the Study Area that may supply support services within the scope of the Study (e.g., hospitals, Goderich salt mine, Ontario Mine Rescue Program, mutual aid services). These counties, communities and organizations/ facilities are considered in this Study.

Figure 1-1: Map of The Spatial Boundary for the Emergency Services Study

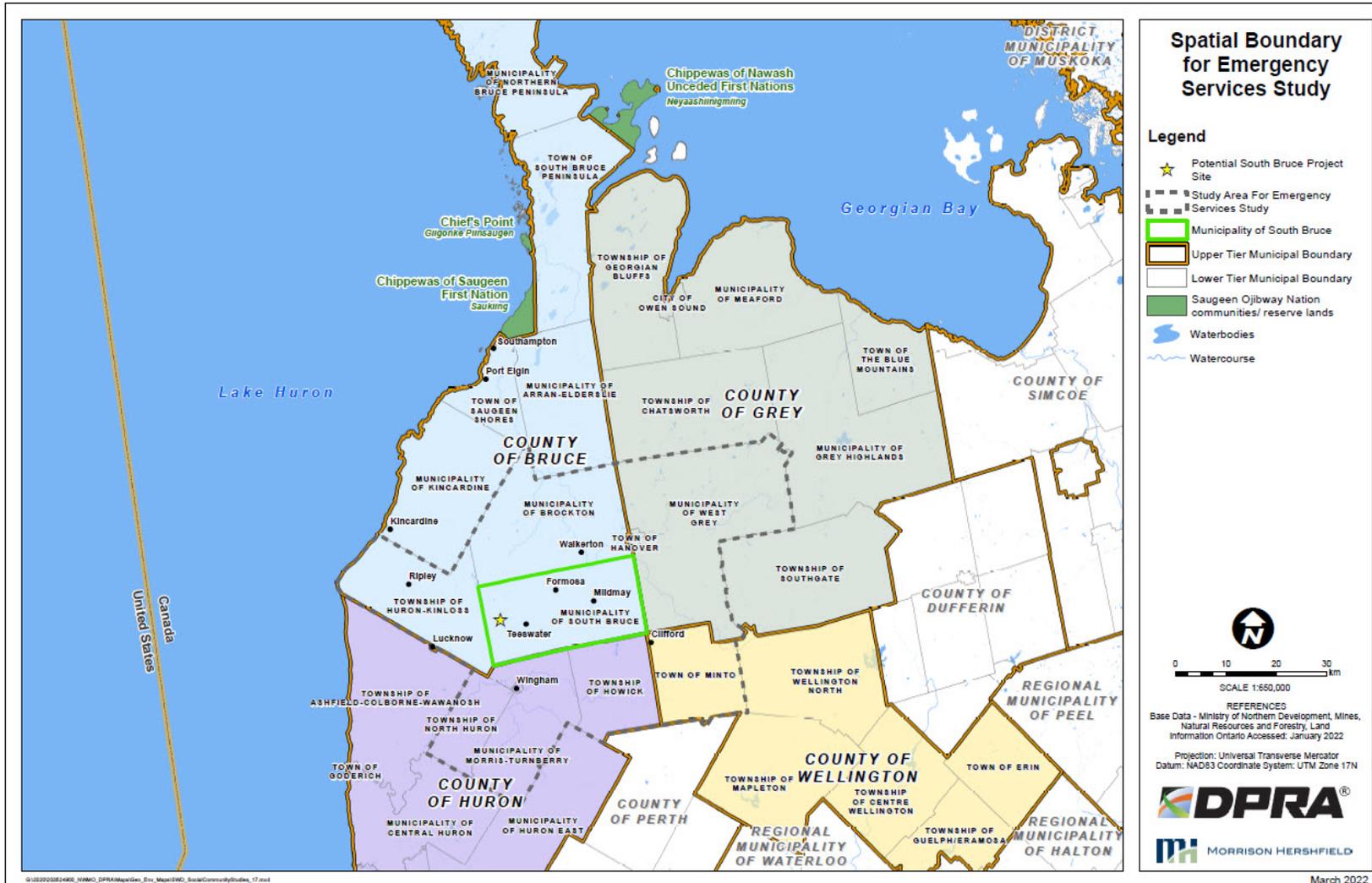
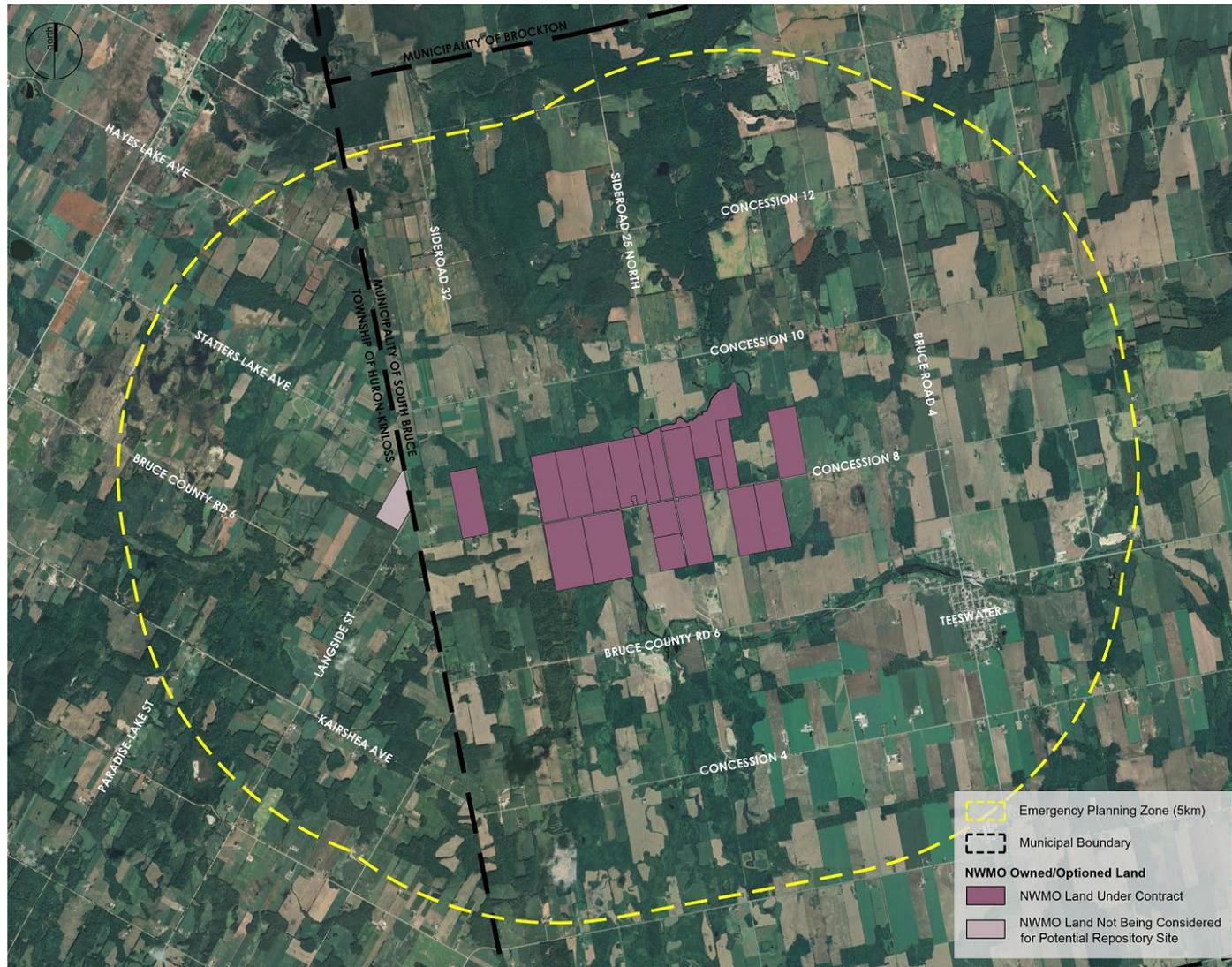


Figure 1-2: 5 km Emergency Planning Zone



### 1.3.3 Temporal Boundaries

The temporal boundaries for the *Emergency Services Study* are as follows:

- Current Period (2016/2022)
- Near-term (2023 to 2032)
  - Aligns with end of site preparation phase in 2032 and construction start 2033
- Mid-term (2033 to 2042)
  - Aligns with construction phase ending in 2042 and operations start 2043
- Long-term (2043 and beyond)
  - Aligns with operations phase (approximately 40 years; does not include monitoring and decommissioning)

## 2. Methodology

### 2.1 General Approach

The NWMO and the MSB drafted Statements of Work for each community study in response to the MSB's 36 Guiding Principles. As previously mentioned, the community studies are being undertaken by the NWMO or the MSB, with some being joint efforts.

The socio-economic community studies were categorized into three themes: Economics, Social Cultural, and Infrastructure and Aggregate. The studies were then allocated a unique ID code to identify which theme the study is associated with (see **Appendix A**).

The following methodology pertains to the 13 socio-economic community studies solely or jointly led by the NWMO.

Based on the Statements of Work, work plans for each community study were developed. The work plans:

- Outlined the peer review approach with the MSB
- Identified linkages to other studies
- Identified the spatial and temporal boundaries
- Identified key assumptions that will dictate the completion of the study
- Described the tasks associated with the study and schedule for each task
- Identified key information sources and data collection methods

Draft work plans were reviewed by the MSB and its peer review team. Formal peer review team comments on the draft community study work plans were received in September 2021. The peer review of the draft *Emergency Services Study* work plan was undertaken by GHD.

DPRA provided Comment Disposition Tables and revised work plans to respond to the peer review comments in October 2021. In a memo dated November 3, 2021, the GHD team provided acknowledgement of comments that were addressed in the revised community study work plans or flagged to be addressed in future work such as the community study reports.

Several consultant consortium meetings and “check-in” meetings with the MSB and its peer review team were held during the development of each study.

### 2.2 Data Collection / Information Sources

Data and key information for this study was collected from primary sources such as knowledge holder interviews, and secondary sources such as Project information from the NWMO and data/documents from local and regional organizations. The sections below describe how data and information was collected from these sources.

In addition to data and information collected specifically for this study, it is noted that the 5 km Emergency Planning Zone (Figure 1-2, above) is also utilized in the *Land Use Study Report* (MHBC and DPRA, 2022). Relevant information was obtained from the findings/results of the *Labour Baseline Study*, the *Workforce Development Study* and the *Housing Needs and Demand Analysis Study* (Keir Corp., 2022a,

2022b, 2022c) to inform the population and housing projections in S.3 'NWMO Project Characteristics Relevant to Emergency Services'. The *Local Traffic Study* (Morrison Hershfield, 2022) was also reviewed.

## 2.2.1 Knowledge Holder Interviews

The selection of knowledge holders was undertaken through an iterative review process between the NWMO and the MSB and its peer review team. Many of the later interviews came from recommendations of knowledge holders interviewed earlier. Interviews were scheduled by the NWMO and a representative from the NWMO, the NWMO's consultants and the MSB peer review team were invited. The knowledge holders were provided with an Interview Guide prior to the interview to provide background information on the Project and a general framework for the interview. During the interview, the NWMO's consultants and MSB's peer review team also asked specific questions relevant to applicable community studies. The NWMO representative took notes during the interviews and distributed the notes and any documents received from the knowledge holder to the consultants/peer review team members. Information received from these interviews has been used in the development of this report.

Interviews were undertaken with the following knowledge holders:

- South Bruce Fire Department
- Bruce County Paramedic Services
- South Bruce Grey Health Centre - Kincardine Hospital
- Bruce Power Emergency Department
- NWMO - Transportation Planning
- Compass Minerals – Goderich salt mine
- Kinectrics Laundry Facility (Teeswater)

Further detail on the knowledge holder interviews is provided in **Appendix B**.

## 2.2.2 Other Key Information and Data Sources

Other key information and data sources for this study included:

- The NWMO's updated Project information:
  - *Community Studies Planning Assumptions* (Confidential) (October 2021)
  - *Deep Geological Repository Conceptual Design Report Crystalline/Sedimentary Rock* (2021)
  - *Deep Geological Repository Transportation System Conceptual Design Report Crystalline/Sedimentary Rock* (2021)
  - *Planning Framework for the Transportation of Used Nuclear Fuel* (2021)
  - *Preliminary Transportation Plan* (2021)
- Data/documents from organizations within the Study Area including:
  - The Bruce County ERP (2004)
  - Bruce County Paramedic Services website
  - MSB Safety and Preparedness website
  - Workplace Safety North (WSN), Ontario Mine Rescue Program website
  - Mutual Aid Agreements (MAA) among municipalities
  - Memorandum of Understanding (MOU) between health care organizations and Bruce Power (2015)

- Other publicly available information:
  - *Hazard Identification Report*, 2019 Section D: Hazardous Materials Hazards
  - *PNERP Implementing Plan for the Bruce Nuclear Generating Station* (2019)
  - *PNERP Master Plan* (2017)
  - *PNERP Implementing Plan for Other Radiological Emergencies* (2011)
  - Government of Canada, Transport Canada, CANUTEC website
  - Emergency Response Guidebook for Transportation Emergencies (2020)
  - Lessons Learned from a Transport Security Exercise Conducted Off the Coast of Sweden (2016)
  - The World's First Spent Fuel Repository, How to Tackle Safety, Security and Safeguards Needs? ISBN 978-952-309-518-2 (2021).
  - STUK's statement and safety assessment on the construction of the Olkiluoto encapsulation plant and disposal facility for spent nuclear fuel, STUK-B 196, Radiation and Nuclear Safety Authority, STUK, Helsinki. (2015).

## 2.3 Assessment

The preliminary analysis and assessment of the effect of the Project may have on emergency services within the Study Area was conducted through the following steps:

- Understanding and evaluating the existing conditions for emergency response organizations and emergency service infrastructure within and near the Study Area. More specifically, the following capabilities were assessed included:
  - Existing emergency planning and response services capability
  - Fire response capability
  - Transportation emergency response capability
  - Paramedic, Ambulance, and Air Ambulance capability
  - Hospital services in proximity to the potential Project Site
  - Mine rescue capability
  - MAAs and MOUs
  - Identification and ability to evacuate sensitive populations during emergency events
- Service providers within or near the Study Area, for all four levels of government:
  - Federal
  - Provincial
  - County
  - Municipality
- Health Care Organizations
- Industry:
  - Bruce Power
  - Kinetrics Laundry Facility
  - Compass Minerals' Goderich Salt Mine

Future changes to the existing requirements were assessed through:

- The direct impact of Project-related needs on the emergency response services (medical emergencies, fire, hazardous materials, etc.) during the construction and operations phases
  - Non-radiological emergencies during the construction phase (including non-radiological transportation events)
  - Radiological and non-radiological emergencies during the operations phase (including transportation of used nuclear fuel)
- Potential to increase the workload and responsibilities of various emergency response entities
- Increase in community population due to the Project (e.g., traffic accidents, fire, medical emergencies)
  - Non-radiological emergencies during construction and operations phases
- Shift in population distribution and traffic patterns
  - Non-radiological emergencies during construction and operations phases

The assessment compared the required level of capabilities with existing levels and identified any gaps. Options related to additional studies or addressing gaps have been provided.

## 2.4 Study Limitations

The study is based on best available information at this point in the design process. The level of detail in the information available from NWMO, and on emergency services at the County and lower tier municipal level varies. Therefore, the level of data presented for each municipality in the *Emergency Services Study* also varies.

While the nature of changes that may be required in the existing municipal ERPs (e.g., the Bruce County ERP, MSB ERP) and an outline of the types of changes and steps required to revise the ERPs has been provided in the *Emergency Services Study*, these can not be highly specific or quantified, nor can cost estimates (even qualitative) be prepared in the absence of additional future study and engagement.

## 3. NWMO Project Characteristics Relevant to Emergency Services

The Project activities/characteristics that are relevant to emergency services were obtained from the *Deep Geological Repository Conceptual Design Report Crystalline/Sedimentary Rock* (Naserifard et al., 2021), *Deep Geological Repository Transportation System Conceptual Design Report Crystalline/Sedimentary Rock* (Taylor, 2021), and *Preliminary Transportation Plan* (NWMO, 2021b). These activities and characteristics can be different for the construction and operations phases, while sharing some attributes during all phases of the Project. These characteristics are discussed below.

Elements of these documents relating to emergency services are described in Section 5 (Preliminary Analysis/Effects Assessment). The existing conditions of the emergency services are discussed at federal, provincial, county, municipal, hospital and industry levels in Section 4 (Existing Conditions).

The potential emergencies provided in Tables 3-1 to 3-3 are identified for the purpose of emergency planning considerations in this study, and include some that are considered 'worst-case scenarios'. There will be preventive and mitigative measures that are put in place during future Project design, construction, and operation to avoid such scenarios and to ensure that the risk of these emergencies is minimized/acceptable.

### 3.1 Construction Phase

The construction phase activities, and their corresponding emergency services are provided in Table 3-1.

