2023 Technical Peer Review Summary Report

Biosphere – Biodiversity Impact Studies

Municipality of South Bruce

16 February 2024

Executive Summary

The Nuclear Waste Management Organization (NWMO) has been engaged in a multi-year, community driven process to identify a site where Canada's used nuclear fuel can be safely contained. The site selection process involves nine steps, with the process currently at Step 3 (Phase 2). The NWMO is now in its final screening process, and the two remaining siting areas currently being assessed under Step 3, Phase 2, are the Municipality of South Bruce (MSB) and the Township of Ignace and their surrounding areas. The NWMO plans to complete all preliminary assessment work and to select one community/area to host the Adaptive Phased Management (APM) Project (Project) by the end of 2024.

Building on previous work, engagement completed to-date, and MSB's 36 Guiding Principles, the NWMO and MSB are working together to prepare a suite of studies which will be shared broadly with the community. The studies are being undertaken by the NWMO or MSB, with some being joint efforts. The MSB has retained consultants to develop a number of studies and to peer review others developed by the NWMO and their consultants. The information acquired through the studies is expected to aid MSB to make informed decisions about whether the Project is suitable for their community, and if they are willing to consider hosting it and under what circumstances and terms.

Biodiversity includes considerations of ecological functions that contribute to ecosystem resiliency and human/spiritual well-being, which are integrated into the program as a study of ecosystem services. Ecosystem services include provisioning services (e.g., fuel wood, fish used as food, plants used for medicine), cultural services (e.g., ceremony, traditional land use, recreation; data largely collected for the Project's health and social impact assessment), regulating services (e.g., flood control, pollination, air purification), and supporting services (e.g., functional habitat that supports other services and species, nutrient cycling). Holistically, these are considered in the Biodiversity Impact Studies (BIS) Program, and components selected for further study are those that are relevant, important, and potentially impacted by the Project, and/or representative of change to larger ecosystem functions.

To gain knowledge of the receiving environment, the NWMO has commenced an Environmental Media Baseline Program (EMBP). The purpose of the EMBP is to characterize the biophysical environment and is focused on environmental components that have the potential to be impacted by the Project. The data collected as part of the EMBP would support the development of a conceptual site model (CSM). Impacts of relevance to the EMBP will also be relevant to the BIS Program (e.g., impacts due to Contaminants of Potential Concern could lead to decreased survival and reproduction of biodiversity values (BVs)). Therefore, pathways linking the CSM to the EMBP should be considered in determining how the Project could interact with BVs and ecosystem function and services. Project impacts on the community's social, economic, or health values will also need to be considered for their potential to impact BVs and ecosystem function and services.

The NWMO developed the following goals and objectives for the 2023 BIS Baseline Report which are:

1. Present preliminary (Tier 1) baseline information on the presence and distribution of habitats and areas of ecological importance to BVs and key species of interest (e.g., species at risk [SAR], rare species, species of interest to stakeholders and rights-holders, invasives) within BV-specific study areas.
2. Provide community-level species composition (i.e., number of species) data, where possible, to indicate areas within the BIS study areas that may host more or fewer species.
3. Provide analytical products (e.g., maps, species lists) that can be used to:
    a. further design focused and statistically sound studies in subsequent years;
    b. support engagement regarding values, concerns, and next steps in the BIS program; and
    c. help to inform infrastructure design and placement.

It is the Peer Review Team's (PRT's) understanding that additional Tier 1 field data from subsequent field seasons will be included in future iterations of the BIS Baseline Report. If MSB is selected for the Project, Tier 2 studies will be implemented to address the requirements of the Project-specific Tailored Impact Statement Guidelines (TISG) when it

is developed. Zoetica's BPPA Report (Zoetica 2021) proposes potential Tier 2 studies to meet the requirements of the TISG Template. Future baseline studies are designed to:

1. Establish the functioning of ecosystems and the biodiversity they support to understand the potential impacts of the Project.
2. Demonstrate how stakeholder and rights-holder concerns and aspirations are addressed.
3. Provide additional baseline data to help inform the Project's biodiversity Impact Assessment (IA) and mitigation measures and assist in the potential development of monitoring program(s) to address environmental, regulatory, and stakeholder/rights-holder concerns.

This interim Technical Summary Report summarizes the peer review findings of work plans, technical data reports and biodiversity field surveys and sampling events carried out by the NWMO and their consultants that commenced in October 2022. The peer review is intended to provide the community with a good understanding of the scope of work being undertaken to characterize the biodiversity baseline conditions prior to the development of the Project's site-specific design and impact assessment.

The current peer reviews described in this report are a follow up to the biodiversity peer reviews conducted in 2021 on the following draft reports:

– Zoetica Environmental Consulting Services (Zoetica) Report (Rev. 0), Biodiversity Impact Studies – Southwestern Ontario Region: Best Practices and Preferred Approach, June 25, 2021
– Zoetica Report (Rev. 0), Biodiversity Impact Studies – Southwestern Ontario Region: Baseline Program Design, July 12, 2021

The 2021 draft reports outline the framework and design for conducting BIS program within the South Bruce Study Area.

It is the view of the PRT that the BIS and associated documents produced by the NWMO to date demonstrate the progress to satisfy Guiding Principle #2. It is too early in the program to demonstrate progress in satisfying Guiding Principle #7 as site-specific designs for the construction and operation of the DGR have not been developed. As the BIS is a multi-year program, further review of the additional data collected and reports produced will be carried out as they become available to assist South Bruce in understanding the pertinent biodiversity parameters. It is the PRT's current understanding that the BIS will continue with additional data collection (for Tier 1) related to eDNA, aquatic habitat mapping, terrestrial ecosystem mapping and significant wildlife habitat. The PRT will continue to work collaboratively with the NWMO and their consultants to review work plans and reports that will be updated for 2024, as they come available, and will also conduct field observations related to these activities.

Contents

Table index

Figure index

Appendices

Acronyms

AHM	Aquatic Habitat Mapping
APM	Adaptive Phased Management
BIS	Biodiversity Impact Studies
BPD	Baseline Program Design
BPPA	Best Practices and Preferred Approach
BVs	Biodiversity Values
CanNorth	Canada North Environmental Services
CNSC	Canadian Nuclear Safety Commission
CSM	Conceptual Site Model
CWB	Community well-being
DGR	Deep Geological Repository
eDNA	Environmental DNA
EMBP	Environmental Media Baseline Program
Geosyntec	Geosyntec Consultants International, Inc
GHD	GHD Limited
IA	Impact Assessment
IEC	Independent Environmental Consultants
MSB	Municipality of South Bruce
NRSI	Natural Resource Solutions Inc.
NWMO	Nuclear Waste Management Organization
PRT	Peer Review Team
QA/QC	Quality Assurance/Quality Control
Stantec	Stantec Inc.
SLR	SLR Consulting Ltd.
SME	Subject Matter Expert
SVCA	Saugeen Valley Conservation Authority
SWH	Significant Wildlife Habitat
TEM	Terrestrial Ecosystem Mapping
TISG	Tailored Impact Statement Guidelines
TULLOCH	TULLOCH Environmental, a division of TULLOCH Engineering Inc.
Zajdlik	Zajdlik & Associates Inc
Zoetica	Zoetica Environmental Consulting Services

Scope and limitations

Respectfully submitted by:

_____

Jennifer Son, P. Eng.
Environment Lead, GHD Leadership Team

_____

Gregory D. Ferraro, P. Eng.
Project Manager, GHD Leadership Team

1. Introduction

This interim Technical Summary Report documents the technical peer review undertaken of the various Biosphere – Biodiversity Impact Studies (BIS) reports, work plans and observation of field programs carried out by the Nuclear Waste Management Organization (NWMO) and their consultants. The NWMO has been engaged in a multi-year, community driven process to identify a site where Canada's used nuclear fuel can be safely contained. The site selection process involves nine steps, with the process currently at Step 3 (Phase 2). Step 3 is defined by two phases of preliminary assessments for each interested community. Phase 1 involved primarily desktop studies documenting the current socioeconomic conditions in the communities and then considering what might be the possible implications of the Adaptive Phased Management (APM) Project (Project) on community wellbeing (CWB) for each community and the wider area. For interested communities that successfully completed the initial screening in Phase 1, Phase 2 (the current phase) involves additional work to support conducting a preliminary assessment of potential suitability and narrowing the number of communities that have expressed an interest in partnering with the NWMO.

The NWMO is now in its final screening process, and the two remaining siting areas currently being assessed under Step 3, Phase 2, are the Municipality of South Bruce (MSB) and the Township of Ignace and their surrounding areas. The NWMO plans to complete all preliminary assessment work and select one community/area to host the Project by the end of 2024 which then marks the beginning of Step 4 of APM implementation[1]. The selection of a final site will trigger the regulatory approvals phase of the Project. Federal approval under the Impact Assessment Act and licensing by the Canadian Nuclear Safety Commission (CNSC) under the Nuclear Safety and Control Act will be required. Meeting federal regulatory standards is imperative to achieve approval and withstand intense public and regulatory scrutiny.

Building on previous work, engagement completed to-date, and MSB's 36 Guiding Principles, the NWMO and MSB are working together to prepare a suite of studies which will be shared broadly with the community. The MSB has retained consultants to peer review others developed by the NWMO and their consultants. The information acquired through the studies is expected to aid MSB make informed decisions about whether the Project is suitable for their community, and if they are willing to consider hosting it and under what circumstances and terms.

Biodiversity Impact Studies

The BIS focuses on studying the following biodiversity values (BVs) of known or predicted relevance to the Project:

- Vegetation
- Wetland and Riparian Environments
- Mammals (e.g., ungulates, carnivores, small terrestrial mammals, semi-aquatic mammals, bats)
- Herpetofauna (e.g., amphibians and reptiles)
- Terrestrial invertebrates
- Avifauna (e.g., birds)
- Fish and Fish Habitats
- Ecosystem Function and Services
- Habitats and associated species
    - Terrestrial Ecosystem Mapping (TEM)
    - Significant Wildlife Habitat (SWH)
    - Aquatic Habitat Mapping (AHM)
    - Environmental DNA Studies (eDNA)

1. Nuclear Waste Management Organization, 2020. Moving Towards Partnership - Triennial Report 2017 to 2019.

The data collected through the preceding components will ultimately enable impact predictions and optimal application of the mitigation hierarchy for the Federal Impact Assessment (IA), if applicable.

The goals of the biodiversity program as described by the NWMO as follows:

– Provide inputs to model(s) of the interacting natural systems that predict how key biodiversity values would be expected to change over the life the Project, with and without the project, including considerations of both short- and long-term effects
– Provide information that reduces uncertainty about potential project effects on biodiversity values
– Provide a strong foundation for an adaptive environmental management program that achieves “no net loss” and possibly “net gain” in biodiversity values

The BIS includes developing various work plans, execution of ecological field surveys and sampling events and the production of data reports for the individual program components. Preparation of the BIS Year 1 Baseline Report combining the information collected during September 2021 to December 2023 of the program and has been completed.

The BIS Program has been carried out by the NWMO’s technical team and their consultants which include:

– Natural Resource Solutions Inc. (NRSI)
– North/South Consultants Inc.
– North-South Environmental Inc.
– Saugeen Valley Conservation Authority (SVCA)
– SLR Consulting Ltd. (SLR)
– Stantec Inc. (Stantec)
– TULLOCH Environmental, a division of TULLOCH Engineering Inc. (TULLOCH)

Peer Review Team

The Peer Review Team (PRT) for the BIS related documents and field observation activities include the following Subject Matter Experts (SMEs) from GHD:

– Chris Ellingwood, B.E.S. – Senior Terrestrial and Wetland Biologist
– J-P Fleras, B.A. – Senior Technician (Surface Water, Sediment, Bathymetry, Arborist)
– Laura Lawlor, M.Sc., CSE – Senior Aquatic Biologist/Ecologist
– Leah Jefferson, B.E.S. – Field Lead (Surface Water, Ecology)
– Robyn Leppington, B.Sc. – Senior Aquatic Biologist

The SMEs, in combination with the GHD Leadership Team (Greg Ferraro, Jennifer Son and Amy Douglas), make up the PRT.

Peer Review Status

The current peer reviews and their findings described in this report is a follow up to the BIS peer reviews conducted in 2021 on the following draft reports:

– Zoetica Environmental Consulting Services (Zoetica) Report (Rev. 0), Biodiversity Impact Studies – Southwestern Ontario Region: Best Practices and Preferred Approach, June 25, 2021
– Zoetica Report (Rev. 0), Biodiversity Impact Studies – Southwestern Ontario Region: Baseline Program Design, July 12, 2021

The 2021 draft reports outlined the framework and design for conducting baseline studies related to biodiversity within the South Bruce Study area.

The PRT commenced work on the current peer review in October 2022 on various BIS components.

Section 2 of this report elaborates on the Peer Review Protocol process including the steps specifically followed and discussions held with NMWO and their consultants. As described in **Section 3**, the PRT in conducting the peer review considered the information provided in several relevant ancillary documents prepared by the NWMO. A high level overview of the PRT's current findings/observations are summarized in **Section 4**. This is followed by a description on how the BIS and associated documents informs the applicable Guiding Principles. Lastly, the conclusions from the current peer review are provided.

2. Peer Review Protocol

2.1 Objectives and Overview of the Peer Review Protocol Process

The technical peer review of the various BIS reports, work plans and observations of field surveys and sampling events was undertaken in accordance with the Peer Review Protocol established jointly by the MSB and the NWMO. The Peer Review Protocol had the following established objectives:

1. To provide the community of the MSB with an independent review by qualified SMEs
2. To complete a peer review of the NWMO's assessment of potential impacts and proposed benefits of locating the APM Project in MSB in comparison to existing conditions
3. To review how the potential impacts and proposed benefits adhere to the 36 Guiding Principles that will guide the MSB's assessment of willingness to host the APM Project

With these objectives in mind, the Peer Review was conducted in a collaborative manner between the NWMO team and the MSB/GHD team while maintaining independence during the process. **Appendix A** includes the Peer Review Protocol established in June 2021 and **Figure 2.1** summarizes the process followed.

Figure 2.1 The Peer Review Protocol Process

2.2 Key Activities Associated with the Peer Review of the Biodiversity Impact Studies

With the preceding process in mind, the peer review carried out by the PRT included work plans for field execution, field observations, and technical data reports prepared by the NWMO. As part of the peer review process, the PRT reviewed various components of the BIS to understand the following:

– Are there any significant concerns, issues, and/or omissions in the documentation?
– What are the PRT's initial observations/impressions on the quality of the documentation?
– Are the baseline findings interpreted and presented in a clear and understandable manner?
– Does the documentation reflect the most current information?

