Land Use Study Report

Southwestern Ontario Community Study

May 20, 2022

PREPARED FOR:

Nuclear Waste Management Organization and Municipality of South Bruce
NWMO Purchase Order Number 2001020

In Association With:

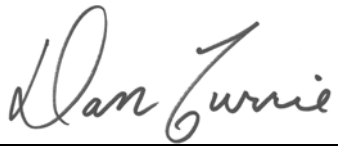
DPRA Canada Inc.
60 Adelaide Street East, Suite 501, Toronto, ON M5C 3E4
416-203-7222 / 1-800-661-8437
www.dpra.ca

Authors

Prepared by:

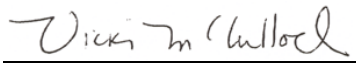
Liam Murphy and Lucy Chen
MHBC Planning Ltd.

Reviewed by:



Dan Currie
Partner, MHBC Planner Ltd.

Approved by:



Vicki McCulloch
Principal, DPRA

Revision History

Rev.	Issue Date	Description	Prepared By	Reviewed By	Approved By
0	March 10, 2022	Original Draft Report V1	Liam Murphy	Dan Currie	Vicki McCulloch
1	March 11, 2022	Revised Draft Report V2 (Revised text / map reference in S. 3)	Liam Murphy	Dan Currie	Vicki McCulloch
2	April 29, 2022	Final Draft Report V3	Lucy Chen	Dan Currie	Vicki McCulloch
3	May 20, 2022	Final Report V4		Dan Currie	Vicki McCulloch

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List of Acronyms

ANSI..... Area of Natural and Scientific Interest
APM ..... Adaptive Phased Management
CNSC..... Canadian Nuclear Safety Commission
DGR ..... Deep Geological Repository
DPRA ..... DPRA Canada Inc.
EPZ ..... Emergency Planning Zone
IA..... Impact Assessment
MECP……. Ministry of the Environment, Conservation and Parks
MDS……. Minimum Distance Separation
MOU..... Memorandum of Understanding
MSB ..... Municipality of South Bruce
MVCA……. Maitland Valley Conservation Authority
NWMO ..... Nuclear Waste Management Organization
OMAFRA ..... Ontario Ministry of Agriculture, Food and Rural Affairs
PNERP…….Ontario Provincial Nuclear Emergency Response Plan
SVCA……...Saugeen Valley Conservation Authority

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 (APM) 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 2023. 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 MSB 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 *Land Use Study* is one of the community studies being prepared. This study is organized as follows:

- Purpose and Scope (**Section 1.3**)
- Methodology (**Section 2**)
- Existing Conditions (**Section 3**)
- Relevant Adaptive Phased Management Project Characteristics (**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 assess the likely changes in present and planned land use and development patterns that will occur and its interaction with the emergency response plan for the future facility) 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 2023.

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 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 Land Use Study Work Plan (DPRA, October 2021). The overall objective of the *Land Use Study* is to assess the likely changes in present and planned land use and development patterns that will occur with the Project in the MSB and the neighbouring communities and its interaction with the emergency response plan for the future facility.

The specific objectives of the *Land Use Study* are to:

1. Identify the current land uses and how they may change resulting from the Project.
2. Confirm that there are no current land uses that would challenge the implementation of the nuclear emergency response plan.
3. Identify options to prevent future changes to land uses that would introduce challenges to the implementation of the nuclear emergency response plan.

The *Land Use Study* is relevant to the MSB Guiding Principles (2020) #10, #11, #29 and #33:

- #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.”
- #11: “The NWMO, in consultation with the Municipality, will establish a property value protection program to compensate property owners in the event that property values are adversely affected by the NWMO’s site selection process and the development, construction and/or operation of the Project.
- ”#29: “The NWMO will prepare an infrastructure strategy that addresses any municipal infrastructure requirements for the Project and will commit to providing appropriate funding for any required upgrades to municipal infrastructure required to host the Project in South Bruce.
- #33: “The NWMO will comply with the Municipal Official Plan and zoning by-law and seek amendments to the Official Plan and zoning by-law as necessary to implement the Project.”

The *Land Use Study* provides information directly relevant to Principle #33 and contributes more generally to Principles #10, #11 and #29.

The MSB and the NWMO are jointly responsible for the completion of the *Land Use Study*. This study was undertaken by MHBC Planning, 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 *Land Use 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 *Land Use Study* is a Joint Study, which has been conducted by the NWMO; the NWMO has determined the spatial Study Area, developed data and inputs

used to establish baseline conditions and conducted the assessment of the forecasted effects resulting from the Project.

MSB consultants have jointly participated in developing data inputs and baseline conditions. Peer review has been undertaken on the framing and scope of the study, and the effects assessment. Options developed to address potential effects are presented in this report.

This final *Land Use Study* Report reflects the comments provided by the MSB peer review consultants and subsequent discussions.

For the *Land Use Study*, the peer review was led by GHD.

1.3.2 Spatial Boundaries

For the Land Use Study, there are three Study Areas: the Core Study Area; the general area for the potential Project site, and a 5 kilometre Emergency Planning Zone (EPZ) boundary.

1.3.2.1 Core Study Area

Figure 1 shows the spatial boundaries of the Core Study Area for the *Land Use Study*, which includes:

- Bruce County:
  - Municipality of South Bruce;
  - Township of Huron-Kinloss;
  - Municipality of Brockton;
- Huron County:
  - Township of North Huron;
  - Municipality of Morris-Turnberry

1.3.2.2 Potential Project Site and Emergency Planning Zone

The potential Project site and Emergency Planning Zone study areas are shown on **Figure 2**. The potential Project site contains the lands associated with the Project (NWMO owned/optioned lands, approximately 724 hectares). The EPZ is a 5 kilometre radius around the perimeter of the NWMO owned/optioned lands to be used for the purpose of emergency response planning and evacuation, as determined by the NWMO. The current selection of a 5 kilometre Emergency Planning Zone as a starting planning assumption is based on the following considerations:

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

According to REGDOC-2.10-1, 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” (Canadian Nuclear Safety Commission/CNSC, 2016). 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.

As shown in Figure 2, the EPZ includes lands within 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 robust design considerations, meteorological conditions and emergency preparedness considerations that are affected by the land use around the site.

The potential Project site area and Emergency Planning Zone are where any land use change or land use impacts will occur as a direct result of the construction, operation, and decommissioning of the Project. Indirect effects on land use that may result from the potential Project (such as potential increased enrollments in elementary schools due to Project workforce residing in/moving to a community) are expected to take place beyond the Project site study area.

1.3.3 Temporal Boundaries

The temporal boundaries for the *Land Use Study* are as follows:

- Current Period (2016/2022)
- Near-term (2023 to 2032) – Pre-Construction
  - Aligns with end of site preparation phase in 2032 and design and construction start 2033
- Mid-term (2033 to 2042) - Construction
  - Aligns with construction phase ending in 2042 and operations start 2043
- Long-term (2043 and beyond) – Operations
  - Aligns with operations phase (approximately 40 years; does not include monitoring and decommissioning phases, which occur after the operation phase)

Table 1 describes the workforce associated with these Project phases.

Table 1 – 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)

The *Land Use Study* considers the applicable land use policy, guidelines and regulations that are in place in the current period (i.e., 2022). It is recognized that land use policy evolves over time, and to the extent possible, policy changes that are anticipated (such as the updated County of Bruce Official Plan to be released later in 2022) are considered as part of this Study. The land use planning approvals required for the Project (should it be located in the MSB) would occur during the near term and be in place in advance of construction start in 2033. While it is

expected that the land use policy framework is unlikely to significantly change by then, the land use approvals would have to consider the land use policy that is in place and in effect at that time.

The *Land Use Study* also considers the decommissioning of the site which will occur in the long-term. How the site is decommissioned and to what extent the lands are returned to their predevelopment form are an important consideration in this Study.

Figure 1 – Core Study Area for the Land Use Study

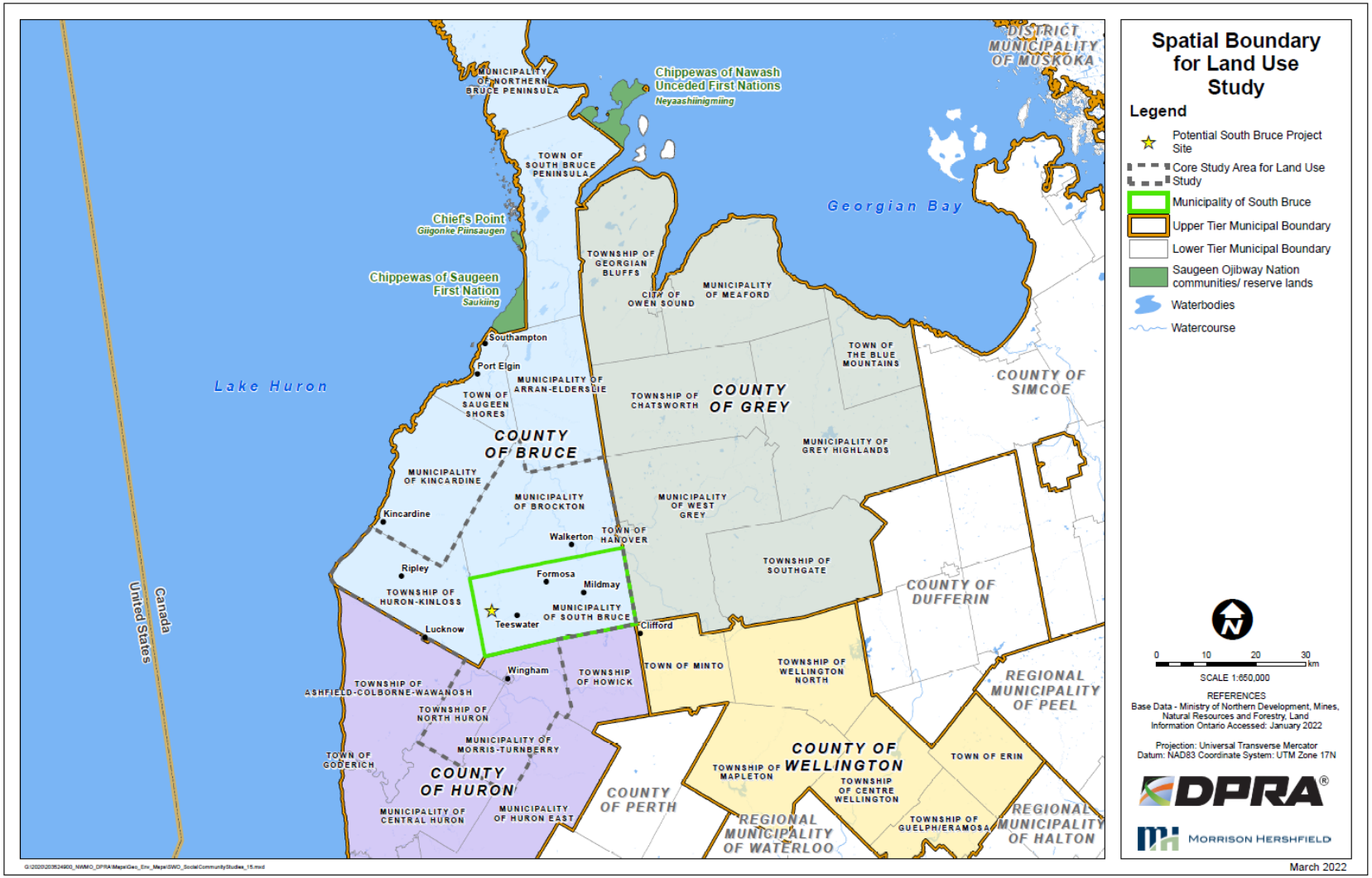
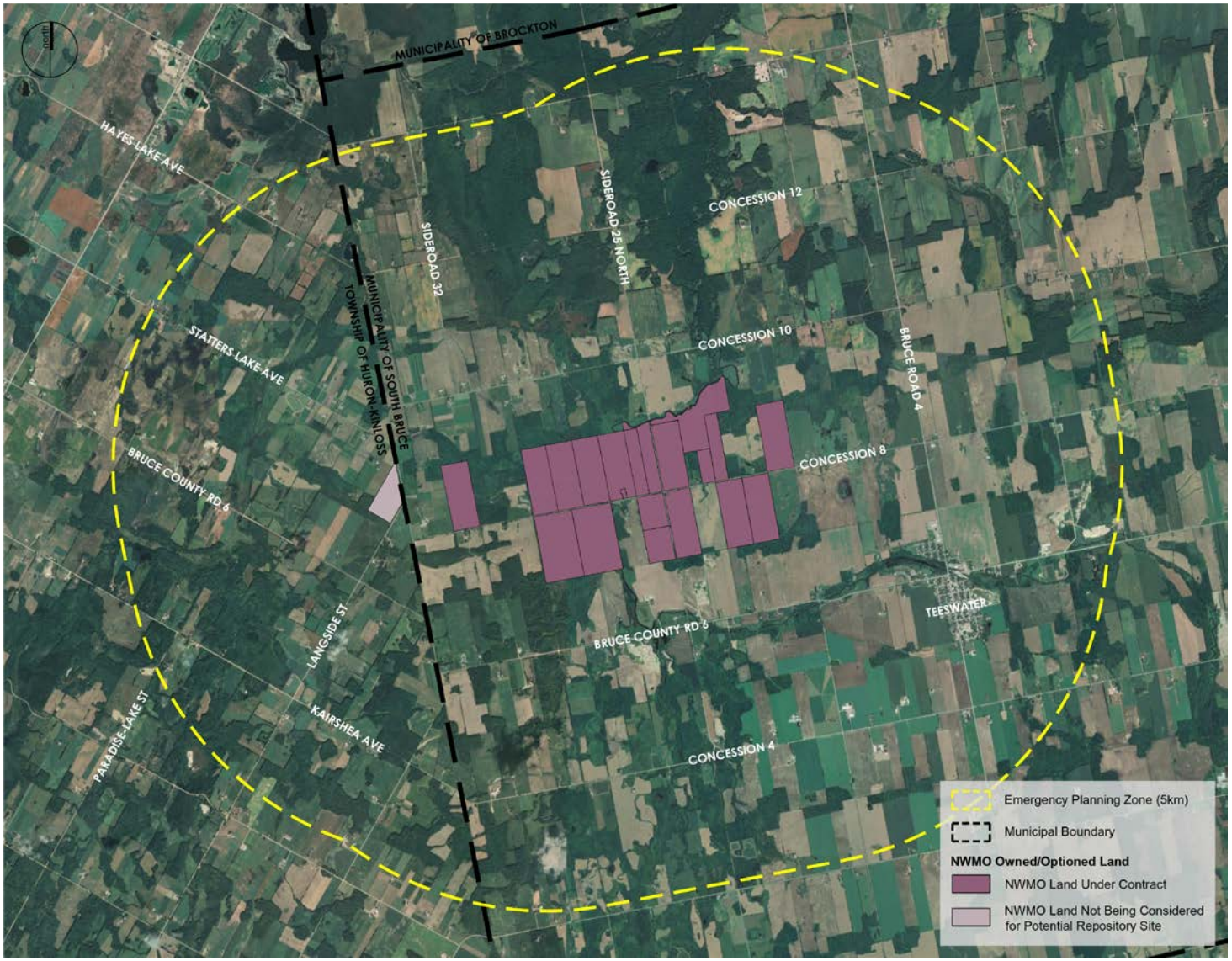


Figure 2 – Potential Project Site and Emergency Planning Zone



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 list of studies is provided in **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 *Land Use 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, regional, provincial, and federal 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, some of the input was obtained from the results of the draft *Emergency Services Study* (IEC/DPRA, 2022)*, Housing Needs and Demand Analysis Study (*Keir Corp., May 2022a)*, Aggregate Resources Study (*Keir Corp., May 2022b)*,* and draft *Infrastructure Baseline & Feasibility Study* (Morrison Hershfield, March 2022) . Data and information were collected for these studies using the methodology described in those study reports.