**Table 3-1: NWMO Construction Activities and Potential Emergency Services Needs**

Activity	Aboveground / Underground	Potential Emergency	Potential Emergency Services
Operation of vehicles with increased volume of local transportation.	Aboveground	Transportation accidents (crash, fire, rollover), spill of hydrocarbons, operators' injury	<ul style="list-style-type: none"> <li>• Police</li> <li>• Paramedics / hospital</li> <li>• Transportation emergency response</li> <li>• Hydrocarbon spill response</li> <li>• Fire fighting</li> </ul>
		Transporter-human-wildlife interaction	<ul style="list-style-type: none"> <li>• Police</li> <li>• Emergency response</li> </ul>
Site preparation	Aboveground	Soil erosion / runoff	<ul style="list-style-type: none"> <li>• Spill response</li> </ul>
		Fuel fire / Electrical fire	<ul style="list-style-type: none"> <li>• Paramedics / hospital</li> <li>• Fuel spill response</li> <li>• Fire fighting</li> </ul>

Activity	Aboveground / Underground	Potential Emergency	Potential Emergency Services
Operation of heavy equipment.	Aboveground / Underground	Equipment fire, spill of hydrocarbons, operators' injury	<ul style="list-style-type: none"> <li>• Paramedics / hospital</li> <li>• Emergency response</li> <li>• Hydrocarbon spill response</li> <li>• Fire fighting</li> </ul>
Shaft sinking and DGR development with application of heavy mining and construction equipment and generation of large volumes of excavated materials that are planned to be stored on or near the site.	Underground	Equipment accident, including fire, rollover	<ul style="list-style-type: none"> <li>• Paramedics / hospital</li> <li>• Hydrocarbon spill response</li> <li>• Fire fighting</li> <li>• Emergency response</li> </ul>
		Unplanned event with the use of explosives during construction	<ul style="list-style-type: none"> <li>• Paramedics / hospital</li> <li>• Spill response</li> <li>• Fire fighting</li> <li>• Emergency response</li> <li>• Underground rescue / refuge</li> </ul>
		Underground flooding	<ul style="list-style-type: none"> <li>• Spill response</li> <li>• Paramedics / hospital</li> <li>• Emergency response</li> <li>• Underground rescue / refuge</li> </ul>
		Fuel fire / Electrical fire	<ul style="list-style-type: none"> <li>• Paramedics / hospital</li> <li>• Fuel spill response</li> <li>• Fire fighting</li> <li>• Underground rescue / refuge</li> </ul>
		Surface runoff / erosion and movement of stockpiled materials	<ul style="list-style-type: none"> <li>• Emergency response</li> </ul>
Transportation of Project construction workforce.	Aboveground	Transportation accidents (crash, fire, rollover), spill of hydrocarbons, injury	<ul style="list-style-type: none"> <li>• Police</li> <li>• Paramedics / hospital</li> <li>• Transportation emergency response</li> <li>• Fuel spill response</li> </ul>
		Transporter-human-wildlife interaction	<ul style="list-style-type: none"> <li>• Police</li> <li>• Emergency response</li> </ul>

Activity	Aboveground / Underground	Potential Emergency	Potential Emergency Services
Hauling of materials (e.g., aggregate), equipment, fuel, hazardous materials and solid waste will contribute to increased local travel volume.	Aboveground	Transportation accidents (crash, fire, rollover), spill of hydrocarbons and other hazardous materials, operators' injury	<ul style="list-style-type: none"> <li>• Police</li> <li>• Paramedics / hospital</li> <li>• Transportation emergency response</li> <li>• Hazmat spill response</li> <li>• Fire fighting</li> </ul>
		Transporter-human-wildlife interaction	<ul style="list-style-type: none"> <li>• Police</li> <li>• Emergency response</li> </ul>

### 3.2 Operations Phase

The operations phase activities and their corresponding emergency services are provided in Table 3-2:

**Table 3-2: Operations Phase Activities and Potential Emergency Services Needs**

Activity	Aboveground / Underground	Potential Emergency	Potential Emergency Services
Continuous development of the DGR	Underground	Equipment accident, including fire, erosion/ runoff	<ul style="list-style-type: none"> <li>• Paramedics / hospital</li> <li>• Hydrocarbon spill response</li> <li>• Fire fighting</li> <li>• Emergency response</li> </ul>
		Unplanned event with the use of explosives during construction	<ul style="list-style-type: none"> <li>• Paramedics / hospital</li> <li>• Hydrocarbon spill response</li> <li>• Fire fighting</li> <li>• Emergency response</li> <li>• Underground rescue / refuge</li> <li>• Radiation emergency response</li> </ul>
		Underground flooding caused by inflow of intercepted aquifer during shaft sinking and DGR development	<ul style="list-style-type: none"> <li>• Spill response</li> <li>• Paramedics / hospital</li> <li>• Emergency response</li> <li>• Underground rescue</li> </ul>
		Fuel fire / Electrical fire	<ul style="list-style-type: none"> <li>• Paramedics / hospital</li> <li>• Fuel spill response</li> <li>• Fire fighting</li> <li>• Underground rescue / refuge</li> </ul>

Activity	Aboveground / Underground	Potential Emergency	Potential Emergency Services
Surface facilities to receive, handle, process, and temporarily store of used nuclear fuel	Aboveground	Used fuel drop with breach. Due to the robustness of the Used Nuclear Fuel (UNF) containers and operational procedures in place, a radioactivity release is extremely unlikely.	<ul style="list-style-type: none"> <li>Radiation emergency response</li> </ul>
		Facility fire (fuel /equipment/ electrical)	<ul style="list-style-type: none"> <li>Paramedics / hospital with radioactivity capabilities</li> <li>Fire fighting</li> <li>Radiation emergency response</li> </ul>
		Accidental exposure	<ul style="list-style-type: none"> <li>Radiation emergency response</li> </ul>
Hoisting, handling, and processing of used nuclear fuel at the underground facility	Underground	Used fuel drop with breach. Due to the robustness of the UNF containers and operational procedures in place, a radioactivity release is extremely unlikely.	<ul style="list-style-type: none"> <li>Radiation emergency response</li> <li>Underground rescue / refuge</li> </ul>
		Underground fire	<ul style="list-style-type: none"> <li>Paramedics / hospital with radioactivity capabilities</li> <li>Fire fighting</li> <li>Radiation emergency response</li> <li>Underground rescue / refuge</li> </ul>
		Accidental exposure	<ul style="list-style-type: none"> <li>Radiation emergency response</li> <li>Underground rescue / refuge</li> </ul>
Placement of used nuclear fuel underground	Underground	Used fuel drop	<ul style="list-style-type: none"> <li>Radiation emergency response</li> <li>Underground rescue / refuge</li> </ul>
		Underground fire (fuel /equipment/ electrical)	<ul style="list-style-type: none"> <li>Paramedics / hospital with radioactivity capabilities</li> <li>Fire fighting</li> <li>Radiation emergency response</li> <li>Underground rescue / refuge</li> </ul>
		Accidental exposure	<ul style="list-style-type: none"> <li>Radiation emergency response</li> <li>Underground rescue / refuge</li> </ul>

Activity	Aboveground / Underground	Potential Emergency	Potential Emergency Services
Transportation of the Project workforce,	Aboveground	Transportation accidents (crash, fire, rollover), spill of hydrocarbons, injury	<ul style="list-style-type: none"> <li>• Police</li> <li>• Paramedics / hospital</li> <li>• Transportation emergency response</li> <li>• Fuel spill response</li> </ul>
		Transporter-human-wildlife interaction	<ul style="list-style-type: none"> <li>• Police</li> <li>• Emergency response</li> </ul>
Hauling of dangerous goods which will contribute to increased local travel volume	Aboveground	Transportation accidents (crash, fire, rollover), spill of hydrocarbons and other hazardous materials, operators' injury	<ul style="list-style-type: none"> <li>• Police</li> <li>• Paramedics / hospital</li> <li>• Transportation emergency response</li> <li>• Hazmat spill response</li> <li>• Fire fighting</li> </ul>
		Transporter-human-wildlife interaction	<ul style="list-style-type: none"> <li>• Police</li> <li>• Emergency response</li> </ul>
Increased local population and permanent and temporary housing to accommodate the workers	Aboveground	Residential emergencies	<ul style="list-style-type: none"> <li>• Police</li> <li>• Paramedics / hospital</li> <li>• Fire fighting</li> </ul>
Active Solid Waste Handling Facility	Aboveground / Underground	Facility fire (fuel /equipment/ electrical)	<ul style="list-style-type: none"> <li>• Paramedics / hospital with radioactivity capabilities</li> <li>• Fire fighting</li> <li>• Radiation emergency response</li> </ul>
		Accidental exposure	<ul style="list-style-type: none"> <li>• Radiation emergency response</li> </ul>
		Active waste release. The procedures involving the storage and handling the active solid waste are designed with best practices and followed by trained operators. These preventive measures and other mitigations make this type of release extremely unlikely. To be clear, this is not the solid UNF.	<ul style="list-style-type: none"> <li>• Radiation emergency response</li> </ul>
Non-Radiological Hazardous waste / materials management	Aboveground / Underground	Facility fire (fuel /equipment/ electrical)	<ul style="list-style-type: none"> <li>• Paramedics / hospital</li> <li>• Fire fighting</li> <li>• Emergency response</li> </ul>

Activity	Aboveground / Underground	Potential Emergency	Potential Emergency Services
		Spill of hazardous waste / materials	<ul style="list-style-type: none"> <li>• Emergency response</li> </ul>
Active Liquid Waste Storage	Aboveground / Underground	Waste spill, Given the containments surrounding the active liquid waste and provisions for the secondary containment, release of liquid waste into the environment is extremely unlikely. To be clear, this is not the solid UNF.	<ul style="list-style-type: none"> <li>• Radiation emergency response</li> </ul>
Switchyard and Transformers	Aboveground	Electrical fire	<ul style="list-style-type: none"> <li>• Fire fighting</li> <li>• Emergency response</li> <li>• Paramedics / hospital</li> </ul>
		Mineral oil spill	<ul style="list-style-type: none"> <li>• Spill response</li> </ul>
Emergency Generator	Aboveground	Equipment fire	<ul style="list-style-type: none"> <li>• Fire fighting</li> <li>• Emergency response</li> <li>• Paramedics / hospital</li> </ul>
Fuel Storage	Aboveground / Underground	Hydrocarbon fire / explosion	<ul style="list-style-type: none"> <li>• Fire fighting</li> <li>• Emergency response</li> <li>• Paramedics / hospital</li> </ul>
		Hydrocarbon spill	<ul style="list-style-type: none"> <li>• Emergency / Spill response</li> </ul>
Security fencing and access gates	Aboveground	Security breach	<ul style="list-style-type: none"> <li>• Police</li> <li>• NWMO security</li> </ul>
Kitchen, dining, laundry and recreation facilities	Aboveground	Building fire	<ul style="list-style-type: none"> <li>• Paramedics / hospital</li> <li>• Fire fighting</li> </ul>
Water / swage treatment	Aboveground	Chemical spill	<ul style="list-style-type: none"> <li>• Emergency / Spill response</li> </ul>
Helicopter Pad	Aboveground	Helicopter crash	<ul style="list-style-type: none"> <li>• Paramedics / hospital</li> <li>• Hydrocarbon spill response</li> <li>• Fire fighting</li> <li>• Emergency response</li> </ul>
Ventilation system	Aboveground	Equipment fire	<ul style="list-style-type: none"> <li>• Paramedics / hospital</li> <li>• Fire fighting</li> </ul>
		Failure	<ul style="list-style-type: none"> <li>• Underground rescue / refuge</li> </ul>
Fresh air heating system	Aboveground	Fire	<ul style="list-style-type: none"> <li>• Paramedics / hospital</li> <li>• Fire fighting</li> <li>• Underground rescue / refuge</li> </ul>

### 3.3 Transportation of UNF Containers

The NWMO’s current UNF transportation plan includes two options, either (NWMO, 2021b):

- 1) An all-road used fuel transportation system; or
- 2) A road/rail used fuel transportation system.

For planning purposes, NWMO uses the all-road used fuel transportation system as the reference case.

The used fuel transportation activities and their corresponding emergency services are provided in Table 3-3:

**Table 3-3: NWMO Transportation of Used Fuel Containers and Potential Emergency Services Needs**

Activity	Aboveground / Underground	Potential Emergency	Potential Emergency Services
An all-road used fuel transportation system	Aboveground	Transporter crash, spill of hydrocarbons, operators’ injury, potential for radioactivity release	<ul style="list-style-type: none"> <li>• Police</li> <li>• NWMO security</li> <li>• Paramedics / hospital with radioactivity capabilities</li> <li>• Transportation emergency response</li> <li>• Fuel spill response</li> <li>• Radiation monitoring</li> </ul>
		Transporter fire, spill of hydrocarbons, operators’ injury, potential for radioactivity release	<ul style="list-style-type: none"> <li>• Police</li> <li>• NWMO security</li> <li>• Paramedics / hospital with radioactivity capabilities</li> <li>• Transportation emergency response</li> <li>• Fuel spill response</li> <li>• Fire fighting</li> <li>• Radiation monitoring</li> </ul>
		Transporter-human interaction	<ul style="list-style-type: none"> <li>• Police</li> <li>• Paramedics / hospital with radioactivity capabilities</li> </ul>

### 3.4 Project Workforce, Population and Housing Projections

In the context of the *Emergency Services* study, relevant Project characteristics also relate to the workforce numbers/characteristics for each phase, where the workforce may originate/reside, and the significance of those numbers or degree of change relative to existing conditions. Key Project characteristics are summarized below in terms of workforce, population and housing.

For the purposes of the *Emergency Services Study*, projections prepared for MSB (metro-economics, 2022) confirm growth in five local municipalities (the MSB, the Township of Huron-Kinloss, the Municipality of Brockton, the Township of North Huron, and the Municipality of Morris-Turnberry) in terms of both population and housing between 2021 and 2046, for both the 'base case' and 'with the Project'. Emergency services in the Study Area will need to reflect this future community growth, as well as the presence of the Project facility itself.

### 3.4.1 Project Workforce

The *Community Studies Planning Assumptions* (Confidential) (NWMO, October 2021) describes the labour workforce projected for the Project by three phases and location (on- or off-site). Table 3-4 describes the workforce associated with these Project Phases. The *Labour Baseline Study and Workforce Development Study* (Keir Corp., 2022a, 2022b) conclude that the direct labour force requirements of the Project are relatively modest in relation to Bruce Power's Major Component Replacement (MCR) Project/the Bruce Power Generating Station, and occur in stages, synchronized with the key phases of the Project.

**Table 3-4: Workforce by Project Phase**

		NWMO Staff	Surface Trades	Underground Trades	Total
On-site	Pre-construction (2028)	20	-	-	20
	Construction (2033)	40	300	130	470
	Operations (2043)	510	10	60	580
Off-site	Pre-construction (2028)	180	-	-	180
	Construction (2033)	170	-	-	170
	Operations (2043)	120	-	-	120
Total	Pre-construction (2028)	200	-	-	200
	Construction (2033)	210	300	130	640
	Operations (2043)	630	10	60	700

SOURCE: NWMO (October 2021)

#### Pre-construction (2028) – Centre of Expertise

Pre-construction is characterized by the in-moving of NWMO staff to the community from their current office location in Toronto. This phase of the Project will be closely associated with permitting and licensing activities and it also will involve both on-site and off-site initiatives. In the latter case an office and Centre of Expertise will be made operational. The NWMO workforce strategy will entail a combination of new employee hires and relocation of existing employees.

Construction (2033) and Operations (2043+)

In subsequent phases of the Project, replacement and new additional NWMO staff can be potentially sourced from the Regional<sup>1</sup>, Local<sup>2</sup> or Core<sup>3</sup> Study Areas as defined in the *Housing Needs and Demand Analysis* and *Workforce Development* studies (Keir Corp., 2022c, 2022b).

### 3.4.2 Population Projections

The Municipality of South Bruce (metroeconomics, 2022) prepared base case (‘without the Project’) population projections for five local municipalities. A corresponding set of incremental ‘anticipated Project effects’ projections was also prepared (metroeconomics, 2022) utilizing Municipality of South Bruce Project-related growth targets. As shown in Table 3-5, these projections indicate that, in the base case (without the Project), the total population of the combined area<sup>4</sup> of the MSB, the Township of Huron-Kinloss, the Municipality of Brockton, the Township of North Huron, and the Municipality of Morris-Turnberry will be 46,390 by the year 2046 (a growth of 13,060 people). When growth associated with the Project is incorporated, it is projected that the population of these five municipalities could be 48,190 by the year 2046 (a growth of 14,860 people, with an incremental additional growth of 1,800 people from the Project) (metroeconomics, 2022).

**Table 3-5: Base Case & Impact Case Population Projections, 2021 - 2046**

	2021		2031		2041		2046	
	Base Case	Impact Case	Base Case	Impact Case	Base Case	Impact Case	Base Case	Impact Case
South Bruce	6,250	-	7,420	7,620	8,400	9,040	8,760	9,540
Other Core Area Municipalities	Sum of Other Core Area	-	32,030	32,230	36,120	36,760	37,630	38,650
Total Core Area	Σ	-	39,450	39,850	44,520	45,800	46,390	48,190

Source: metroeconomics (2022)

The *Labour Baseline Study* and *Workforce Development Study* (Keir Corp., 2022a, 2022b) note that:

- The proposed Project is located in the midst of a large capable labour pool. At a regional level this is one of the largest most advanced labour pools in the country. It is also home to a number of companies that form part of the supply chain for the nuclear industry across Ontario, and further afield.
- Therefore, at a broad level the size and qualifications of the labour pool within the *Labour Baseline* and *Workforce Development* Study Areas are sufficient to meet the needs of the Project. The Study Areas collectively can meet almost all the needs for labour and goods and services required by the Project. The one exception is for mining expertise and underground trades which may potentially have to be sourced from other areas in Ontario.