A description of the activities conducted as part of the peer review process of the work plans, field observations and reports are provided as follows:

Work Plans

– Gain a greater understanding of the field plans and methods for conducting various activities for field data collection as part of the BIS
– Provide comments on the NWMO's work plans and considering responses received from the NWMO
– Hold on-going discussions as required with the NWMO team providing input where appropriate (e.g., field methodologies, decontamination procedures, sample collection methodologies, etc.)

Field Observations

– Observe field activities for field data collection as part of the BIS to confirm that the NWMO team are following procedures outlined in the work plans
– Providing observations on the NWMO team's field execution
– Hold on-going discussions as required with the NWMO team providing input where appropriate

Reports

– Review draft reports and revised draft reports prepared by the NWMO team

Peer Review Comments

– Develop a preliminary list of comments including initial impressions, observations, and any potential issues and/or concerns with the work plans, field observations and draft and revised reports based on several documents and information as described in **Section 3**
– Provide the preliminary list of comments on the various documents to the NWMO team for their understanding of the PRT's initial impressions, observations, and any potential issues and/or concerns
– Attend a Working Sessions with the NWMO team to discuss the preliminary list of comments and work through appropriate responses and/or actions in a collaborative manner
– Submit the formal set of comments on the various documents to the NWMO team for their review and responses
– Review the responses from the NWMO team to the formal set of comments and ensure no significant outstanding issues and/or concerns remain

Peer Review Report

– Prepare the draft Technical Peer Review Report and submit to MSB for review
– Finalize the draft Technical Peer Review Report based on any comments received and provide to MSB

3. Key Documentation and Information Reviewed

For the purposes of this interim Technical Summary Report, various work plans, field observations and data reports made available to GHD were reviewed by the PRT in carrying out the Peer Review Protocol starting in November 2022. **Table 3.1** lists background reports that were reviewed to gain a high level understanding of the Project and support the peer review process and **Table 3.2** lists the key documents and information considered by the PRT in the review of the Biodiversity Impact Studies.

Table 3.1 Background Reports Reviewed to Support the Peer Review Process

Document Name/Information	Author/Source/Date	Description/Application
Implementing Adaptive Phased Management 2021 to 2025	NWMO (March 2021)	This report presents the 5-year strategic plan for the NWMO and is a way for the NWMO to show commitment to transparency. The 5-year plan is a living document and each year is updated to reflect progress in the work completed by the NWMO, input from communities and the public, advances in science and technology, insights from Indigenous Knowledge, evolving societal values and changes in public policy.
Final Draft Report: Nuclear Waste Management Organization Adaptive Phased Management Project – South Bruce Site, Environmental Media Baseline Program Design, May 2021	CanNorth, Geosyntec, IEC and Zajdlik (May 2021)	This report outlines the design of the Environmental Media Baseline Program (EMBP) to support the Impact Assessment should the community of South Bruce remain in the process. The report describes the environmental components included in the EMBP, which will include tissue samples, hydrology, surface water parameters, air quality, noise and light, shallow groundwater quality and drinking water quality, and surface soil, shallow overburden and bedrock quality.
Deep Geological Repository Conceptual Design Report – Crystalline / Sedimentary Rock (APM-REP-00440-0211-R000)	NWMO (September 2021)	This report describes conceptual designs for a Deep Geological Repository (DGR) facility in either crystalline or sedimentary rock. For costing purposes, it is assumed that the facility will receive 5.5 million used CANDU fuel bundles over a 46-year period. The report describes the required facilities and infrastructure needed to safely receive, package, and emplace the used nuclear fuel in the underground repository. The report further describes how at the end of emplacement activities and following a period of extended monitoring the DGR facility will be decommissioned and closed. All underground rooms, tunnels and the three shafts will be permanently sealed.
Final Report: Nuclear Waste Management Organization Adaptive Phased Management Project – Saugeen Ojibway Nation-South Bruce Area, Environmental Media Baseline Program – Year 1 Baseline Report	CanNorth, Geosyntec, SVCA (September 29, 2023)	This report outlines the collection of data from the SON-South Bruce area under the EMBP that started in September 2021 and was primarily completed by the SVCA. The report describes how during Year 1 of the program, data were collected on surface water quality, surface water flow (hydrology), and drinking water quality from private wells.

Table 3.2 Key Documents and Information Considered in the Peer Review of the Biodiversity Impact Studies

Document Name/Information	Author/Source/Date	Description/Application
Biodiversity Impact Studies – Southwestern Ontario Region: Best Practices and Preferred Approach (BPPA) (NWMO_BIS_2021_BPPA Report_SB (R000))	Zoetica (June 25, 2021)	This report compares and contrasts the various methods, best practices, and guidelines available for the four main, interrelated categories of the Biodiversity Impact Studies: scoping of potential biodiversity values for study; baseline study design; data collection, analysis, and interpretation; biodiversity impact assessment; and, cumulative impact assessment.
Biodiversity Impact Studies - Southwestern Ontario Region: Baseline Program Design (BPD) (NWMO_BIS_2021_BPD Report_SB (R000))	Zoetica (July 12, 2021)	This report serves the primary purpose of presenting the methods (desktop and field-based) to be used in undertaking baseline data collection and data management. The methods detailed within follow the decisions and preferences presented in the BPPA.
Biodiversity Impact Studies – Southwestern Ontario Region: 2022 Change Assessment Memorandum (NWMO_2022_Change Assessment Memo_SB (R001))	Zoetica (July 4, 2022)	This memorandum examines potential interactions between the APM Project and BVs that could result in changes to those BVs. The memorandum outlines any known biodiversity sensitivities within and surrounding the area of interest based on existing data and data collected as part of Tier 1 studies.
Biodiversity TEM & SWH Field Data Collection Work Plan (APM-PLAN-07000-0226)	Tulloch (July 18, 2022)	This document details the scope of work for Tier 1 Biodiversity TEM and Tier 1 Biodiversity Candidate SWH.
South Bruce Biodiversity Baseline Field Data Collection Workplan – Aquatic Habitat Mapping Field Sampling (APM-PLAN-07000-0223)	North/South Consultants Inc. (September 15, 2023)	This document details the scope of work for conducting the AHM field sampling.
South Bruce Biodiversity Baseline Field Data Collection Workplan – Aquatic Environmental DNA Field Sampling (APM-PLAN-07000-0222)	North/South Consultants Inc. (November 13, 2023)	This document details the scope of work for conducting the eDNA field sampling.
Biodiversity Impact Studies – Southwestern Ontario Region: 2023 Baseline Report (Chapter 1: Introduction) (NWMO_BIS_2023_Baseline Report CH1 (A000))	Zoetica (August 23, 2023)	Chapter 1 of the BIS Baseline Report details the goals and objectives, project description, and study areas of the BIS.
Biodiversity Impact Studies – Southwestern Ontario Region: 2023 Baseline Report (Chapter 2: Vegetation) (VEG_CH2_NWMO_BIS_2023_Baseline Report_SB (A000))	Zoetica (October 16, 2023)	Chapter 2 of the BIS Baseline Report presents findings from desk-based mapping and field data from the 2022 TEM and AHM surveys. These findings are focused on vegetation within SWH and vegetation species of interest.
Biodiversity Impact Studies – Southwestern Ontario Region: 2023 Baseline Report (Chapter 3: Wetlands and Riparian Environments) (NWMO_BIS_2023_Baseline Report_CH3_SB (A000))	Zoetica (October 13, 2023)	Chapter 3 of the BIS Baseline Report provides an overview of wetland and riparian environments within the relevant BIS study areas. These findings are used to describe the baseline ecosystem function and services in Chapter 9.

Document Name/Information	Author/Source/Date	Description/Application
Biodiversity Impact Studies – Southwestern Ontario Region: 2023 Baseline Report (Chapter 4: Mammals) (MAMMAL_CH4_NWMO_BIS_2023_Baseline Report_SB (A000))	Zoetica (September 27, 2023)	Chapter 4 of the BIS Baseline Report provides information about the background context of mammals within the BIS study areas. These findings help to understand the baseline state of mammals within the region. Mammals in this report are classified into five groups (ungulates, carnivores, small terrestrial mammals, semi-aquatic mammals, and bats) based on habitat requirements, ecological community function, or other ecological aspects.
Biodiversity Impact Studies – Southwestern Ontario Region: 2023 Baseline Report (Chapter 5: Herpetofauna) (HERP_CH5_NWMO_BIS_2023_Baseline Report_SB (A000))	Zoetica (September 28, 2023)	Chapter 5 of the BIS Baseline Report provides information about herpetofauna within the BIS study areas. Herpetofauna species are particularly sensitivity to environmental change and are a good indicator of environmental stressors. These findings will be used to determine the presence and distribution of herpetofauna species with the study areas to guide mitigation measures and develop monitoring programs.
Biodiversity Impact Studies – Southwestern Ontario Region: 2023 Baseline Report (Chapter 6: Terrestrial Invertebrates) (TINV_CH6_NWMO_BIS_2023_Baseline Report_SB (A000))	Zoetica (September 29, 2023)	Chapter 6 of the BIS Baseline Report looks at terrestrial invertebrates within the BIS study areas. The report looks at the different function feeding groups including decomposers, predators, prey, parasites, herbivores, and pollinators. The results are used to inform the baseline distribution of terrestrial invertebrates in the area.
Biodiversity Impact Studies – Southwestern Ontario Region: 2023 Baseline Report (Chapter 7: Avifauna) (BIRDS_CH7_NWMO_BIS_2023_Baseline Report_SB (A000))	Zoetica (September 22, 2023)	Chapter 7 of the BIS Baseline Report presents baseline information for bird species within the BIS study areas. The report groups species into four main groups including upland breeding birds, shorebirds, waterbirds, and raptors. The species presence and distribution will be utilized in to determine the baseline communities. Many regulations are reviewed within the text to inform on protections and permitting required.
Biodiversity Impact Studies – Southwestern Ontario Region: 2023 Baseline Report (Chapter 8: Fish and Fish Habitat) (NWMO_BIS_2023_Baseline Report_CH8_SB (A000))	Zoetica (September 29, 2023)	Chapter 8 of the BIS Baseline Report provides an overview of the presence of fish and fish habitat within the BIS study areas. The distribution of species and habitat will be used to inform the baseline information. Additionally, the characterization of life history, biotic interaction processes, seasonal variability ranges, and sensitive periods were observed.
Biodiversity Impact Studies – Southwestern Ontario Region: 2023 Baseline Report (Chapter 9: Ecosystem Function and Services) (NWMO_BIS_2023_Baseline Report_CH9_SB (A000))	Zoetica (October 16, 2023)	Chapter 9 of the BIS Baseline Report reviews the four main categories of ecosystem services including provisioning services, regulating services, cultural services and supporting services. The report identifies ecosystems and components that are required to sustain biodiversity with the BIS study areas.
Biodiversity Impact Studies – Southwestern Ontario Region: Appendix A – 2023 Dataset Quality Report	Zoetica (December 4, 2023)	Appendix A of the BIS Baseline Report lists the datasets received from external sources used in the BIS and assesses their quality for bias, reliability, relevance, and other factors.

Document Name/Information	Author/Source/Date	Description/Application
Biodiversity Impact Studies – Southwestern Ontario Region: 2023 Ecological Land Classification and Terrestrial Ecosystem Mapping Report (Appendix B_TEM_NWMO_BIS_2023_Baseline Report_SB (A000))	Zoetica (August 23, 2023)	Appendix B of the BIS Baseline Report provides an overview of the ecological land classification and terrestrial ecosystem mapping within the BIS study areas. ELC mapping can advise on where environmentally significant areas are located within the study areas. TEM mapping allows for greater refinement of landcover information. Together they summarize the biodiversity within the study areas.
Biodiversity Impact Studies – Southwestern Ontario Region: Significant Wildlife Habitat 2023 Baseline Report (Appendix C_SWH_NWMO_BIS_2023_Baseline Report_SB (A000))	Zoetica (September 29, 2023)	Appendix C of the BIS Baseline Report presents the 39 different types of significant wildlife habitat types, which includes a variety of seasonal concentration areas, rare vegetation communities, specialized habitat for wildlife, habitats for species of conservation concern, and animal movement corridors. The SWH distributions and presence were mapped for the BIS study area to provide a baseline.
Biodiversity Impact Studies – Southwestern Ontario Region: 2023 Aquatic Habitat Mapping Report (Appendix D_AHM_NWMO_BIS_2023_Baseline Report_SB (A000))	Zoetica (September 13, 2023)	Appendix D of the BIS Baseline Report studied adaptive phased management for the potential impacts to fish and fish habitat within the BIS study area. Areas of importance for aquatic ecology were identified to inform on baseline conditions through both desktop and field studies.
Biodiversity Impact Studies – Southwestern Ontario Region: Environmental DNA 2023 Baseline Report (Appendix_E_eDNA_NWMO_BIS_2023_Baseline Report_SB (A000))	Zoetica (October 10, 2023)	Appendix E of the BIS Baseline Report details the eDNA information collected within the BIS study area. eDNA uses genetic materials that have been released into waters to determine species presence. The data was used to create a community-level species composition to determine genetic diversity of the area.

4. Peer Review Findings and Resolution

4.1 Comments on the Biodiversity Impact Studies

As previously mentioned, biodiversity includes considerations of ecological functions that contribute to ecosystem resiliency and human/spiritual well-being, which are integrated into the program as a study of ecosystem services. The ecosystems considered in the BIS Program, and components selected for further study are those that are relevant, important, and potentially impacted by the potential Project, and/or representative of change to larger ecosystem functions. Impacts of relevance to the EMBP will also be relevant to the BIS Program (e.g., impacts due to Contaminants of Potential Concern could lead to decreased survival and reproduction of BVs). Therefore, pathways linking the CSM to the EMBP should be considered in determining how the Project could interact with BVs and ecosystem function and services. Project impacts on the community's social, economic, or health values will also need to be considered for their potential to impact BVs and ecosystem function and services.

To date the BIS work has been carried out on individual components as independent programs. However, the integration of the component work that has been completed into a draft characterization of baseline conditions is yet to be completed.

The PRT has provided the NWMO team in memorandum form, preliminary comments on the BIS documents received and field activities observed during the September 2022 to December 2023 time period. As described, the preliminary comments were discussed with the NWMO prior to the NWMO providing documented responses.