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. A representative from NWMO reached out to the potential knowledge holders to determine their interest and availability to take part in the interview process and to schedule interviews. Interviews were scheduled by the NWMO and a representative from the NWMO, the NWMO's consultants and the MSB peer review team were present (GHD). 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 the study report.

The land use planning function occurs at the County level in Bruce County and in Huron County. Knowledge holder interviews were undertaken with the following organizations:

- Bruce County Planning and Development;
- Huron County Planning and Development;
- Huron County Economic Development.

While the focus of the interviews was predominately on land use, interviewees also touched upon topics relevant for *Housing Needs and Demand Analysis Study* (e.g. supply of available housing), *Infrastructure Baseline and Feasibility Study* (e.g. cross-border servicing arrangements between adjacent municipalities), *Agricultural Task Force/Agricultural Business Impact Study* (e.g. increase in per acre cost and farm consolidation) and the *Tourism Industry Effects & Strategy* (e.g. potential negative perception of area due to facility location) (Bruce County, Knowledge Holder Interview, August 25, 2021 and Huron County, Knowledge Holder Interview, September 16, 2021). As part of the *Housing Needs and Demand Analysis Study (Keir Corp., 2022a)*, interviews were held with two local land developers and the information was provided and has been reviewed for the *Land Use Study*.

Interviews were not undertaken with representatives of Grey County or Wellington County since these municipalities are not within the Core Study Area for the *Land Use Study*. Interviews with representatives of the local municipalities within the Core Study Area were not undertaken on the topic of land use since the land use planning function occurs at the County level.

Land use planning is primarily a municipal responsibility. While the province sets the policy and legislative framework (such as the *Ontario Planning Act* and the Provincial Policy Statement), the province delegates authority to municipalities (in this case the County municipalities) to ensure that provincial interests are maintained. Therefore, interviews were not held with provincial officials.

Further details on the knowledge holder interviews are 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:
    - *APM 2021 DGR Lifecycle Cost Estimate Update Cost Summary Report* (Heimlich, 2021)
    - *Community Studies Planning Assumptions* (Confidential) (NWMO, October 2021)
    - *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)
    - *REGDOC-1.2.1, Guidance on Deep Geological Repository Site Characterization*. (CNSC, 2021)

    - *REGDOC-2.11 Framework for Radioactive Waste Management and Decommissioning in Canada, Version 2*. (CNSC, 2021)
    - *REGDOC-2.10.1 Emergency Management and Fire Protection Nuclear Emergency Preparedness and Response, Version 2.* (CNSC, 2016).
- Data/documents from organizations within the Core Study Area (various levels of government, agencies, etc.) such as:
    - Provincial planning policy
    - County, Municipality and Township planning policy
    - Conservation authority planning policy
- The following provincial legislation and guidelines were reviewed Section 3 of this report:
    - *Ontario Planning Act (R.S.O. 1990, c. P.13);*
    - Provincial Policy Statement (2020)
    - Provincial Emergency Response Plan (2019)
    - Ontario Ministry of Environment, Conservation and Parks (D-Series Land Use Compatibility Guidelines)
    - Ontario Ministry of Food and Agriculture, Minimum Distance Separation (MDS) Document Formulae and Guidelines for Livestock Facility and Anaerobic Digester Odour Setbacks Publication 853 (2016)
    - Ontario Ministry of Food and Agriculture, Guidelines on Permitted Uses in Ontario's Prime Agricultural Areas Publication 851 (2016)
    - Ministry of Northern Development, Mines, Natural Resources and Forestry Natural Heritage Reference Manual (2010)
- The following County, Municipality and Township planning policy documents were reviewed for this report:
    - Bruce County Official Plan (2017, as amended)
    - Bruce County – Plan the Bruce – Good Growth Discussion Paper and Interim Report (2021)
    - Huron County Official Plan (October 2021 Consolidation)
    - Official Plan for the Formosa, Mildmay and Teeswater Settlement Areas (2005, as amended)
    - The Corporation of the Municipality of South Bruce By-law (2011, as amended)
    - Township of Huron-Kinloss Official Plan (2016, as amended)
    - Township of Huron-Kinloss Zoning By-law (2018, as amended)
    - The Corporation of the Municipality of Brockton Zoning By-law (2016, as amended)
    - Township of North Huron Official Plan (2021)
    - Township of North Huron Zoning By-law (2021)
    - Municipality of Morris-Turnberry Official Plan (2006, as amended)
    - Municipality of Morris-Turnberry Zoning By-law (2014, as amended)
    - City of Pickering Official Plan (edition 8)
    - City of Pickering Zoning Bylaw
    - Municipality of Kincardine Official Plan (2021)
    - Municipality of Kincardine Zoning Bylaw (2012 consolidation)
    - Clarington Official Plan (2018)
    - Clarington Zoning Bylaw 84-63
    - Region of Durham Official Plan (2020 consolidation)
    - South Bruce and Area Growth Expectations Memorandum*,* prepared by metroeconomics for MDB Insight (now Deloitte LLP) and the Municipality of South Bruce (February 2022)
- The following Conservation Authority planning policy documents were reviewed for this report:
    - Saugeen Valley Conservation Authority – Environmental Planning and Regulations Policies Manual (2018, as amended)
    - Maitland Valley Conservation Authority – Policies and Procedures for Compliance with the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (2016, as amended)

2.3 Assessment

Following completion of the data collection phase, a review of Knowledge Holder Interview notes, as described in Section 2.2.1, was completed. The findings were contemplated and discussed with regard to other related studies and the potential to address Knowledge Holder interview questions through studies that directly relate to the questions posed such as the supply of housing and the relationship to the *Housing Needs and Demand Analysis Study*, the provision of necessary infrastructure, and the extraction of mineral aggregate resources.

The assessment and analysis for the Land Use Study has two components. The first component is the assessment of the land use change and implications directly related to the construction and operation of the Project Deep Geological Repository (DGR) facility. These direct land use implications are limited to the potential Project site and the associated EPZ.

The second component is the assessment of potential land use change and implications as a result of indirect changes related to the development of the Project. These include land use considerations related to:

- Additional housing demand resulting from the employment related to the construction and operation of the Project.
- Additional institutional, commercial or employment land needs that are an indirect result of the Project.
- The potential location of the Centre for Expertise.

2.3.1 Analysis Method

2.3.1.1 Potential Direct Effects on Land Use Resulting from the Project

The method to identify and assess the potential direct effects on land use resulting from the Project is as follows:

1. Identify the relevant municipal and provincial policy and regulatory framework governing the existing and future land uses within the potential Project site and EPZ.
2. Identify the land use related characteristics of the Project.
3. Assess the compliance and non-compliance of the Project with the existing land use policy and regulatory framework.
4. Identify options including mitigation measures or other considerations for any land use conflicts.

2.3.1.2 Potential Indirect Effects on Land Use

The method to identify and assess potential land use effects that are an indirect result of the development of the Project is as follows:

1. Review the relevant land use policy framework that governs residential and employment growth in the Study Area.
2. Identify the characteristics of the potential indirect affects – e.g., what are the total number of new residential units that are estimated to be needed?
3. Identify any conflicts, necessary changes or other issues that are expected as a result of the indirect effects.
4. Provide options to resolve potential conflicts.

2.4 Limitations

The limitations of the *Land Use Study* are mainly related to the fact that this study has been completed at a high level and specific details of the potential Project site and surface facility location have not yet been determined. It is expected that the potential effects on land use and more detailed evaluation of policy conformity can be completed in future Project phases as more details are known.

The other main limitation is that this Study references the land use policy and regulatory framework that exists today. The land use planning approvals required for the potential Project (should it be located in the South Bruce Area) would occur during the near-term pre-construction Project phase and be in place in advance of construction start in 2033. While it is expected that the land use policy framework is unlikely to significantly change by then, the land use approvals would have to consider the land use policy that is in place and in effect at that time.

3. Existing Conditions

3.1 Introduction

Land use planning in Ontario is a shared responsibility between the province and municipalities. The province is ultimately the authority and decision making body on all land use planning decisions in the province. However, the province delegates much of the approval and implementation of land use planning to upper and single tier municipalities. Some of the approval and implementation is further delegated by upper tier municipalities to lower tier municipalities.

The federal government has a very limited role in land use planning. Federal jurisdiction is limited to lands owned by the federal government, and in some cases, lands owned or controlled by federally regulated entities – such as railways. There are federal regulations that apply to nuclear facilities, but they are largely in regard to the operation of such facilities or sites. For example:

- The federal government regulates the management, treatment and handling of radioactive materials which must be approved and licensed by the Canadian Nuclear Safety Commission (CNSC). This includes Deep Geological Repository (DGR) facilities. Regulatory Document REGDOC-1.2.1 Guidance on Deep Geological Repository Site Characterization (2021) sets out the federal regulatory requirements with respect to site characterization for a DRG facility for radioactive waste (CNSC, 2021).
- Regulatory Document REGDOC-2.11 Framework for Radioactive Waste Management and Decommissioning in Canada, Version 2 provides the framework for the planning, preparation, execution, and completion of decommissioning in Canada. Decommissioning includes actions taken to allow the removal of some or all of the regulatory controls from a facility, location, or site where nuclear substances are managed, used, possessed, or stored (CNSC, 2021).

The federal regulatory framework will impact the characteristics of the Project and how it functions and is organized on the land, however, the federal government does not provide policy or regulations related to land use that govern such facilities. It is noted that a new standard, CSA N292.7, *Deep geological disposal of radioactive waste and irradiated fuel*[1]*,* is expected to be publicly available in 2022; its implications in terms of land use are not clear at this time.

The relevant provincial and municipal land use policy and regulations that apply to the Core Study Area are described in **Section 3.2.** The provincial framework applies equally to both the potential Project site, the EPZ and the Core Study Area. .

In addition, the lands within the potential Project site and EPZ are within the jurisdiction of the Saugeen Valley Conservation Authority and the Maitland Valley Conservation Authority. The relevant land use policy and regulations related to the conservation authorities is described in **Section 3.3.6.**

The relevant municipal land use policy for the potential Project site; EPZ and the Core Study Area is somewhat different, and each is described separately and in more detail in **Section 3.3.1.** In general, the existing land use planning framework is as follows:

[1] [In development] CSA N292.7, Deep geological disposal of radioactive waste and irradiated fuel This standard will specify requirements for the lifecycle of a deep geological disposal facility, and will address activities including site evaluation, design, monitoring and surveillance, safety assessment, site preparation, construction, commissioning, operation, closure, and institutional controls. (CSA Group.pdf (nrcan.gc.ca))

1. Potential Project Site
   - The potential Project site is located entirely within Bruce County and therefore the County of Bruce Official Plan applies;
   - The lands within the potential Project site are designated Agricultural, Rural, and Hazard. A portion of the lands are within the Mineral Aggregate Resources overlay and a small area has been designated Licenced Aggregate/Quarry Operation;
   - The Agricultural designation limits development to agriculture and agricultural uses. The Rural designation allows for agricultural uses and limited other non-agricultural uses that are consistent with a rural landscape. The Hazard designation is intended to protect natural environment features and development is not permitted.
   - The Licenced Aggregate/Quarry Operation permits aggregate extraction operations in accordance with the *Aggregate Resources Act*.
   - The potential Project site is entirely within the Municipality of South Bruce. The land use designations in the MSB Official Plan do not apply to the potential Project site since it is outside a designated Settlement Area and therefore the County's Official Plan land use designations apply.
   - The MSB Zoning Bylaw applies to the entirety of the potential Project site. The applied zoning categories implement the Official Plan policies and apply agricultural zones, environmental protections zones and extractive industrial zone.

2. EPZ
   - The lands within the EPZ are wholly within Bruce County and therefore the Bruce County Official Plan applies. The lands are partially within the MSB and partially within Huron Kinloss and therefore the zoning bylaw of each municipality is applicable to the lands within that municipality.
   - The majority of the lands within the EPZ are designated Agriculture, Rural or Hazard and therefore land uses are generally restricted to agriculture, agricultural related and rural uses. A few properties are designated Licenced Aggregate /Quarry Operation to recognize existing mineral aggregate operations.
   - The Teeswater Settlement Area is within the EPZ. The MSB Official Plan is applicable to Teeswater and applies a wide range of urban land use designations and permits a range of residential, commercial, institutional and employment uses.

3. Core Study Area
   - The Core Study Area is partially within Bruce County (local municipalities of South Bruce, Huron Kinloss and Brockton) and partially within Huron County (municipalities of North Huron and Morris-Turnberry). The Counties of Huron and Bruce official plans and associated land use designations apply to lands outside of the settlement areas in each municipality. The local official plan land use designations apply to the designated settlement areas within each municipality. While the areas outside of designated settlement areas are generally restricted to agricultural and rural uses, the Core Study Area when taken as a whole contains a wide range of land use designations and a wide range of land uses are permitted.

The County of Bruce provides details on active development applications in each of the local municipalities. In MSB, there are currently 14 active development applications associated with 9 different locations and details are provided on the County's website (https://www.brucecounty.on.ca/living/land-use/south-bruce). Four of the applications are located outside of the EPZ (e.g., in Mildmay or Formosa). Of the five applications within the EPZ, three are located within the Teeswater settlement area and are zoning bylaw amendment or severance applications for urban forms of development.

One of the applications within the EPZ is a zoning bylaw amendment to permit the expansion of the Teeswater Culross Cemetery that is located at 1780 Concession Road 4. The other application is an Official Plan and Zoning Bylaw Amendment submitted by Teeswater Concrete for mineral aggregate extraction operation on lands adjacent to the potential Project site area.

3.2 Provincial Policy

3.2.1 Planning Act

The *Planning Act* is provincial legislation that controls land use planning in Ontario. The *Planning Act* provides the basis for the consideration of provincial interest and identifies those matters of provincial interest that the council of a municipality, local board, planning board or Ontario Land Tribunal must have regard for when carrying out their responsibilities under the *Planning Act*. The *Planning Act* also requires that all planning decisions be consistent with provincial policy statements and provincial plans in effect at the time (*Planning Act*, R.S.O. 1990)

3.2.2 Provincial Policy Statement

The Provincial Policy Statement (PPS, 2020) is issued under the authority of section 3 of the *Planning Act* and the most recent version came into effect on May 1, 2020. The PPS provides policy direction on matters of provincial interest related to land use planning and development. All municipal official plans and all decisions on land use planning matters must be consistent with the PPS.

The PPS provides policy direction on a wide range of land use categories. For the purposes of this study the following policy categories have the most relevance:

- Managing growth and settlement patterns
- Natural heritage resources
- Rural and agricultural lands
- Mineral aggregate resources
- Land use compatibility

3.2.2.1 Managing Growth and Settlement Patterns

A primary directive of the PPS is that growth should be managed to achieve efficient and sustainable development patterns. Section 1.1.3 of the PPS directs that settlement areas are to be the focus of growth and development. Settlement areas refer to lands designated in an official plan for urban uses including urban areas, urban policy areas, towns, villages, hamlets, rural clusters, rural settlement areas, urban systems, rural service centres or future urban use areas, or as otherwise prescribed by regulation (*Planning Act*, 1990).Development outside of settlements and on rural lands is generally more limited.

The PPS directs that upper tier municipalities are responsible for managing growth including identifying areas where growth and development will be directed and allocating population, housing, and employment projections for lower-tier municipalities. Within the Study Area, Bruce County is responsible for managing growth for the Municipality of South Bruce, Township of Huron-Kinloss, and Municipality of Brockton. Huron County is responsible for managing growth in the Township of North Huron and the Municipality of Morris-Turnberry.