<sup>1</sup> The Regional Study Area for the *Workforce Development Study* includes the Counties of Bruce, Grey, Huron, Perth, Wellington, Oxford and Middlesex and the Region of Waterloo. This area lies within a one and half to two-hour drive time of the potential Project site and is home to a large portion of the supply chain companies for the Bruce Nuclear Plant and its associated Major Component Replacement (MCR) Project. Additionally, it is home to many of the workers associated with the Bruce Nuclear Station during refurbishment and almost all the workers associated with plant operations.

<sup>2</sup> The Local Study Area for the *Workforce Development Study* and the *Housing Needs and Demand Analysis Study* steps down from the Regional Study area and focused on the municipalities surrounding the MSB (i.e., Huron-Kinloss, Brockton, Kincardine, Saugeen Shores, Arran-Elderslie, West Grey, Hanover, Minto, Howick, Morris-Turnberry, North Huron, Ashfield-Colborne-Wawanosh) as well as South Bruce itself. All parts of the Local Study Area are within a one-hour drive of the potential Project Site.

<sup>3</sup> The Core Study Area for the *Workforce Development Study* and the *Housing Needs and Demand Analysis Study* steps down from the Local Study Area and focused on the municipalities of South Bruce, Huron-Kinloss, Brockton, North Huron and Morris-Turnberry. These five communities are closely intertwined through social/cultural, economic and political relationships.

<sup>4</sup> The metroeconomics projections include five of the municipalities that are part of the Study Area for the *Emergency Services Study*, but do not include the Town of Hanover, Municipality of West Grey, Township of Howick, or the Town of Minto.

- Bruce Power is the biggest economic engine in the area and is currently in the midst of its Major Component Replacement (MCR) Project, which will secure operation of the Generating Station until 2064. The MCR Project value is \$13 billion and having started in 2016 it is scheduled for completion in mid-2033 when work wraps up on reactor 8. Bruce Power estimates that the MCR Project will support an estimated 5,000 direct and indirect jobs annually with approximately 1,600 on-site. Moreover, they further estimate in the Bruce, Grey, and Huron Counties combined, the MCR Project could support 400 direct jobs from suppliers and 3,000 jobs overall.
- Bruce Power estimates that 25% of the trades people employed on the MCR Project reside within commuting distance of the Generating Station. These tradespeople would therefore likely be available to work on the construction of the Project.

In summary, there is a large and capable skilled workforce available regionally for the construction and operations phases of the Project. A number of NWMO workers will move to the area during pre-construction, though NWMO has a number of staff living in the local/regional area already. While there may be in-migration of workers during the construction and operations phases, the overall change in population resulting from the Project in comparison to the regional baseline population is relatively small. However, the distribution of the workforce in the MSB and neighbouring communities has important social and economic implications.

### 3.4.3 Housing Considerations

The Municipality of South Bruce (metroeconomics, 2022) also prepared base case ('without the Project') projections for housing for five municipalities. A corresponding set of incremental 'anticipated Project effects' projections was also prepared (metroeconomics, 2022). As shown in Table 3-6, these projections indicate that, in the base case (without the Project), the total number of dwellings in the combined area of the MSB, the Township of Huron-Kinloss, the Municipality of Brockton, the Township of North Huron, and the Municipality of Morris-Turnberry will be 17,640 by the year 2046 (a growth of 4,610 dwellings). When growth associated with the Project is incorporated, it is projected that the number of dwellings in these five municipalities would be 18,240 by the year 2046 (an incremental additional growth of 600 dwellings from the Project) (metroeconomics, 2022).

**Table 3-6: Base Case & Impact Case Housing Projections, 2021-2046**

	2021		2031		2041		2046	
	Base Case	Impact Case	Base Case	Impact Case	Base Case	Impact Case	Base Case	Impact Case
South Bruce	2,360	-	2,850	2,920	3,200	3,400	3,300	3,550
Other Core Area Municipalities	Sum of Other Core Area	-	12,450	12,520	13,840	14,060	14,340	14,690
<b>Total Core Area</b>	<b>13,030</b>	<b>-</b>	<b>15,300</b>	<b>15,440</b>	<b>17,040</b>	<b>17,460</b>	<b>17,640</b>	<b>18,240</b>

Source: metroeconomics (2022)

The following observations from the *Housing Needs and Demand Analysis Study* (Keir Corp., 2022c) are also relevant for the *Emergency Services* study:

- The MSB wishes to grow its compliment of occupied housing by attracting workers and their families associated with the Project to take up residence in the Municipality. MSB and NWMO are currently exploring options to that end.
- Other nearby municipalities are also interested in attracting a portion of the Project workforce to reside in their communities.
- Current and potential housing availability across the Local Study Area<sup>5</sup> as a whole is substantial. Many of the municipalities in the area are planning for growth, and as such home buyers with a few exceptions have an extensive landscape to shop in.

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<sup>5</sup> The Local Study Area for the *Housing Needs and Demand Study* focused on the municipalities surrounding the MSB (i.e., Huron-Kinloss, Brockton, Kincardine, Saugeen Shores, Arran-Elderslie, West Grey, Hanover, Minto, Howick, Morris-Turnberry, North Huron, Ashfield-Colborne-Wawanosh) as well as MSB itself.

## 4. Existing Conditions

There is a great deal of relevant knowledge and experience regarding emergency response near the Study Area due to the presence of Bruce Power, OPG and CNL operations at the site of the Bruce Nuclear Generating Station in Kincardine. The framework of the various emergency services include:

1. Federal:
  - a. Transport Canada (CANUTEC)
  - b. Canadian Nuclear Safety Commission (CNSC)
  - c. RCMP
2. Provincial:
  - a. Emergency Management Ontario (EMO)
  - b. Provincial Nuclear Emergency Response Plan (PNERP)
  - c. WSN (Ontario Mine Rescue Program)
  - d. OPP
3. County:
  - a. County ERP
  - b. County Paramedic Services
4. Municipality
  - a. Fire Departments
  - b. Municipal emergency response organizations
5. Health Care Organizations
6. Industry
  - a. Bruce Power emergency response services
  - b. Compass Mineral's Goderich salt mine rescue services

The existing conditions of the emergency services are discussed at federal, provincial, county, municipal, hospital and industry levels in the subsections that follow.

### 4.1 Federal Level

#### 4.1.1 Transport Canada

Transportation of Dangerous Goods (TDG) Regulations require that a person who is involved in the transportation of certain dangerous goods above the quantity specified in the TDG Regulations have an Emergency Response Assistance Plan (ERAP). The TDG Regulations outline the requirements for an ERAP.

The TDG Directorate of Transport Canada operates CANUTEC to promote public safety in the transportation of dangerous goods.

##### 4.1.1.1 ERAP

An ERAP needs to be developed by NWMO or other party transporting used nuclear fuel (UNF) containers; it will describe what to do in the event of a release or anticipated release of certain higher-risk dangerous goods while they are in transport. ERAP requirements are specific to certain:

- Dangerous goods,
- Modes of transport (air, rail, road or marine),
- Means of containment, like containers or packaging, used to hold the dangerous goods, and
- Geographical area in which the dangerous goods will be transported.

An ERAP is used to assist emergency responders. ERAPs list specialized personnel and equipment needed for responding to an incident.

ERAPs may be used along with ERPs from NWMO. An incident management system, usually the Incident Command System (ICS), ensures coordination between the ERAP and other emergency response plans.

If an ERAP holder does not immediately respond, or if the ERAP holder is unknown, and when necessary to protect public safety, section 7.1 of the TDG Regulations allows Transport Canada to direct a person with an approved ERAP to implement their plan in order to respond to a release or anticipated release.

#### 4.1.1.2 CANUTEC

Transport Canada's TDG Directorate operates CANUTEC which is the Canadian Transport Emergency Centre (CTEC). The Directorate's overall mandate is to promote public safety in the transportation of dangerous goods by all modes and has a published emergency response guidebook (Transport Canada, 2020).

CANUTEC serves as a national advisory service that assists emergency response personnel in handling dangerous goods<sup>6</sup> emergencies on a 24/7 basis. The CANUTEC emergency centre is staffed by bilingual scientists specialized and trained in emergency response. CANUTEC deals with approximately 1,000 emergency situations for all classes of dangerous goods yearly and handles over 25,000 communications per year (Government of Canada, 2022b) The TDG Class 7, radioactive materials, is a very small fraction of these situations. CANUTEC's advisors can provide immediate advice over the phone and recommend actions to be taken, and those to avoid, in dangerous goods emergencies. CANUTEC advisors do not go to the incident site.

#### 4.1.2 CNSC

The CNSC is a federal regulatory agency with a mandate involving four major areas of:

- Regulation of the development, production and use of nuclear energy in Canada to protect health, safety and the environment
- Regulation of the production, possession, use and transport of nuclear substances, and the production, possession and use of prescribed equipment and prescribed information
- Implementation of measures respecting international control of the development, production, transport and use of nuclear energy and substances, including measures respecting the non-proliferation of nuclear weapons and nuclear explosive devices
- Dissemination of scientific, technical and regulatory information concerning the activities of CNSC, and the effects on the environment, on the health and safety of persons, of the development, production, possession, transport and use of nuclear substances (CNSC, 2021).

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<sup>6</sup> Dangerous Goods are classified in Transportation of Dangerous Goods Regulations SOR/2001-286 (REF) and provided in Schedule I of the regulation.

The first and second elements of the CNSC mandate are most relevant to the Project and emergency services. The CNSC are the regulator that “licenses nuclear power plants in Canada and monitors their safe operation” (CNSC, 2020). The CNSC would provide licencing related approvals for Project activities including site preparation, construction, operations and decommissioning phases, as well as responsibility for emergency preparedness and response associated with each of these activities. The CNSC oversight of the Project would be guided by a new standard, CSA N292.7, *Deep geological disposal of radioactive waste and irradiated fuel* (CSA 2022).

### 4.1.3 Safety and Security - RCMP

The nearest Royal Canadian Mounted Police (RCMP) detachment is located in Kitchener, 120 km southeast of the potential Project Site. The most applicable aspect of the RCMP operation is its national Chemical, Biological, Radiological, Nuclear, Explosives (CBRNE) response team. The CBRNE team is called in to evaluate scenes potentially linked to terrorist or suspected terrorist activity. Other aspects of RCMP operations are not considered further in this report.

## 4.2 Provincial Level

Existing provincial emergency response capabilities are:

- Emergency Management Ontario (EMO)
- Provincial Nuclear Emergency Response Plan (PNERP) and its implementing plans for nuclear facilities including Bruce Power
- Air Ambulance (Ornge)
- WSN (Ontario Mine Rescue Program)
- OPP

### 4.2.1 Emergency Management Ontario

Emergency Management Ontario (EMO) is responsible for planning for, responding to, and recovering from emergencies within the province including nuclear emergencies. It is the key organization for controlling emergency response from nuclear facilities at the provincial level through development and implementation of the PNERP Master Plan and its implementing plans. The Office of the Fire Marshal and Emergency Management (OFMEM) of the Ministry of Community Safety and Correctional Services updated the PNERP Master Plan in 2017 (Ministry of Community Safety and Correctional Services, 2017). One of the examples of the PNERP implementing plans is the *Implementing Plan for the Bruce Nuclear Generating Station*, which was updated in 2019 by OFMEM (Ministry of Community Safety and Correctional Services, 2019).

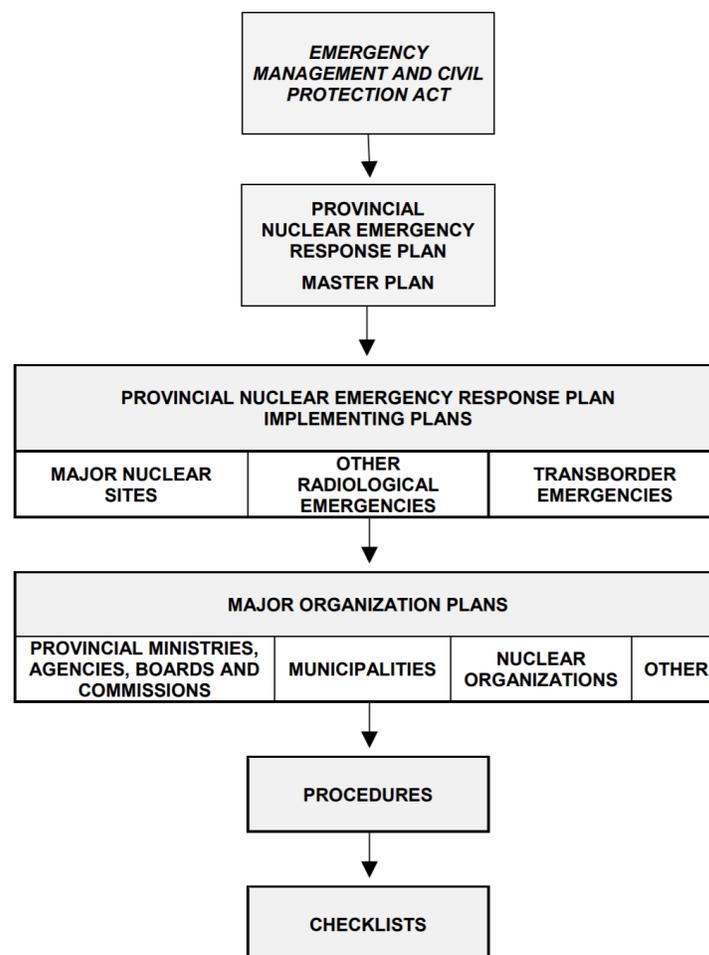
In support of emergency management in Ontario, a hazard identification was completed by the OFMEM (OFMEM, 2019). The *Hazard Identification Report* contains information profiles for hazards, including a high-level overview of possible consequences. It is divided into 10 parts; an introduction and 9 sections. Section D of the report is about hazardous materials.

### 4.2.2 PNERP

The PNERP is mandated by section 8 of the provincial *Emergency Management and Civil Protection Act (EMCPA)* (Government of Ontario, 2019) which requires a provincial emergency plan for emergencies arising in connection with nuclear facilities.

The PNERP Master Plan is a generic plan that sets out the overall principles, policies, basic concepts, organizational structures and responsibilities, functions, and inter-relationships that govern nuclear emergency management in Ontario (Ministry of Community Safety and Correctional Services, 2017). The Ontario government is responsible for planning and leading the response to off-site nuclear emergencies by supporting and coordinating the responsible organizations including provincial ministries, municipalities, nuclear facilities, federal agencies, etc. Emergency response plans for nuclear facilities are developed through implementing plans (e.g., the *Implementing Plan for the Bruce Nuclear Generating Station*, OFMEM 2019). The PNERP Master Plan was updated and approved in December 2017 after a public consultation and input from nuclear emergency response organizations. Figure 4-1 shows the provincial nuclear and radiological emergency response planning structure.

**Figure 4-1: Provincial Nuclear and Radiological Emergency Response Planning Structure**



Source: PNERP Master Plan, 2017.

Two of the main provisions of the PNERP Master Plan are ‘Emergency Planning Zones’ and the ‘Roles and Responsibilities of Designated Municipalities’:

1. The planning basis determination has been elucidated in terms of the emergency planning zones, including the new Contingency Planning Zone, which have been incorporated into the PNERP

Master Plan.<sup>7</sup> These zones were adopted to better align the Plan with the principles and requirements of national and international standards including CNSC Nuclear Emergency Preparedness and Response, Version 2 REGDOC-2.10-1 (CNSC, 2016), CSA N1600 (CSA, 2021), and International Atomic Energy Agency (IAEA) IAEA GSR 7 (IAEA, 2015), and each is defined in terms of the level and extent of planning and preparedness required to prepare for a nuclear emergency.

- a. Automatic Action Zone (AAZ): 3km
- b. Detailed Planning Zone (DPZ): 10km
- c. Contingency Planning Zone (CPZ): 20km
- d. Ingestion Planning Zone: 50km

According to the PNERP Master Plan, the above zones are defined only for a nuclear reactor facility. In May 2011, EMO prepared the PNERP *Implementing Plan for Other Radiological Emergencies* (2011) which defines the primary (which includes Contiguous Zone) and secondary zones within which planning and preparedness are carried out for measures against exposure to ingestion of radioactive materials.

It should be noted that the current Emergency Planning Zone definition (see Section 1.3.2 'Spatial Boundaries', above) may change when the PNERP Implementing Plan is prepared for the Project.

2. PNERP defines a *designated municipality* and *designated host municipality* as follows:

**“Designated Municipality:** A Municipality in the vicinity of a nuclear facility which has been designated under the *Emergency Management and Civil Protection Act (EMCPA)*<sup>8</sup>, as one that shall have a nuclear emergency plan.”

**“Designated Host Municipality:** The Municipality assigned responsibility in the Provincial Nuclear Emergency Response Plan for the reception and care of people evacuated from their homes in a nuclear emergency.”

Municipalities designated pursuant to Section 3(4) of the EMCPA as a Designated Municipality have the following responsibilities:

- a. Preparedness
- b. Provision of Personnel
- c. Response
- d. Training & Exercises
- e. Infrastructure
  - i. local police services
  - ii. fire services
  - iii. paramedic services
  - iv. hospitals

The detailed roles and responsibilities of the designated municipalities as stipulated in the PNERP Master Plan are provided in **Appendix C**.

<sup>7</sup> These emergency planning zones, including the Ingestion Planning Zone, may not apply to an underground storage facility such as a DGR, as the types of potential release associated with a reactor are not present with a DGR. The applicable planning zones would be developed in the future by NWMO in consultation with provincial and federal regulators (PNERP and the CNSC).