The Biodiversity Impact Studies – Southwestern Ontario Region: 2023 Change Assessment Memorandum (draft dated January 29, 2024) was received from the NWMO in February 2024. Peer review of this memorandum has not been completed or reviewed with the NWMO at the time of finalizing this interim Technical Summary Report. Peer review of this memorandum will be included in the updated 2024 Technical Summary Report (proposed for completion and issue in early 2025).

The PRT is of the understanding that a BIS Baseline Report for 2024 will be prepared and provided for peer review. The 2024 BIS Report is expected to include the data and information generated from the components of work identified in Section 1, as part of the BIS Program. In addition, the PRT understands that the NWMO will complete a program review prior to proceeding with Tier 2 Studies Design. A BIS Baseline – Tier 2 Studies Design will be completed pending the willingness decision expected by the end of 2024.

Overall, the BIS baseline work completed to date has studied a wide range of components to develop an initial understanding of the BVs and ecosystem. The individual components of the BIS, once integrated, will set the framework for advancing the BIS program. The PRT is of the opinion that, at this point in the program and going forward, there should be increased consistency in the quality and detail provided in the workplans and reports. The quality of the component workplans and reports and the level of detail provided has not been consistent given the number of firms that are involved in executing the BIS program. The integration of the EMBP CSM and how it effects the overall BIS should start to be considered.

The PRT is of the view that it would be valuable to develop an understanding, at this point of the program, of how the baseline biodiversity information will be integrated with the results of the EMBP and geoscience programs currently being carried to build the comprehensive CSM for the DGR site setting.

Table 4.1 summarizes the peer review memorandums issued during the BIS program execution up to December 4, 2023. **Appendix B** provides additional detail. The PRT also notes that some of the peer review memorandums (Appendix B) are still in draft format and will be updated and finalized once comments have been received from the NWMO.

Table 4.1 Peer Review Memoranda issued throughout the Biodiversity Impact Studies Review

Document Title	Document Type Reviewed	Preliminary PR comments issued to the NWMO	General Findings / Observations
Ecological Survey Observations (MEM-35)	Field Observations	October 11, 2022	The workplans for the activities observed were provided to the PRT while on site, which did not allow sufficient time to understand the approaches proposed nor to prepare questions regarding the methodologies. Based on the field observations the site assessment included lake/pond, wetland, inlet/outlet and watercourse. Many of the lake/pond classified features were found to be dry throughout summer assessments.
Biodiversity Impact Studies – Southwestern Ontario Region: 2022 Change Assessment Memorandum – Subject Matter Expert Comments (MEM-40)	Report	December 12, 2022	The PRT identify that wetlands are potentially being undervalued in the biodiversity work/reporting reviewed by the PRT to date. It is recommended that identifications of potential interactions with, and mitigation of wetlands of all classifications be assessed in greater depth. Based on completion of the peer review, the PRT finds the Draft Change Assessment Memorandum provides a high-level understanding of the potential interactions between the Project and biodiversity values that could result in changes to those biodiversity values.
Biodiversity Impact Studies – Southwestern Ontario Region: 2023 Ecological Land Classification and Terrestrial Ecosystem Mapping Report – Peer Review Comment (MEM-61)	Report	September 8, 2023	Based on the completion of the peer review, the data provided in this report includes data collected for Tier 1 studies as outlined in the terrestrial workplan reports provided earlier in the process and prior to field work season. The report also meets the objectives of the workplan, the field investigations and scope of work that were outlined in the detailed work plan. In general, a better understanding of the implications of the field verification challenges in Year 1 for subsequent field work is required and if any changes to BV values will occur.
South Bruce Biodiversity Baseline Field Data Collection Workplan – Aquatic Environmental DNA Field Sampling Revision 1 – Peer Review Comments (MEM-52)	Work Plan	October 4, 2023	The eDNA workplan reviewed by the PRT is comprehensive with respect to the equipment and decontamination procedures. Additional clarity could be provided regarding the purpose of the work (e.g., what are the species of interest guiding this sampling program, why are the oversample stations limited to wetlands), including Year 1 and subsequent years foci. Additional clarity regarding sample locations would also provide opportunity for a more thorough review as the maps provided are not easily correlated with the sample location nomenclature included in the tables.

Document Title	Document Type Reviewed	Preliminary PR comments issued to the NWMO	General Findings / Observations
South Bruce Biodiversity Baseline Field Data Collection Workplan – Aquatic Habitat Mapping Field Sampling Draft – Peer Review Comments (MEM-51)	Work Plan	October 10, 2023	The AHM workplan provided is well written and comprehensive. The PRT identified a gap in SAR data capture process in the filed collection form and that there is a risk that SARs are either not recorded (field staff are not attuned to this as part of the AHM scope) or if recorded, that the AHM dataset is reviewed as a resource for SAR data. The other limiting factor for completing this review is the hindsight review for work completed in 2022. The absence of clarity around SAR data as a focus of the AHM and how that data gets reported may prove a meaningful influence on the data set used. It is the PRT's understanding that monthly progress reports are provided to the NWMO by their consultant and that review of these monthly progress reports may provide the PRT a better understanding of the data quality prior to completion of Tier 2 data collection.
Biodiversity Terrestrial Ecosystem Mapping & Significant Wildlife Habitat Field Data Collection Draft Work Plan – Peer Review Comments (MEM-50)	Work Plan	October 12, 2023	The SWH covers a wide range of habitats and species, including Species of Conservation Concern (e.g., overwintering raptor habitat, and deer yards). The SOWs were brief but appear to have been incorporated into the workplan. Overall, the workplan was detailed. Comments have been provided on the SWH surveys showing presence of candidate and confirmed SWH for all applicable criteria.
Biodiversity Impact Studies – Southwestern Ontario Region: Appendix D - 2023 Aquatic Habitat Mapping Report – Peer Review Comments (MEM-62)	Report	October 18, 2023	The completeness of the aquatic habitat mapping cannot be fully assessed at this time as the mapping program is understood to be at an interim stage with further field work required. The PRT identified that the Draft Report is currently incomplete. This leaves uncertainty with the PRT as to the completeness and quality of the findings of the report at the time of the review. The PRT understands that a cleaned-up version of the report be provided for thorough review. Based on completion of the peer review, the PRT finds the Draft Report provides an initial high-level characterization of the aquatic habitats within the Study Areas and a basis for understanding of the aquatic BVs. The PRT strongly supports the recommendation that a spring reconnaissance survey be completed in 2024 of any reaches identified as being dry in the 2022 field surveys, and complete survey of all reaches (even those that were not dry) if timing allows.
Biodiversity Impact Studies – Southwestern Ontario Region: Appendix E - Environmental DNA 2023 Baseline Report – Peer Review Comments (MEM-63)	Report	October 18, 2023	The PRT understands that the Draft Report is an interim report presenting and interpreting data collected during the initial Tier 1 field program. The peer review identified a number of inconsistencies throughout the Draft Report regarding the study area and what species were detected and reported on. Based on completion of the peer review, PRT finds the Draft Report provides an early indication of the potential composition of species within the AOI and LSA study areas and potential interactions between the Project and BVs that could result in changes to those BVs.

Document Title	Document Type Reviewed	Preliminary PR comments issued to the NWMO	General Findings / Observations
Biodiversity Impact Studies – Southwestern Ontario Region: Appendix C - Significant Wildlife Habitat 2023 Baseline Report – Peer Review Comments (MEM-64)	Report	November 7, 2023	During the review of the NWMO APM Phase 2 Baseline Environmental Studies – South Bruce, ON, Biodiversity Terrestrial Ecosystem Mapping & Significant Wildlife Habitat Field Data Collection Draft Work Plan (see MEM-50), the PRT raised several questions about the data collected in the first year of the field program and the next steps in the confirmation of SWH features within the study area. Based on completion of the peer review, the PRT finds the Draft Report provides a complete summary of all data collected in 2022 but that additional data is still necessary for confirmation of SWH.
Biodiversity Impact Studies – Southwestern Ontario Region: Baseline Report Chapters 1 - 9 – Peer Review Comments (MEM-65)	Report	November 17, 2023	The PRT found the Draft Report to be of good quality with information generally presented in a clear and understandable manner. The Draft Report provides a good summary of the study findings, the interactions with the species identified, and BVs that could experience changes due to the construction and operation of the Project. It is noted however that some inconsistencies throughout the chapters regarding the data that was reported were identified. These inconsistencies may leave the reader with a level of uncertainty as to the completeness and appropriateness of the results. The information provided in the chapters contributes to developing an understanding of the baseline conditions for biodiversity. Commitments to review and include additional datasets and analyses required to better represent and consider the baseline biodiversity functions and services of the study areas was not made clear in the report.
Biodiversity Impact Studies – Southwestern Ontario Region: Appendix A – 2023 Dataset Quality Report – Peer Review Comments (MEM-68)	Report	December 4, 2023	Appendix A of the Draft Report lists the datasets received from external sources used in the BIS and assesses their quality for bias, reliability, relevance, and other factors. Given that the PRT did not review each of the datasets, the PRT comments consisted only of a review of the completeness and clarifications of the list.

4.2 Municipality of South Bruce's Guiding Principles

The Municipality published a Project Visioning report based on community workshops held in December 2019 and January 2020 that identified areas of community concern and opportunities. Based on the Project Visioning report and further public consultation, MSB passed a Council resolution endorsing the 36 Guiding Principles that will guide their assessment of willingness to host the APM Project. In light of their importance to MSB, the principles have been individually linked to each of the studies as appropriate to ensure that they were fully considered or accounted for in completing the work (**Appendix C**).

The work plans for field execution, field observations, and technical data reports prepared by the NWMO, as it relates to the BIS, inform two of the principles (Guiding Principles #2 and #7) of the 36 Guiding Principles established by MSB. **Table 4.2** lists MSB's Guiding Principles #2 and #7 and how the results of the BIS to date, inform these principles.

Table 4.2 The MSB Guiding Principles associated with the Biodiversity Impact Studies

Principle # and Description	Consideration of the Principle in the Biodiversity Impact Studies
2. The NWMO must demonstrate to the satisfaction of the Municipality that sufficient measures will be in place to ensure the natural environment will be protected, including the community's precious waters, land and air, throughout the Project's lifespan of construction, operation and into the distant future.	The BIS scope of work informs Guiding Principle #2 by collecting biodiversity data to focus on environmental effects and characterize biodiversity baseline conditions prior to the development of the Project. As a result, the potential effects of the major Projects stages (construction, operations, extended monitoring, decommissioning and post-closure) can be identified, understood and, as required, monitored in the future. The sampling program, to date, has focused on the collection of biodiversity data from vegetation, wetland/riparian environments, mammals, herpetofauna, terrestrial invertebrates, fish and fish habitats, ecosystem function and services, and habitats and associated species (TEM, SWH, AHM, eDNA). It is the PRT's understanding that future work related to biodiversity will be conducted to support the development of the understanding of the baseline conditions to ensure that the natural environment will be protected. As this program is multi-year, it is the PRT's understanding that a program review will be completed by the NWMO to make modifications based on analysis of the data already collected and data needs. In addition, a BIS Baseline – Tier 2 Studies Design will be completed pending the willingness decision.
7. The NWMO must commit to preparing construction management and operation plans that detail the measures the NWMO will implement to mitigate the impacts of construction and operation of the Project.	As previously stated, the BIS program should consider Project impacts on the community's social, economic, or health values for their potential to impact BVs and ecosystem function and services. The characteristics of the BVs and the ecosystem will need to be assessed to confirm the mitigation measures that would be required and incorporated into the site-specific detail design for the repository during construction and operations. The BIS program will also be used to understand the characteristics and sensitivities of ecosystem in the vicinity of the DGR, to mitigate the potential for impacts to biodiversity and integrate with the appropriate management programs.

4.3 Conclusions of the Peer Review

As previously discussed, biodiversity includes considerations of ecological functions that contribute to ecosystem resiliency and human/spiritual well-being, which are integrated into the program as a study of ecosystem services. The ecosystems considered in the BIS Program, and components selected for further study are those that are relevant, important, and potentially impacted by the potential Project, and/or representative of change to larger ecosystem functions. Impacts of relevance to the EMBP will also be relevant to the BIS Program (e.g., impacts due to Contaminants of Potential Concern could lead to decreased survival and reproduction of BVs). Therefore, pathways linking the CSM to the EMBP should be considered in determining how the Project could interact with BVs and

ecosystem function and services. Project impacts on the community's social, economic, or health values will also need to be considered for their potential to impact BVs and ecosystem function and services.

The work to be carried out as part of Tier 2 of the BIS the program is yet to be finalized and communicated. The PRT understands that the NWMO will undertake a program review and provide a Program Review Report to the PRT for peer review. The Program Review will assess the data collected as part of the Tier 1 BIS program and potentially make recommendations to adjust the program's design and implementation plans.

It is the PRT's current understanding that the BIS will continue with additional data collection, as part of Tier 1 program, related to TEM, SWH, AHM and eDNA. The PRT will continue to work collaboratively with the NWMO and their consultants to review work plans and reports as they are updated for 2024 and become available and will also conduct field observations related to these activities. It is the view of the PRT that the BIS and the associated documents are technical in nature and demonstrate progress in satisfying Guiding Principle #2 based on the factual data collected to date. It is too early in the program to demonstrate progress in satisfying Guiding Principle #7 as site-specific designs for the construction and operation of the DGR have not been developed. As this is a multi-year program, the PRT will review of the additional data that will be collected to ensure that the Tier 1 component of the biodiversity baseline is complete to make informed decisions and to assess the changes resulting from or associated with the Project.

Should the MSB be selected as the host community, it is the PRT's understanding that the NWMO will carry out further studies once the site-specific conceptual design has been prepared to further assess and describe the potential Project derived effects on biodiversity.