The PPS identifies how and where settlement areas can be established and expanded. Settlements can only be expanded when it is demonstrated that there are not sufficient lands to accommodate growth within the upper tier municipality. The PPS also provides direction on where that settlement expansions may occur and specifies, for example, that prime agricultural lands should be avoided.

3.2.2.2 Natural Heritage Resources

The PPS directs that natural heritage features, such as wetlands, woodlands, and habitat of endangered and threatened species shall be protected for the long term. Development that occurs adjacent to natural heritage features can be permitted provided it is demonstrated that there will be no negative impacts on the natural features or their ecological functions. Bruce County, Huron County, and the applicable conservation authority provide land use policy and mapping regarding the location and management of lands with natural heritage features.

3.2.2.3 Rural and Agricultural lands

The PPS directs that prime agricultural lands (defined as those with Class 1, 2 and 3 soils) are to be protected for the long term use for agriculture. Land uses within prime agricultural areas are limited to agricultural uses, agricultural related uses, and on-farm diversified uses. Non-agricultural uses are only permitted where it has been demonstrated that there is identified need for the use and alternative locations have been evaluated and there are no reasonable alternatives. The Bruce County Official Plan and Huron County Official Plan include detailed land use mapping for agricultural and rural lands and the respective soil classification associated with each land use designation.

3.2.2.4 Mineral Aggregate Resources

The PPS identifies that mineral aggregate resources shall be protected for long term use. Development is not permitted on lands where there are known deposits of mineral aggregate resources unless the extraction of the resource is not feasible, or the proposed development serves a greater long term interest. The PPS considers mineral aggregate resource extraction an interim or temporary use and allows extraction in prime agricultural areas provided the lands are rehabilitated back to an agricultural condition.

3.2.2.5 Land Use Compatibility

The PPS identifies that Major facilities shall be planned and developed to avoid, or if avoidance is not possible, minimize and mitigate any potential adverse effects, on nearby land uses. Major facilities are defined as those land uses that may emit odour, noise and other contaminants and include uses such as airports, industrial uses, waste management facilities, sewage treatment facilities and resource extraction activities.

3.2.3 Provincial Plans

The province has developed land use policy plans for specific areas within the Province. For example, the Niagara Escarpment Plan, the Greenbelt Plan, and the Growth Plan for the Greater Golden Horseshoe each provide specific policy direction for a specific geographical area. No provincial plan applies to lands within the Study Area. The Niagara Escarpment Plan does apply to a portion of Bruce County, but that area is in the northern part of the County and does not apply to the area associated with this Land Use Study.

3.2.4 Ontario Provincial Nuclear Response Plan

The area around the Bruce Nuclear Generating Station is divided into three distinct zones: the contiguous, primary, and secondary zones. Each zone has a distinct geographical boundary based on the distance to the nuclear installation. A portion of the MSB falls within the secondary zone. The secondary zone is described as being "a larger zone within which it is necessary to plan and prepare measures to prevent ingestion of radioactive material."

Under Section 2.4.2 of the Ontario Provincial Nuclear Emergency Response Plan (PNERP), the secondary zone for the Bruce Nuclear Generating Station has an approximate radius of 50 km (PNERP, 2011).

3.2.5 Ontario Land Use Compatibility Guidelines (D-Series Guidelines)

The Ministry of the Environment, Conservation and Parks (MECP) has published a series of land use compatibility guidelines that are to be considered in the land use planning process to avoid and minimize impacts on sensitive land uses (such as residential uses) from land uses that may emit noise, odour, vibration, or other impacts. There are six sets of guidelines (D-1 to D-6) that set out compatibility guidelines for various land uses. For example, the D-4 guidelines apply to land use near landfills, whereas the D-6 guidelines apply to land use related to industrial uses and facilities.

In general, the primary mechanism for achieving compatibility between land uses in all of the guidelines is separation. For example, the D-2 Guidelines for Compatibility Between Sewage Treatment and Sensitive Land Use specify a 100 metre minimum distance setback from sewage treatment facilities with the distance increasing with the size of the facility. The D-6 Industrial Facility Compatibility Guidelines specify both a Minimum Distance Separation (MDS) and identify an area of influence. The MDS for Class III industrial uses are a minimum distance of 300 metres and an area of influence of 1000 metres. Class III are the uses with most potential for noxious emissions and would include facilities such as factories, metal stamping, foundries, and smelters. The MDS of 300 metres is the minimum distance between a Class III industrial facility and a sensitive land use, whereas the larger area of influence represents the area where emissions may still be experienced and is the recommended separation distance (MECP, 2021).

The D Series Guidelines do not specifically address a land use like the potential Project. Aside from the radioactive component of the materials, the site would function similar in many ways to an industrial facility with noise and vibration being the likely potential day to day impacts. Therefore, the D-6 Guidelines would likely be a useful surrogate. Regardless, the concept of separation distances to minimize impacts of potential noxious uses is a standard planning tool in Ontario and should be considered as part of the planning and site development process for the facility, if it is located in the South Bruce Area.

3.2.6 Guidelines on Permitted Uses in Ontario's Prime Agricultural Areas (Publication 851)

The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) has published *Guidelines on Permitted Uses in Ontario's Prime Agricultural Areas* to assist with interpretation and implementation of the policies in the Provincial Policy Statement (PPS). Specifically, these guidelines provide direction on policies in section 2.3 of the PPS and the land uses that are permitted in prime agricultural areas. The Guidelines do not contain additional policy or direction that conflicts with or adds to the policies in PPS.

The Guidelines only apply to prime agricultural lands. Should the potential Project be located on prime agricultural lands, the document would provide guidance on PPS policy 2.3.6 which allows for non-agricultural uses in prime agricultural lands in limited situations.

OMAFRA has also published a document titled "*Minimum Distance Separation (MDS) Document Formulae and Guidelines for Livestock Facility and Anaerobic Digester Odour Setbacks Publication 853*"**.** These Guidelines are intended to provide technical guidance for implementing both the MDS Formulae and Implementation Guidelines as required in the PPS. In accordance with the PPS, new land uses in prime agricultural areas and on rural lands shall comply with the Minimum Distance Separation Formulae. The MDS Guidelines would be used during the planning approval process for the potential Project to minimize land use conflict between the Project and any nearby livestock facilities.

3.2.7 Natural Heritage Reference Manual (Second Edition)

The Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF) has published the *Natural Heritage Reference Manual* which provides technical guidance for implementing the natural heritage policies of the PPS The manual represents the Province's recommended technical criteria and approaches for being consistent with the PPS in protecting natural heritage features. The manual is intended to assist in implementing PPS policy, it does not add to or detract from the policy. There are natural heritage features located on the potential Project site area and the guidelines of the Reference Manual would be used to apply the policies of the PPS during the planning approval process for the Project.

3.3 Municipal Land Use Policy Framework

The Study Area is partially within Bruce County and partially within Huron County. Both Bruce County and Huron County are two tier municipalities and land use policy and regulation is a shared responsibility with local municipalities. Both Counties have adopted Official Plans that set out land use objectives, contain a growth management and development strategy and apply land use designations.

All local municipalities have an official plan that conforms to the applicable County Official Plan and each local municipality has a zoning by-law which implements the local Official Plan and County Official Plan. For the five local municipalities in the Study Area the Official Plan land use designations apply to lands within the settlement areas. For lands outside settlement areas the land use designations and policies of the County official plan applies.

The following local planning documents apply to lands within the Study Area for the *Land Use Study*:

- Official Plan for the Formosa, Mildmay and Teeswater Settlement Areas (2005, as amended)
- The Corporation of the Municipality of South Bruce By-law (2011, as amended)
- Township of Huron Kinloss Official Plan (2016, as amended)
- Township of Huron Kinloss Zoning By-law (2018, as amended)
- The Corporation of the Municipality of Brockton Zoning By-law (2016, as amended)
- Township of North Huron Official Plan (2021)
- Township of North Huron Zoning By-law (2021)
- Municipality of Morris-Turnberry Official Plan (2021)
- Municipality of Morris-Turnberry Zoning Bylaw (2014, as amended)

The potential Project site and EPZ are located entirely within Bruce County and therefore the Bruce County Official Plan applies to the entirety of the area. The potential Project site is located within the Municipality of South Bruce and the five kilometre EPZ is primarily within MSB but also extends into the Township of Huron-Kinloss (see **Figure 2**, above). Therefore, the policy and regulatory framework for MSB applies to both the potential Project Site and EPZ and the Township of Huron-Kinloss' policy and regulatory framework applies to a portion of the EPZ. A summary the relevant applicable land use policies and regulations of Bruce County, MSB and Township of Huron-Kinloss are provided below. These two lower-tier municipalities were reviewed in detail since any direct land use effects related to the Project will be limited to the potential Project site and EPZ.

3.3.1 Bruce County Official Plan

The County of Bruce Official Plan was adopted by Council in May 1997, and has, and continues to be, amended over the years. Amendments to the Official Plan are posted regularly to the County's website. The Official Plan provides a vision for the future growth of the County and a policy framework to guide its physical development. The County of Bruce is currently completing a Municipal Comprehensive Review to update the official plan to ensure

consistency and conformity with Provincial policy. The new official plan is expected to be completed by the end of 2022.

The land use designations for all lands within the county are identified in Official Plan Schedule A (Bruce County Official Plan, 2017). **Figure 3** illustrates the land use designations of the Official Plan for the potential Project site and the surrounding EPZ. There are four (4) land use designations within the potential Project site as follows:

- Agricultural
- Rural
- Hazard
- Licensed Aggregate / Quarry Operation

Official Plan Schedule B illustrates the respective road classifications for lands within the potential Project site/EPZ and beyond. Schedule B is included as **Figure 4**. Official Plan Schedule C is included as **Figure 5** and identifies that the potential Project site includes lands identified as a 'Mineral Resource Area' and that lands beyond the potential Project site but within the 5km EPZ include an 'Area of Natural and Scientific Interest' (ANSI).

The Province identifies ANSIs as areas of land and water containing natural landscapes or features which have been identified as having values related to protection, natural heritage appreciation, scientific study, or education. The Bruce County Official Plan provides policies and objectives on lands identified as ANSI areas and states that ANSI areas are to be provide for the continued private use while encouraging landowners to voluntarily protect and manage the unique environmental resources of their land.

A summary of the land use designations and uses permitted within these designations are outlined in **Table 2**.

Table 2 – Applicable Bruce County Official Plan Land Use Designations

Official Plan Schedule A	Land Use Description	Permitted Uses
Agricultural	The Agricultural designation is applied to prime agricultural lands, which are areas that have Class 1, 2 and 3 soils as defined by the Canada Land Inventory Soil Capability Classification for Agricultural Capability. The intent of the Agricultural designation is to limit non-agricultural development and protect prime agricultural lands for long term agricultural use.	Land uses are limited to agriculture and agricultural uses including: Agriculture, Aquaculture, Apiaries, Agro-forestry, Maple syrup production, Home occupations, Home industries, Farm-related uses (including the use of lands, Buildings or structures for the raising of animals, the growing of plants for food production and nurseries) Bed and breakfast establishments

Official Plan Schedule A	Land Use Description	Permitted Uses
Rural	The Rural land use designation is applied to lands that have Class 4, 5, 6 and 7 soils as defined by the Canada Land Inventory Soil Capability Classification for Agricultural Capability. The intent of the Rural designation is to balance rural development pressures with the need to preserve and protect the rural landscape.	A range of rural type uses beyond agriculture are permitted including: Agriculture Farm related commercial and industrial uses Institutional Home industries and home occupations Rural industrial Rural commercial Non-farm residential
Hazard	Hazard land use designation is applied to lands that contain natural environment features or natural hazards such as flood plains or steep slopes. The intent of this designation is to restrict development to ensure the long-term protection of these features.	Uses are limited to those that will not impair ecological features and functions: Conservation Forestry Wildlife areas Passive recreation
Mineral Aggregate Resources Licensed Aggregate / Quarry Operation	Potential mineral aggregate resources are shown on Schedule C. The intent of the official plan is to protect these areas by not allowing develop that would hinder extraction in the long term. Aggregate extraction operations are recognized by special policy and permitted in these locations in accordance with the requirements of the *Aggregate Resources Act*.	Wayside pits and portable asphalt plants are permitted uses in accordance with the Zoning By-Law

The Teeswater settlement area is within the EPZ. The County official plan designates Teeswater a Primary Urban Community. The Official Plan identifies that Primary Urban Communities should be planned to accommodate a wide range of land uses and further directs that local municipal official plans include policies to direct and guide development and land use within Primary Urban Communities.

The growth management strategy of the current Official Plan directs that the majority of projected permanent population growth will occur in Primary Urban Communities. While the Official Plan allocates population, household, and employment growth to each local municipality, the management of growth occurs at the county level. Section 5.2.2.5 of the current Official Plan identifies that there are sufficient lands within existing settlement areas and new or expanded settlements are not required to accommodate the growth forecasts in the current Official Plan. The Official Plan further states that the populations of MSB, Huron-Kinloss, Brockton and Arran-Elderslie are expected to grow at a slow rate or remain stable.

The County of Bruce is currently undergoing a Municipal Comprehensive Review which will result in a new updated Official Plan later in 2022 which will replace the current plan and update the current county growth strategy described above. The updated Official Plan will assist in guiding the development and growth of the County for the next 25 years (to 2046). As part of the Municipal Comprehensive Review, the County initiated a study (Plan the Bruce: Good Growth) to prepare an overview of the County's projected growth over the next 25 years and a growth management strategy to inform the new Bruce County Official Plan. An interim report was prepared in March, 2021 with a subsequent discussion paper presented to Council in September, 2021. The interim report and discussion paper provided a review of demographic trends, economic and socio-economic profiles, and assessment of key growth drivers in the County. More detailed discussion on growth projections for the Study Area is provided in Section 3.4.

3.3.2 Municipality of South Bruce – Official Plan

The MSB is a lower-tier municipality with an Official Plan that provides land use policies specifically for urban settlement areas. The Municipality's Official Plan, specifically referenced as the "The Official Plan for the Formosa, Mildmay and Teeswater Settlement Areas" (The Municipality of South Bruce Official Plan, 2005), applies to settlement area boundaries as established in the Bruce County Official Plan. **Figure 6** identifies the plan boundaries of the MSB Official Plan. Within the Teeswater, Settlement Area, a variety of land uses are permitted, including residential, industrial, institutional, and future development as shown on **Figure 7**.

The MSB Official Plan does not apply land use designations or specific policy to lands outside of settlement areas. The land use designations and policies of the Bruce County Official Plan identified in Table 2 apply to these areas.

3.3.3 Municipality of South Bruce Zoning By-law (2011-63)

The Municipality of South Bruce Zoning By-law (2011) regulates how lands may be used, where buildings and other structures can be located, the types of buildings that are permitted and the specific dimensions, parking requirements and building heights, setbacks, and densities. The MSB Zoning By-law implements the land use designations of the Bruce County Official Plan and MSB Official Plan.

Figure 8 illustrates the zoning categories that apply to the area of the potential Project Site. There are four general zoning categories within the potential Project site area and the permitted uses of each are identified in Table 3.