<sup>8</sup> Emergency Management and Civil Protection Act R.S.O. 1990

### 4.2.3 Air Ambulance (Ornge)

The main air ambulance service provider in Ontario is Ornge. Ornge's core business is providing patient transportation involving a range of paramedical services (Ornge, 2022), by air and by land, including:

- Emergent and urgent interfacility transport
- Emergent scene response
- Repatriation of interfacility patients
- Non-urgent transport based on geographic and population needs
- Support for healthcare in remote communities through new and innovative approaches
- Provincial Transfer Authorization Centre (PTAC) authorization in support of public health objectives
- Transportation related to organ transplant

Ornge owns a fleet of aircraft and land ambulances operating out of 12 bases across Ontario. The closest base to the potential Project Site is located in London, Ontario which is 130 km away from MSB. Vehicles in Ornge's fleet include:

- 8 Pilatus Next Generation PC-12 airplanes,
- 12 Leonardo AW-139 helicopters, and
- 13 Crestline Commander land ambulances.

The total number of transports by Ornge in 2021 were (Ornge Stats Centre, 2022):

- Total Fixed-Wing Transports (Planes): 11,525
- Total Rotor-Wing Transports (Helicopter): 4,130
- Total Land Ambulance and Marine Transports: 8,391

### 4.2.4 Workplace Safety North (Ontario Mine Rescue Program)

Workplace Safety North (WSN) is an independent not-for-profit and one of four sector-based health and safety associations in Ontario. WSN provides province-wide workplace health and safety training and services for the mining and forest products industries in the area where the Project is located. The services include the Safe Workplace Ontario third-party business health and safety certification program, Workplace Safety and Insurance Board Excellence program, business health and safety program and culture audit, and on-site health and safety consulting. Training services include Joint Health and Safety Committee Certification, Occupational Health and Safety Representative, Working at Heights Safety Training, mining and forestry common core mandatory skills training and mine rescue training.

The Ontario Mine Rescue Program has published the Handbook of Training in Mine Rescue and Recovery Operations (Ontario Mine Rescue, 2021). On April 14, 2021, the Province of Ontario announced funding of nearly \$8 million to support the Ontario Mine Rescue Program which helps strengthen rescue capacity at mine sites (WSN, 2021).

The WSN Mine Rescue Technical Advisory Committee (TAC) is comprised of industry volunteers with experience and expertise in mine rescue. The TAC promotes the continual improvement of emergency preparedness of Ontario mines by:

- Providing advice and recommendations on the content of mine rescue training programs;
- Providing advice and making recommendations regarding mine rescue emergency equipment requirements;
- Identifying and recommending research projects; and

- Recommending changes to the mine rescue handbook.

The complete services provided are published in WSN Health and Safety Services Guide (WSN, 2022b).

#### 4.2.5 Safety and Security - Ontario Provincial Police (OPP)

The Ontario Provincial Police (OPP) operates under the *Police Services Act* (Act), and primarily provides:

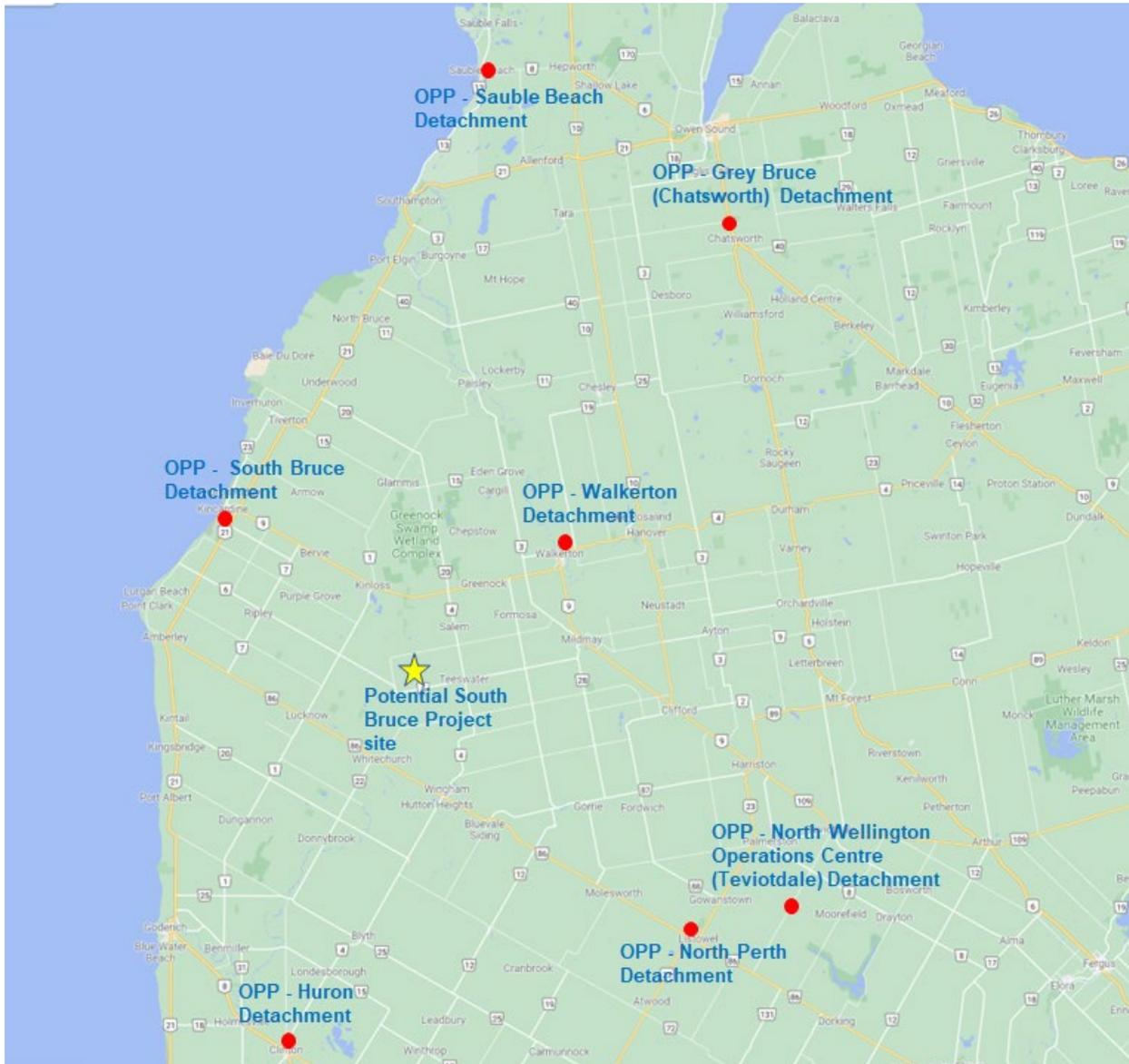
- Front-line police services in areas of Ontario that do not have their own police force;
- Patrols on provincial highways, waterways and trail systems;
- Municipal policing services under contract where requested by municipalities;
- Emergency and other support services to all communities in the province; and
- Investigations into complex criminal cases and organized crime.

Under PNERP, OPP shall:

- Execute the applicable preparedness responsibilities described in Section 4.2.2 related to the preparedness elements of the PNERP prior to a nuclear or radiological emergency.
- Ensure that it maintains appropriate plans and preparations to execute its operational role in a nuclear emergency, including participation in the development of Unified Transportation Management Plans.
- Ensure the provision of assistance and resources in support of the emergency response, and as required by Unified Transportation Management Plans made under this Plan.
- Ensure participation by all required staff in nuclear and radiological emergency training and exercises.
- Require OPP staff working in the Provincial Emergency Operations Centre (PEOC) to have an overall knowledge of their emergency plans and PNERP.

The OPP detachments within and near the Study Area are shown in Figure 4-2. The OPP Walkerton Detachment is the only one located within the Study Area; it provides services to the MSB.

Figure 4-2: OPP Detachments Within and Near the Study Area



Source: OPP search (OPP, 2022)

### 4.3 County Level

The county-level emergency response capabilities within the Study Area include:

- Paramedic Services
- County of Bruce ERP
- County Emergency Response Organizations
- MAAs
- Community Emergency Management Coordinator (CEMC)

## 4.3.1 Paramedic Services

Among three paramedic services headquarters (Bruce County, Grey County, and Huron County), two are located within the Study Area – those for Bruce and Huron counties (see Figure 4-3).

### 4.3.1.1 Bruce County Paramedic Services

Bruce County Paramedic Services employs a staff of about 100 full time and part time paramedics that provide pre-hospital care to citizens and visitors of Bruce County (Bruce County Paramedic Service, 2022). Headquartered in Walkerton, Bruce County Paramedic Service is committed to:

- Providing quality community-based emergency health services.
- Maintaining and improving the skills of its paramedics.
- Promoting public relations and providing community awareness and prevention programs.
- Enhancing its partnerships with other emergency services such as fire and police departments including assisting with the development and maintenance of a tiered response.
- Ensuring responses to emergencies meet its Canadian Triage and Acuity Scale (CTAS) Response Times targets.

Bruce County Paramedic Services reports that it responds to more than 14,000 calls for service annually. It operates 12 ambulances from the following seven bases:

- Walkerton
- Kincardine
- Port Elgin
- Sauble Beach
- Wiarton
- Tobermory
- Chesley

In the fall of 2022, Bruce County Paramedic Services took over responsibility for Bruce County's Emergency Management; prior to that, this function was housed within Corporate Services.

### 4.3.1.2 Huron County Paramedic Services

Huron County's Paramedic Services provide 24-hour paramedic services from seven bases and two posts strategically located throughout the county (Huron County Paramedic Service, 2022):

- Bases:
  - Exeter
  - Goderich
  - Tuckersmith (Kinburn Line/Hwy 8 Intersection)
  - Wingham (Headquarters)
  - Clinton
  - Zurich
  - Bayfield
- Posts:
  - Ashfield-Colborne-Wawanosh
  - Brussels

Figure 4-3: Location of Paramedic Services Headquarters



Sources: (Bruce County Paramedic Service, 2022), (Grey County Paramedic Service, 2022), (Huron County Paramedic Service, 2022)

Huron County's 11 ambulances and 3 rapid response units cover an area of 3,402 square kilometres, providing emergency medical response to a population base of approximately 59,100 people.

Huron County paramedic services reports that it responds to more than 10,000 calls for service annually.

A study was completed that included 10 – 20-year projections regarding the anticipated changes in calls to the service. The study included (Knowledge holder interview, August 2021):

- Anticipated increased calls from Sauble Beach, new base was recommended.
- A new station in Holyrood (Huron-Kinloss) would be desirable since it is in the middle of the County.
- Recommendation for additional stations for Kincardine and Tobermory.

#### 4.3.1.3 Grey County Paramedic Services

Grey County Paramedic Services (headquartered in Owen Sound) provides emergency ambulance service to Grey County. As the fourth largest county in Ontario, covering an area of 454,040 hectares, Grey County is home to more than 90,000 residents. Grey County Paramedic Services responds to more than 23,000 calls for service annually (Grey County Paramedic Service, 2022). Grey County's Paramedic Services provide services from eight bases throughout the county:

- Owen Sound
- Meaford
- Markdale
- Dundalk
- Durham
- Hanover
- Craigeleith
- Chatsworth

All stations except the Chatsworth base are staffed 24 hours per day. Up to 10 ambulances are staffed during peak hours, with 7 ambulances being the minimum at night from midnight to 6:00 AM.

Grey County paramedic services reports that it responds to more than 23,000 calls for service annually.

Grey County Paramedic Services Workforce include (Grey County Paramedic Service, 2022):

- 69 Primary Care Paramedics (full time)
- 55 Primary Care Paramedics (part time)
- 11 Alternate Rating Duty Supervisors
- Duty Supervisors
- 2 Administrative Support Staff
- 1 Quality Assurance & Training Manager
- 1 Operations Manager
- 1 Director of Paramedic Services

The locations of paramedic services headquarters are shown in Figure 4-3 above.

### 4.3.2 County of Bruce ERP

The *Emergency Management and Civil Protection Act* includes the requirement for hazard and risk assessment and emergency response planning. Section 2 of the Act requires that “in developing its emergency management program, every municipality shall identify and assess the various hazards and risks to public safety that could give rise to emergencies and identify the facilities and other elements of the infrastructure that are at risk of being affected by emergencies.” Section 3 of the Act requires that “every municipality shall formulate an emergency plan governing the provision of necessary services during an emergency and the procedures under and the manner in which employees of the municipality and other persons will respond to the emergency and the council of the municipality shall by by-law adopt the emergency plan.”

The County of Bruce ERP (2004) includes the basic requirements of an ERP and spells out the requirement of hazard and risk assessment and development of risk-based ERP for each municipality within the county. However, it does not appear that the County itself has conducted any risk assessment. If the Project comes to the South Bruce Area, the County of Bruce ERP needs to be updated based on an assessment of hazards and risks that are associated with the implementation of the Project. These are discussed in Section 5.

### 4.3.3 County Emergency Response Organizations

The Bruce County, Huron County, and Grey County Emergency Response Organizations operate emergency operations centres which maintain ERPs for their respective counties. The ERPs include (County of Bruce, 2004, County of Huron, 2018, County of Grey, 2019):

- Description of response organization and emergency response team members
- Roles and responsibilities
- Contact information
- Notification and response procedures
- Emergency operations
- Evacuation
- Communications
- Recovery
- Plans maintenance and testing

### 4.3.4 Other Capabilities

Other county level emergency response capabilities/mechanisms include:

- MAAs with neighbouring counties, municipalities and Bruce Power. All counties within the Study Area have MAAs.
- A county level CEMC who is responsible and accountable for the county's emergency management program (County of Bruce, 2004). All counties with the Study Area have a CEMC. The Bruce County CEMC is based in Walkerton.

## 4.4 Municipality Level

Municipal emergency response capabilities in the Study Area include:

- MSB ERP
- Fire departments
- MAAs
- CEMC

A risk assessment (RA) for the MSB was prepared in support of emergency management in the municipality (Knowledge holder interview, July 2021). This simplified risk assessment is updated every three years (MSB, 2009). No additional information on the risk assessment was provided for inclusion in this study.

### 4.4.1 MSB ERP

The *Emergency Management and Civil Protection Act* includes the requirement for hazard and risk assessment and emergency response planning. Section 2 of the Act requires that “in developing its emergency management program, every municipality shall identify and assess the various hazards and risks to public safety that could give rise to emergencies and identify the facilities and other elements of the infrastructure that are at risk of being affected by emergencies.” Section 3 of the Act requires that “every municipality shall formulate an emergency plan governing the provision of necessary services during an emergency and the procedures under and the manner in which employees of the municipality and other persons will respond to the emergency and the council of the municipality shall by by-law adopt the emergency plan.”

The MSB ERP includes the basic requirements of an ERP, and it appears that the risk assessment conducted has provided a basis for the ERP. If the Project comes to the South Bruce Area, the MSB risk assessment and ERP need to be updated based on an assessment of hazards and risks that are associated with the implementation of the Project. These are discussed in Section 5.

### 4.4.2 Fire Departments

There are sixteen nearby fire stations that could potentially support Project-related emergencies (Municipality fire Department Websites, 2022). Ten of these fire stations are within and six of them are outside the Study Area. Additionally, Bruce Power has a fire department which is approximately 50 km by road northwest of the potential Project Site and could potentially support Project-related emergencies. The municipal fire departments are listed in Table 4-1 and their locations are shown in Figure 4-4.

The MSB fire department operates two stations (Mildmay Carrick and Teeswater Culross) and has one permanent fire fighter and 50 volunteer firefighters (some of whom work at the Bruce Power fire department).

**Table 4-1: Municipal Fire Departments**

<b>Fire Department</b>	<b>Distance by Road to the Site, km</b>
Teeswater Fire Hall	5
Wingham Fire Department	17
Mildmay-Carrick Fire Station	19
Lucknow & District Fire Department	21
Ripley-Huron Fire Department	23
Walkerton Fire Department	30
Howick Township Fire Station	32
Clifford Fire Department	34
Kincardine Fire Department	38
Hanover Fire Department	39
Blyth Fire Hall	40
Tiverton Fire Department	43
Paisley Fire Department	44
Goderich Fire Department	51
Elmwood & Area Fire Department	52
Chesley and Area Fire Department	54

#### **4.4.2.1 Mildmay Carrick Fire Station**

The Mildmay Carrick Station is 19 km by road east of the potential Project Site and is led by a deputy fire chief and 25 volunteer firefighters. The Station provides a variety of fire rescue services to the community including (MSB, 2022a):

- Fire rescue services
- Motor vehicle collision response
- Medical first response
- Code inspection and enforcement
- Public education
- Fire prevention

The Mildmay Carrick Station operates the following fire engines and transportation vehicles:

- One pumper
- One tanker
- One rescue truck
- One utility truck

Figure 4-4: Location of Municipal Fire Departments



Sources: MSB Safety and Preparedness website (MSB, 2022a), Chesley and area fire department website (2022), Kincardine fire department website (2022), Elmwood and area fire department website (2022), Walkerton fire department website (2022), Hanover fire department website (2022), Tiverton fire department website (2022), Ripley-Huron fire department website (2022), Clifford fire department website (2022), Blyth fire department website (2022), Goderich fire department website (2022), Lucknow & district fire department website (2022), Wingham fire department website (2022), Township of Howick fire department website (2022)

#### 4.4.2 Teeswater Culross Fire Station

The Teeswater Culross Station is 15 km by road east of the potential Project Site and is led by a deputy fire chief and 25 volunteer firefighters. The station provides a variety of fire rescue services to the community including (MSB, 2022a):

- Fire rescue services
- Motor vehicle collision response
- Medical first response
- Code inspection and enforcement
- Public education
- Fire prevention

The Teeswater Culross Station operates the following fire engines and transportation vehicles:

- One pumper
- Two tankers
- One rescue truck

#### 4.4.3 Mutual Aid Agreements

The MSB has established MAAs with other municipalities including:

- Township of North Huron
- Municipality of Morris-Turnberry
- Township of Howick

#### 4.4.4 CEMC

A municipality level CEMC is responsible and accountable for each municipality's emergency management program.