Appendices

Appendix A

Peer Review Protocol

South Bruce Consultants Peer Review Protocol

Protocol for Peer Review Process

1. The scope of the peer review is variable for each NWMO study (Study). The scope and objective of each Study is variable. The Study may include development of information, data and documents in the form of a:
   - Statement of Work
   - Work plan
   - Baseline conditions
   - Modeling/prediction/forecast of future conditions
   - An assessment of impact/benefits

   Not all NWMO studies will include each of the above listed elements. While a collaborative peer review approach is to be used, it is important to maintain independence during the peer review process.
2. Develop an initial understanding of NWMO inputs to conducting the Study including timing, availability and sources of information.
3. Meet with NWMO and their consultants to
   - compile a list of information/documents that will need to be reviewed as part of the Peer Review
   - compile a list of parties/agencies providing information for use in preparing the Study
   - identify additional information/sources that may be pertinent to the Study
4. Undertake an initial review of the information/documents assembled and developed for the Study
   - Peer review of the SoW will include information and data pertaining to some or all of the following elements:
     i.) Statement of Work (SoW)
     ii.) Work plan
     iii.) Baseline conditions
   - Provide questions/comments to NWMO on the available information/documents and ensure they have been adequately addressed with the community in mind.
5. Conduct peer review of the Study findings as they are developed which may include the following:
   i.) Project design(s)
   ii.) Modeling of future conditions
   iii.) Impact assessment approach
   iv.) Impact assessment findings
   v.) Analysis of reliability
   - If warranted, work with NWMO and their consultants to conduct a site visit
6. Meet with NWMO and their consultants to:
   - Seek clarifications of the information/documents reviewed
   - Ensure a full understanding of the assessment approach and findings
   - Present the preliminary peer review findings (concurrences and concerns)

- Provide questions/comments and peer review findings and ensure they have been adequately addressed with the community in mind.

7. Review NWMO draft reports
   - Complete a detailed review of the draft reports
   - Identify omissions and/or inconsistencies if they occur with SOW and Work Plan
8. Prepare draft Peer Review Report for submission to South Bruce for comments.
   - Include a summary of peer review observations, findings, and comments
9. South Bruce will review with RedBrick for communications to public
10. Finalize and present the Peer Review Report to South Bruce and NWMO
11. Each consultant will need to provide a presentation of the findings of the peer reviews to the CLC.

Table of Contents for Peer Review Report

1. Introduction
   a. State the purpose of the Peer Review Report (Report)
   b. Provide capsule summary of the proposed Project
   c. Identify the NWMO Study that is being peer reviewed
   d. Identify the NWMO Statement of Work for completing the Study (i.e., SOW from EOI or update)
   e. Identity participants involved in conducting the Study
   f. Identify the time period the Study work and Peer Review was carried out
2. Peer Review Objectives and Process
   a. State objectives for conducting the Peer Review which include
      i. To provide the community of SB with independent review by qualified subject matter experts
      ii. To complete a peer review of the NWMO Assessment of potential impacts and proposed benefits in comparison to existing conditions
      iii. To review how the potential impacts and proposed benefits adhere to the 36 principles that will guide the assessment of willingness to host the Project.
   b. Describe the Peer Review Process Undertaken
      i. Describe the Peer Review process that was carried out.
      ii. List activities completed (e.g., site visits, work plan review, data review, report review, meetings, etc.)
3. Documentation and Information Reviewed
   a. List NWMO study specific information reviewed which may include:
      i. Scope of work
      ii. Detailed work plan
      iii. Baseline Conditions
      iv. Assessment Approach
      v. Assessment Findings
   b. List parties/agencies involved in providing information into the study
   c. List all documents/meetings/data/additional information and include a short summary of each

4. Peer Review Findings and Resolution
   a. Baseline Conditions Report (concurrences and concerns and resolution)

b. Impact Assessment (IA) Report
    i. IA approach (concurrences and concerns and resolution)
    ii. IA findings (concurrences and concerns and resolution)
c. Conclusions of peer review
d. Adherence to the 36 principles which are pertinent to the study

5. Summary

Appendix B

Peer Review Comment Memorandums

Memorandum

11 October 2022 – updated 13 February 2024

To	Dave Rushton/Steven Travale, Municipality of South Bruce		
Copy to	Michelle Nearing/Katie Langdon, NWMO		
From	Laura Lawlor, Jennifer Son/AD/mma	**Tel**	+1 519 884 0510
Subject	Ecological Survey Observations	**Project No.**	11224152-MEM-35

1. Introduction

Guided by a Nuclear Waste Management Organization (NWMO) staff member, GHD Limited (GHD) ecologists joined staff from North/South Consultants Inc. (NSC) and North-South Environmental Inc. (NSE) on September 29, 2022, to observe field data collection protocols. The workplans for the activities observed were provided to GHD while on site, which did not allow time for sufficient review to digest the approaches proposed nor to prepare questions regarding the methodologies. Additional comments may follow pending our review of the terrestrial, aquatic habitat mapping and eDNA work plans.

2. Field Observations

Field activities were initiated with completion of a tailgate safety meeting for all parties present. Appropriate canoe and safety equipment was present and appeared to be in good-working order. Staff from both NSC and NSE were accommodating to the field review conducted by GHD and willingly answered questions.

2.1 Aquatic Habitat and eDNA Survey Observations

NSC was observed completing aquatic habitat mapping and collecting aquatic eDNA samples at site L006. The site included segments classified as lake/pond, wetland, inlet/outlet, and watercourse. Comments regarding the activities completed at L006 include:

– During the field activities, NSC mentioned that many of the areas mapped as lake/pond in the desktop digital elevation mapping analyses had been observed to be dry over the course of the summer field investigations. GHD advises a single site visit to these locations may not allow for accurate characterization of the permanence, function or hydroperiod of these features.
– Aquatic habitat mapping was completed primarily from shore with a single data point of water quality collected from the deepest location in the pond. While this may provide representative information from smaller ponds, this over-simplifies the characterization of larger ponds and lakes. Mapping of the in-water pond vegetation by pond vs the terrestrial shoreline mapping by subdivided zones provides an introductory level of data that will warrant additional detailed data collection in order to provide a baseline measure for determination of sensitivity and impact.
– eDNA sample collection was observed from both within the pond and the wetland. Multiple layers of gloves were worn to limit cross-contamination of samples. Sample collection protocol was consistent by collecting

2 L per sample and three samples per feature regardless of feature type (e.g. pond vs wetland). This method, which has been applied throughout the summer months does not account for seasonal and feature type variability, introducing the potential for underrepresentation of species. GHD will review the work plan to understand if additional rationale or detail regarding this approach is provided.

– It was noted that NSC were not aware of species listed as Special Concern under the provincial *Endangered Species Act* (ESA) and the federal *Species at Risk Act* (SARA), namely snapping turtle (*Chelydra serpentina*). Other Special Concern species monarch (*Danaus plexippus*) was observed on site by GHD and not recorded until identified by GHD. GHD advises due diligence through background reviews and sufficient training of field staff are recommended to be completed before surveys commenced. The presence of Species at Risk (SAR) and their habitats is of particular importance to the Tier 1 evaluation as it is a metric that can be directly evaluated through compliance with or permitting needed for interference with the species or impact to SAR habitat under provincial and federal regulations. Incomplete data collection at the Tier 1 stage may underrepresent the SAR presence, and result in an inaccurate evaluation of location suitability.

2.2 Terrestrial Ecosystem Survey Observations

GHD observed NSE completing a sample terrestrial ecosystem mapping and significant wildlife habitat (SWH) survey at two plot locations within the Local Study Area (LSA). The plots were identified as “visual” plots (versus ground or full plots) that required recording of the vegetation community (ecosite) classification, candidate significant wildlife habitat features, and disturbance history. Incidental observations of wildlife could also be recorded. The data was collected in digital field forms on iPads. NWMO requested that NSE walk through the procedure for a “full” plot so that GHD could get a sense for how all of the field data is collected. The additional data forms involved in the “full” plot included information on vegetation community composition and structure (species, % cover in vegetation layers, etc. structured in a format based on BC TEM protocols), cavity/snag tree densities, soil profiles and field analysis, and downed woody debris assessments.

GHD did not receive the workplans in advance of the work so did not have the opportunity to contextualize the observed tasks against the workplan. However, the following comments are provided:

– Field staff team members are qualified for the work in Ontario (e.g., familiarity with southern Ontario species, communities, and regulatory and policy context). Field crew members had a good level of confidence and familiarity with the field forms and data collection procedures in general. It is not clear experienced botanists/vegetation specialists and wildlife specialists who would be able to identify important species and features actually from each field crew’s forms. This may not be required for this stage of the work but should be part of future targeted surveys intended to capture species information.
– The ecosite classification codes utilize the Draft codes for Southern Ontario in the Provincial ELC Manual, “Ecosites of Ontario” (2009), rather than the 1998 (Lee et al) codes that were referenced in the BIS BPD and BPPA. The *Ecosites* protocol requires detailed soil profiles sufficient to determine moisture regime to arrive at the final ecosite classification, but for visual plots this soil data is not collected. Therefore, it’s possible that the selected ecosite classification code may be incorrect/inaccurate in some cases for the individual polygons. These should not be relied upon for data such as soil moisture regime classification unless more detailed soils info is obtained. Some uncertainty about how to make the determination of the ecosite classification code was expressed by field staff in this circumstance.
– Confirming/updating polygon boundary limits or identification/mapping of previously unmapped ecosite or vegetation community types was not part of the field work.
– The use of the Draft *Ecosites* codes for the ecosite type makes the assessment of candidate significant wildlife habitat more complex since the 1998 codes are what are referenced in Significant Wildlife Habitat (SWH) guidelines and should be utilized when assessing potential presence of SWH. Since field crews will not be assigning 1998 codes to the polygons they are assessing, it’s not clear how accurate/objective/consistent the determinations of SWH will be.
– GHD was able to observe the protocol undertaken by field crews when the ecosite in the field does not match that classified through desktop mapping. In this case, a forested area had been clearcut. A new

vegetation code of meadow (herbaceous) was selected. No estimates of sapling or shrub cover were carried out to confirm that classification is appropriate as is required by the procedures outlined in the Ecosites manual and field staff were surprised that a meadow could also be treed or shrub, indicating a lack of familiarity with the Ecosite Keys. Field staff noted they had not yet encountered a plot where the desktop ecosite classification needed to be modified. GHD's opinion is tree and shrub cover were in fact over the required thresholds and the meadow determination at that location may not be correct.

– GHD asked the field crew about any strategy for accessing plots and routes between plots and there was no set strategy during this event. Recording incidental observations along the route therefore may not have much utility in data analyses. This will need to be determined.

QA/QC procedures for submission of field forms and progress updates were described/demonstrated. Data accuracy assessment procedures could not be confirmed.

3. Summary

In summary, NSC and NSE were accommodating to GHD's field observations. Incomplete collection of SAR field observations is concerning as SAR are an important consideration at all stages of location suitability. Further, translation between data collection and significance of habitats may prove difficult based on the field methods being applied. Provision of work plans to GHD and observation of future field monitoring is recommended. As GHD did not have opportunity to review the workplans, additional comments may be forthcoming.

NWMO response:

We thank GHD for their feedback on the Biodiversity Impact Studies (BIS) field data collection protocols for the Tier 1 baseline programs. A follow-up meeting between the NWMO, Zoetica Environmental Consulting Services (Zoetica™, who designed the BIS), and GHD was held on 17 November 2022 to discuss these field observations. Zoetica clarified that Tier 1 baseline work for SAR included collating desk-based observations (e.g., NHIC and GBIF records), mapping of SAR critical habitat (as identified by ECCC), recording incidental observations during all Tier 1 terrestrial and aquatic programs, and identifying any SAR detections through eDNA metabarcoding analyses. Detailed SAR studies are planned as part of the Tier 2 baseline program, which will be informed by the findings of Tier 1. Zoetica plans to revisit locations of recorded SAR (from both field- and desk-based data) to complete more detailed surveys (e.g., breeding bird surveys, amphibian surveys, vegetation surveys) and habitat assessments at the appropriate time(s) of year during these Tier 2 baseline studies.

We agree that it is more efficient to review workplans prior to field observations. Ongoing collaboration and planning between the NWMO and GHD will continue to allow for adequate review time before observations going forward. Of note, GHD subsequently reviewed and provided comments on the BIS field program work plans. These comments were discussed with GHD, NWMO, Zoetica, and the field data collection contractor during follow-up meetings on 10 October 2023 (AHM and eDNA) and 30 October 2023 (TEM and SWH). All comments will be addressed in work plan revisions prior to future field programs.

Recommendations from GHD on the Tier 1 BIS field protocols will be incorporated into future study design and field planning/training. For example, in preparation for additional Tier 1 baseline studies in 2024, Zoetica will update the survey protocols to ensure that the SOPs are clear that species of interest should be recorded when observed by field staff during all surveys. Zoetica will also prepare a field guide of species of interest such that field staff have a better understanding of the species and habitats that should be documented in the field when observed as incidentals. Zoetica will provide additional training to field staff prior to the continued Tier 1 field program to commence in 2024.

Memorandum

08 December 2022 – updated 08 September 2023

To	Dave Rushton/Steven Travale, Municipality of South Bruce		
Copy to	Michelle Nearing/Katie Langdon, NWMO		
From	Laura Lawlor, Chris Ellingwood, Greg Ferraro and Jennifer Son/AD/mma	**Tel**	+1 519 884 0510
Subject	Biodiversity Impact Studies – Southwestern Ontario Region: 2022 Change Assessment Memorandum – Subject Matter Expert Comments	**Project no.**	11224152-MEM-40

1. Introduction

This memo provides the Municipality of South Bruce (South Bruce) peer review team's (PRT's) comments on the *Biodiversity Impact Studies – Southwestern Ontario Region: 2022 Change Assessment Memorandum* prepared by Zoetica Environmental Consulting Services (Zoetica) for your consideration and internal circulation as per the South Bruce Nuclear Exploration Project joint study review flow process. In addition, the memo will be submitted to the Nuclear Waste Management Organization (NWMO) and their consultants (Zoetica) by GHD Limited (GHD) as per the peer review protocol process.

2. Peer review approach

The peer review of the Draft Memorandum was carried out by GHD (Subject Matter Experts [SMEs] and Lead Consultant). The peer review process was completed in alignment with the peer review protocol that was developed to support a collaborative approach between the NWMO and South Bruce while maintaining independence during the process. In accordance with the peer review protocol process, GHD SMEs Laura Lawlor and Chris Ellingwood and GHD Lead Consultants Jennifer Son and Greg Ferraro reviewed the Draft Memorandum having the following questions in mind:

– Are there any significant concerns, issues, and/or omissions with the Draft Memorandum?
– What are our initial observations/impressions on the Draft Memorandum?
– Does the Draft Memorandum reflect the most current information available?

3. Peer review comments

As stated above, the comment disposition table (**Table 1**) lists our initial comments on the Draft Memorandum. The NWMO and their consultants provided responses to these comments and addressed each comment where appropriate as part of finalizing the Memorandum.

The PRT identify that wetlands are potentially being undervalue in the biodiversity work/reporting reviewed by the PRT to date. It is recommended that identifications of, potential interactions with, and mitigation of wetlands of all classifications be assessed in greater depth.