Table 3 – Applicable Municipality of South Bruce Zoning By-law Provisions

MSB Zoning By-law	Land Use Description	Permitted Uses
A1 – General Agriculture'	The provisions of the Agricultural (A1) Zone shall generally apply to lands designated 'Agriculture' or 'Rural' on Schedule 'A' Land Use in the County of Bruce Official Plan.	**Non-Farm Lot:** Dwelling, Non-Farm, Group Home, Home Occupation, Kennel, Accessory structures **Farm Lot:** Agritainment, Agriculture, General, Conservation, Dwelling, Group Home, Home Occupation, Home Industry, Livestock Facility, Kennel, Wayside Pit, Quarry, Portable Asphalt Plant
EP – Environmental Protection	The provisions of the Environmental Protection (EP) Zone shall generally apply only to lands designated 'Hazard Land' on Schedule 'A': Land Use Plan of the Official Plan for the Urban Areas of Mildmay Formosa and Teeswater or designated 'Hazard' on Schedule 'A': Land Use Plan of the County of Bruce Official Plan.	Agriculture, General Boat Launching & Docking Conservation Area Public Park Snowmobile Club
EP – 1 – Environmental Protection (Provincially Significant Wetlands)	Lands delineated as EP-1 are also applied to lands within the Hazard designation. All buildings and structures shall be prohibited in an 'EP-1' zone except those necessary for flood and/or erosion control.	Existing agricultural uses and non-intensive outdoor recreational activities (e.g., hiking and walking trails, cross-country skiing, fishing, and hunting)
M2 – Extractive Industrial	The Extractive Industrial (M2) Zone applies to pits and quarries as identified on Schedule 'A': Land Use of the County of Bruce Official Plan.	Agriculture, General, Pit, Portable Asphalt Plant, Portable Concrete Plant, Quarry, Buildings, structures and uses accessory to a permitted use, processing of natural materials extracted from the site including screening, sorting, washing, crushing, storing, portable ready mix/concrete, asphalt plant

The majority of the zoning provisions that apply to lands within the potential Project site and surrounding lands are restrictive and limited to agriculture and environmental related uses.

The A1 - General Agriculture zoning provisions apply to the lands identified in the Bruce County Official Plan as both 'Agriculture' and 'Rural'. The intent of this designation is to accommodate a variety of land uses that are appropriate for a rural location and a limited amount of residential development where such development will not preclude continued agricultural and non-residential uses.

The EP designation generally applies only to lands designated ‘Hazard Land’ on Schedule ‘A’: Land Use Plan of the Official Plan for the Urban Areas of Mildmay Formosa and Teeswater or designated ‘Hazard’ on Schedule ‘A’: Land Use Plan of the County of Bruce Official Plan. Buildings and structures are prohibited in the EP zone except for uses that support environmental or recreational features.

The EP-1 designation is intended to identify and protect significant wetlands to maintain their important ecological functions. Development and site alteration within this designation is very restricted and only uses that do not affect the natural characteristics of the wetland are permitted. All buildings and structures are prohibited in an ‘EP-1' zone except those necessary for flood and/or erosion control purposes. Site alteration, such as filling or excavation is not permitted within the ‘EP-1' zone except to allow existing agricultural uses to continue.

The M2-Extractive Industrial designation applies to pits and quarries as identified on Schedule ‘A’: Land Use of the County of Bruce Official Plan. The M2 designation is typically implemented through site specific amendments to permit aggregate extraction.

The MSB Zoning By-law 2011-63 Schedule 'A - Teeswater' identifies the specific zoning provisions for the Teeswater Settlement Area. A mix of zoning provisions apply to lands within the Teeswater Settlement Area and permit a range of residential, institutional, employment and commercial type uses.

Within the potential Project site and EPZ, the zoning generally prohibits uses that cause potential land use impacts regarding compatibility. A Zoning By-law Amendment is required to permit site specific uses or to change various land uses. When reviewing Zoning By-law Amendment applications within the potential Project site or EPZ, consideration of potential land use compatibility should be reviewed.

3.3.4 Township of Huron-Kinloss Official Plan

The Township of Huron-Kinloss is a lower tier municipality with an Official Plan that provides land use policies specifically for settlement areas (Township of Huron Kinloss Official Plan, 2016). The Township’s Official Plan applies to settlement areas as established in the Bruce County Official Plan. The Official Plan land use designations and policies of the County’s Official Plan apply to lands outside of settlement areas including the portion of the EPZ that extends into Huron-Kinloss.

3.3.5 Township of Huron-Kinloss Zoning By-law (2018-98)

Similar to the MSB Zoning By-law, the Township of Huron-Kinloss Zoning By-law (2018) regulates how lands may be used, where buildings and other structures can be located, the types of buildings that are permitted and the specific dimensions, parking requirements and building heights, setbacks, and densities. The Huron-Kinloss Zoning By-law generally implements the land use designations of the Bruce County Official Plan and Huron-Kinloss Official Plan.

Figure 9 identifies the Township of Huron-Kinloss zoning provisions that apply to the EPZ. Permitted uses in this area are limited generally to agriculture and environmental protection; other land uses require site-specific approvals. For example, there is a large Mennonite population in the Township who rely on schools and churches located within the rural part of the Township. Site-specific uses such as these are not permitted as of right but require a zoning by-law amendment to permit the use and are limited in terms of size and scale Mennonite schools and churches within the EPZ are shown on **Figure 10** for reference.

3.3.6 Conservation Authorities

Conservation Authorities are corporate bodies created through legislation by the province and focus on water related natural hazard prevention and management, including flood and erosion control. The potential Project site and EPZ include lands that are subject to Conservation Authority review and regulation. Development, including

site alteration that is proposed within the regulated area of the Saugeen Valley or Maitland Valley Conservation Authorities are reviewed and considered by the appropriate Conservation Authority (SVCA, 2017 and MVCA, 2016). The Saugeen Valley Conservation Authority and Maitland Valley Conservation Authority act as a Review Agency and are circulated on all *Planning Act* applications with regards to Section 3.1 (Natural Hazards) of the Provincial Policy Statement.

Figure 11 identifies the scope and boundaries of the Conservation Authority regulated areas. The scope and boundaries identified in **Figure 11** reflect the hazard land boundaries identified in Schedule A of the Bruce County Official Plan (**see Figure 3**)**.** Within the Conservation Authority regulated areas are the Greenock Swamp, which is identified as a Provincially Significant Wetland and ANSI and other wooded areas (SVCA, 2017). These features are to be protected and limited development or site alteration will be permitted. Section 4.15.2 of the BCOP (2017) identifies that development may be permitted adjacent to wetlands with suitable setbacks if the development does not result in: the loss of wetland functions; the demand for future development that will negatively affect the wetland; conflict with site-specific wetland management practices; and, cause the loss of contiguous wetland area.

Consideration of the SVCA, Maitland Valley Conservation Authority, and Bruce County Official Plan land use policies must be considered when identifying the final location for surface level facilities of the DGR and Excavated Rock Management Area. Further analysis will be required to determine potential environmental impacts related to lands within the conservation authority regulated areas.

3.4 Planning for Nuclear Facilities

Provincial land use policy and guidelines do not specifically address nuclear facilities. The PPS contains policies on infrastructure, which is defined as including electricity generating facilities, but nuclear facilities are not specifically identified.

A review of municipal official plans for municipalities that address nuclear facilities indicates that municipalities generally recognize the facility but do not apply specific policies to regulate the land use of the facility or apply policies to restrict land use in the vicinity of the facility.

The Bruce Power Nuclear Generating Station is located in Kincardine. The facility is outside of the designated settlement areas and therefore the Bruce County Official Plan designations apply. The Official Plan does not apply a land use designation; instead, section 5.13 of the Official Plan states:

> "As the government of Canada has exclusive regulatory jurisdiction over nuclear facilities, no municipal regulation of land uses or development within the Bruce Power Nuclear Development Area shall occur while a nuclear facility is operated within the Bruce Nuclear Power Development designation pursuant to a license granted by the Canadian Nuclear Safety Commission."

The Kincardine Zoning Bylaw zones the lands M1(c) which is a site specific employment zone. The site-specific zone allows the lands to be used as Bruce Nuclear Power facility but does not apply specific regulations.

The lands adjacent to Bruce Power Generating Station are a mix of Rural, Agricultural and Hazard designated lands. The Bruce Eco-Industrial Park is located nearby. There are no policies in the Bruce County or Kincardine Official Plans or regulations in the Kincardine Zoning Bylaw that specifically limit or regulate land use based on proximity to the Bruce Power Generating Station.

The Municipality of Clarington and the City of Pickering take a similar approach. The Darlington Nuclear facility is designated as "Utility" in the Clarington Official Plan but there are no specific policies that govern the land use of the site. The lands are zoned Agriculture but Public Services provided by a Public Authority are permitted in all zones and therefore the facility is considered a public use.

The Pickering Generating Station is located within the designated settlement boundary in Pickering. The Pickering Official Plan designates the lands as “Freeways and Major Utilities” which recognizes the use of the lands as an electrical generating station but does not apply specific land use policies.

Neither Clarington nor Pickering apply specific land use policies or zoning regulations to control land use adjacent to the nuclear facilities.

3.5 Study Area Growth Projections

3.5.1 Population and Housing Projections

As noted above, the County of Bruce is in the process of updating its Official Plan and as part of that process the County has generated population, employment, and household projections to 2046. Huron County has recently done the same. At the same time, the Municipality of South Bruce has undertaken growth projections for the five municipalities in the Core Study Area. These projections are described in their report titled *South Bruce and Area Growth Expectations* (metroeconomics, February 2022) and summarized in Table 4 below. The metroeconomics projections differ from the County in that they project a greater amount of growth for the municipalities in the Core Study Area than do the two respective Counties.

The growth projections in Table 4 do not include any growth in population, housing or employment that is associated with the Project. The metroeconomics report also provides anticipated Project related growth projections. These are shown in Table 5.

Table 4 - metroeconomics Base Case Growth Projections (2021-2046)

Municipality	Projected Population Growth 2021-2046	Projected Housing Growth 2021-2046
Sum of Municipalities	13,060	4,610
Brockton	3,880	1,490
Huron Kinloss	3,180	1,030
South Bruce	2,510	940
North Huron	1,860	790
Morris-Turnberry	1,630	360

Source: metroeconomics 2022

Table 5 - Anticipated Project Effects Projections (2021-2046)

			2021	2031	2041	2046
Population	South Bruce		-	200	640	780
	Other Core Area Municipalities	Sum of Other Core Area	-	200	640	1,020
	Total Core Area		-	400	1,280	1,800
Dwellings	South Bruce		-	70	200	250
	Other Core Area Municipalities	Sum of Other Core Area	-	70	220	350
	Total Core Area		-	140	420	600
Employment	South Bruce		-	230	730	840
	Other Core Area Municipalities	Sum of Other Core Area	-	40	170	420
	Total Core Area		-	270	900	1,260

Source: metroeconomics 2022

3.5.2 Land Capacity

The County of Bruce has completed a land needs assessment as part of their 'Plan the Bruce' project and identified that there are sufficient lands within existing settlement areas to accommodate projected growth. The County has identified that there is capacity to accommodate at least 8,000 housing units above the projected growth to 2046 (County of Bruce, September, 2021).

The County's growth management strategy looks at the County as a whole – meaning that if there is shortage of land capacity within a particular local municipality to accommodate forecast growth, a settlement boundary would not be necessary if there is otherwise a surplus of capacity elsewhere in the County. Given the considerable capacity within the existing settlements as a whole, the County has concluded that no settlement boundary expansions are needed to accommodate the forecasted growth to 2046.

The County's land supply analysis does not consider the potential Project-related housing growth. However, the anticipated additional 600 dwelling units that would result from the Project would seem to be able to be accommodated within the County's identified land supply.

The housing supply capacity for Bruce County municipalities that are within the Core Study Area is described in the *Housing Needs and Demand Analysis Study* (Keir Corp., 2022a;) and summarized below in Table 6. Note that these are base case growth projections and do not include household growth related to the Project.

Table 6 – Core Study Area Housing Unit Capacity (2021-2046)

Municipality	Projected Housing Growth 2021-2046	Total Housing Capacity 2021-2046	Surplus/Deficit
Sum of Municipalities	4,610	4,820	210
Brockton	1,490	1,150	-340
Huron Kinloss	1,030	1,120	190
South Bruce	940	1,010	70
North Huron	790	940	150
Morris-Turnberry	360	500	140