### 4.5 Health Care Organizations

There are twelve hospitals located in four counties overlapping the Study Area as well as in Perth County that could potentially support emergency response. These hospitals operate under various healthcare organizations. These include four South Grey Bruce Health Centre hospitals. Bruce Power signed a MOU in 2015 to support two of these hospitals for radiation monitoring and decontamination (Bruce Power, 2015):

- South Grey Bruce Health Centre Kincardine Hospital (SGBHC)
- Grey Bruce Health Services- Southampton Hospital (GBHS)

Other hospitals are currently not equipped to measure radioactivity or to provide a decontamination room.

The hospitals located in the four counties overlapping the Study Area as well as in Perth County are listed in Table 4-2. While the Owen Sound Hospital (Grey Bruce Health Services) provides a number of regional services, it is located approximately 100 km by road from the potential Project Site. Given the operating principle that paramedics/ambulances transport patients to the nearest hospital, there are a number of other closer hospitals, including two with radiation decontamination facilities.

**Table 4-2: Hospitals Located in Counties Overlapping the Study Area**

Health Care Organization	Hospital	Distance by Road to the Project Site	Number of Beds	Emergency Department Operating hours	Radiation Decontamination Facility
Listowel Wingham Hospitals Alliance	Wingham & District Hospital	14 km	32-bed hospital, 22 acute care beds, 5 chronic care and 5 rehabilitation care beds	24-hr	No
South Grey Bruce Health Centre (SGBHC)	Walkerton Hospital	24 km	21 beds (15 Acute, 6 Obstetric),	8 am to 8 pm	No
SGBHC	Kincardine Hospital	29 km	17 beds	24-hr	Yes
-	Hanover & District Hospital	39 km	28 beds	24-hr	No
-	Alexandra Marine & General Hospital (Goderich)	45 km	42 beds including 20 beds dedicated for IP Acute care	24-hr	No
Listowel Wingham Hospitals Alliance	Listowel Memorial Hospital	48 km	38 beds including 18 med surge beds, 15 CCC beds, 5 obstetrics beds	24-hr	No
Wellington Health Care Alliance	Palmerston & District Hospital	54 km	15 beds	24-hr	No
SGBHC	Durham Hospital	55 km	10 beds	24-hr	No
SGBHC	Chesley Hospital	56 km	18 beds ((8 Acute, 10 Seniors Centre of Care)	24-hr	No
Wellington Health Care Alliance	Louise Marshall Hospital (Mount Forest)	56 km	15-bed acute	24-hr	No
Grey Bruce Health Services (GBHS)	Southampton Hospital	70 km	16 beds	24-hr	Yes
GBHS	Owen Sound Hospital	100 km	244 beds	24-hr	No

Sources: South Grey Bruce Health Centre website (2022), Hanover & District Hospital website (2022), Alexandra Marine & General Hospital (Goderich) website (2022), Listowel Wingham Hospitals Alliance website (2022), Wellington Health Care Alliance website (2022), Grey Bruce Health Services website (2022)

The locations of these hospitals are shown in Figure 4-5.

Figure 4-5: Location of Hospitals



Sources: South Grey Bruce Health Centre website (2022), Hanover & District Hospital website (2022), Alexandra Marine & General Hospital (Goderich) website (2022), Listowel Wingham Hospitals Alliance website (2022), Wellington Health Care Alliance website (2022), Grey Bruce Health Services website (2022)

## 4.6 Industry

### 4.6.1 Bruce Power

The Bruce Power Emergency Response Organization (BP ERO) as described in the PNERP *Implementing Plan for the Bruce Nuclear Generating Station* employs 14 people with operational, emergency management, fire fighting, security, and radiation protection backgrounds. The emergency response resources include 5 fire trucks. Additional part-time employees include more than 60 personnel including 40 operators and 20 fire fighters on standby using 6 crews for every 6-week rotation (Knowledge holder interview, January 2022). The Bruce Power ERO is responsible for the PNERP *Implementing Plan for the Bruce Nuclear Generating Station*.

Bruce Power has signed several MAAs and Memorandum of Understanding (MOUs) with Bruce County, adjacent municipalities, SBGHC and GBHS (Bruce Power ,2015).

Bruce Power contributes to the community emergency response in the following capacities (Knowledge holder interview, January 2022):

- PNERP *Implementing Plan for the Bruce Nuclear Generating Station*
- Licence drills
- Conducting joint emergency exercises involving OPG, CNL, and Hydro One (twice a year)
- Emergency drills which involve Bruce County Paramedic Services
- Municipality of Kincardine Fire Department
- Hazardous material trainings to Kincardine and Southampton hospitals and Kincardine Fire Department
- Providing training to community emergency response teams through its Kincardine and Chesley training centres
- Providing technical expertise and human resources to provincial and municipal emergency response organizations

### 4.6.2 Kinectrics Laundry Facility (Teeswater)

Kinectrics' Laundry Facility opened in 2019. Located 30 minutes from the Bruce Power site in Teeswater, the 40,000 sq. ft. site launders contaminated garments/ personal protective equipment (PPE) from Bruce Power (Nuclear Innovation Institute, 2021). This includes cotton products, plastic suits, respirators, air hoses and other PPE. The Kinectrics Laundry Facility adheres to the conditions outlined by the CNSC to protect the health, safety and security of staff and the community, as well as the environment (Knowledge holder interview, October 2022). There is no long-term storage of the radionuclides removed, as they are returned to the plants they were received from on a routine basis<sup>9</sup>. No public domain information on emergency planning/response for this facility was found,

### 4.6.3 Compass Minerals Goderich Salt Mine

The Goderich salt mine operated by Compass Minerals has a very well established mine safety system that includes a mine rescue plan. It has MAAs with the Windsor salt mine and the Caledonia gypsum mine. These mines support each other during mine emergencies particularly mine evacuation and rescue (Knowledge holder interview, February 2022).

<sup>9</sup> From [Laundry Facility | Kinectrics](#) (Accessed September 20, 2022)

## 5. Preliminary Analysis/Effects Assessment

The assessment of potential effects of the potential Project in South Bruce on community emergency response planning and infrastructure considers the following aspects:

- The requirements of the applicable regulatory authorities
- The review of relevant emergency services reports and data sets (e.g., local and regional ERPs, service-specific ERPs, mutual aid agreements)
- Interviews with key knowledge holders
- The Project characteristics/activities and requirements based on comparable industry standards that are relevant to emergency services
- Existing emergency response capabilities
  - Existing emergency planning and response services capability
  - Fire response capability
  - Transportation emergency response capability
  - Paramedic, Ambulance, Police, and Air Ambulance capability
  - Hospital services in proximity to the potential Project Site
  - Mine rescue capability
  - MAAs and MOUs
  - Identification and ability to evacuate sensitive populations during emergency events
- NWMO's proposed emergency response provisions in the *Deep Geological Repository Conceptual Design Report Crystalline/Sedimentary Rock* (Naserifard et al., 2021), *Deep Geological Repository Transportation System Conceptual Design Report Crystalline/Sedimentary Rock* (Taylor, 2021), and *Preliminary Transportation Plan* (NWMO, 2021b).

This *Emergency Services Study* report is a first step in starting to understand key considerations and future needs that would be required if the Project is located in the South Bruce Area.

Section 5.1 provides the details of the NWMO's proposed emergency response provisions. The sections that follow provide analysis of the effect of Project on the requirements of the emergency response services that are provided by various organizations. To facilitate the referencing, these sections follow the same hierarchy that was presented in Section 4.

### 5.1 NWMO

At this point in the site selection process, the NWMO has not developed any specific emergency plans or procedures specific to the potential Project Site in South Bruce. However, Section 9 of the *Deep Geological Repository Conceptual Design Report (DGR CDR) Crystalline/Sedimentary Rock* (Naserifard et al 2021) conceptually describes various aspects of 'Operational Safety and Monitoring', including radiological protection, monitoring for radioactive releases, fire detection and suppression. The Project ERP, when developed, should conform to the PNERP Implementing Plan that would be developed by EMO for the Project.

Section 9.1.4 of the *DGR CDR* 'Emergency Response and Mine Rescue' describes key concepts related to emergency services for the Project:

"Procedures for emergency response planning, the notification of releases and incident reporting will meet CNSC requirements and include the utilization of incident command systems to meet the needs of any kind or complexity of situation. For severe incident management (e.g., extreme or violent weather, chemical spills, etc.), various emergency related resources will be available. These will include:

- Pre-planned response procedures (including shutdown protocols);
- Pre-established post-emergency procedures including those for resuming operations;
- Off-site and on-site communications and management protocols, including regulatory notifications and public interaction;
- The services of an Emergency Response Team (ERT) or Mine Rescue Team (MRT); and
- Pre-trained staff that have undergone regular training on emergency response issues.

The primary personnel involved in handling any emergency will reside within an ERT/MRT. These resources would also be supported by on and off-site firemen and first aid attendants as well as the DGR's various superintendents and shift managers. Communications staff will be available to coordinate and assist in the required incident communications activities. Emergency response requirements have been incorporated in the design of the facility (e.g., fire protection and suppression, egress and refuge, secondary repository egress, etc.) as well as identification of services to support response (e.g., mine rescue, fire rescue) for the various phases of the DGR." (p. 142)

The DGR CDR also describes the firehall facility, a refuge station, and security monitoring room:

"The firehall (supported by the security monitoring room) will be equipped with detection and monitoring equipment for any fire hazards or smoke from any of the DGR facility operations. Firefighters will be on duty each shift, with other fire team members on standby in the event of an emergency. Two large municipal fire trucks will be available with telescopic ladders, hoses, pumps and all other typical fire-fighting tools." (p. 37)

Section 5.5.3 of the DGR CDR describes ancillary support facilities, including permanent and portable Refuge Stations:

"A large permanent refuge station will be established in the Services Area and will only be used as safe refuge for workers and visitors in the event of an emergency (i.e., will not be used as a lunchroom or for office space). The station will be located between two access tunnels which will allow access at either end of the station. The station will have 2 concrete walls with steel doors in the wall at each entrance to the refuge station. They will include a main area for personnel, and an operations supervisor's office at the back end of the station. The refuge station will be equipped with safety and rescue equipment such as a fire extinguisher, eyewash station, first aid kit, emergency food and drink rations and stretchers. The refuge station will provide a location that can be sealed and will be supplied with fresh air via the compressed air system. The piping network supplying breathing air to the refuge station will be designed to be in pressurized state (always ready to use) although breathing air will only be required during emergencies. All breathing air supplied to a refuge station will pass through an air purifier unit, which will be located underground inside the refuge station.

A portable refuge station will be placed underground in each arm of the repository within crosscuts that connect the twin access tunnels in each arm. These portable refuge stations will provide refuge to workers and visitors during an abnormal event when safe passage to the permanent refuge station in Services Area is not possible. Each of the portable refuge stations will contain bottled compressed air for emergency breathing air. Alternatively, the portable refuge stations could use a

Refuge One Air Centre (e.g., oxygen generator) to supply breathing air. The portable refuge station will also have a stock of bottled drinking water for the occupants.” (p. 89)

Section 8.1 Site Security describes ancillary support facilities, including a central command post or security monitoring room:

“The Protected Areas physical protection systems will incorporate a perimeter barrier with unobstructed land of minimum 5 m clear distance on both sides of the barrier. In addition, a system of protective elements will be in place to provide multiple layers of delay, detection and assessment that are controlled through a central command post or security monitoring room. The assessment component will enable security personnel to evaluate detected threats and provide the appropriate response. All of these component layers will further be connected to a back-up uninterrupted power supply, located within the Protected Area.” (p. 132) Further, “The main security monitoring room will house monitoring equipment including cameras and closed-circuit TV monitors and will serve as the central command point for security surveillance serving both the Protected Areas and the Balance of Site. The security room (Area B25 in Figure 58), located adjacent to the Administration Building, will accommodate four on-duty personnel per shift. Remaining security team members will be on standby in the event of an emergency.” (p. 133)

Additional detail on the approach to site security for the DGR facilities is provided on p.132 to 138.

Section 8.2 Safeguards describes other measures:

“The purpose of safeguards measures is to provide credible assurance of non-diversion and the absence of undeclared safeguards relevant activities as prescribed by the IAEA. In the DGR facility, this would be accomplished through nuclear material accounting techniques (to maintain knowledge of the contents of each package) and a containment and surveillance system (to verify the continued integrity and movements of the spent fuel packages to maintain the continuity of knowledge on them). An important aspect of the safeguard system is the security measures. The security measures will provide physical protection of nuclear material and nuclear facilities in order to prevent unauthorized removal and sabotage of nuclear material in storage. Security measures will include technical means and procedures of access control, detection of unauthorized intrusion and response to unauthorized intrusion. (p. 138)

Emergency services for transportation of UNF containers are outlined in Chapter 9 of the *Transportation System Conceptual Design Report Crystalline/Sedimentary Rock* (Taylor, 2021) which states:

“NWMO will provide an Emergency Response Plan to the Canadian regulatory agencies to demonstrate that appropriate emergency measures are in place and that information is available to relevant public emergency response agencies. The purpose of the Emergency Response Plan is to ensure coordination among the NWMO, provincial, and local first responders as well as federal agencies.

The Emergency Response Plan will identify provisions to ensure that there are appropriate measures in place, in the event that there is an incident involving the transport of used nuclear fuel. The Emergency Response Plan details the response actions that should take place, the resources available to mitigate the situation, and, ultimately, how to return the area to normal.

The Emergency Response Plan will describe responsibilities associated with response as well as define response strategies and concepts. It will also identify resources (i.e., personnel and equipment requirements) and define training and procedures to enable effective response. It will also establish communications / liaison protocols with external emergency response organizations.

The Emergency Response Plan may include, but is not limited to the following:

- description of the emergency response organization and external agencies, as well as their roles, responsibilities, capabilities and duties and how they will interface;
- agreements on assistance with other facilities and/or other organizations;
- plans for mobilizing and deploying resources for response;
- description of response functions and actions (e.g., driver, escort, NWMO transportation command centre staff, first on the scene team, response team, recovery team, etc.);
- protective and response measures;
- training and qualification requirements, as well as drills and joint exercises; and
- communication protocols as well as procedures for alerting and notifying key organizations and personnel as well as the public.”

The *Preliminary Transportation Plan* (NWMO, 2021b) has listed specialized conveyance recovery equipment that may be identified by ERP in addition to the conventional emergency response equipment identified in Section 6 of *Transportation System Conceptual Design Report Crystalline/Sedimentary Rock* (Taylor, 2021).

Additional information on the regulatory process for transporting UNF containers was provided in the NWMO and *Planning Framework for the Transportation of Used Nuclear Fuel* (NWMO, 2021a) which states:

- “Emergency response planning requirements will need to be met, ensuring workers and first responders are trained before shipments can begin. The NWMO will need to work with local response agencies to co-ordinate planning and preparedness activities before transportation can begin.” (p. 15)
- “Although existing supports are available (e.g., Canadian Transport Emergency Centre<sup>10</sup>) and training covers incidents involving dangerous goods, including radioactive material, access to training can be budget-dependent. The NWMO needs to work with first responders along transportation routes to understand specific information and training requirements, and ensure that all parties have appropriate information, resources, training, and a clear understanding of roles and responsibilities in the event of an accident.” (p. 15)
- Emergency response planning for the transportation of UNF containers is a basic requirement for the *Planning Framework*. This emergency planning will include training and joint exercises with provincial and community emergency responders.

A knowledge holder interview with NWMO on the transportation of UNF (Knowledge holder interview, February 2022) provided the following observations:

- Transportation is approximately 20 years away, therefore all planning is at the conceptual level now. A framework is being developed for road and rail transportation modes. For the potential Project Site, a system including the rail transportation mode does not seem viable and it is most likely that the transportation system would be road only.
- NWMO has not worked directly with hospitals but have been working with other organizations. They have developed a first responders working group (fire fighters, both paid and volunteers) which has helped to determine what type of incidents they have experience with, training requirements, and comfort with a radiological incident.

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<sup>10</sup> CANUTEC

- The goal of the working group is to obtain baseline information and to determine how to move forward with transportation awareness and training.
- Based on discussions to date with CANUTEC, UNF would be treated like any other dangerous good being transported today with strict regulations and the trucks labelled. At this time, NWMO has had relatively little engagement with Transportation Canada since UNF transportation is not yet on their radar. There is an interjurisdictional working group that plans to address the transportation of UNF.

Table 5-1 provides a summary of the NWMO's proposed emergency response provisions and identifies which of these provisions has been indicated as not requiring support from community emergency response capabilities.