Based on completion of the peer review, the PRT finds the Draft Change Assessment Memorandum provides a high-level understanding of the potential interactions between the Adaptive Phased Management (APM) Project and biodiversity values (BVs) that could result in changes to those BVs.

Table 1 Comment Disposition Table - Biodiversity Impact Studies – Southwestern Ontario Region: 2022 Change Assessment Memorandum

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
1	p. 9, Table 3-1	Review the application of setback distances and buffer terminology vs. the Natural Heritage Reference Manual definition of Adjacent lands distances. The adjacent lands definition is not mutually exclusive with buffer or setbacks, the latter of which implies the adjacent lands areas are fixed development distances.	We agree that the application of setback distances and buffer terminology differs from the Natural Heritage Reference Manual definition of Adjacent lands distances. We have added a caveat to the table notes to indicate the following: "Currently, the list of setback distances does not indicate which are required or may permit development with a demonstration of mitigation to enable no net negative effects."	The reviewers support, in part, the approach noted in the 'How and Where Comments are Addressed' column, but do not see the edit as being made in the version of the memo provided. It appears that this edit should be reflected in what is now Table 4-1. The authors should consider rephrasing again, as the minimum buffer distances are interchangeably being called setbacks with the values derived from the Natural Heritage Reference Manual that are not either of those.
2	p. 18, Table 4-1	The Biodiversity Values (BVs) listed in the introduction do not coincide with those identified Table 4-1 as BVs to potentially be affected. Consider adding a column so both the BV and the habitat, function or ecosystem service pertaining to them can be clearly identified and referenced in future work.	Thank you for pointing out the discrepancy between the biodiversity values listed in the introduction and those identified in Table 4-1. We have added clarifying text to Section 1.0 (Overview) to indicate that BVs were further grouped into BV categories. These categories include species of interest (species of conservation concern [SCC], species of interest to stakeholders and rights-holders [SOI] and invasive species), important habitat (Candidate Significant Wildlife Habitat [SWH], and Important Fish Habitat), Wetland and Riparian Areas, and Ecosystem Function and Services. For clarity, in Table 4-1 (now Table 3-1), we have included a footnote indicating that biodiversity values listed in the introduction were grouped into these categories.	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
3	p. 21, Section 5.1.1	Consider stating if these 'to date' data are exclusively the result of desktop analyses or if any field data is included as these results will be likely to change based on the addition of field results. This will provide clarity for the reader as the introduction states that this change assessment includes both desk-based and field-based surveys but what is available at the date of production isn't clear.	We can see how this might be confusing. We have updated the intro to the following: "The 2022 BIS Change Assessment draws from Tier 1 desk-based data and limited field-based studies conducted to date (i.e., bat studies conducted in partnership with the Toronto Zoo) within relevant BIS study areas: an Area of Interest (AOI) where project infrastructure will be placed, terrestrial and aquatic local study areas (LSAs), and BV-specific regional study areas (RSAs). Additional Tier 1 BIS field-based studies commenced within relevant BIS study areas in 2022; however, data were not available at the time of writing the 2022 SON-South Bruce BIS Baseline Report and the 2022 SON-South Bruce BIS Change Assessment Report (this document)." Zoetica acknowledges that the collection and inclusion of future field data may change results and recommendations. We have also included a note in the caption of the Tables in Section 5 that states: "All observations were collected from desk-based sources unless noted otherwise."	The reader is unable to find these incorporations within the updated memo. Please clarify so the response can be evaluated for its suitability.
4	Tables of Section 5	Consider applying consistent symbology, or add definition of the different symbology used to identify absence of a species from a study area (currently 'x' and '-' are used and 'NA' is identified in table footer).	Thank you for pointing out the inconsistency in the use of symbology in the tables in Section 5. We have updated the symbology to an 'x" when the species was not detected in the relevant study area and continue using "NA" where a study area was not investigated. Typically, a study area was not investigated for a species when the study area would be irrelevant (e.g., an RSA is irrelevant for rare plant species). We have updated the notes in the table footer to reflect the symbology.	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
5	Tables of Section 5	Consider providing more clarity as to which stages of the mitigation hierarchy may be applicable as not all will be applicable to all species or habitats.	The NWMO will follow the mitigation hierarchy through all stages of the project based on the best available information at the time. Currently, there is no Project Description available. Thus, the NWMO can apply the information in the change assessment document to first attempt to avoid negative interactions with biodiversity through Project design. The NWMO will attempt to avoid areas delineated as potentially sensitive to biodiversity. If such areas cannot be fully avoided, the NWMO will sequentially follow the steps in the mitigation hierarchy to address APM Project x biodiversity interactions. Zoetica acknowledges that information from Tier 2 and 3 studies will likely be available until after the NWMO develops a Project Description. While the NWMO may use these subsequent data to modify small components of the surface facilities (e.g., moving ancillary infrastructure or laydown areas), there may be less opportunity to use Tier 2 and 3 data in the first step of the mitigation hierarchy (avoidance). Still, they can apply these data in later steps in the mitigation hierarchy (e.g., reducing potential effects). We have updated the text in Section 4.1 (Mitigation Hierarchy) to clarify this limitation. In addition, we have added the following footnote to the tables in Section 5: “Potential mitigation included in this table reflects the typical mitigation measures that can be applied to reduce potential Project impacts. Additional mitigation measures may be included where needed to minimize any negative effects of the Project on biodiversity. The NWMO will follow the mitigation hierarchy (see Section 4.1) in all stages of the Project using the best available data at each stage.”	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
6	Section 5.2.1	As presence of Species of Conservation Concern are another type of Significant Wildlife Habitat (SWH), their presence should be discussed in this section as either candidate or confirmed SWH, as applicable.	Thank you for pointing out this important topic. We added a row to Table 5.4 (Candidate SWH identified to date within the relevant BIS study areas) for the SWH "Special Concern and Rare Wildlife Species" with text that points to Table 5-2 (SAR) for the details. This solution highlights that these species observations are candidate SWH while not duplicating information.	Comment satisfactorily addressed.
7	Table 5-5	For species at risk (SAR) with critical habitat identified within the Area of Interest (AOI), would continuation with Tier 1 eDNA studies for aquatic species not also be relevant as a gap/next steps?	Yes. We agree that eDNA is a useful tool for gap analysis for SAR. Following site selection, we hope to continue eDNA metabarcoding studies in relevant BIS study areas until species-detection curves can be established and indicate we have reached the horizontal asymptote. Where SAR are detected, we may use targeted eDNA and traditional methods to confirm presence. We included a bullet in the Gaps/Next Steps column of Table 5-5 for continuing Tier 1 eDNA studies for species with critical habitat overlapping with the AOI.	Addition of reference to continuation of eDNA studies to the Aquatic species of (new) Table 5-1 is noted, but the comment about rationale provided in this response table does not match what is stated in Table 5-1. Recommend that the reference to 'seasonal presence' is removed and left at 'to determine presence' is applied. Further, this reference to eDNA sampling has been incorrectly added to the River Bluet as well.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
8	Table 5-9	Consider including the Greenock Swamp and wetlands in this table for their contributions to biodiversity services within the Local Study Area (LSA) and landscape.	We agree that wetlands, including the Greenock Swamp Wetland Complex, contribute to biodiversity services within the LSA and landscape. We have specified in Table 5-9 that the ANSI includes the Greenock Swamp ANSI and have updated the text leading to the table to the following: Table 5-9 contains important or potentially important areas identified to date for providing ecosystem services within the BIS study areas of relevance during Tier 1 studies. While wetlands can provide water-regulating services, further information gathered during future Tier 2 BIS studies and other studies (e.g., conducted as part of the EMBP) will be important for determining the relevance of a particular wetland in providing a regulating service. Similarly, other ecosystem components (e.g., lakes, rivers, and wetlands) can provide provisioning services (e.g., fish, wild rice), but require additional information to determine the relevance of these ecosystem components in the area. Thus, currently, Table 5-9 contains only those known significant ecosystem components that do not require further studies to glean their importance as ecosystem services within the BIS study areas.”.	Comment satisfactorily addressed.
9	Appendix A, p. A-5	Update references for recently finalized Fisheries and Oceans Canada (DFO) Codes of Practice.	Thank you. Some DFO Codes of Practice were interim when writing the BIS Change Assessment. We have updated the reference to link to the main Fisheries and Oceans Canada (DFO) Codes of Practice page. This provides the best solution for keeping up-to-date with changes to these codes of practice while not referencing an out-of-date code of practice.	Comment satisfactorily addressed.

Memorandum

8 September 2023 – updated 23 January 2024

To	Dave Rushton/Steven Travale, Municipality of South Bruce		
Copy to	Michelle Nearing/Katie Langdon, NWMO		
From	Chris Ellingwood, Greg Ferraro and Jennifer Son/AD/mma	**Tel**	+1 519 884 0510
Subject	Biodiversity Impact Studies – Southwestern Ontario Region: 2023 Ecological Land Classification and Terrestrial Ecosystem Mapping Report – Peer Review Comments	**Project no.**	11224152-MEM-61

1. Introduction

This memo provides the Municipality of South Bruce (South Bruce) peer review team's (PRT's) comments on the *Draft Biodiversity Impact Studies – Southwestern Ontario Region: Appendix B - 2023 Ecological Land Classification and Terrestrial Ecosystem Mapping Report* (Draft Report) prepared by Zoetica Environmental Consulting Services (Zoetica) for your consideration and internal circulation as per the South Bruce Nuclear Exploration Project joint study review flow process. This memo will be submitted to the Nuclear Waste Management Organization (NWMO) and their consultants (Zoetica) by GHD Limited (GHD) as per the peer review protocol process.

2. Peer review approach

The peer review of the Draft Report was carried out by GHD (Subject Matter Expert [SME] and Lead Consultant). The peer review process was completed in alignment with the peer review protocol that was developed to support a collaborative approach between the NWMO and South Bruce while maintaining independence during the process.

The PRT reviewed the Draft Report having the following questions in mind:

– Are there any significant concerns, issues, and/or omissions with the Draft Report?
– What are our initial observations/impressions on the Draft Report?
– Does the Draft Report reflect the most current information available?

3. Peer review comments

As stated above, the comment disposition table (**Table 1**) lists our initial comments on the Draft Report. The NWMO and their consultants provided responses to these comments and addressed each comment where appropriate as part of finalizing the Report.

Based on the completion of the peer review, the data provided in the Draft Report includes data collected for Tier 1 studies as outlined in the terrestrial Work Plan reports provided earlier in the process and prior to field work season. The Draft Report also meets the objectives of the Work Plan, the field investigations and scope of work that were outlined in the detailed Work Plan. In general, a better understanding of the implications of the field verification challenges in Year 1 for subsequent field work is required and if any changes to biodiversity values (BVs) will occur.

Table 1 *Comment Disposition Table - Draft Biodiversity Impact Studies – Southwestern Ontario Region: 2023 Ecological Land Classification and Terrestrial Ecosystem Mapping Report*

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
1	3.4	As LSA eco was ultimately divided into a north and south of the AOI and habitat based on soils and topography, does this change the number of sites that need to be surveyed to verify the ELC classification by desktop. Was the ratio still met or does this affect the overall number of ground truthed sites that should be surveyed in the north vs southern sites.	Thank you for the thoughtful question. When selecting the number of plots for survey, Zoetica's original design was to ensure that the number of polygons surveyed for any particular ecosite type met the requirement outlined in the TEM standard based on study area size. Zoetica's original design for Tier 1 TEM studies was to select survey locations using GRTS. This method would ensure a random stratification of selected ecosite polygons across the landscape and should result in an even distribution of sites north and south of the AOI. However, limited access to properties for survey caused bias in our design as more accessible lands were available north of the AOI relative to the south. Even after selecting 100% of eligible ecosite polygons within accessible parcels, the guideline criteria (survey 55% of polygons of each ecosite) were not met. Since an ecosite type can be distributed unevenly across the landscape, we cannot predict which area (AOI, North, or South) will result in relatively more sampling effort. The goal is that overall mapping of the entire LSA_{ECO} study area meets the guideline criteria. However, in the future, we can attempt to preferentially select sampling locations for an ecosite type to achieve a relatively spatially balanced sampling effort if polygons are available in under-surveyed areas, such that our design will meet both the guideline criteria and a more spatially balanced survey effort. Zoetica will consider this when designing future Tier 1 studies anticipated to occur in 2024. The NWMO is continually trying to gain access to private lands for their studies. Additional outreach efforts will be attempted in areas where gaps remain before the field season in 2024. We recognize the subdivision in north versus south is arbitrary. We used the north versus south subdivision to report soil and vegetation data only (not the overall ecosite data). The soils and vegetation data were separated into north vs. south to account for the large tracts of wetland and larger sample size (due to parcel availability) in the north that could swamp the patterns in	The PRT appreciate the additional discussion regarding the results to date. The sampling methods to be applied to future field work should provide a more balanced effort across the AOI and LSA. The PRT understand access to private properties can be challenging and that the team is working on providing adequate coverage on all lands. No further comments from GHD.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			the vegetation data if summarized together. The subdivision provided a relevant way to discuss the patterns of soil and vegetation on the landscape in the 2023 TEM baseline report/appendix. The variations in habitat are also being considered in the planning of Tier 2 studies. However, future analyses of ecosites (e.g., to identify differences in spatial distribution, rare ecosites) for the Impact Assessment will be conducted on the full dataset without subdivision of north vs. south.	
2	3.4	As the SWOOP imagery was leaf-off does this also affect how much ground truthing plots are required and level of effort to confirm ELC?	The leaf-off SWOOP imagery used in desk-based TEM mapping does not affect the number of ground-truthed field plots required to confirm ELC. The number of field plots selected is based on the TEM standards and not on aerial imagery quality. The number of plots is based on the spatial area of the study area (Level 2 or 51-75% of polygons based on the size of the LSA_{ECO}). Zoetica has elected to try to verify 55% of polygons for each desk-based ecosite to ensure that enough data are collected for each ecosite to increase the confidence in mapping. In 2022, not enough parcels were available to achieve the TEM standard guidance and additional ground-truthing is anticipated to occur in 2024. Zoetica will update the desk-based mapping after completing Tier 1 studies in the LSA_{ECO} (anticipated in 2024). In addition, if the SON-South Bruce site is selected, Zoetica will complete surveys within the AOI to ensure that all areas where infrastructure will be placed have been surveyed and will also complete additional TEM surveys in areas that are deemed to have less confidence in mapping (e.g., leaf-off imagery limitations) relative to areas that are determined to have good confidence.	The response answers the question regarding coverage. The additional survey effort required for the SON-South Bruce is to be determined if that site is selected. Would the surveys include more detailed botanical and wildlife surveys than the TEM protocols focussing on areas of tree removal and impacts on natural features including bats maternity/roosting sites and acoustics, breeding bird surveys and targeted SAR species?
3	3.4	The ranking of forest health was based on poor, fair and good. Has that changed due to the differences in soils from north and south sites (e.g., Limestone pavement areas)?	The ranking of forest health was included in the BIS at the request of the MVCA. At the acceptance of the SVCA, Zoetica adopted the forms and parameters used by the MVCA. The MVCA forms were not specific to their jurisdiction but were applied generically across the whole study area such that data collected could be compared by the MVCA to data collected within their jurisdiction. The soil gradient from north to south does not feed into the forest health ratings according to the MVCA criteria. The ratings are based on several criteria to ascertain	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			forest disturbance due to logging and other disturbances, tree health, standing snags, and deer browse. These criteria are outlined in the 2022 BPD Report.	
4	4.1.1	Reclassification noted as 56% from treed to swamp and 36 finer ecosites not mapped during desk based ecosite mapping. Also 59% of polygons had different tree species. These are significant changes and reflect limitations of the off-leaf SWOOP imagery. Is there other on-leaf images that may be older but may reflect conditions on the ground better. Is the difference due to interpretation by computer and was staff used to interpret polygons by hand?	SUMAC Geomatics was subcontracted to Zoetica to interpret SWOOP 2020 imagery and to classify ecosites by hand within the natural and naturalized areas in the LSA_{ECO}. Zoetica is aware that the desk-based mapping could not be as specific as it could have been if SWOOP imagery had been collected during the leaf-on season. Additional on-leaf imagery at this resolution (12 cm resolution) was unavailable during desk-based ecosite mapping, and other available imagery was not at a scale that could accurately determine vegetation species. However, the changes noted in the comment are interpreted in error. Zoetica first considered the reclassification of ecosites by habitat type or community class (e.g., swamp, marsh, treed, thicket, meadow). Reclassification among community classes occurred in 16% of polygons surveyed (or 76 polygons out of 474 total). Of the polygons reclassified by community class, 52% (40 polygons) changed from treed to swamp (upland to wetland) grouping. An additional 4% were a change from marsh to swamp (making up 56% of all changes in community class to a swamp classification) Thus, only approximately 8% of total polygons (40 of 474 total) changed from a treed (upland) ecosite type to a wetland (swamp) ecosite type. Since the draft version of the TEM report, Zoetica has included an additional figure to show where changes in community class occur. Mapping indicated that most polygons reclassified from treed to swamp occur adjacent to the Greenock Swamp Wetland Complex. In addition, we have included a more detailed breakdown of ecosite changes in Table B-3 in Appendix B. We have also modified the wording concerning the number of polygons with different tree species. The 59% represented 278 polygons that changed in ecosite naming due to the type of vegetation or tree species present. Of these changes, 184 polygons (66%) were a result of the refinement of an ecosite due to the addition	The additional breakdown of the results answer the question. Will this be included in the final version of the reports?