Source: Keir Corp. 2022a

Figure 3 – Bruce County Official Plan – Schedule A – Land Use

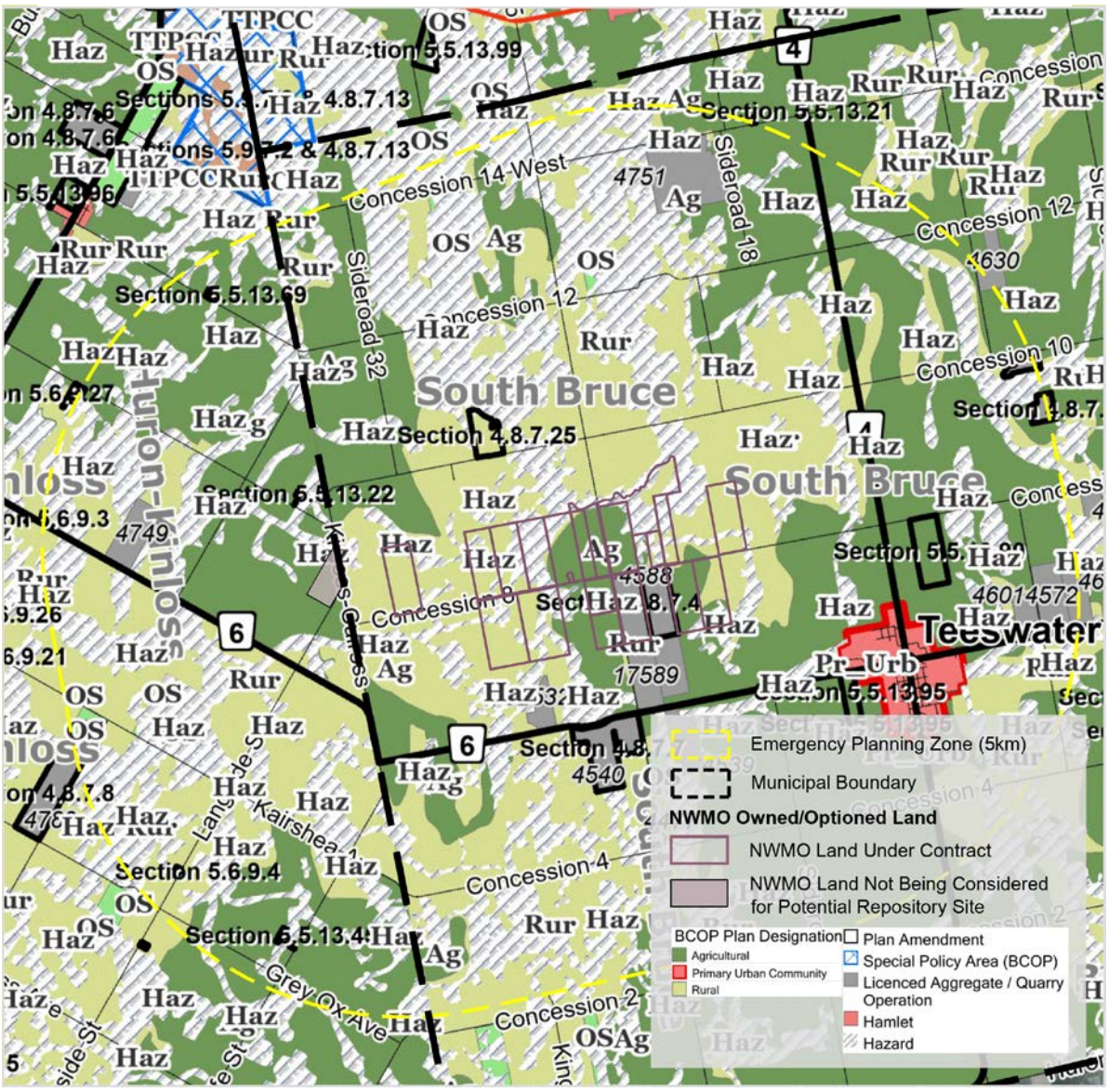


Figure 4 – Bruce County Official Plan – Schedule B – Road Classifications

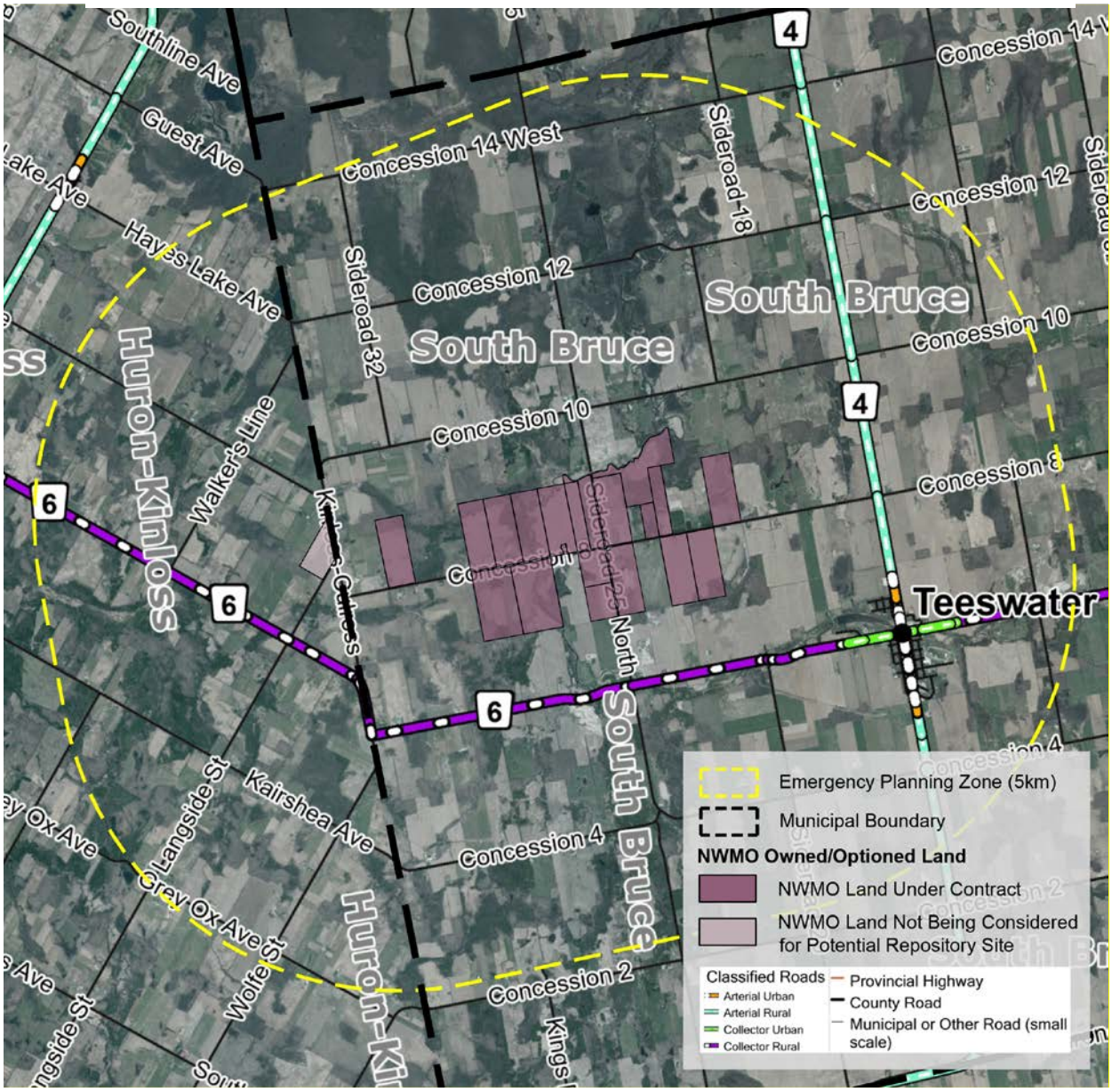


Figure 5 – Bruce County Official Plan Schedule C - Constraints

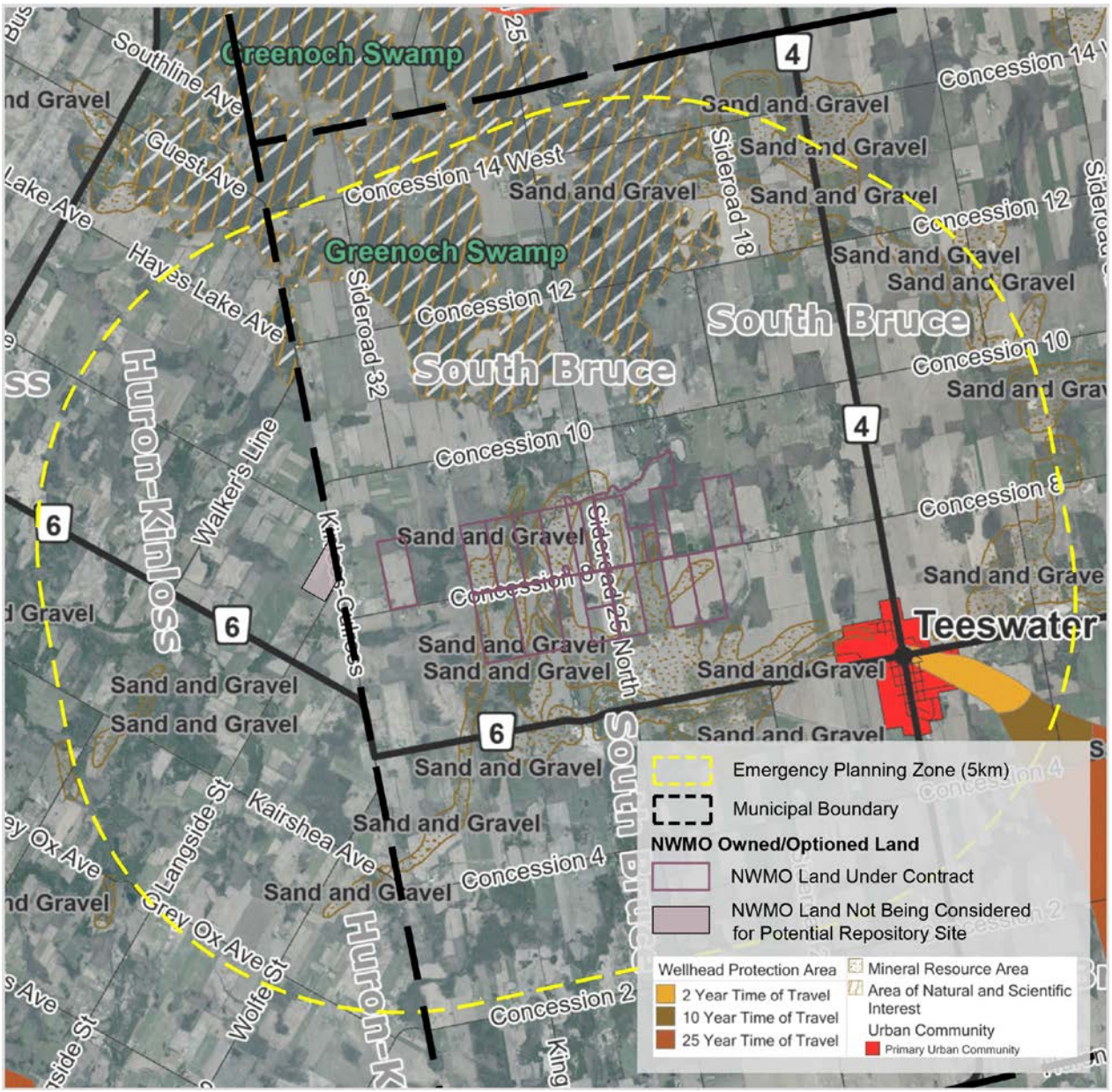


Figure 6 – Municipality of South Bruce Official Plan

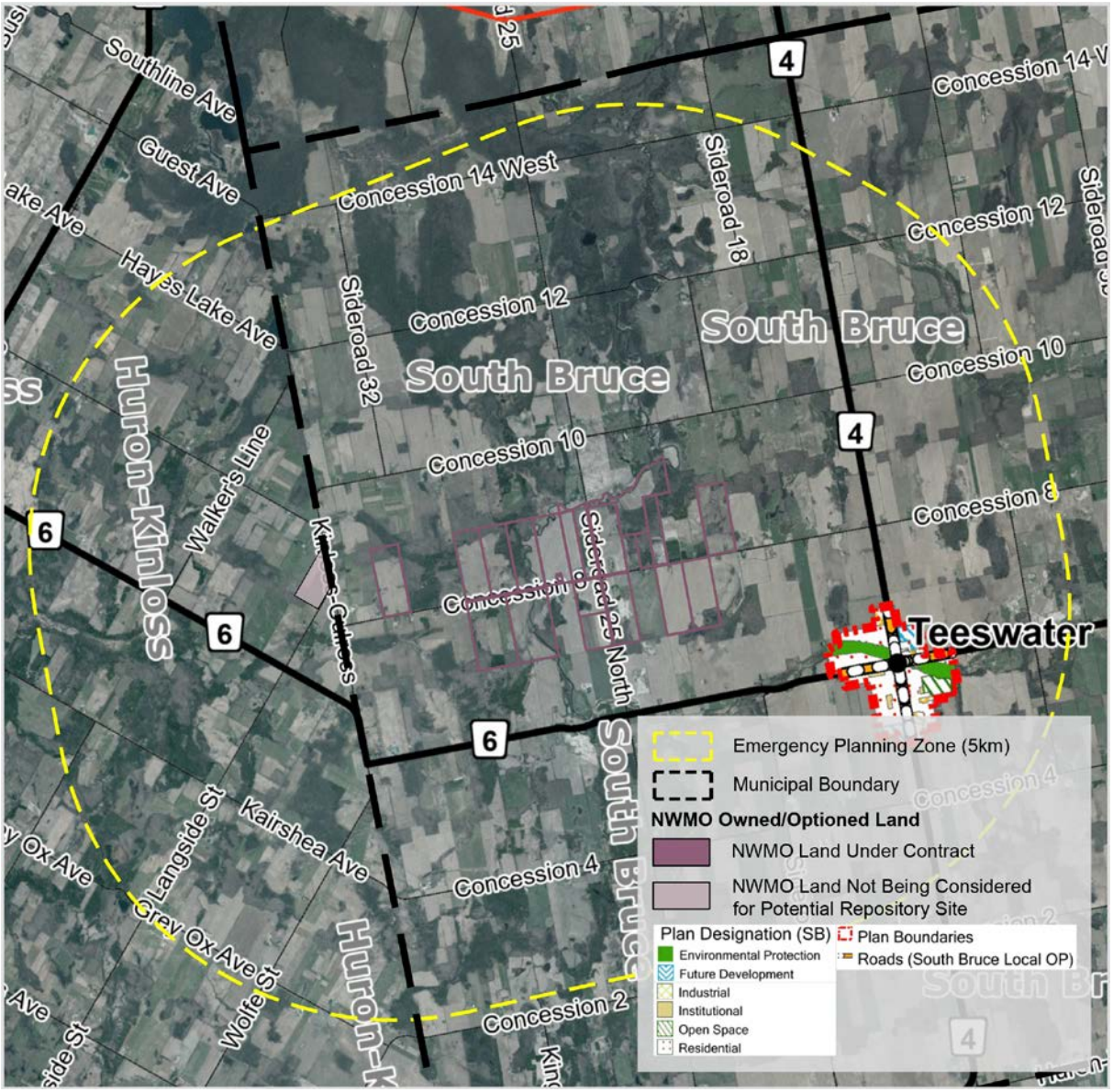


Figure 7 – Municipality of South Bruce Official Plan – Schedule 'A' Teeswater

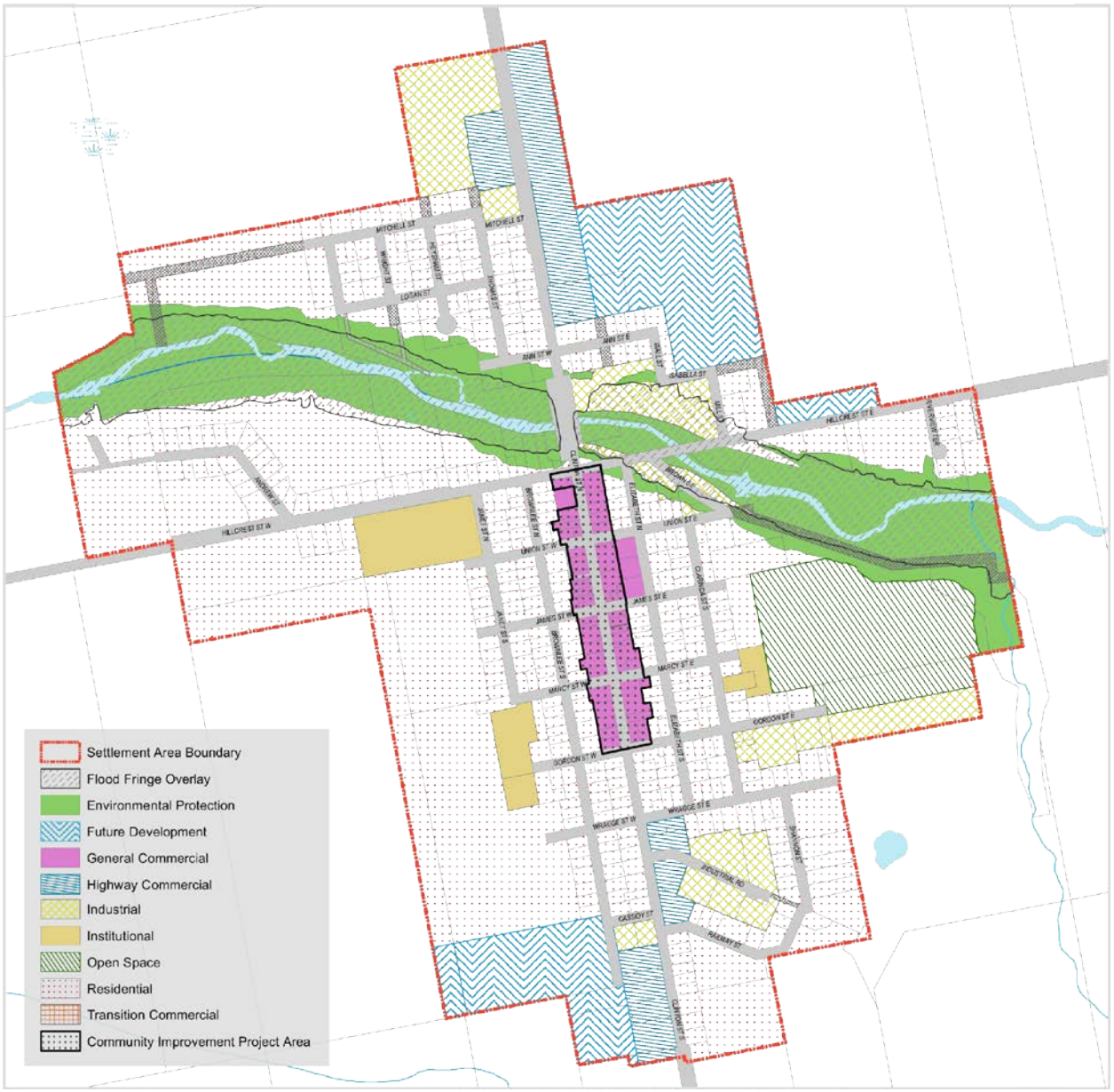


Figure 8 – Municipality of South Bruce Zoning By-law 2011-63

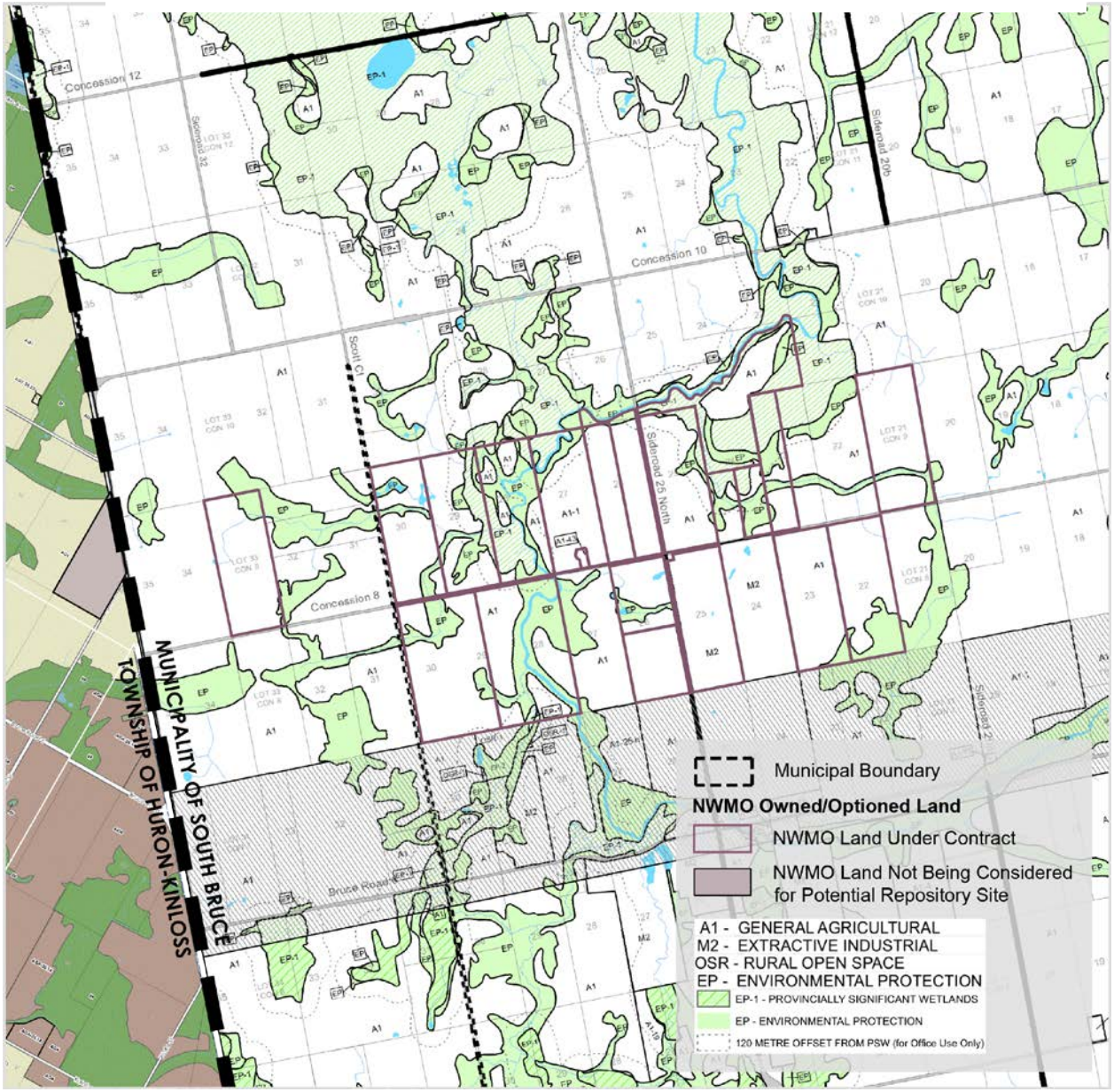


Figure 9 - Municipality of South Bruce Zoning Bylaw 2011-63 & Township of Huron-Kinloss Zoning Bylaw 2018-98

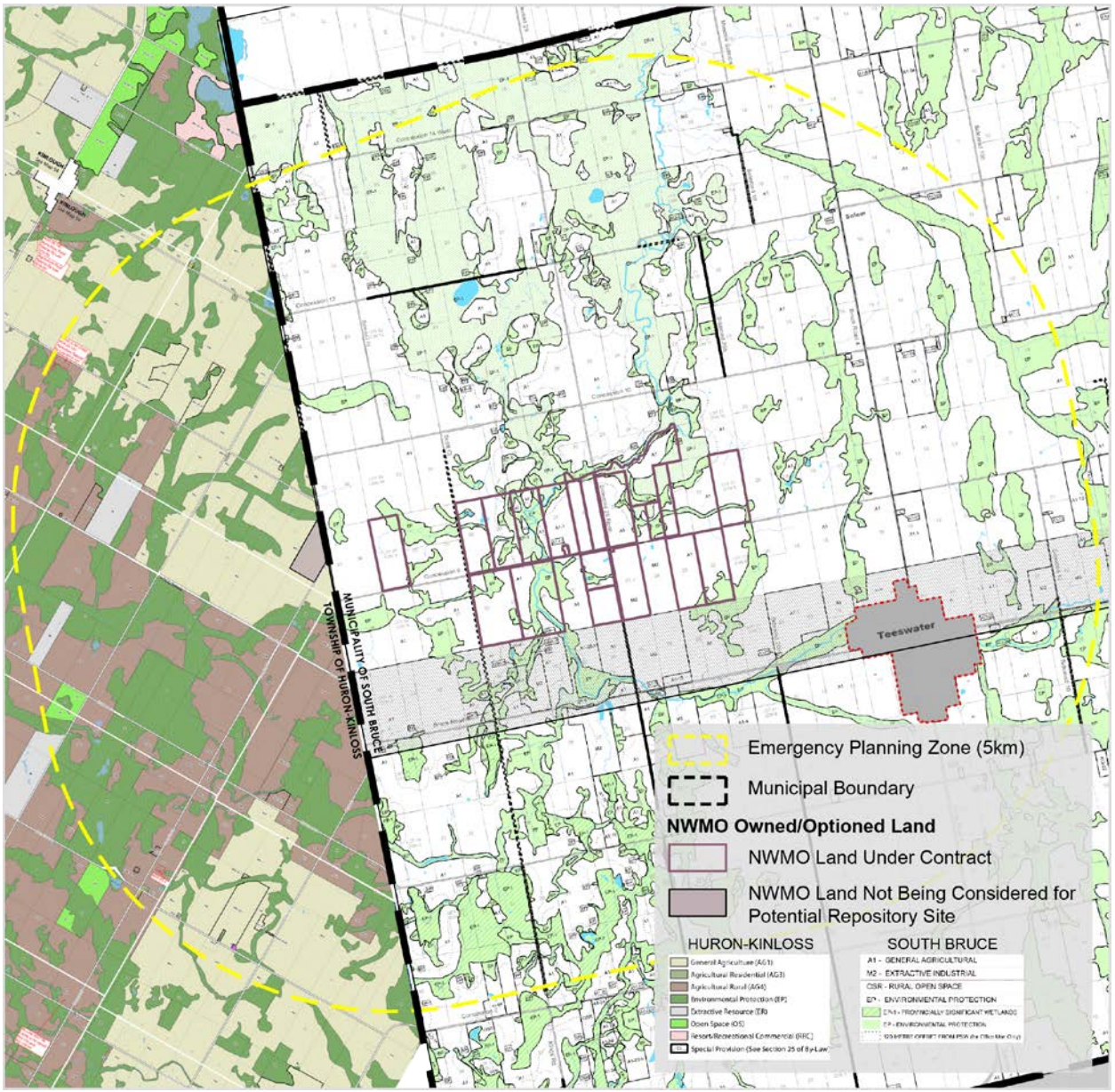


Figure 10 – Mennonite Churches and Schools