**Table 5-1: Summary of the NWMO's Proposed Emergency Response Provisions**

Proposed Provision	Requirement for Community Emergency Response Support	Aboveground / Underground
Radiological protection	No	Aboveground / Underground
Monitoring for radioactive releases	No	Aboveground / Underground
Fire detection and suppression	Yes	Aboveground / Underground
Project ERP which includes but is not limited to the following: <ul style="list-style-type: none"> <li>• External organizations and emergency response capabilities</li> <li>• Roles, responsibilities</li> <li>• Coordination and interfacing</li> <li>• Agreements on assistance</li> <li>• Mobilizing and deploying</li> <li>• Response functions and actions</li> <li>• Protective and response measures</li> <li>• Training and drills and joint exercises</li> <li>• Communication protocols</li> <li>• Notification</li> </ul>	Yes	Aboveground / Underground
Notification of releases and incident reporting	No	Aboveground / Underground
Pre-planned response procedures (including shutdown protocols)	No	Aboveground / Underground
Pre-established post-emergency procedures including those for resuming operations;	No	Aboveground / Underground
Off-site and on-site communications and management protocols, including regulatory notifications and public interaction	No	Aboveground / Underground
The services of an ERT or MRT	Yes	Aboveground / Underground
Pre-trained staff that have undergone regular training on emergency response issues	Yes	Aboveground / Underground

Proposed Provision	Requirement for Community Emergency Response Support	Aboveground / Underground
Firehall facility with two large municipal fire trucks will be available with telescopic ladders, hoses, pumps	Yes	Aboveground
Permanent refuge station equipped with safety and rescue equipment such as a fire extinguisher, eyewash station, first aid kit, emergency food and drink rations and stretchers	No	Underground
Portable refuge station in each arm of the repository within crosscuts that connect the twin access tunnels in each arm which will contain bottled compressed air for emergency breathing air	No	Underground
Security measures including technical means and procedures of access control, detection of unauthorized intrusion and response to unauthorized intrusion	No	Aboveground
Security room which accommodates four on-duty personnel per shift with remaining security team members will be on standby in the event of an emergency	No	Aboveground
Protected Areas physical protection systems incorporating a perimeter barrier	No	Aboveground
Security monitoring equipment including cameras and closed-circuit TV monitors	No	Aboveground
Transportation security plan which includes but not limited to the following: <ul style="list-style-type: none"> <li>• Threat assessment</li> <li>• Proposed security measures</li> <li>• Communication arrangements and protocols</li> <li>• Notification</li> <li>• Arrangements with emergency response forces</li> <li>• Support of response forces along the transport route</li> <li>• Contingency arrangements</li> <li>• Escort</li> <li>• Training and drills and joint exercises with provincial and community emergency responders</li> </ul>	Yes	Aboveground

## 5.2 Federal Level

The assessment resulted in the following general findings:

- The CNSC and Transport Canada are the key regulators for the development and operation of nuclear facilities and the transportation of used nuclear fuel in Canada.
- The emergency response requirements from their regulations are designed to minimize any potential harm and effects on nearby people and the environment.
- Site-specific emergency response requirements, including those related to the Emergency Planning Zone, have not yet been developed by the CNSC for the Project; this would occur following site selection during the regulatory activities in the pre-construction phase. It is noted that a new Canadian Standards Association standard, CSA N292.7 (CSA 2022), *Deep geological*

*disposal of radioactive waste and irradiated fuel*; would have to be reviewed to understand any relevance/ implications for emergency planning.

## 5.2.1 Transport Canada

### 5.2.1.1 CANUTEC

CANUTEC serves as a national advisory service that assists emergency response personnel in handling dangerous goods. NWMO should continue the discussion with CANUTEC and the interjurisdictional working group to share information about transportation of UNF.

### 5.2.1.2 ERAP

NWMO is mandated by the *TDG Act* and Regulations to develop ERAP for its transportation activities, particularly UNF transportation. NWMO should continue information sharing discussions with Transport Canada TDG directorate.

## 5.2.2 CNSC

Development of the ERP for the Project would require advanced consultation with the CNSC. The ERP provisions should meet the PNERP requirements.

## 5.2.3 RCMP

The NWMO, RCMP, and OPP are the three principal partners for provision of safety and security of the Project. Therefore, NWMO should hold discussions with the RCMP's CBRNE response team and the OPP with regards to provisions of safety and security both within the potential Project site and during transportation of UNF containers.

## 5.3 Provincial Level

### 5.3.1 OFMEM and EMO

- The *Hazard Identification Report* prepared in 2019 (OFMEM, 2019) will have to be updated to include the Project, before the construction phase for conventional hazards, and before the Project operations phase for radiological hazards. NWMO will need to share information with OFMEM and EMO in this regard.

### 5.3.2 PNERP

- At this point in the siting process, NWMO has not started discussions on developing its PNERP Implementing Plan or the application of its Emergency Planning Zone for the Project. As noted above in Section 1.3.2, selection of a revised Emergency Planning Zone may be justified following collection of additional data and more specific site characterization.

- PNERP includes roles and responsibilities for the designated municipality and designated host municipality. Therefore, before the operations phase, MSB and Bruce County will need to join the discussion with OFMEM and NWMO during the development of PNERP.

### 5.3.3 Ornge

- While the presence of the Project is not expected to have major effects on the operation of Ornge services, it would still have to be considered in Ornge's business assessment. NWMO will need to have discussions with Ornge before the construction phase is initiated.

### 5.3.4 Workplace Safety North

- Workplace Safety North is responsible for mine rescue in this part of Ontario. At this point in the siting process, the Project is not on their agenda. An Ontario Mine safety officer is currently assigned to three mines in their Southern District: Compass Minerals' Goderich salt mine, the Windsor salt mine, and the Caledonia gypsum mine. The Project would need to be added if it goes forward in the South Bruce Area.
- The WSN Mine Rescue TAC would need to review the Project's mine rescue procedures and recommend changes regarding the inclusion of radiological incidents in the Ontario Mine Rescue Program and the associated published Handbook of Training in Mine Rescue and Recovery Operations. This requires close discussion with NWMO.
- NWMO should become an Ontario Mine Rescue stakeholder. Efficient and effective progress in the Project's underground safety can be greatly supported by NWMO joining the Ontario Mine Rescue Program.

### 5.3.5 OPP

- The OPP along with the NWMO and RCMP are the three principal partners for provision of safety and security of the Project. The OPP periodically re-evaluates its resource allocation based on its review and business plans (e.g., OPP, 2013). Presence of the Project, its transportation activity, and any change in Project-related population, traffic, and housing are expected to be included in the OPP's business plan at the appropriate time. Information sharing among the community, NWMO, and police forces is a key activity before the construction phase begins.

## 5.4 County Level

Comparing the Project and the existing county emergency response capability resulted in the following findings.

### 5.4.1 Paramedic Services

- Paramedic Services are responsible for transportation of patients to hospitals. The role of Paramedic Services will not change during the construction and operational phases of the Project. However, they will coordinate with NWMO and ask for assistance when the injuries involve radioactivity.
- Bruce County Paramedic Services is currently involved in Bruce Power emergency response drills and exercises.
- Paramedics currently coordinate with Bruce Power and ask for assistance when the injuries involve radioactivity while patients are being transported to the nearest hospital (Knowledge holder interview, August 2021).
- The latest 10-20 year projection study that has been completed for paramedic services did not consider the presence of the Project. If the Project goes ahead in the South Bruce Area, the projection study would need to be updated. The anticipated increase in traffic volume and increased workforce population in the community will require additional incremental paramedic services capacity/support, as the allocation of these services are on a per capita basis.

### 5.4.2 County of Bruce ERP and ERO

- Bruce county has MAAs with neighbouring counties and municipalities.
- The Bruce County CEMC is based in Walkerton and is responsible for emergency planning in the County due to being closest to Bruce Power. The Project is not yet considered in the County's planning.
- In the fall of 2022, Bruce County Paramedic Services took over responsibility for Bruce County's Emergency Management; prior to that, this function was housed within Corporate Services.
- Bruce County is dependent on the Bruce Power Fire Department for hazardous material training.
- Protocol is in-place for ORNGE / air ambulance (Knowledge holder interview, August 2021).
- The Bruce County ERP does not include any reference to the Project implications on the emergency response (County of Bruce, 2004).
- *Emergency Management and Civil Protection Act* requires that development of municipal ERP should follow a risk and hazard assessment.
- The analysis indicated that the following changes/provisions need to be considered when updating the Bruce County ERP:
  - A risk and hazard assessment should consider the presence of the Project and its operations including transportation of UNF containers.
  - Ensuring the ERP is conforming to PNERP.
  - Updating the risk assessment to include new hazards and emergencies including nuclear emergencies.
  - Participating organizations needs to include NWMO.
  - Updating the roles and responsibilities to be consistent with the PNERP implementing plan requirements.
  - Update the traffic control centre to respond to increased traffic volume and transportation of UNF containers.
  - Updating the emergency operations to include nuclear emergency operations in coordination with the NWMO ERP and the PNERP.

- Updating the recovery plan to include nuclear emergency operations in coordination with the NWMO ERP and the PNERP.
- Plan testing and drills and exercises will need to involve NWMO with respect to nuclear emergency drills.
- Should include details on the relevant notifications to and from the involved organizations.
- Provision of essential services (including facilities such as water treatment plants, hospitals, long-term care and nursing homes) in coordination with the province. This also includes development of procedures for evacuation and identifying/pre-designating special groups who cannot evacuate on their own and need assistance in the event of a nuclear emergency.
- Development of plans for the protection and care of animals in consultation with OSPCA, OMAFRA, and MNR.
- Including provisions for the establishment of Emergency Worker Centres. Locations for these centres should ideally be able to accommodate the co-location of an Environmental Radiation and Assurance Monitoring Group (ERAMG) Command Post for field monitoring purposes.
- The Bruce County ERP includes provisions for assisting the coordinated effort for transport of persons in health care facilities, nursing homes, homes for the aged, etc. in need of evacuation.

## 5.5 Municipality Level

Comparing the Project and the existing municipal emergency response capability resulted in the following findings.

### 5.5.1 MSB Fire Department

- The MSB fire department does not have adequate equipment (particularly the Teeswater fire station which is in need of upgrades) (Knowledge holder interview, July 2021) and training required to support emergency response for the Project. The MSB fire department needs to be more equipped and trained for nuclear or radiological emergencies if the Project is to be located in the MSB.

### 5.5.2 MSB ERP

- It is anticipated that there will be an increase in traffic volume on the roads around the vicinity of the potential Project Site during operations and at a higher-level during construction.
- In addition, it is anticipated that there would be additional permanent/temporary population and housing in the MSB and neighbouring municipalities due to the Project that would require additional emergency support.
- While the MAAs with surrounding municipalities provides additional support to emergency response capability of the MSB, it has not yet been investigated whether this support is sufficient to handle the needs of the Project.
- *Emergency Management and Civil Protection Act* requires that development of municipal ERP should follow a risk and hazard assessment.
- The Risk Assessment (RA) that was conducted by MSB in support of the MSB's emergency response capability did not consider the Project and incidents involving nuclear materials, increased transportation volume (goods and services, workforce), and population due to the Project during construction and operations phases. The RA would have to be updated to include

the Project and its activities including transportation of UNF containers if it is to be located in the South Bruce Area.

- The MSB is not a support municipality for any nuclear facility emergency response, and the presence of the Kinectrics Laundry Facility in Teeswater does not seem to have made a change to its emergency response capability.
- It is anticipated that the MSB ERP would be updated to conform to the PNERP Master Plan and implementing plan for other radiological emergencies. These changes should include:
  - Establishing a coordinating committee to review and manage nuclear emergency management concerns
  - The measures they may need to take to respond to a radiological emergency. This would include details on the relevant notifications to and from the involved organizations
- The MSB emergency response team has not yet been involved in any emergency response drills related to nuclear emergencies (e.g., for Bruce Power). However, as noted below in Section 5.7.3, the Kinectrics Laundry Facility has a fire safety plan which is approved by the MSB fire department, and Kinectrics has conducted fire drills which involved the MSB fire department.
- The following facilities and populations may require special provisions during Project-related emergencies:
  - Hospitals
  - Schools
  - Senior residences
  - Daycares
  - Huron-Kinloss Mennonite Community (primarily located immediately west of the potential Project Site)
    - Schools
    - Churches
    - Houses and farms with no phone or Internet access/motorized vehicles
  - Other special needs facilities / populations

Figure 5-1 (MHBC and DPRA, 2022) shows the 5 km Emergency Planning Zone boundary and the location of Mennonite schools and churches. As can be seen from the figure, the Black Creek School, Langside School and Langside Church, and Holyrood East School are located to the west of the potential Project Site in Huron-Kinloss within the 5 km Emergency Planning Zone. These schools and churches, as well as houses and farms without phone or Internet /vehicular access have to be considered within the Project ERP. It is noted that the Mennonite community has been identified as a community of interest in terms of some other community studies (e.g., with respect to the increased traffic that may occur because of the Project; this has been addressed in the *Local Traffic Study* (Morrison Hershfield, 2022)).

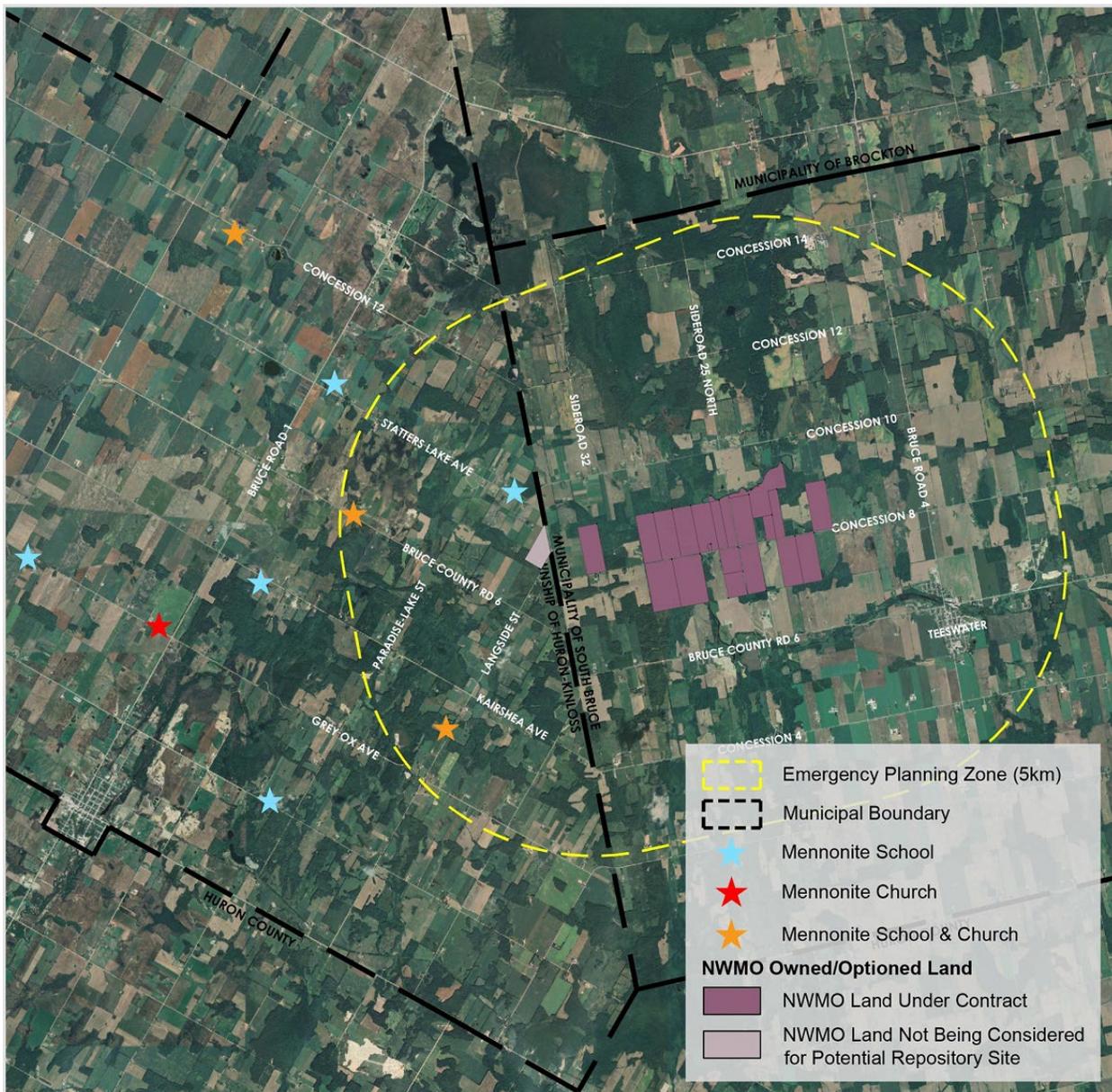
## 5.6 Health Care Organizations

Comparing the Project and the existing hospital emergency response capability resulted in the following findings:

- The NWMO would need to consider joining the MOU between Bruce Power and Kincardine Hospital (SBGHC) and the Southampton Hospital (GBHS). Both hospitals are located outside the Study Area but are within approximately 30 and 70 km respectively of the potential Project Site.
- Both the Kincardine and Southampton hospitals are dependent on Bruce Power expertise, personnel, equipment and funding for detection, treatment, and decontamination of nuclear-related injuries.
- Other hospitals located within the Study Area including those in closer proximity to the potential Project Site (e.g., Wingham & District Hospital) currently do not have capacity to

- deal with nuclear-related injuries. This should be reviewed by NWMO and the hospitals if the Project comes to the South Bruce Area; an MOU would need to be developed between NWMO and selected hospital(s) near the potential Project Site.
- Paramedics will in general take patients, including those affected by radioactivity, to the nearest hospital.
  - Bruce County paramedic services will need to be involved in discussions with NWMO and health care organizations regarding selecting and equipping hospitals for nuclear-related injuries.