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			of tree species (from a more generic ecosite), 13 polygons (5%) were a change within the tree genus, and 27 polygons (10%) were a change to a more generic ecosite code by removing the tree species name. Only 11% of surveyed polygons (54 polygons) had a change to a different tree genus. Thus, while the field crew made many refinements to the desk-based ecosite mapping, the majority (84%) were not drastic changes but rather closer refinements within a similar habitat category.	
5	4.1.1	Detailed analysis of ELC codes and ecosites and percent of each in study area. Sections of predominant ecosite types in 4.1.2 would benefit from adding description of typical tree species found and dominant species.	Currently, the ecosite mapping includes a desk-based mapping product with updates to polygons visited during field verification in 2022. The mapping does not include an update to the overall desk-based mapping based on surrounding soil and vegetation properties, as the field data collection effort to date has not yet met the TEM standard guidelines (please see disposition to Comment #1), and additional ground-truthing will be required (anticipated in 2024) prior to summarizing those data. Once complete, Zoetica, along with their subcontractor SUMAC, will assess the field data to determine confidence in updating the overall desk-based mapping. As a result of the current ecosite mapping being a mix of original desk-based mapping with updates only for field-verified polygons, predominant ecosites are still heavily influenced by the original desk-based mapping using leaf-off SWOOP imagery. The influence of original desk-based mapping using leaf-off SWOOP imagery will decrease as additional field data are collected and as the overall desk-based mapping is updated based on surrounding soil and vegetation attributes. In many cases, the original desk-based mapping could not be mapped to specific tree species, resulting in more generic ecosites currently dominating the map. As additional field truthing is conducted, many of these generic ecosites may become more specific due to the identification of tree species. Zoetica will strive to update Section 4.1.2 to include typical tree species and dominant species in future iterations of the baseline report after Tier 1 field data collection is complete and desk-based mapping can be updated using all field data.	The additional description of the field verification process and that future field work will complete that effort responds adequately to the comment.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
6	Table 4-10	Table lists plots where wildlife evidence was found. For woodpecker holes, could those be distinguished between pileated and other species, as pileated nests have special status under MBCA.	In 2022, the field crew identified woodpecker holes to the species level in one case: “pileated woodpecker cavities” (unspecified if nesting, roosting, or foraging) were present at plot TEM_033. For all other observations, there was not enough confidence to specify woodpecker holes to the species level. Further investigations (during Tier 2 studies if the SON-South Bruce site is selected) are needed for any “holes” or “cavities” observed during 2022 fieldwork because it is unclear if any are pileated woodpecker nesting cavities. To comply with the updated Migratory Birds Regulations, 2022 (effective 30 July 2022, after finalizing Zoetica’s BPD Report for the 2022 field season), Zoetica will update both the TEM SOP and the Incidental Wildlife Observations SOP to ensure that field crews identify and record pileated woodpecker nesting cavities during future field campaigns.	The additional training and manual updates should help crews to identify larger tree cavity openings that have potential to be nest sites/roosting sites for pileated woodpeckers. No further questions from GHD at this time.
7	Table 4-12	For bird spp and woodpecker spp, can the species be listed where recorded.	The tree attributes protocol required the field crew to record the wildlife use of sample trees by recording the type of use (activity) and the general user (e.g., Feeding Bird [FB]). However, the instructions indicated, “*if a wildlife species using a sample tree can be positively identified, record the species code in the Notes section of the Site and Soil Description Form*”. In most cases, the wildlife user was determined post field by applying criteria to the trees assessed. For example, for all standing trees with an effective crown, it was assumed that perching activity by bird species occurs; and for trees with notes indicating a potential cavity nest, the wildlife user was assumed to be an unknown bird. Thus, in many cases, the animal was not present at the time of survey but use was inferred. However, wildlife species were recorded in a few cases and are presented in Table 4-12. Additional training can be provided to field crew prior to the next field season to ensure they can identify pileated woodpecker nesting cavities due to the important new updates and implications of the MBCA (please see disposition to Comment #6).	See response above.
8	Figure A1-a	Northern studies area received greatest number of plots. With less to south and in AOI. Is this all due to access?	Please see the disposition to Comment #1. In short, yes, more plots were situated in the north due to the bias in access.	Acknowledged.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
9	Figure A1-e	Are more plots planned in the AOI and more complete mapping of the ELC ecosites?	Zoetica recognizes a bias towards more plots in the LSA_{ECO} north of the AOI relative to the AOI and the LSA_{ECO} south of the AOI. The NWMO continues to make efforts to achieve access to privately owned lands in the AOI and south of the AOI. Zoetica will review data gaps outlined in the TEM Baseline Report and will aim to fill these data gaps, where possible, and based on access within the AOI and LSA_{ECO} south of the AOI in future Tier 1 studies (anticipated in 2024). In addition, Zoetica recognizes that minimal full plots were conducted in the AOI and the LSA_{ECO} south of the AOI relative to the LSA_{ECO} north of the AOI due to the distribution of accessible plots within the study areas. Additional full plots are anticipated within accessible areas in the AOI and the LSA_{ECO} south of the AOI during future Tier 1 studies (anticipated in 2024).	Comment satisfactorily addressed.
10	5.5	The explanation of data collected in 2022 and limitations due to access mostly to public lands vs private lands is appreciated. The shift to more full plots and general landscape patterns will provide a more general pattern across the AOI. Is there other ways to access the ELC even at ecosite level by surveying more plots in focus areas and potential host sites in the study area, especially where a facility may impact directly on terrestrial habitat?	See response to Comment #9. Zoetica recognizes data gaps, especially in the AOI and the LSA_{ECO} south of the AOI. Tier 1 studies are anticipated to continue in 2024 to fill data gaps within these study areas. Access to privately owned lands is a real concern, especially given that access is limited on the privately owned lands within the AOI and privately owned lands south of the AOI, where vegetation and habitat are more comparable to the AOI than areas to the north. The NWMO continues to seek access to privately owned lands in the AOI and LSA_{ECO}. Zoetica will also explore ways to increase surveys on currently accessible lands within these study areas, including conducting additional full and ground plots. If the SON-South Bruce site is selected, and when the location of the Project footprint is known, detailed TEM will be completed in the footprint area where there will be direct impacts to the terrestrial habitat.	Comment satisfactorily addressed.

Memorandum

04 October 2023

To	Dave Rushton/Steven Travale, Municipality of South Bruce		
Copy to			
From	Greg Ferraro and Jennifer Son/AD/mma	**Tel**	+1 519 884 0510
Subject	South Bruce Biodiversity Baseline Field Data Collection Workplan – Aquatic Environmental DNA Field Sampling Revision 1 – Peer Review Comments	**Project no.**	11224152-MEM-52

1. Introduction

This memo provides the Municipality of South Bruce (South Bruce) peer review team's (PRT's) comments on the *South Bruce Biodiversity Baseline Field Data Collection Workplan – Aquatic Environmental DNA Field Sampling (Revision 1)* prepared by North/South Consultants Inc. (NSC; September 23, 2022) for your consideration and internal circulation as per the South Bruce Nuclear Exploration Project joint study review flow process. In addition, the memo will be submitted to the Nuclear Waste Management Organization (NWMO) and their consultants (NSC) by GHD Limited (GHD) as per the peer review protocol process.

2. Peer review approach

The peer review of the Work Plan was carried out by GHD (Subject Matter Expert [SME] and Lead Consultant). The peer review process was completed in alignment with the peer review protocol that was developed to support a collaborative approach between NWMO and South Bruce while maintaining independence during the process.

The PRT reviewed the Work Plan having the following questions in mind:

– Are there any significant concerns, issues, and/or omissions with the Work Plan?
– What are our initial observations/impressions on the Work Plan?
– Does the Work Plan reflect the most current information available?

3. Peer review comments

The comment disposition table (**Table 1**) lists our combined comments on the Work Plan. The expectation established in the peer review protocol is that NWMO and their consultants will provide responses to **Table 1** comments following its receipt.

The eDNA workplan reviewed by the PRT is comprehensive with respect to the equipment and decontamination procedures. Additional clarity could be provided regarding the purpose of the work (e.g., what are the species of interest guiding this sampling program, why are the oversample stations limited to wetlands), including Year 1 and subsequent years foci. Additional clarity regarding sample locations would also provide opportunity for a more thorough review as the maps provided cannot easily be correlated with the sample location nomenclature included in the tables.

Table 1 Peer Review Comments - South Bruce Biodiversity Baseline Field Data Collection Workplan – Aquatic Environmental DNA Field Sampling (Revision 1)

Comment number	Report section reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO/NSC to Address)	Peer Review Initial Feedback to NWMO/NSC Comments (GHD to complete after previous column completed by NWMO/NSC)
1	2.3	As the eDNA work is within regulated waterbodies, consideration of the Conservation Authorities Act and relevant regulations should be included.		
2	3.1	There is a discrepancy between the text and the table as to how many watercourse stations are proposed.		
3	3.2.2	The description of daily decontamination of field equipment does not address decontamination that occurs within a day, between samples. Are all tweezers discrete per sample collected within a day? With the high risk of cross-contamination of samples, please also provide a description of the field sample kit preparation area and associated decontamination.		
4	3.3.1.3	On page 13 it is noted that pre-priming of the OSMOS system is warranted with fall eDNA sample collection. Is this unique to fall sampling? Clarification was not found in Appendix G.		
5	Appendix A	The SOP provided is dated June 2022 and noted as a draft copy. Please advise if a final SOP has been prepared and the differences between the versions.		
6	Appendix A, 5.1 Timing	Recommended sampling timeframes are provided, but clarity on which would be applied based on the species of interest is notably absent from the workplan.		

Comment number	Report section reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO/NSC to Address)	Peer Review Initial Feedback to NWMO/NSC Comments (GHD to complete after previous column completed by NWMO/NSC)
7	General Statement	In the field, it was observed that a double-glove system was employed for eDNA sample collection. Was this standard practice? Are there other field approaches employed that should be added to the workplan to better reflect the field methods employed?		
8	Appendix A, 5.9 Depth of Sampling	Reference is made in this subsection that the Year 1 eDNA study is designed for sample collection targeting when fish and amphibians are closer to shore. Please confirm the purpose of the Year 1 (and subsequent years) sampling program(s) in the objectives to provide context for the technical reviews.		

Memorandum

10 October 2023

To	Dave Rushton/Steven Travale, Municipality of South Bruce		
Copy to	Michelle Nearing/Katie Langdon, NWMO		
From	Laura Lawlor, Jennifer Son and Greg Ferraro/AD/mma	**Tel**	+1 519 884 0510
Subject	South Bruce Biodiversity Baseline Field Data Collection Workplan – Aquatic Habitat Mapping Field Sampling Draft – Peer Review Comments	**Project no.**	11224152-MEM-51

1. Introduction

This memo provides the Municipality of South Bruce (South Bruce) peer review team's (PRT's) comments on the *South Bruce Biodiversity Baseline Field Data Collection Workplan – Aquatic Habitat Mapping Field Sampling (Draft)* prepared by North/South Consultants Inc. (NSC; September 15, 2022) for your consideration and internal circulation as per the South Bruce Nuclear Exploration Project joint study review flow process. In addition, the memo will be submitted to the Nuclear Waste Management Organization (NWMO) and their consultants (NSC) by GHD Limited (GHD) as per the peer review protocol process.

2. Peer review approach

The peer review of the Work Plan was carried out by GHD (Subject Matter Expert [SME] and Lead Consultant). The peer review process was completed in alignment with the peer review protocol that was developed to support a collaborative approach between NWMO and South Bruce while maintaining independence during the process.