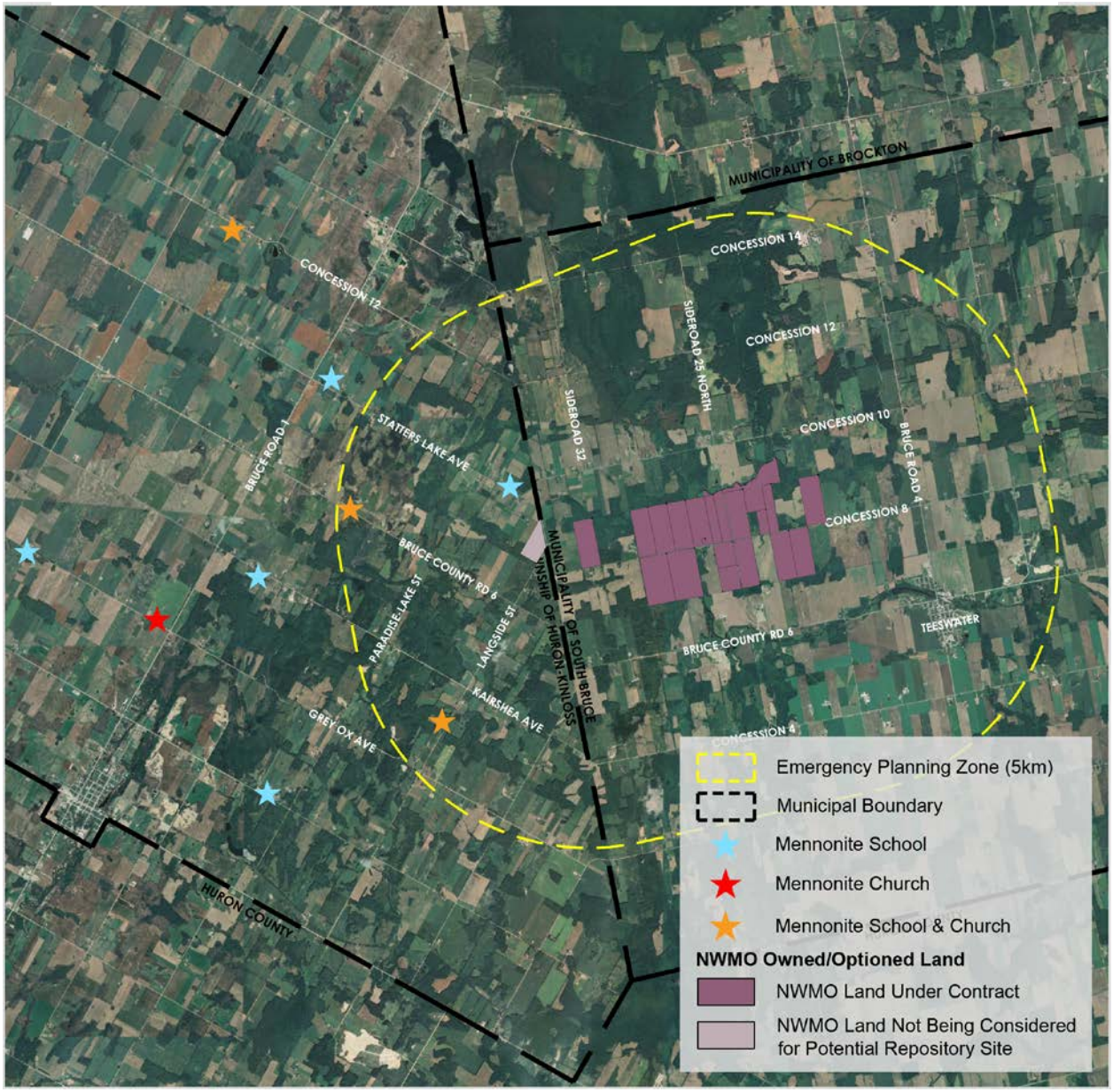
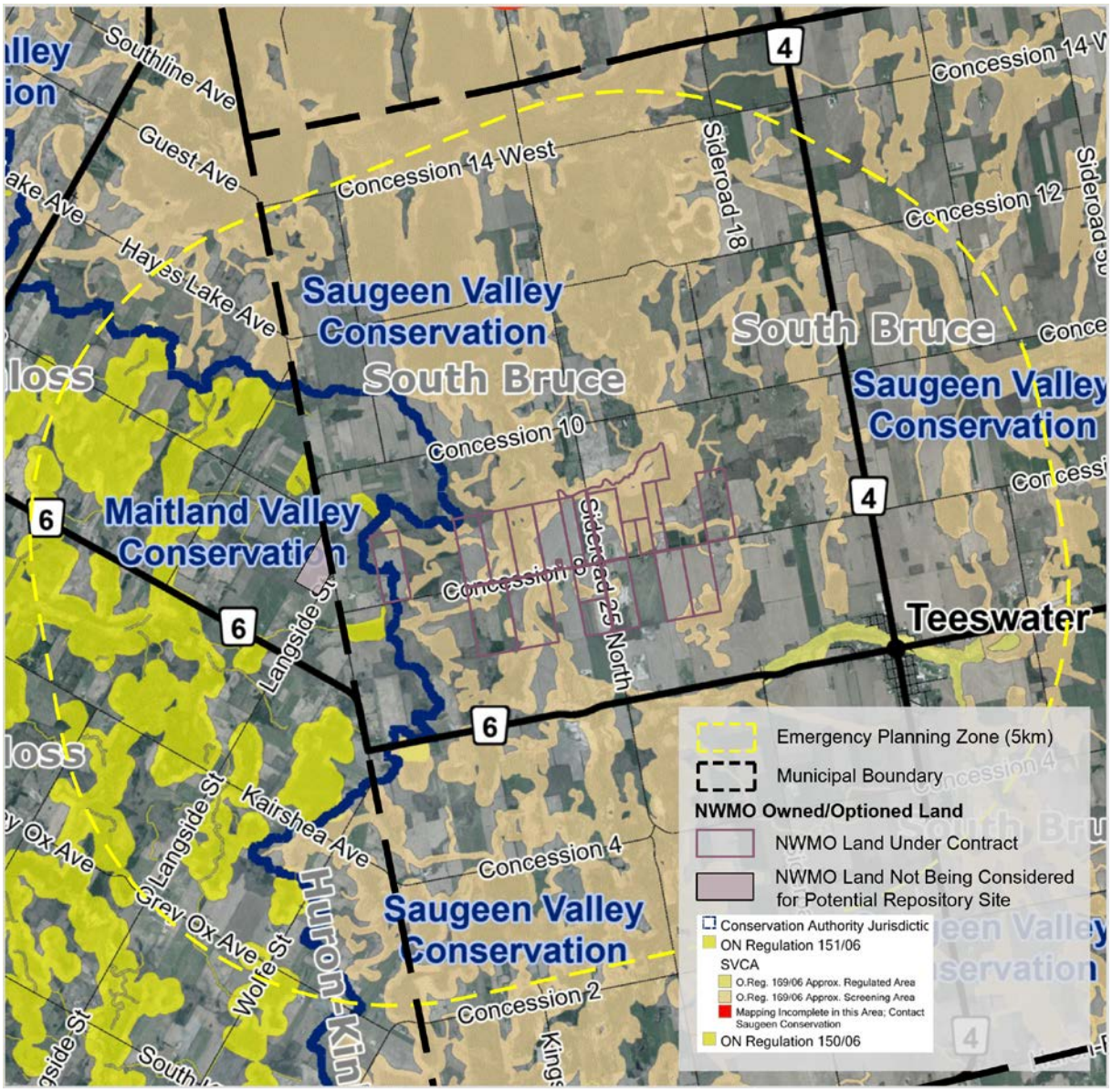


Figure 11 – Conservation Authority Data



4. Relevant Project Characteristics

4.1 Project Site Characteristics

4.1.1 DGR Site

The Deep Geological Repository (DGR) is a self-contained facility with operation, maintenance and long-term monitoring occurring on-site. The DGR surface facility includes structures, systems, equipment, and components for the facility. Surface facilities are identified as either being within the Protected Area (i.e., a restricted area established by NWMO) or associated with the Balance of Site area. The land required to accommodate the DGR surface facilities covers an area of approximately 625 m x 700 m (approx. 45 hectares) (Naserifard et al., 2021). A conceptual plan for the potential DGR site is shown in **Figure 12**.