**Figure 5-1: Location of Mennonite Schools and Churches within the 5 km Emergency Planning Zone**



## 5.7 Industry

### 5.7.1 Bruce Power

The results of the assessment indicated that:

- Bruce Power, which is located in Kincardine approximately 50 km from the potential Project Site by road, provides an excellent model of how to implement an ERP and to respond to nuclear and non-radiological emergencies for the above ground portion of the Project facility. These come from:
  - CNSC license inspection drills
  - Providing radiation monitoring and decontamination support to Kincardine and Southampton hospitals
  - Providing training to community emergency response teams through its Kincardine and Chesley training centres
  - Conducting joint emergency exercises involving OPG, CNL, and Hydro One (twice a year)
  - Providing technical expertise and human resources to provincial and municipal emergency response organizations (Knowledge holder interview, January 2022),
- Providing funding to municipalities for some level of equipment, staffing, facilities, training, etc.
- Bruce Power MAAs and MOUs include adjacent municipalities, OPG, CNL, SBGHC, and GBHS
- None of the above plans or agreements currently involves the Project or the Municipality of South Bruce.
- The potential Project Site is outside all three of Bruce Power's AAZ, DPZ, and CPZ.

### 5.7.2 Compass Minerals Goderich Salt Mine

The results of the assessment indicated that the Goderich salt mine:

- Has a very well established mine safety system that includes a mine rescue plan.
- Has MAAs with Windsor salt mine and Caledonia gypsum mine. These mines support each other during mine emergencies, particularly mine evacuation and rescue.
- These mine emergency response plans and mine rescue plans provide excellent examples of how to implement these services for the underground portion of the Project facility both during construction and operations phases.
- Emergency response and evacuation support would also be very effective during the construction (non-radiological) phase of the Project. However, due to lack of radiological experience and knowledge on the part of the Goderich salt mine staff, this support will become less effective with the shift to operations. To acquire this support for the operations phase will likely require radioactivity training for the Goderich salt mine rescue team if they are involved in an MAA arrangement for the Project.

### 5.7.3 Kinectrics Laundry Facility (Teeswater)

The results of the assessment indicated the following for the Kinectrics Laundry Facility in Teeswater. Kinectrics:

- Has a regional ERP which covers their Teeswater, Tiverton, and Kincardine operations.
- Has a fire safety plan which is approved by the MSB fire department.
- Has conducted fire drills which involved the MSB fire department.
- Has CANUTEC ERAP for transportation of shipments that are classified as dangerous goods.
- Supplies green-qualified persons to protect paramedics from radiation exposure, if needed.

## 6. Options Assessment

### Note to Reader

This section provides an overview of possible options to mitigate negative consequences or to enhance positive outcomes. They are presented by the authors to foster discussion only. They do not represent commitments or actions for the NWMO, the Municipality of South Bruce, or other parties. The final decisions on actions and commitments will be made at a future date.

If South Bruce is selected in 2024 to host the Project, there will be additional demand in the area for emergency services (e.g., plans, training, coordination, infrastructure). This has implications for NWMO itself, and at the municipal (lower-tier municipality and County levels), provincial and federal levels.

For the Project to proceed, NWMO must meet CNSC and other regulatory requirements related to emergency services (planning and response); as such it should not be interpreted that these requirements are 'options' or 'optional'. The timing of engagement and preparation of plans could be initiated in advance of the 2024 site selection decision or immediately following site selection during the pre-construction phase.

The preliminary analysis of potential effects of the Project was evaluated in this report. Several options are proposed to ensure that organizations address the gaps identified in the report; that NWMO fulfills emergency planning/response regulatory requirements; that other organizations, including those at municipal and county levels with roles in emergency response infrastructure can fulfill their roles in supporting Project-related emergency response; and to mitigate potential adverse effects of the Project on them.

The first three options are common to all three objectives of the study, or are of general application:

1. NWMO, Bruce County, and MSB will need to initiate or continue engagement / information sharing. This could be done in advance of the site selection decision, but certainly following the selection of the host community in 2024 (i.e., during the pre-construction phase). The topics of engagement should include:
  - a. Information about the Project, the siting process in advance of the 2024 site selection decision, and the nature of emergency planning needs during the Project phases.
  - b. Current status of Bruce County and MSB ERPs and changes that may be required for the Project and how the NWMO could help to implement these changes.
  - c. The development, implementation, and coordination of the NWMO ERP and its relationship with Bruce County and MSB (e.g., MAA and MOU).
  - d. Current status of paramedic services and MSB fire department and their future needs, particularly in light of the Project.

2. NWMO will need to conduct additional studies during the pre-construction phase to identify and characterize potential Project emergencies (including underground emergencies) and develop additional detail regarding the specific circumstances that Project emergency services will be needed for:
  - on-site/off-site construction and operations activities
  - mine rescue (construction and operations phases)
  - off-site transportation of UNF and on-site UNF handling (operations phase)
3. NWMO will maintain and update the ERPs (including conducting associated training/exercises) during the construction and operations phases in coordination with regulatory agencies and other partners.

The other proposed options described below are organized to correspond with the three objectives of the study:

**Objective 1 - “NWMO will identify what changes may be required to the Bruce County Emergency Response Plan, including the nature of the nuclear emergency response capability would need to be maintained for the operations period of the Project.”**

*The focus of these options is on nuclear emergency response capability during the operations phase (2043 and beyond). Engagement and planning should of course be initiated well in advance of the operations phase. The level of detail and effort will increase as the operations phase approaches.*

4. Bruce County will need to initiate or continue engagement / information sharing with the following:
  - a. Other facilities (Bruce Power and Kinectrics Laundry Facility) regarding the development, implementation, and coordination of their ERPs and their potential future relationship with Bruce County (e.g., MAA and MOU).
  - b. WSN regarding mine rescues preparedness and training with involvement of NWMO as a stakeholder of Ontario Mine Rescue Program.
  - c. OPP with respect to potential roles and responsibilities of Walkerton Detachment, with involvement of NWMO, if South Bruce is selected in 2024 to host the Project.
  - d. Office of the Fire Marshal and Emergency Management and EMO regarding:
    - PNERP Implementing Plan for the Project
    - Roles and responsibilities of the PNERP designated host municipality, if necessary
    - Fire Services (discussed in more detail under Objective 2, below)
    - Refinement of the Project emergency planning zone(s)
    - Special provisions during emergencies for hospitals, schools, senior residences, daycares, the Huron-Kinloss/MSB Mennonite community, and other special needs facilities / populations
  - e. Health care organizations (e.g., Wingham & District Hospital, Walkerton Hospital, Kincardine Hospital) in coordination with NWMO with respect to their abilities and needs for radiation-related injuries emergencies. This includes the discussion of:
    - Which hospital(s) to be selected to have nuclear capabilities
    - The need for a decontamination room and associated equipment
    - Required training
  - f. Third-party contractors regarding arrangements for radiation emergency response support.

5. Bruce County will need to initiate a study in coordination with NWMO during the pre-construction phase to quantify the future needs, particularly in light of the potential Project, including:
  - a. Additional ambulance stations
  - b. Additional paramedics
  - c. Additional ambulances and equipment
  - d. Additional Fire Services
  - e. Training for nuclear emergencies
  - f. Training for mine rescue
  - g. Cost estimates for additional emergency services required to service the Project in MSB
  
6. Bruce County will need to update its ERP during the pre-construction/construction phases to include the following items related to the Project:
  - a. Nuclear emergencies
  - b. Nuclear emergency response procedures and training
  - c. Internal and external resources available for nuclear emergencies
  - d. Mine rescue capabilities and training
  - e. Coordination with other emergency response entities (e.g., MSB; nuclear facilities including NWMO Project; PNERP; OPP)

**Objective 2 – “The NWMO will identify the incremental fire and injury response capability that may be needed from Bruce County and the Municipality of South Bruce during the construction period.”**

*The focus of these options is on the fire and injury response capability during the construction phase (2033 to 2042). Nuclear emergency response capability is not needed during the construction phase. Engagement and planning should of course be initiated well in advance of the construction phase.*

7. MSB will need to initiate or continue engagement / information sharing with the following:
  - a. Other facilities (Bruce Power, Compass Minerals, and Kinectrics Laundry Facility) regarding the development, implementation, and coordination of their ERPs and their relationship with MSB (e.g., MAA and MOU).
  - b. WSN regarding mine rescue preparedness and training with involvement of NWMO as a stakeholder in the Ontario Mine Rescue Program.
  - c. Office of the Fire Marshal and Emergency Management Ontario regarding:
    - PNERP Implementing Plan for the Project
    - Roles and responsibilities of the PNERP designated municipality
    - Refinement of the Project emergency planning zone(s)
    - Injury response capabilities during emergencies for hospitals, schools, senior residences, daycares, the Huron-Kinloss/MSB Mennonite community, and other special needs facilities / populations

8. MSB will need to update its risk assessment study and initiate a study in coordination with NWMO during the pre-construction phase to quantify the construction phase needs, particularly in light of the potential Project, including possible need for:
  - a. Roles and responsibilities of NWMO and MSB emergency services
  - b. Additional permanent and volunteers fire fighters at the MSB fire department
  - c. Upgrades to the Teeswater Fire Station including the potential need for additional fire trucks and building upgrades
  - d. Increasing number of fire trucks and other equipment
  - e. Mine rescue equipment
  - f. Training for mine rescue
  - g. Cost estimates for additional emergency services required to service the Project in MSB
  
9. MSB will need to update its ERP during the construction phase to include the following items:
  - a. Internal and external resources available
  - b. Mine rescue capabilities and training
  - c. Coordination with other emergency response entities (e.g., Bruce County; nuclear facilities including the NWMO Project; PNERP; OPP)

**Objective 3 – “The NWMO will identify the parties in the region that could participate in a Mine Safety and Rescue Emergency Services plan.**

*The focus of these options is on mine safety/ rescue capability during both the construction phase (2033 to 2042) and the operations phase (2043 and beyond). The nuclear emergency response capability is relevant only for the operations phase. Engagement and planning should of course be initiated well in advance of either phase.*

10. NWMO will need to initiate or continue engagement / information sharing in advance of the site selection decision, but certainly following the selection of the host community in 2024 (i.e., during the pre-construction phase) with:
  - a. Bruce Power, Compass Minerals (Goderich Salt Mine in Huron County), and Kinectrics Laundry Facility regarding the development and implementation of their ERPs and their relationship with local municipalities / counties (e.g., MSB and Bruce Count).
  - b. Federal and provincial government agencies regarding the emergency response development, implementation, and regulatory requirements as well as support for construction and operations phases.
  - c. Third-party contractors regarding arrangements for radiation emergency response support.
  
11. NWMO will need to consider becoming a stakeholder of Ontario Mine Rescue Program.
  
12. NWMO will need to consider forming a MAA with the Compass Minerals Goderich salt mine, Windsor salt mine, and/or the Caledonia gypsum mine. These mines support each other during mine emergencies particularly mine evacuation and rescue.

13. During the pre-construction phase, NWMO will need to develop Project ERP(s) that identify emergencies that requires underground rescue and include rescue procedures, equipment, and training. During the construction phase when there is no nuclear material underground, experience from nearby large underground mine facilities (e.g., Compass Minerals Goderich salt mine) should be used to inform development of ERPs that meet or exceed regulatory requirements. For the operation phase when nuclear material will be placed underground, other international DGR facilities (e.g., in Sweden and Finland) should be used to provide invaluable information regarding planning for emergency response for transportation and handling of UNF (Wilmark, 2016) and operation of DGRs (STUK, 2015, and 2021).

Table 6-1 shows the assessment of the above options with respect to:

- Ease of implementation/degree of complexity
- Degree of effectiveness or conditions for effectiveness as per understanding of community needs and aspiration(s)
- Cost
- Ability for NWMO, Bruce County, and/or MSB to implement vs. need to involve other responsible authorities

**Table 6-1: Assessment of the Options**

Option	Factors				
	Ease of implementation/degree of complexity	Degree of effectiveness or conditions for effectiveness as per understanding of community needs and aspiration(s)	Cost	Ability for NWMO, Bruce County and/or MSB to implement vs. need to involve other responsible authorities	
<b><i>Options common to all three objectives of the study, or of general application</i></b>					
1. NWMO Engagement and information sharing with:	Bruce County, MSB	Not very complex	Very effective	Can be achieved as part of NWMO's ongoing engagement programs; relatively low cost	Requires participation from NWMO, municipality
2. Conduct studies during the pre-construction phase to identify and characterize potential Project emergencies and develop additional detail regarding the specific circumstances that Project emergency services will be needed		Not very complex; It may be a lengthy process but is under the control of NWMO	Very effective	Unknown at this time	Largely under control of NWMO

Option		Factors			
		Ease of implementation/degree of complexity	Degree of effectiveness or conditions for effectiveness as per understanding of community needs and aspiration(s)	Cost	Ability for NWMO, Bruce County and/or MSB to implement vs. need to involve other responsible authorities
3. NWMO will maintain and update the ERPs (including conducting associated training/exercises) during the construction and operations phases in coordination with regulatory agencies and other partners		Not very complex	Very effective	Unknown at this time	Largely under the control of NWMO, but requires participation of involved partners
<b>Objective 1 - "NWMO will identify what changes may be required to the Bruce County Emergency Response Plan, including the nature of the nuclear emergency response capability would need to be maintained for the operations period of the Project."</b>					
4. Bruce County Engagement and information sharing with:	a. Bruce Power, Compass Minerals, and Kinectrics Laundry Facility	Not very complex	Relatively effective	Relatively low cost	Requires participation from noted organizations/ facilities
	b. WSN	Not very complex	Very effective	Relatively low cost	Requires participation from Ontario Mine Rescue
	c. OPP	It may be a lengthy process / somewhat complex	Effective	Relatively low cost	Requires participation from OPP, maybe Infrastructure Ontario
	d. Office of the Fire Marshal and Emergency Management and EMO	It may be a lengthy process / somewhat complex	Very effective	Relatively low cost	Requires participation from Office of the Fire Marshal and Emergency Management and EMO

Option	Factors				
	Ease of implementation/degree of complexity	Degree of effectiveness or conditions for effectiveness as per understanding of community needs and aspiration(s)	Cost	Ability for NWMO, Bruce County and/or MSB to implement vs. need to involve other responsible authorities	
e. Health care organizations	Not very complex	Very effective	Relatively low cost	Requires participation from health care organizations	
f. Third-Party Contractors	Not very complex	Somewhat effective	Unknown at this time	Requires cooperation from contractors	
5. Study to quantify needs for Bruce County paramedic services	Not very complex; It may be a lengthy process but is under the control of Bruce County	Very effective	Unknown at this time	Largely under the control of Bruce County, but requires participation from NWMO	
6. Updating Bruce County ERP	Not very complex	Very effective	Unknown at this time	Largely under the control of Bruce County, but requires participation of involved partners	
<b>Objective 2 - "The NWMO will identify the incremental fire and injury response capability that may be needed from Bruce County and the Municipality of South Bruce during the construction period."</b>					
7. MSB Engagement and information sharing with:	a. Bruce Power, Compass Minerals, and Kinectrics Laundry Facility	Not very complex	Relatively effective	Relatively low cost	Requires participation from noted organizations/ facilities
	b. WSN	Not very complex	Very effective	Relatively low cost	Requires participation from Ontario Mine Rescue
	c. Office of the Fire Marshal and Emergency Management and EMO	It may be a lengthy process / somewhat complex	Very effective	Relatively low cost	Requires participation from Office of the Fire Marshal and Emergency Management and EMO
8. Updating risk assessment and study to quantify needs of MSB fire department	Not very complex; It may be a lengthy process but is under the control of MSB	Very effective	Unknown at this time	Largely under the control of MSB, but requires participation from Bruce County and NWMO	

Option	Factors				
	Ease of implementation/degree of complexity	Degree of effectiveness or conditions for effectiveness as per understanding of community needs and aspiration(s)	Cost	Ability for NWMO, Bruce County and/or MSB to implement vs. need to involve other responsible authorities	
9. Updating MSB ERP	Not very complex	Very effective	Unknown at this time	Largely under the control of MSB, but requires participation of involved partners	
<b>Objective 3 - "The NWMO will identify the parties in the region that could participate in a Mine Safety and Rescue Emergency Services plan"</b>					
10. NWMO Engagement and information sharing with:	a. Bruce Power, Compass Minerals, and Kinectrics Laundry Facility	Not very complex	Relatively effective	Can be achieved as part of NWMO's ongoing engagement programs; relatively low cost	Requires participation from noted organizations/ facilities
	b. Federal, and provincial government agencies	It may be a lengthy process / somewhat complex	Effective	Can be achieved as part of NWMO's ongoing engagement programs; relatively low cost	Requires participation and approval from federal and provincial agencies
	c. Third-Party Contractors	Not very complex	Somewhat effective	Can be achieved as part of NWMO's ongoing engagement programs; relatively low cost	Requires cooperation from contractors
11. NWMO becoming a stakeholder of Ontario Mine Rescue Program	Not very complex	Very effective	Can be achieved as part of NWMO's ongoing engagement programs; relatively low cost	Requires participation from Ontario Mine Rescue Program	

Option	Factors			
	Ease of implementation/degree of complexity	Degree of effectiveness or conditions for effectiveness as per understanding of community needs and aspiration(s)	Cost	Ability for NWMO, Bruce County and/or MSB to implement vs. need to involve other responsible authorities
12. MAA with Compass Minerals Goderich salt mine, Windsor salt mine, and the Caledonia gypsum mine	Not very complex	Very effective	Can be achieved as part of NWMO's ongoing engagement programs; relatively low cost	Requires participation from mines
13. During the pre-construction phase, NWMO will develop Project ERP(s) that reflect additional information from the studies to identify and characterize Project emergencies, current regulatory requirements, and the roles/responsibilities of other parties	Somewhat complex; It may be a lengthy process / but can be achieved within the 10-year pre-construction period (2023-2033)	Very effective	Unknown at this time	Requires participation from federal and provincial agencies, counties, lower tier municipalities, and health care organizations

# 7. Summary

## 7.1 Key Findings

- The upper and lower-tier municipalities within the Study Area have ERPs; while they have been discussing the Project, its potential presence has not been accounted for in their ERPs at this point in time.
- Additional equipment, human resources, and training would be needed for the municipalities within the Study Area for handling emergencies related to the construction and operation of the Project – in particular for events potentially involving radioactivity.
- Within the region there are good examples of ERPs for a) a large above ground nuclear facility (Bruce Power), and b) a large underground mine facility (Goderich salt mine).
- Bruce Power has developed MAAs and MOUs with many municipal emergency response organizations and health organizations which would serve as a good model for the NWMO for the development of similar agreements associated with the Project.
- In light of the above, there appears to be sufficient information for NWMO to initiate further studies and engagement to successfully develop, update and/or implement ERPs, as well as signing MAAs and MOUs with neighbouring communities by 2033 when construction is projected to start.