The PRT reviewed the Work Plan having the following questions in mind:

– Are there any significant concerns, issues, and/or omissions with the Work Plan?
– What are our initial observations/impressions on the Work Plan?
– Does the Work Plan reflect the most current information available?

3. Peer review comments

The comment disposition table (**Table 1**) lists our combined comments on the Work Plan. The expectation established in the peer review protocol is that NWMO and their consultants will provide responses to **Table 1** comments following its receipt.

The Aquatic Habitat Mapping (AHM) Field Sampling Workplan provided is well written and comprehensive. The gap identified was Species at Risk (SAR) data capture; if this is not flagged specifically within the collection forms there is a risk that SAR are either not recorded (field staff are not attuned to this as part of the AHM scope) or if recorded that the AHM dataset is reviewed as a resource for SAR data.

The other limiting factor for completing this review is the hindsight review for work completed in 2022. The absence of clarity around SAR data as a focus of the AHM and how that data gets reported up may prove a meaningful influence on the data set used to compare the two short-listed sites. Further, noting that monthly progress reports are provided to NMWO, may representatives of those be provided to the Peer Review Team so we may have an understanding of the data quality prior to completion of Tier 1 data collection?

Table 1 Peer Review Comments - South Bruce Biodiversity Baseline Field Data Collection Workplan – Aquatic Habitat Mapping Field Sampling (Draft)

Comment number	Report section reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO/NSC to Address)	Peer Review Initial Feedback to NWMO/NSC Comments (GHD to complete after previous column completed by NWMO/NSC)
1	General	Consider including a glossary of acronyms.		
2	2.1	Consider including any preservatives used in aquatic species field surveys into the Safe Work Procedures.		
3	3.1	The dates for completing the scope of work outlined in the Aquatic Habitat Mapping Workplan states it will be completed between mid-July 2022 and before the end of September 2022, however the draft report was first dated July 11, 2022 and only finalized on September 15, 2022. Can NWMO/NSC confirm that the procedures outlined in this final document were those applied in the field prior to the document being finalized? If not, please identify the differences from the draft work plan that was available when the work was being completed.		
4	3.3	Understanding that this is all part of the Tier 1 field work that is foundational to the evaluation of whether or not the Project Site is selected as the waste storage facility, please identify how SAR observations made during AHM work plan execution. SAR are not referenced in this report but would be expected to be encountered at some stage while in the field.		
5	3.3.1.3	Please confirm which three forms are completed for each site (even if dry).		

Comment number	Report section reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO/NSC to Address)	Peer Review Initial Feedback to NWMO/NSC Comments (GHD to complete after previous column completed by NWMO/NSC)
6	3.3.1.5	Watercourse Characterization Form 4b – please clarify what methods are used to evaluate flow permanency as we understand this characterization to be based on a single site visit. Are other data sources used to validate this field determination?		
7	3.3.2	What is the QA/QC procedure for vegetation identification, particularly any unknowns observed by the field crews? When are any edits to the digital notes made and how are those changes documented?		
8	Appendix A	The attached version is stamped draft. Please identify what changes were made between this draft June 2022 version and what is presumably a more current final version.		
9	Appendix A Section 7.0	Were any lake or pond aquatic habitat mapping protocols requested when consulting with SVCA or the MNRF?		
10	Appendix A Section 8	Please clarify if it is only riparian-associated wetlands that are being assessed by these methods (as they are adjacent the AHM areas) or are these methods being applied to all wetlands characterized in Tier 1?		
11	Appendix C	Please confirm that the OWES – Southern Manual was applied for the development of this program. (Anticipate that the Northen Manual reference in Appendix C is typo).		

Memorandum

12 October 2023

To	Dave Rushton/Steven Travale, Municipality of South Bruce		
Copy to	Michelle Nearing/Katie Langdon, NWMO		
From	Chris Ellingwood, Jennifer Son and Greg Ferraro/AD/mma	**Tel**	+1 519 884 0510
Subject	Biodiversity Terrestrial Ecosystem Mapping & Significant Wildlife Habitat Field Data Collection Draft Work Plan – Peer Review Comments	**Project no.**	11224152-MEM-50

1. Introduction

This memo provides the Municipality of South Bruce (South Bruce) peer review team's (PRT's) comments on the *NWMO APM Phase 2 Baseline Environmental Studies – South Bruce, ON, Biodiversity Terrestrial Ecosystem Mapping (TEM) & Significant Wildlife Habitat (SWH) Field Data Collection Draft Work Plan* prepared by Tulloch Environmental (July 17, 2022) for your consideration and internal circulation as per the South Bruce Nuclear Exploration Project joint study review flow process. In addition, the memo will be submitted to the Nuclear Waste Management Organization (NWMO) and their consultants (Tulloch Environmental) by GHD Limited (GHD) as per the peer review protocol process.

2. Peer review approach

The peer review of the Work Plan was carried out by GHD (Subject Matter Expert [SME] and Lead Consultant). The peer review process was completed in alignment with the peer review protocol that was developed to support a collaborative approach between NWMO and South Bruce while maintaining independence during the process. In accordance with the peer review protocol process, the PRT considered the following information during our individual reviews of the *Biodiversity TEM & SWH Field Data Collection Draft Work Plan*:

– Local Avian Species and Habitats – Baseline and Effects Study – Scope of Work (SOW)
– Local Terrestrial Species and Habitats – Baseline Study - SOW

The PRT reviewed the Work Plan having the following questions in mind:

– Are there any significant concerns, issues, and/or omissions with the Work Plan?
– What are our initial observations/impressions on the Work Plan?
    - Have the SOWs been complied with?
    - Does the Work Plan reflect the most current information available?

3. Peer review comments

The comment disposition table (**Table 1**Error! Reference source not found.) lists our combined comments on the Work Plan. The expectation established in the peer review protocol is that NWMO and their consultants will provide responses to **Table 1** comments following its receipt.

The SOWs were brief but appear to have been incorporated into the Work Plan. Overall, the Work Plan was detailed. A few comments have been provided on the SWH surveys and showing presence of candidate and confirmed SWH for all applicable criteria.

As SWH covers a wide range of habitats and species including Species of Conservation Concern, overwintering raptor habitat, and deer yards, as an example, if the surveys are conducted by the wildlife specialists in May- August and September, a few comments below.

Table 1 Peer Review Comments - Biodiversity TEM & SWH Field Data Collection Draft Work Plan

Comment number	Report section reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO/Tulloch to Address)	Peer Review Initial Feedback to NWMO/Tulloch Comments (GHD to complete after previous column completed by NWMO/Tulloch)
1	1	Scope of work is very general but does match the Tulloch TEM - Significant Wildlife Habitat Identification.		
2	1.0 and 2.2.1 and 2.3.1	The Baseline reports for 2022 showed that number of plots completed was much lower than anticipated due to private land access issues. Does this TEM objective of 600 plots need to be revised? Is there a minimum number of plots required for the analyses?		
3	2.3	For all of the candidate SWH included in the background review, how does the field schedule account for candidate features that are best identified through focused field surveys at appropriate time of year? Can you provide some examples of SWH that would not be covered in summer but may require other seasonal field work?		
4	2.3	For candidate SWH involving Special Concern species be it federal and/or provincial that may be identified during breeding bird surveys, amphibian surveys, or vegetation surveys, how does that species habitat get assessed during summer field visits? Is the presence of a SAR special concern species found in point count confirmed by identifying that the habitat is suitable in that full or partial plot survey?		
5	2.3	With 600 plots over a broad study area, what is the anticipated timeline? Is this 1 year, 2, or 3 to cover all plots and for all SWH identified?		
6	2.3.1	As candidate SWH criteria vary widely and are not necessarily related to the area of one plot or are part of a larger woodland, field, or wetland, does the SWH assessment take into account adjacent features? Example vernal pool a few hundred metres away may be used by amphibians foraging in an upland woodland plot.		

Comment number	Report section reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO/Tulloch to Address)	Peer Review Initial Feedback to NWMO/Tulloch Comments (GHD to complete after previous column completed by NWMO/Tulloch)
7	2.3.1	Is candidate SWH criteria known by field crews prior to daily plots completed, to be aware of which criteria may be relevant on that site?		
8	2.3.1	The crews consist of vegetation and wildlife specialists for each plot. Assume the wildlife specialist is also doing bird surveys. Would they relate bird sightings to the SWH criteria applicable?		
9	2.3.1	How SWH is confirmed is not described in this report. Will that be in the SWH baseline reports?		
10	2.3.1	Some SWH criteria may require several site visits to confirm criteria (e.g., Migratory bird stopover site, monarch migration stopover site, waterfowl staging). The criteria assigned at nil. low, medium, high are to determine if confirmation is possible?		
11	3.2	With the study effort required and multiple field staff, abilities, and training, does the audit of the 13 plots revisited monthly take into account if discrepancies are found with certain crew members, weather factors or digital data collection issues? Are the audit reports from 2022 available. Were discrepancies found?		
12	4.1	Statement in section says "*TULLOCH, and subcontractors undertaking field data collection, will not be undertaking interpretation or analysis of TEM and SWH work package data but will strive to organize data in a manner that will facilitate achieving the objectives stated by Zoetica in the Biodiversity Baseline Program Design (Zoetica, 2021).*" Who would be undertaking that analysis?		

Memorandum

18 October 2023 – updated 23 January 2024

To	Dave Rushton/Steven Travale, Municipality of South Bruce		
Copy to	Michelle Nearing/Katie Langdon, NWMO		
From	Laura Lawlor, Greg Ferraro and Jennifer Son/AD/mma	**Tel**	+1 519 884 0510
Subject	Biodiversity Impact Studies – Southwestern Ontario Region: Appendix D - 2023 Aquatic Habitat Mapping Report – Peer Review Comments	**Project no.**	11224152-MEM-62

1. Introduction

This interim memo provides the Municipality of South Bruce (South Bruce) peer review team's (PRT's) comments on the *Draft Biodiversity Impact Studies – Southwestern Ontario Region: Appendix D - 2023 Aquatic Habitat Mapping Report* (Draft Report) prepared by Zoetica Environmental Consulting Services (Zoetica) for your consideration and internal circulation as per the South Bruce Nuclear Exploration Project joint study review flow process. In addition, the memo will be submitted to the Nuclear Waste Management Organization (NWMO) and their consultants (Zoetica) by GHD Limited (GHD) as per the peer review protocol process.

2. Peer review approach

The peer review of the Draft Report was carried out by GHD (Subject Matter Experts [SMEs] and Lead Consultant). The peer review process was completed in alignment with the peer review protocol that was developed to support a collaborative approach between the NWMO and South Bruce while maintaining independence during the process. In accordance with the peer review protocol process, GHD SME Laura Lawlor and GHD Lead Consultants Jennifer Son and Greg Ferraro reviewed the Draft Report having the following questions in mind:

– Are there any significant concerns, issues, and/or omissions with the Draft Report relative to the scope of work outlined in the Work Plan?
– What are our initial observations/impressions on the quality of the Draft Report?
– Are the baseline study findings interpreted and presented in a clear and understandable manner?

3. Peer review comments

As stated above, the comment disposition table (**Table 1**) lists our initial comments on the Draft Report. The NWMO and their consultants provided responses to these comments and addressed each comment where appropriate as part of finalizing the Report.

The completeness of the aquatic habitat mapping cannot be fully assessed at this time as the mapping program is understood to be at an interim stage with further field work required.

The PRT identified that the Draft Report seems incomplete with many sections relating to figures highlighted and blank sections throughout. This leaves uncertainty with the PRT as to the completeness and quality of the findings of the report at this time. It is recommended that a cleaned-up version of the report be provided for thorough review.

Based on completion of the peer review, the PRT finds the Draft Report provides an initial high-level characterization of the aquatic habitats within the Study Areas and a basis for understanding of the aquatic biodiversity values (BVs). The PRT strongly supports the recommendation that a spring reconnaissance survey be completed in 2024 of any reaches identified as being dry in the 2022 field surveys, and complete survey of all reaches (even those that were not dry) if timing allows.

Table 1 Comment Disposition Table - Draft Biodiversity Impact Studies – Southwestern Ontario Region: Appendix D - 2023 Aquatic Habitat Mapping Report

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
1	Title Page	While we understand that the report is being published in 2023, consider renaming the report as "... 2022 Aquatic Habitat Mapping..." for clarity of the year in which the data was collected.	Our preference is for the title to remain as the 2023 Baseline report as the BIS baseline reports will be cumulative reports and a lag between the year of data collection and reporting is typical for the program. A change to the year would require updating many previous annual report drafts and reports produced by other disciplines, which would potentially create internal version control issues and additional confusion.	Comment satisfactorily addressed.
2	Glossary and Abbreviations	We recommend reviewing the acronyms of the report and updating this list accordingly.	We have updated the list of acronyms, thank you.	Comment satisfactorily addressed.
3	Starting in Section 1.0	The subscripts associated with the acronyms are not clearly connected for the reader. We recommend updating the report so the reader understands what these are related to.	The subscripts associated with the acronyms were defined in Section 1.1 when they were first introduced; however, we have also repeated the definitions of these acronyms within Section 2.0 (Study areas) as they pertain to study areas defined by Zoetica and it may be helpful for the reader to view these in this section as well. We have also included these acronyms in the glossary.	Comment satisfactorily addressed.
4	Sections 1.0 - 4.0 & 6.0	Highlighted references to figures and chapters are present throughout these sections. Please provide a clean version of the report.	Highlighted references to figures and chapters were included in drafts as a prompt to Zoetica to verify these references upon report finalization. These are part of our working procedures. These highlights will be removed upon verification and chapter finalization.	Comment satisfactorily addressed.
5	Sections 3.0, 4.0 & 5.0	One or more blank headers are present in these sections. Please provide a clean version of the report.	We could not find any blank headers in these sections. The version of the document that was sent back to us seems to be correct. We will ensure that there are no blank headers in the final version of the PDF document.	Comment satisfactorily addressed.
6	Sections 3.3.1 - 3.3.3	With many references to other reports, it is difficult for the reader to follow what is relevant. Consider including a copy of the final watercourse, waterbodies and wetlands reaches table into this report. Perhaps a reference to Appendix A, Table A1 would address this particular comment.	Thank you for pointing this out We have added references to Table A1 in Sections 3.3.1 – 3.3.3.	Comment satisfactorily addressed.
7	Section 3.3.1	The report states that all watercourses reported in here are	Thank you for catching this. The statement "all watercourses were unconfined and low gradient" was in error and was an accidental	Comment satisfactorily addressed.