Surface facilities located within the Protected Area of the DGR facility include the Used Fuel Packaging Plant, Main Shaft Complex, Service Shaft Complex and Ventilation Shaft Complex. Security and double perimeter fencing will be required to prevent unauthorized access into the Protected Area. Surface facilities located outside the Protected Area, but inside the outer perimeter fence, are considered the Balance of Site. The Balance of Site area will include the Administration Building, Sealing Material Compaction Plant, and a Concrete Batch plant.

Three shaft complexes (shafts, headframes, and hoisting systems) will support the underground repository. The shaft complexes are to be approximately 60 metres high. The underground facilities will be comprised of the following two main areas: a) Services Area located at the base of the three shafts and b) Panels of rooms located in repository placement arms accessible by parallel access tunnels. For both crystalline and sedimentary geospheres, and depending on geologic conditions encountered, the underground repository will likely cover an area of approximately 2 by 3 kilometers (about 1,500 acres or 600 hectares).

4.1.2 Excavated Rock Management Area

External facilities, located outside of the DGR's perimeter fence, are also required to support the repository construction and operation. These external facilities include the Centre of Expertise and Excavated Rock Management Area (ERMA). The ERMA is to be located outside the perimeter fence of the DGR surface facilities and will accommodate the excavated rock required to develop the facility. The ERMA is to be located in an area that avoids streams and wetlands and is to be located within a 5 kilometre distance of the DGR surface facilities. The proposed area of the ERMA is approximately 500 m x 500 m (25 hectares) (Naserifard et al., 2021).

4.1.3 Emergency Planning Zone

The EPZ (shown in **Figure 2** above) assumes a 5 kilometre radius around the potential Project site boundary to be used for the purpose of emergency response planning and evacuation, as determined by the NWMO. The current selection of a 5 kilometre EPZ is based on the following considerations:

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

According to REGDOC-2.10-1, 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” (CNSC, 2016). 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.

The EPZ includes lands within the MSB and Township of Huron-Kinloss. The Teeswater settlement areas is located within the EPZ.

If the Project comes to the MSB, 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 robust design considerations, meteorological conditions and emergency preparedness considerations that are affected by the land use around the site.

4.1.4 Infrastructure

4.1.4.1 Roads

The draft *Roads Conditions Study* (Morrison Hershfield 2022a) report identifies potential road upgrades that will be required (which may include road enhancements, such as turning lanes) to support the development of the Project site, if it is located in the South Bruce Area.

Depending on the exact location of the proposed DGR facility on the potential Project site and the related ERMA, a new road connection from one or both facilities that would connect them to the existing road network may be required. It is expected that these connections would be relatively short and should be designed and located to avoid natural environmental features. As part of the planning and design of the precise facility layout/footprint selection and related zoning bylaw amendment and/or site plan approval process, the location of any necessary road connection would be determined.

4.1.4.2 Water & Sewer Services

In the *Deep Geological Repository Conceptual Design Report Crystalline / Sedimentary Rock* report prepared by the NWMO (2021) the water and sewage services for the DGR facility are proposed to be provided by means of private on-site services – e.g., wells and septic systems. The draft *Infrastructure Baseline & Feasibility Study* (Morrison Hershfield 2022b, under revision) report assesses the potential to service the facility with water and sewer sanitary sewage from the Teeswater drinking water system and wastewater treatment plant. The technical evaluation of the proposed services and their location to ensure that they would not impact ground water and natural heritage features would be considered through the planning approval process.

4.1.4.3 Stormwater Management Facilities

The *Deep Geological Repository Conceptual Design Report Crystalline / Sedimentary Rock* report prepared by the NWMO (2021) identifies that five stormwater management facilities will be established on the potential Project site to manage surface water, mine dewatering, and stormwater run-off. The land area needed to accommodate these uses is within the 45 hectare above ground surface facility site area. The ERMA also requires stormwater management and the necessary facility is also proposed to be located within the 25 hectares footprint of the ERMA.

Therefore, there are no additional lands required for stormwater management beyond the 45 hectare and 25 hectare footprints of the DGR and ERMA facilities. The technical review of the stormwater facilities and their precise locations would typically occur through the planning approval process.

4.1.5 Mineral Aggregate Resources

The *Aggregate Resources Study* (Keir Corp., 2022b) identifies there are unconstrained, unlicensed, undeveloped aggregate resources located on the potential Project site. This resource has been preliminarily estimated to consist of approximately 16.5 million tonnes of aggregate (Keir Corp, 2022b). Aggregate material excavated on-site may be re-used on site for the construction of surface facilities and infrastructure and for road and infrastructure enhancement upgrades. The *Aggregate Resources Study* states that "Although some of the aggregate generated by the…Project during construction may be used on site, NWMO emphasizes that no excavated material will be made available for outside commercial use. Therefore, the…Project will not have an impact on commercial aggregate supply" (p. 19). However, there may be circumstances for use of this material for potential off-site uses that would not negatively affect the existing commercial aggregate market (p. 21).

4.1.6 Site Decommissioning

The *Deep Geological Repository Conceptual Design Report Crystalline / Sedimentary Rock* identifies that the DGR facility will be decommissioned once the operations phase is complete (Naserifard, N., Lee, A., Birch, K., Chiu, A., & Zhang, X. (2021). As part of the decommissioning, it is proposed that all or nearly all of the DGR surface facilities would be removed. The lands would then be rehabilitated and returned to their original use (i.e., agriculture).

Likewise, the ERMA is intended to be rehabilitated and returned to agriculture or rural use. Some of the excavated rock would be returned to below surface as the facility is closed and decommissioned. The remaining excavated rock would be graded and the topsoil re-applied.

The proposed site decommissioning plan would suggest that the above ground DGR facility and the related ERMA are an interim land use – albeit an interim use over many decades. Therefore, any land removed from agricultural production would presumably be returned to agriculture in the long term. Similarly, any mineral aggregate resources on site or on lands adjacent that had not been extracted due to the operations of the facility, would presumably be available for extraction in the long term.

4.2 Characteristics of Indirect and Off-Site Development

4.2.1 Employment

Table 1 in section 1.3.3 identifies that 200 direct jobs will be associated with the preconstruction phase (2023-2032); 640 jobs will be associated with the construction phase (2033-2042) and 700 jobs associated with the operations phase (2043 and beyond).

The *South Bruce and Area Growth Expectations* (metroeconomics, February 2022) report prepared for MSB identifies that in addition to the 700 direct jobs, the Project will also result in a number of indirect jobs (those created at firms supplying goods and services to the project) and a number of induced jobs (jobs created in goods and services to provide the day to day needs of the new 700 direct job holders). The metroeconomics report concludes that 200 of the 590 indirect jobs would be located within the Core Study Area municipalities.

4.2.2 Housing Demand

The construction and operation of the Project is expected to result in need for additional housing units to accommodate new residents resulting from the 700 direct and 200 indirect jobs created by the Project. The metroeconomics report estimates that 600 new /additional dwellings will be required by 2046 as a result of the Project. These new units are expected to be located within the Municipality of South Bruce and four adjacent municipalities in the Core Study Area.

Table 7 shows base case ('without the Project') projections for housing for MSB and an aggregate value for the four core area municipalities in the Study Area (Huron-Kinloss, Brockton, Morris-Turnberry and North Huron). A corresponding set of incremental 'anticipated Project effects' (impact case) projections are also shown (metroeconomics, 2022). These were prepared utilizing Municipality of South Bruce Project-related growth targets.

Table 7 – metroeconomics 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	2,360	2,850	2,920	3,200	3,400	3,300	3,550
Other Core Area Municipalities	Sum of Other Core Area	10,670	10,670	12,450	12,520	13,840	14,060	14,340	14,690
Total Core Area		13,030	13,030	15,300	15,440	17,040	17,460	17,640	18,240

Source: metroeconomics 2022

The metroeconomics report does not provide an estimate of total housing units needed by housing unit type. However, the report identifies that the projection has used an average of 3 persons per dwelling unit. Therefore, given the high number of persons per unit, it can be deduced that the 600 new dwelling units would be primarily single detached or semi-detached dwellings.

4.2.3 Indirect and Induced Employment Growth

The *South Bruce and Area Growth Expectations* (metroeconomics, February 2022) report prepared by metroeconomics identifies that the 700 direct jobs associated with the Project will result in "590 jobs indirectly among the suppliers of goods and services to NWMO and another 511 jobs will be induced as the 700 direct and 590 indirect job holders spend their incomes on goods and services in the communities in which they reside".

Metroeconomics further identifies that approximately 200 of the indirect jobs would locate in the five municipalities that make up the Core Study Area and the remaining would locate outside the area in communities where the products and expertise are located. Of the 511 induced jobs the report estimates that 350 of those jobs would be located within the Core Study Area. The distribution to each of the total projected employment growth related to the Project to each of the municipalities in the Core Study Area is shown in Table 8.

While the metroeconomics report does not specify the exact nature of the indirect and induced jobs, it can be assumed from the report that the 200 indirect jobs would be industrial type jobs that would typically locate on designated employment lands and the 350 induced jobs would be considered population related employment (e.g., commercial, service, and institutional jobs) that would be located within commercial areas, residential areas, downtowns, and other similar locations.

Table 8 – Projected Direct and Indirect Employment Resulting from the Project (2021-2046)

Municipality	Projected Employment Growth 2021-2046
South Bruce	840
Sum of Other Core Area	420
Total – Core Area	*1,260*

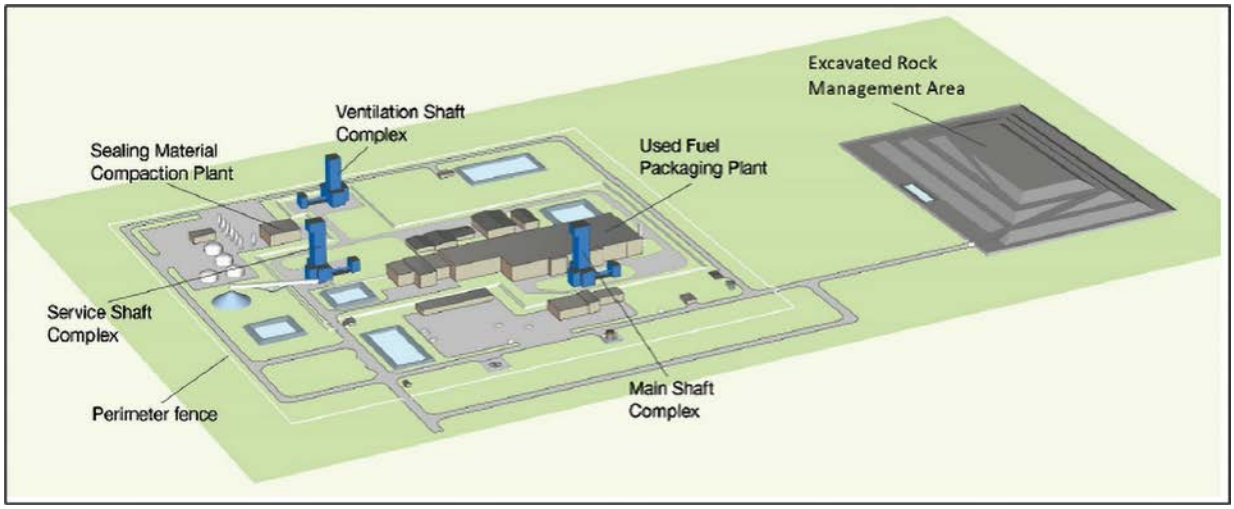
Source: metroeconomics 2022

4.2.4 Centre of Expertise

The Centre of Expertise is a surface facility that is to be located within a surrounding community. The Centre will provide support for the ongoing operation and site evaluation of the Project (Naserifard, N., Lee, A., Birch, K., Chiu, A., & Zhang, X. (2021). The Centre of Expertise will also function as an active technical and social research program and a technology demonstration program. An engineering test facility is also included as a component of the Centre of Expertise and includes research and development type functions (Naserifard, N., Lee, A., Birch, K., Chiu, A., & Zhang, X. (2021). The Centre of Expertise is also contemplated to function as a supportive use during the construction and operation of the Project.

With regards to land use, the Centre of Expertise is envisioned as a multi-purpose facility with, among other uses, institutional, training, research and development type uses. The exact location for the Center of Expertise has not yet been determined, however it will be located in MSB. The Centre of Expertise is a type of land use that is best suited to location within a designated settlement area. However, it may be that a location on the potential Project site or in the rural area is selected. The facility will have to meet all of the necessary planning requirements, and , depending on the location, planning approvals such as an official plan amendment, a zoning bylaw amendment and/or site plan approval will be required.

Figure 12 – Conceptual DGR Facility



Source: Naserifard, N., Lee, A., Birch, K., Chiu, A., & Zhang, X. (2021)

5. Preliminary Analysis/Effects Assessment

5.1 Project Site and Emergency Planning Zone Land Use Assessment

5.1.1 Deep Geological Repository

The proposed DGR facility will require approximately 45 hectares of land for the above ground facilities. There are approximately 288 hectares of Rural designated lands within the potential Project site area (see **Figure 13**). The size and location of the Rural designated lands provides opportunity for the DGR facility to be located on Rural designated lands and thereby avoid or minimize any use of lands that are designated for environmental features, prime agriculture, or mineral aggregate extraction.

Key directives of provincial and county land use policy that are relevant to the Project are:

- Development should avoid and not negatively impact natural heritage features and natural hazards (such as floodways);
- Development should avoid or minimize impact on prime agricultural lands;
- Development should not preclude extraction of known deposits of mineral aggregates; and
- Development that is not suitable to locate in settlement areas should locate on rural lands.

Given that there are Rural designated lands within the potential Project site, there is opportunity for the 45 hectare DGR site (above ground facilities) to be consistent with the major policy thrusts of the Provincial Policy Statement and Bruce County Official Plan by avoiding lands with environmental features and avoiding prime agricultural lands and existing aggregate operations. Outside of the 45 hectare above ground facility, the below surface facilities are not anticipated to have any affect on surface land use.

The exact location of the above-ground facilities at the DGR site within the assembled lands is not yet determined. However, if the decommissioning plan results in the above ground facility being removed and the lands associated with the DGR facility returned to agricultural uses, the facility could be considered an interim use. Therefore, should the DGR be located on prime agricultural lands, or on lands with mineral aggregate potential, the lands will ultimately be returned to agricultural use and any aggregate resource material may also be available for further extraction.

Given the limited size of the above ground facilities (i.e., 45 hectares for the DGR and 25 hectares for the ERMA) and the size of the overall potential Project site area, there is opportunity to address land use compatibility issues between the DGR facility and ERMA and any nearby sensitive land uses. It is expected that any potential emissions such as noise or dust can be addressed by ensuring distance between the facility and any existing sensitive uses. Further, NWMO has confirmed that as part of the development of the DGR they will seek to ensure that any potential emissions as a result of the development will be addressed, and any sensitive uses in proximity to the facility will be evaluated and appropriate measures proposed in accordance with the bounds set by the Impact Assessment Agency of Canada, the CNSC, and appropriate regulators.

While lands within the Rural designation would be the most appropriate location, a DGR facility type of use is not explicitly defined and permitted by the Bruce County Official Plan or the MSB zoning bylaw. Therefore, an amendment to the MSB Zoning Bylaw and likely an amendment to the Bruce County Official Plan would be required to permit the establishment of the DGR facility at the potential Project site in the MSB. Through this process more detailed evaluation would occur and the exact location of any access roads, the location and function of the site servicing and storm water management would be addressed.

5.1.2 Excavated Rock Management Area

There are sufficient 'Rural' designated lands within the potential Project site to accommodate the proposed ERMA (**Figure 13**). Given that there are sufficient locations to avoid environmental features and minimize impacts on prime agricultural lands and aggregate extraction operations and given that the ERMA is an interim use of land, it would appear that the land use effects of the ERMA would be consistent with the major policy objectives of the PPS and County Official Plan.