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# Appendix A.

## List of Socio-Economic Community Studies

## List of Socio-Economic Community Studies

Study Name	Study Proponent	Lead Consultant
<i>Municipality of South Bruce Economic Development Project Effects and Strategy</i>	MSB	Deloitte LLC
<i>Economic Development Study on Youth</i>	MSB	Deloitte Canada
<i>Local Hiring Effects Study &amp; Strategy</i>	MSB	Deloitte LLP
<i>Agriculture Business Impact Study</i>	MSB	Deloitte LLC
<i>Fiscal Impact and Public Finance Study</i>	MSB	Watson & Associates Economists
<i>Municipality of South Bruce Tourism Industry Effects Study</i>	MSB	Deloitte LLC
<i>Housing Needs and Demand Analysis Study</i>	NWMO, MSB	Keir Corp.
<i>Labour Baseline Study</i>	NWMO	Keir Corp.
<i>Workforce Development Study</i>	NWMO	Keir Corp.
<i>Regional Economic Development Study</i>	NWMO	Keir Corp.
<i>Effects on Recreational Resources Study</i>	MSB	Tract Consulting
<i>Local/Regional Education Study</i>	NWMO, MSB	DPRA
<i>Land Use Study</i>	NWMO, MSB	DPRA
<i>Social Programs Study</i>	NWMO, MSB	DPRA
<i>Emergency Services Study</i>	NWMO	DPRA
<i>Vulnerable Populations Study</i>	NWMO	DPRA
<i>Community Health Programs and Infrastructure Study</i>	NWMO	DPRA
<i>Aggregate Resources Study</i>	NWMO, MSB	Keir Corp.
<i>Infrastructure Baseline and Feasibility Study</i>	NWMO	Morrison Hershfield
<i>Local Traffic Study</i>	NWMO	Morrison Hershfield
<i>Road Conditions Study</i>	NWMO	Morrison Hershfield

# Appendix B.

## Inventory of Knowledge Holders Interviewed



## Knowledge Holder Interviews

The table below includes an inventory of Knowledge Holders interviewed in 2021 and 2022 applicable to the *Emergency Services Study*. Names and titles have been excluded to respect the privacy of individuals.

<b>Date</b>	<b>Knowledge Holder – Organization</b>	<b>Applicable Studies</b>
22-Jul-21	South Bruce Fire Department	<i>Emergency Services Study</i>
25-Aug-21	Bruce County Paramedic Services	<i>Emergency Services Study</i>
16-Sep-21	Bruce Power	<i>Emergency Services Study</i> <i>Housing Needs and Demand Analysis Study</i> <i>Labour Baseline Study</i> <i>Workforce Development Study</i> <i>Local Traffic Effects Study</i> <i>Road Conditions Study</i> <i>Regional Economic</i>
09-Dec-21	South Bruce Grey Health Centre	<i>Emergency Services Study</i>
12-Jan-22	Bruce Power	<i>Emergency Services Study</i>
03-Feb-22	Compass Minerals	<i>Emergency Services Study</i>
03-Feb-22	NWMO	<i>Emergency Services Study</i>
26-Oct-22	Kinectrics Laundry Facility (Teeswater)	<i>Emergency Services Study</i>

# Appendix C.

## Roles and Responsibilities of a Designated Municipality and Designated Host Municipality Under PNERP Master Plan

## Roles and Responsibilities of a *Designated Municipality* and *Designated Host Municipality Under PNERP Master Plan*

This appendix summarizes key roles and responsibilities under the Provincial Nuclear Emergency Response Plan (PNERP) Master Plan (Ministry of Community Safety and Correctional Services, 2017) for a designated municipality, and the designated host municipality. PNERP defines a *designated municipality* and *designated host municipality* as follows:

- **“Designated Municipality:** A Municipality in the vicinity of a nuclear facility which has been designated under the *Emergency Management and Civil Protection Act (EMCPA)*<sup>11</sup>, as one that shall have a nuclear emergency plan.”
- **“Designated Host Municipality:** The Municipality assigned responsibility in the Provincial Nuclear Emergency Response Plan for the reception and care of people evacuated from their homes in a nuclear emergency.”

The PNERP Master Plan also defines a *Joint Information Centre* as:

- **Joint Information Centre:** A joint centre for the province, *designated municipality*, federal government and the reactor facility or nuclear establishment that is responsible for providing information on the emergency to the media and the public.

Section 1.7.2 b of the PNERP Master Plan includes the following requirements for Municipal Plans:

### “b) Municipal Plans

- i. Pursuant to **Sections 3 and 8** of the *EMCPA*, municipal nuclear emergency response plans prepared by the *designated municipalities* in respect of reactor facility emergencies (Annex A) shall conform to this PNERP and shall address the responsibilities outlined in Annex I, Appendices 15-16.
- ii. Municipalities in close proximity to, or with nuclear establishments within their boundaries, should include in their emergency response plans the measures they may need to take to respond to a radiological emergency. This would include details on the relevant notifications to and from the involved organizations (see PNERP Implementing Plan for Other Radiological Emergencies). These municipalities are termed *Designated Municipalities* or *Designated Host Municipalities* in this plan.
- iii. All municipalities which have a radiological incident identified as one of their potential *risks* within their Hazard Identification and Risk Assessment (HIRA) shall include, within their municipal emergency response plans, the measures they may be required to undertake to respond to such an emergency (see PNERP Implementing Plan for Other Radiological Emergencies).

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<sup>11</sup> *Emergency Management and Civil Protection Act R.S.O. 1990*

- iv. All municipal nuclear or radiological emergency response plans shall provide for the development of plans and procedures involving local boards (defined pursuant to the Municipal Act, 2001, S.O. 2001, c. 25) and police services operating in the area to provide necessary support and assistance required by such plans, or that which may be needed in an emergency.”

Section 1.10 of the PNERP Master Plan includes the following requirements for municipalities and *designated municipalities* as well:

#### “1.10 Municipal Legislative Authority

##### 1.10.1 Municipal Roles and Responsibilities

- a) Pursuant to **Section 3(4)** of the *EMCPA*, municipalities have been designated to prepare plans in respect of *nuclear emergencies*.
- b) *Designated Municipalities* preparing plans in respect of a *nuclear emergency* include:
  - i. Municipalities located within a nuclear *Detailed Planning Zone* (DPZ).
  - ii. Municipalities acting as a host *community*.
- c) *Designated Municipalities* are listed in **Annex A**.
- d) Annex I, Appendices 15-16 address the main responsibilities of the *Designated Municipalities*.
- e) Municipalities in close proximity to, or with nuclear establishments within their boundaries, should include in their emergency response plans the measures they may need to take to mitigate the off-site consequences of a radiological emergency. This would include details on the relevant notifications to and from the involved organizations (see PNERP Implementing Plan for Other Radiological Emergencies).
- f) All municipalities which have a radiological emergency identified as one of their potential risks, within their HIRA (pursuant to Section 2.1(3) of the *EMCPA*), should include, within their municipal emergency response plans, the measures they may need to undertake to deal with such an emergency (see PNERP Implementing Plan for Other Radiological Emergencies).

##### 1.10.2 Designated Municipalities’ Legislative Authority

- a) Pursuant to **Section 3(4)** of the *EMCPA*, the *Designated Municipalities* shall formulate plans to deal with the off-site consequences of nuclear emergencies caused by the corresponding reactor facility (**Annex A**).
- b) These plans should also contain, where applicable, arrangements for the provision of services and assistance by county departments, local police services, fire services, paramedic services, hospitals and local boards.

c) As required by **Section 8** of the EMCPA, municipal nuclear emergency response plans shall conform to the PNERP and be subject to the approval of the Solicitor General (this function is fulfilled by the Minister of Community Safety and Correctional Services). The Solicitor General may make such alterations as considered necessary for the purpose of coordinating the municipal plan with the province's plan.

D) As required by **Section 5** of the EMCPA, plans of lower-tier municipalities shall conform to the plans of their Upper-tier Municipality.

e) Pursuant to **Sections 2(3)** and **3(4)** of the EMCPA, every *Municipality*, in developing their emergency management program, must identify and assess the various hazards and *risks* to public safety that could give rise to emergencies. Where a *Municipality* identifies radiological *risks* (as per PNERP Implementing Plan for Other Radiological Emergencies), the emergency plan for that *Municipality* must include provisions to deal with such an emergency.

#### 1.10.3 Upper-Tier Municipal Involvement

Where the Upper-tier Municipality is not the *Designated Municipality* under this PNERP it may, with the consent of its *Designated Municipalities*, coordinate the nuclear emergency plans for those municipalities.

#### 1.10.4 Support Municipalities

a) In the event of a declared emergency, the LGIC<sup>12</sup> or the Premier may order a *Municipality* to provide support or assistance to *Designated Municipalities* or to affected municipalities. Such orders, if made, would be authorized by **Sections 7.0.2(4)** or **7.0.3** of the EMCPA.

b) Support and assistance may include, but shall not be limited to, personnel, equipment, services and material.”

The PNERP also includes the following requirements (amongst others) for municipal Emergency Response Plans:

“*Designated Municipalities* shall establish coordinating committees to review and manage nuclear emergency management concerns. (S. 3.2.4 c)”

“The *Designated Municipalities* initiate the public alerting system (e.g., sirens, telephone auto-dialer, etc.)”

“*Designated Municipalities* and provincial institutions providing essential services (including facilities such as water treatment plants, hospitals and long-term care and nursing homes) shall develop plans for, and identify pre-designated *special groups* who cannot evacuate in the event of a nuclear emergency.”

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<sup>12</sup> Lieutenant Governor in Council

*“Designated municipalities shall include provisions in their municipal plans for the establishment of Emergency Worker Centres. Locations for these centres should ideally be able to accommodate the co-location of an ERAMG<sup>13</sup> Command Post for field monitoring purposes.”*

*“Population monitoring, decontamination and medical management should be implemented by activating the monitoring and decontamination facilities administered by the designated municipalities and resourced by the reactor facilities as well as under the provisions of the MOHLTC<sup>14</sup> Radiation Health Response Plan.”*

*“Designated municipalities should consult with the following for assistance in developing plans for the protection and care of animals:*

- i. Ontario Society for the Prevention of Cruelty to Animals (OSPCA) (whose mandate is to protect all animals in Ontario)
- ii. Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) provincial lead on farm animal disease (OIC 1157/2009)
- iii. The Ministry of Natural Resources and Forestry (MNR) for issues pertaining to wildlife”

Annex I and Appendices 15 and 16 of PNERP Master Plan include the detailed responsibilities of the *Designated Municipality* and *Designated Host Municipality*.

## **PNERP ANNEX I - Appendix 15**

### ***“Designated Municipalities***

Municipalities designated pursuant to Section 3(4) of the *EMCPA* as municipalities in nuclear Detailed Planning Zones have the following responsibilities:

#### **Preparedness**

1. Execute the applicable preparedness responsibilities described in Chapter 3 prior to a nuclear or radiological emergency.
2. Prepare a municipal plan for mitigating nuclear emergencies, based on and in conformity with the PNERP. This municipal plan shall include:
  - a) Establishment of a municipal contact point to receive and act upon an initial notification from the reactor facility on a 7-day, 24-hour basis (Chapter 5).
  - b) Establishment of detailed arrangements and procedures for implementing precautionary or protective measures (Chapter 5).
  - c) Planning data concerning the Municipality to include demographic data, institutional data, resource inventory, etc.
  - d) Details regarding a public alerting system meeting the requirements of Section 5.7.

<sup>13</sup> *Environmental Radiation and Assurance Monitoring Group*

<sup>14</sup> *Ministry of Health and Long-Term Care*

- e) Details regarding a nuclear public awareness and education program (Annex C).
- f) Details regarding the provision of emergency information (Chapters 4 and 5).
- g) Arrangements to receive and accommodate evacuees, including liaison arrangements with other host municipalities, as appropriate.

### Provision of Personnel

- 3. Provide a suitable representative to participate on inter-organizational Emergency Management Coordinating Committees set up under this Plan (Chapter 3) to ensure alignment and address inter-organizational issues.

### Response

- 4. Execute the applicable responsibilities described in Chapters 5, 6 and 7 at the first practicable occasion during a nuclear emergency.
- 5. Implement the municipal emergency plan for nuclear emergencies (prepared pursuant to this PNERP and the *EMCPA*).
- 6. Carry out the required emergency response under the guidance and support of the province prior to a declaration of a provincial emergency.
- 7. Implement the directions of the province following an emergency declaration, and pursuant to any orders which may be made by the province (Section 7.0.2 of the *EMCPA*).
- 8. Coordinate the release and content of emergency information for public release with the Provincial Emergency Information Section.

### Training and Exercises

- 9. Execute the training and exercise responsibilities described in Sections 3.2.8 and 3.2.9 prior to a nuclear or radiological emergency to ensure appropriate training of municipal staff.
- 10. Ensure that all municipal personnel assigned any functions under emergency plans for nuclear emergencies are suitably trained for their tasks.
- 11. Implement and participate in nuclear emergency training and exercises.
- 12. Municipal staff working in the PEOC<sup>15</sup> should have an overall knowledge of their emergency plans and PNERP.

### Infrastructure

- 13. Ensure availability of the essential facilities, emergency centres, resources and equipment required by municipal agencies to mitigate a nuclear emergency.

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<sup>15</sup> Provincial Emergency Operations Centre

14. OFMEM<sup>16</sup> shall co-ordinate with appropriate stakeholders to establish arrangements for resources and equipment for the Town of Amherstburg for a nuclear emergency at the Fermi 2 nuclear station.”

## **PNERP ANNEX I - Appendix 16**

### ***“Designated Host Municipalities***

Municipalities designated pursuant to Section 3(4) of the *EMCPA* as municipalities acting as host municipalities, have the following responsibilities:

#### **Preparedness**

1. Execute the applicable preparedness responsibilities described in Chapter 3 prior to a nuclear or radiological emergency.
2. Prepare a municipal plan for mitigating nuclear emergencies in conjunction with the lead Designated Municipalities, which includes:
  - a) Arrangements to receive and accommodate evacuees from the Designated Municipalities.
  - b) Coordination of reception plans and procedures with the reactor facility’s monitoring & decontamination arrangements.
  - c) Establishment of a municipal contact point, which can receive and act upon an initial notification from the provincial contact point on a 7-day, 24-hour basis.
  - d) Liaison arrangements with the Designated Municipality (in reactor facility Detailed Planning Zones) officials and with the PEOC<sup>17</sup> to ensure appropriate communication during an emergency.
  - e) Detailed arrangements with various municipal departments, including social services, public health, police, fire, paramedic services and volunteer agencies which would be involved in staffing and security arrangements for the Reception and Evacuation Centres.
  - f) Arrangements for the provision of emergency information on Reception and Evacuation Centre issues.
  - g) This municipal emergency plan shall be based upon the PNERP, and shall conform to it.

#### **Provision of Personnel**

3. Provide a suitable representative to participate on inter-organizational Emergency Management Coordinating Committees set up under this Plan (Chapter 3) to ensure alignment and address inter-organizational issues.

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<sup>16</sup> Office of the Fire Marshal and Emergency Management

<sup>17</sup> Provincial Emergency Operations Centre

## Response

4. Execute the applicable responsibilities described in Chapters 5, 6 and 7 at the first practicable occasion during a nuclear emergency.
5. Implement the municipal emergency plan for nuclear emergencies (prepared pursuant to this PNERP and the *EMCPA*).
6. Carry out the required emergency response under the guidance and support of the province prior to a declaration of a provincial emergency.
7. Implement the directions of the province following an emergency declaration, and pursuant to any orders which may be made by the province (Section 7.0.2 of the *EMCPA*).
8. Coordinate the release and content of emergency information for public release with the Provincial Emergency Information Section.

### Training & Exercises

9. Execute the training and exercise responsibilities described in Sections 3.2.8 and 3.2.9 prior to a nuclear or radiological emergency to ensure appropriate training of municipal staff.
10. Ensure that all municipal personnel assigned any functions under emergency plans for nuclear emergencies are suitably trained for their tasks.
11. Implement and participate in nuclear emergency training and exercises.
12. Municipal staff working in the PEOC<sup>18</sup> should have an overall knowledge of their emergency plans and PNERP.

## Infrastructure

13. Ensure availability of the essential facilities, emergency centres, resources and equipment required by municipal agencies to mitigate a nuclear emergency.”

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<sup>18</sup> Provincial Emergency Operations Centre