Planning approval will be required and would include an amendment to the MSB Zoning Bylaw and likely an amendment to the Bruce County Official Plan.

5.1.3 Emergency Planning Zone

The development of the Project does not directly result in any land use change to the lands within the 5 km EPZ. The primary land use consideration for the EPZ is to what extent do land uses need to be restricted in order to appropriately facilitate emergency planning.

As noted in **Section 3.3** of this report, land use within the EPZ is already relatively restricted by the existing land use policy and zoning regulations. Outside of the Teeswater settlement area, the majority of the lands are designated and zoned agriculture – which limits their use to agriculture and agricultural related uses – or are environmental lands which are zoned to preclude almost all forms of development. Most residential uses, schools, institutional uses, and other uses that would complicate emergency planning and evacuation are not permitted as of right and would require a planning approval (such as a zoning bylaw amendment) in order to be established. For example, as noted in section 3.3.5, schools and churches for the Mennonite community require a site specific zoning bylaw amendment to permit their use on agricultural lands.

Additional tools are available to the County and/or the local municipalities to further restrict changes in land use. Tools such as a special policy area in the Official Plan or holding provisions or a zoning overlay in the Zoning Bylaw are commonly used in similar situations. For example, many municipalities will apply a zoning overlay on lands within a certain radius of a landfill. The overlay often will further restrict certain uses, such as residential, or require certain studies or conditions be met before development can occur.

5.2 Assessment of Effects of Indirect Development

5.2.1 Projected Housing Needs

There is considerable capacity within existing municipal settlement areas in Bruce County and Huron County to accommodate the projected additional residential growth related to the Project. Bruce County has identified that there is capacity to accommodate an additional 8,000+ housing units over and above the projected population growth to 2046. Therefore, the 600 additional residential units that will be needed as a result of the Project can be accommodated within the existing land supply that is available within the entire County. Therefore, if the County's growth management strategy does not change, accommodation of the additional 600 units resulting from the Project would not require expansion to existing settlement boundaries.

As shown in Table 6 (above), there is capacity for approximately 1,010 new dwelling units in MSB. The *Housing Needs and Demand Analysis Study* has identified that with the metroeconomics base case growth projections there is sufficient capacity to accommodate forecast housing demand from 2021 to 2046, at which point capacity within MSB for an additional 70 units remains. However, this does not include the forecast Project generated housing

demand. When the 250 additional housing units that are generated by the Project are factored in, the land supply is exhausted in 2041.

Given that MSB has considerable residential capacity (i.e., over 1000 units) within the existing settlement areas of Teeswater, Formosa and Mildmay, it is clear that the 250 units generated by the Project and expected to locate in MSB can easily be absorbed within the existing settlement areas. However, with the MSB base case projected housing need, there would need to be settlement boundary expansion at some point before 2041 if all of the projected housing is to be accommodated within MSB.

It is recognized that Bruce County's new official plan is underway and not yet approved, and that several of the local municipalities (including MSB) are requesting that the County reconsider its draft growth allocations to the local municipalities. The projections prepared by MSB show a greater allocation of County growth to MSB. It is possible that the growth allocations for municipalities in the Core Study Area may be increased in the final version of the County Official Plan. Should that occur and there be need for settlement boundary expansion, because of new growth allocations to MSB and/or other municipalities in the Core Study Area, any resulting settlement boundary expansion would occur through normal planning process of approval of the County Official Plan and then subsequent update and approval of local municipal official plans to conform to the new County Official Plan.

The *Planning Act* requires that every five years municipalities must consider whether the official plan requires an update. The majority of the additional 600 housing units related to the Project are not required until 2033 when construction on the facility begins, and the entirety of the 600 new units are not needed until 2043 when the operations phase begins. Typically, an official plan review that includes a settlement boundary adjustment takes 1-2 years to complete. Therefore, there will be multiple opportunities for the County and MSB to consider projected growth and land supply and determine where settlement expansions are needed well in advance of the need.

5.2.2 Centre of Expertise

The location of the Center of Expertise is not yet been determined. However, it is a land use that is more suited to be located within a settlement area rather than a rural location outside of a settlement area.

It is likely that the Centre of Expertise would be located in Teeswater or another settlement area within the MSB either on vacant lands or could occur through redevelopment of an existing site. In either case there are lands and opportunities within existing settlement area boundaries in the MSB and it is unlikely that the Centre of Expertise would require a settlement boundary expansion.

Depending on the selected location, planning approval such as a zoning bylaw amendment to permit the land use would likely be required. In addition, it would likely require Site Plan approval and/or other typical municipal approvals. The need for planning approvals should not be considered a constraint to development or unusual land use affect. It is expected that development of the Centre of Expertise would follow the typical planning approval and development process which, depending on the approval needed, is usually a 6 to 12 month process.

5.3 Land Use Approval Process

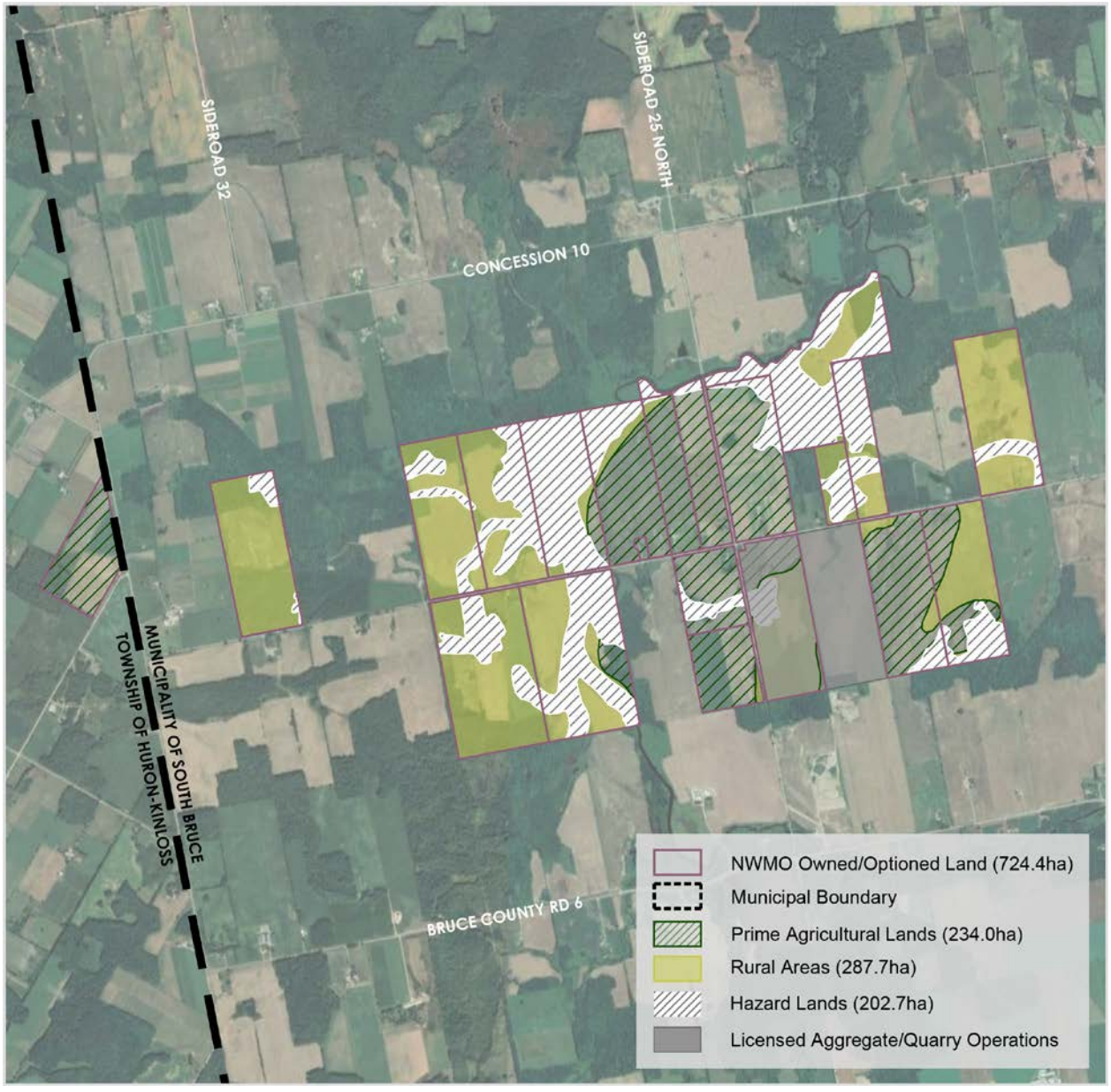
The exact location of the surface facilities for the DGR, ERMA and Centre of Expertise have not been determined. The land use requirements associated with the surface facilities of the DGR and ERMA are identified as 45 hectares and 25 hectares respectively. Existing land uses within the potential Project site are predominantly rural and environmental hazard lands. Adequate areas exist within the potential Project site are available to accommodate the proposed surface facilities required for the Project. There are opportunities to locate surface level land uses outside of hazard lands as shown on **Figure 13**.

A Zoning By-law Amendment at the local municipal level and an Official Plan Amendment at the County level will be required to permit the proposed DGR facility and ERMA in the rural/agricultural zones. Additional provisions

relating to separation distances from wetland and hazard lands will also need to be considered when a final site location(s) for the surface facilities is determined. This may require additional planning policy review and application circulation to conservation and environmental agencies. The planning application process will follow standard timelines and practices towards the implementation and development of the DGR facility and ERMA.

Timelines for planning approvals are regulated by the *Planning Act*. Given that the Official Plan and Zoning Bylaw amendment approval would be followed by Site Plan approval, the likely timeline for the approvals process is 6-12 months. Note that a number of technical studies would likely be required to support the applications (such as an Environmental Impact Study or a Traffic Impact Study), which would typically take several months to complete. Therefore, the total period from preparation of the applications to final approval is likely a 2-3 year time frame.

Figure 13 – Developable Lands



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.

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6.1 Options for the Project Site

The 45 hectare surface level DGR facility and the related 25 hectare ERMA are proposed to be located on lands within the potential Project site.

The assessment of land use implications in **Section 5.0** of this report identifies that there is opportunity to locate the DGR facility and related ERMA within the potential Project site area on lands that would minimize effects of the proposed development on environmental and prime agricultural lands. Lands adjacent and nearby to the potential Project site area are similar and have the same land use designations and policy framework. Therefore, alternative locations for the facility would, at this point, not result in better land use outcomes. Nor would the alternatives require or result in a different or better land use approval process.

6.2 Options for the Emergency Planning Zone

The location of the EPZ is directly related to the location of the potential Project site. Whether the EPZ is larger or smaller or in a different location has little land use implication. The surrounding lands have much the same land use designation as the lands within the currently identified EPZ, and municipalities have the same planning tools regardless of the shape or size of the EPZ.

6.3 Options for the Centre of Expertise

A preferred location for the Centre of Expertise has not yet been determined. At this point, there are a number of potential options. In terms of land use considerations, the main distinction is whether the Centre is located in an existing settlement area or located on rural lands outside of a settlement area. The Centre for Expertise is a type of land use that is most suitable to be located within a settlement area. Therefore, options for locating the Centre for

Expertise within existing settlement areas (i.e., in Teeswater, Mildmay or Formosa) should be explored before any alternatives in rural locations.

6.4 Options for Accommodating Indirect Development

The additional 600 housing units that will be needed to accommodate the labour force generated by the Project (metroeconomics, 2022) is proposed to be supplied by the private sector housing and land development market. It is anticipated that the housing would be developed on lands planned for residential use within settlement areas and other planned locations within the Municipality of South Bruce and/or surrounding municipalities. Similarly, if additional employment lands are needed to accommodate the indirect employment growth (i.e., firms supplying goods and services to the Project), the development of these lands would occur through the usual municipal planning approval and private sector land development process.

If alternative County growth allocations result and there is a need to expand settlement boundaries in South Bruce and/or other municipalities within the Study Area to accommodate a greater proportion of County population and employment growth, this would occur through the usual land use planning process that is governed by the Provincial Policy Statement and County and Local Official Plans. The land use effects cannot be determined at this time since it is not clear which settlement areas would change and by how much. However, any settlement boundary expansion would have to occur in consideration of the policies of the Provincial Policy Statement and conform to the policies of the applicable Official Plans.

7. Summary

7.1 Key Findings

The key findings of the *Land Use Study* can be summarized as follows:

1. There is sufficient opportunity to locate the 45 hectare surface level DGR facility and associated 25 hectare ERMA within the potential Project site on lands that will avoid or minimize affects on natural environmental features and hazards, prime agricultural lands, and mineral aggregate resources;
2. Planning approvals, including an Official Plan amendment and zoning bylaw amendment, will be required to establish the DGR and ERMA facilities on the potential Project site;
3. There is opportunity to mitigate land use compatibility issues between the DGR facility and nearby sensitive land uses;
4. The existing land use designations and zoning in the 5 km EPZ restrict many uses that could complicate emergency planning, further land use restriction in the EPZ is not warranted;
5. There are planning tools available to the Municipality to control and further restrict future land use within the EPZ if necessary;
6. The Centre of Expertise is a type of land use most suited to Teeswater or other designated settlement areas within the MSB;
7. The projected increased residential housing demand of 600 units resulting from the construction and operation of the Project can be accommodated within the planned settlement structure and there is no need for land use change beyond what is planned or proposed by the County.
8. If the metroeconomics base case growth projections are adopted, there will be a need for a settlement boundary expansion in MSB before 2041. The settlement boundary expansion could occur through the approval of the new County of Bruce Official Plan and subsequent update to the MSB Official Plan, or it could occur at the next Official Plan update (e.g., in 2031).

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Appendix A.

List of Socio-Economic Community Studies

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List of Socio-Economic Community Studies

Study Name	Study Proponent	Lead Consultant
Local Economic Development Study and Strategy	MSB	MDB Insight (now Deloitte LLP)
Economic Development Study on Youth	MSB	MDB Insight (now Deloitte LLP)
Local Hiring Effects Study & Strategy	MSB	MDB Insight (now Deloitte LLP)
Agriculture Business Impact Study	MSB	MDB Insight (now Deloitte LLP)
Fiscal Impact and Public Finance Study	MSB	Watson & Associates Economists
Tourism Industry Effects Study and Strategy	MSB	MDB Insight (now Deloitte LLP)
Housing Needs and Demand Analysis Study	NWMO, MSB	Keir Corp.
Labour Baseline Study	NWMO	Keir Corp.
Workforce Development Study	NWMO	Keir Corp.
Regional Economic Development Study	NWMO	Keir Corp.
Effects on Recreational Resources	MSB	Tract Consulting
Local/Regional Education Study	NWMO, MSB	DPRA
Land Use Study	NWMO, MSB	DPRA
Social Programs Study	NWMO, MSB	DPRA
Emergency Services Study	NWMO	DPRA
Vulnerable Populations Study	NWMO	DPRA
Community Health Programs and Infrastructure Study	NWMO	DPRA
Aggregate Resources Study	NWMO, MSB	Keir Corp.
Infrastructure Baseline and Feasibility Study	NWMO	Morrison Hershfield
Local Traffic Study	NWMO	Morrison Hershfield
Road Conditions Study	NWMO	Morrison Hershfield

Appendix B.

Inventory of Knowledge Holders Interviewed

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Knowledge Holder Interviews

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

Date	Knowledge Holder – Organization	Applicable Studies
25-Aug-21	Bruce County Planning & Development Dept	*Land Use Study*
16-Sep-21	Huron County Planning & Development, and Economic Development	*Land Use Study* *Regional Economic Development Study* *Labour Baseline Study* *Workforce Development Study* *Housing Needs and Demand Analysis Study*