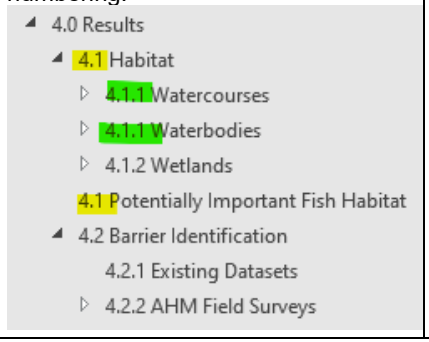
Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
		unconfined and low gradient. We propose that using a more granular definition of 'unconfined watercourse' is appropriate for this project based on the presence of some unconfined watercourses (e.g., many of the headwaters) and higher order, major rivers.	carry-over from the WLON-Ignace site where this was the case. This statement was removed from the text, and the following methodology was updated as follows: "Reach boundaries were delineated based on: – River confluences (e.g., where a tributary meets a larger river); – A distance of at least 100 m from the last boundary (unless tributaries were closer than 100 m); – Locations where watercourse channel patterns change (e.g., change from straight to meandering); – Locations where watercourse habitat attributes change (e.g., change from no wetland to a wetland, change in wetland type, or change in the size of the wetland surrounding the watercourse); – Locations where the permanently vegetated islands change (e.g., no islands to occasional islands); and Locations where the confinement changes (e.g., change from unconfined to occasionally confined)."	
8	Section 3.0	Consider updating the description of methods to provide methodology on how any field-fit results were considered and reported. Identify if desk-based mapping did not align with field conditions observed and locations needed to be shifted. One location this could be addressed in is Section 3.5.	We have expanded on the field methodology section (in Section 3.5) to include how field-fit results were considered and reported. However, field results were not used to update desk-based mapping except when reaches were subdivided, which did not occur in any of the reaches surveyed in 2022. The objectives of desk-based mapping were to delineate reaches based on the criteria outlined in the response to comment #7 such that reaches could be randomly selected for field survey. The purpose of the field-based methods was to characterize habitat data that cannot be gleaned using desk-based methods within a representative site on a reach. Habitat data collected within the site location are assumed to be representative of the overall reach. Additional studies to ascertain aquatic and riparian field conditions relative to desk-based mapping conducted as part of other BIS programs (e.g., Terrestrial Ecosystem Mapping) may be conducted in Tier 2 if the SON-South Bruce site is selected. These studies will include more detailed habitat studies (e.g., OWES) that can be used to update desk-based assessments of habitat.	Thank you for updating the methods since this report and stage of Tier 1 studies does include field results. The second part of this response implies that there were no changes, however it is the PRT's recollection that during GHD's oversite visit there was one location all mapped as a pond which was determined in the field to contain wetland and pond and therefore reach breaks were implemented and the two areas assessed as separate features. This is an example of what the PRT would expect would be captured in Section 3.5 methodologies that would be used to update the data of this report and supersede original desktop analyses.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
9	Sections 3.3 and 3.4.3	Wetland types listed as being present within the various study areas are not consistent between these two sections. Consider updating that section which does not fully reflect the study areas.	Thank you for pointing this out. We have added a sentence to Section 3.3 indicating that no bogs were identified within the natural and naturalized areas of the LSA_{AQU}. We have also included the following statement at the end of section 3.3.3 "As fen wetlands were not accessible during the 2022 field season, this wetland type was excluded from the list of wetland types planned for survey." This edit should now clarify the discrepancy noted and align with the information presented in Table A-1.	Comment satisfactorily addressed.
10	Section 4.0	There appears to be extensive 'Planned 2022 Field Location' areas that were not surveyed. Consider providing the rationale as to why these were not surveyed and if they will be part of remaining Tier 1 studies.	We have added a few sentences to Section 3.6 (Data Analysis) to address this comment: *"A summary of reaches surveyed by the field contractor is provided in **Table A-1**. Many reaches visited during field efforts were dry at the time of survey and thus excluded from the analysis. Additional reaches planned for survey were not visited due to landowner permissions not received in time for survey or due to unsafe conditions (e.g., flooding of land). These reaches may be surveyed in future years if conditions allow*."	Consider modifying the last sentence to "*These reaches will be surveyed in future years of Tier 1 study as conditions allow*". If these field locations were identified through the desktop analysis as valuable to the data collection process, it seems important to capture the information when it can be done safely and with landowner permissions, and for consideration in the Tier 1 assessment.
11	Figure B-1 series and Table C3	'Wetland' as a vegetation cover-type is non-specific and misleading. Based on wetland mapping showing in these figures, wetland land use is present in some locations with mixed woodland vegetation type. This terminology carries through the report text. Consider revising 'wetland' as a vegetation unit or provide a more detailed description of it.	We agree that wetland in the context of riparian cover is better described using the terminology "riparian habitat type" and we have updated the report accordingly. We will also ensure to update the terminology in the BPD Report for future years of Tier 1 study. Zoetica agrees that the information presented in Figure B-1 may be too high-level and may pose confusion where at some locations upland cover types overlap OHN wetland mapping. We have determined that riparian data presented in Figure B-1 and Table C-3 may be misleading as dominant vegetation was determined after field efforts through photos taken at the site and may not be accurate. As such, we have removed Figure B-1 series and have updated Table C-3 to include all vegetation units recorded in each riparian zone similar to Table B-4. These tables are summarized by the proportion of each vegetation type recorded within each categorical grouping and zone and give a better overall understanding of the riparian and wetland habitat surrounding aquatic habitat.	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
12	Appendix B/C	Appendix B tables are incorrectly included in Appendix C. Furthermore, the watercourse and waterbody names listed in Appendix B tables are named but correlation between these and the unique identifiers of the field data is not provided. This makes it very difficult for the reader to be certain which data is represented in which category. Consider providing a cross-referencing table or additional data on the maps to correlate the site data with the tables data.	We cannot see where Appendix B tables are incorrectly included in Appendix C. The version of the document that was sent back to us seems to be correct. However, we have experienced random formatting issues recently that we can't explain, and we will ensure that these tables are correctly placed in the final version of the PDF document. Zoetica has also included an additional table in Appendix A (Table A-2), which outlines which survey sites are affiliated with each grouping category. In addition, we have referenced this new table in the text and within the tables in Appendix B, C, and D to ensure that the reader can cross-reference data summarizations with actual survey locations.	Agreed, the PRT doesn't see the Appendix B/C issue now – apologies for causing confusion. Comment satisfactorily addressed.
13	Appendix Table B5	Highlighted sections of data make it unclear if the data is current, accurate or otherwise.	We have removed the highlighting from this table. All data in the report are current and accurate.	Comment satisfactorily addressed.
14	Appendix Table B2	Including the date(s) which watercourses were surveyed is valuable information to interpret water temperature and DO results. Consider adding this information to Tables B2, C2 and D2.	Thank you for this feedback. Zoetica agrees that dates are important for interpreting water chemistry variables and has included the date ranges in the summary tables in Appendices B, C, and D to assist in contextualizing these measurements. In addition, all raw field data (including dates of field collection) will be available in the NWMO's digital database.	Comment satisfactorily addressed.
15	Section 4.1.2	Information about waterbodies is inconsistently reported. Some lakes or ponds include size and depth (e.g., Silver Lake) while others do not (e.g., Lake L006). Consider updating the text to describe comparable data between all waterbodies.	Information on depth was removed as this information was gleaned through internet searches. More accurate bathymetry surveys were conducted in 2021 and 2022 as part of the Environmental Media Baseline Program and will be used to update this information in future iterations of the baseline report.	Comment satisfactorily addressed.
16	Section 4.2 Barrier Identification (believe this should be 5.2)	Please clarify if all observed culverts were identified as barriers, or were they only identified as barriers if they were perched or otherwise unsuitable for local fish passage.	To date, all culverts were mapped as <u>potential</u> barriers on Figure F-1. Zoetica understands that not all culverts will pose barriers to fish passage; however, they may pose obstacles if they are not maintained properly. The purpose of collecting and mapping culverts, beaver dams, log jams and other features during the Tier 1 AHM surveys was to identify all potential barriers and obstacles such that these areas can be further assessed for fish passage during future Tier 2 surveys, should the SON-South Bruce site be selected. However, upon further assessment, Zoetica notes that some culverts were identified as perched which could make them	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			more likely to be barriers. Zoetica will update the maps and text in Section 4.3 to reflect the difference between culverts that are perched versus those that may not be perched.	
17	Section 6.1 Presence and Distribution of Aquatic Habitat within the BIS Study Areas	The first mention of Cunningham Lake being inaccessible is in the Discussion section. As it has a unique habitat associated with it (floating bog), it is particularly important to capture that habitat information, in whatever format can be safely gathered, to represent that aquatic habitat within the data set.	We have included the following sentence in Section 3.4.2 (Study Design and Survey Site Selection: Waterbodies): "*Cunningham Lake was deemed to be inaccessible based on feedback received by the SVCA indicating that this lake is surrounded by a floating bog; thus, it was excluded from the study design as a result*." Terrestrial Ecosystem Mapping (TEM) studies (Chapter 1, Appendix B) include desk-based mapping of ecosites within the natural and naturalized areas of the LSA_{AQU} including the Greenock Swamp Wetland Complex where Cunningham Lake is situated. Results of desk-based mapping revealed that Cunningham Lake was surrounded by marsh habitat. Further studies may be required to confirm desk-based mapping. Zoetica will assess ways in which this data gap can be filled in future years (e.g., through drone studies).	Comment satisfactorily addressed. Comment satisfactorily addressed.
18	Section 6.5 Limitations	The limitations presented are valid and could use some augmenting. The dry 2022 sampling year, the near absence of primary order streams and headwaters data from at least within the AOI and limited conclusions about whether the selected background watercourses, waterbodies and wetlands is a gap in the Tier 1 studies that should not be overlooked when determining the site selection.	Thank you for the feedback. Zoetica agrees that the absence of primary streams in the assessment is a gap that will require filling, especially for the IA. As a Project Description isn't currently in place for the Project, including where infrastructure may be placed, Zoetica's 2022 Baseline Design focussed on targeting major streams that could be used for water withdrawal and/or water discharge as well as areas downstream that could potentially be impacted by the Project. However, it is Zoetica's intent to survey all reaches that could potentially be impacted by the Project; primary order streams will be included in the continuation of Tier 1 studies and detailed Tier 2 studies if the SON-South Bruce site is selected. Zoetica also recognizes that the dry 2022 sampling year may have impacted the ability to survey aquatic habitats in areas that are prone to drying. Zoetica intends to conduct a reconnaissance survey (anticipated to occur in the spring of 2024) to delineate the potential extent of flooding during the spring freshet and to confirm intermittent or seasonal aquatic habitats. Zoetica intends to include additional AHM surveys in wetlands during the summer to determine whether these aquatic habitats naturally dry during the summer months or if they were dry due to an exceptionally dry season in 2022. If the SON-South Bruce site is selected for the Project, additional, detailed habitat surveys will be conducted in aquatic habitats including watercourses (e.g., through OSAP	Comment satisfactorily addressed. The PRT look forward to reviewing the results of these additional Tier 1 studies, along with the results of the more detailed Tier 2 studies (should the SON-South Bruce site be selected and progress to Tier 2).

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			studies), waterbodies, and wetlands (e.g., through OWES studies) to collect more detailed information in these habitats. We have included additional text in Section 5.5 (Limitations and Next Steps) to discuss these points further.	
19	Section 3.6.1	What was the criteria to determine the errors?	The "errors" referred to in Section 3.6 only refer to formatting issues that require changing so that R code can accommodate the data. For example, where there are no data collected, the field contractor often used "^" or "NA". R statistical program does not deal well with these competing values, and thus the format needs to be changed so that R can run smoothly. Another example may be where the spelling of the same species of habitat changes in the data or differs in its use of upper and lower case letters. Thus, the criteria being searched by Zoetica only included consistency in entries. Zoetica's contract includes assumptions that the final data provided by the field data collection contractor, through the NWMO, are of good quality and in a useable format. The field data collection contractor is responsible for quality-checking their data and correcting any errors prior to submitting the data files to Zoetica. Zoetica conducts a preliminary screening of data for completeness and any obvious errors in the data (e.g., wrong coordinates or information that does not align with the SOP) and provides the field data collection contractor with any questions we have regarding data outputs. However, Zoetica does not change these data, and after any feedback received from Zoetica, it is the responsibility of the field data collection contractor to ensure that data are error-free and of good quality.	Comment satisfactorily addressed. Comment satisfactorily addressed.
20	Section 5.0	The use of year 1 and Tier 1 may be confusing to the reader. It is suggested to reword to the first year of Tier 1 data collection.	Thank you for pointing this out. We have reworded as follows: "*results from the first year of Tier 1 field data collection…*"	Comment satisfactorily addressed.
21	Section 5.4	"AHM data collected in 2022 will ultimately help determine suitable sampling sites for Tier 2 biodiversity studies". What about the data that will be collected in upcoming years that will be collected as part of Tier 1?	We have changed "in 2022" to "during Tier 1 studies" to be inclusive of data that will be collected as part of Tier 1 studies in future years.	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
22	Section 4.0	Duplication present in the heading numbering. 	Thank you for pointing out this error, we have corrected the numbering.	Comment satisfactorily addressed.

Memorandum

18 October 2023 – updated 23 January 2024

To	Dave Rushton/Steven Travale, Municipality of South Bruce		
Copy to	Michelle Nearing/Katie Langdon, NWMO		
From	Laura Lawlor, Jennifer Son and Greg Ferraro/AD/mma	**Tel**	+1 519 884 0510
Subject	Biodiversity Impact Studies – Southwestern Ontario Region: Appendix E - Environmental DNA 2023 Baseline Report – Peer Review Comments	**Project no.**	11224152-MEM-63

1. Introduction

This memo provides the Municipality of South Bruce (South Bruce) peer review team's (PRT's) comments on the *Draft Biodiversity Impact Studies – Southwestern Ontario Region: Appendix E - Environmental DNA 2023 Baseline Report* (Draft Report) prepared by Zoetica Environmental Consulting Services (Zoetica) for your consideration and internal circulation as per the South Bruce Nuclear Exploration Project joint study review flow process. In addition, the memo will be submitted to the Nuclear Waste Management Organization (NWMO) and their consultants (Zoetica) by GHD Limited (GHD) as per the peer review protocol process.

2. Peer review approach

The peer review of the Draft Report was carried out by GHD (Subject Matter Expert [SME] and Lead Consultant). The peer review process was completed in alignment with the peer review protocol that was developed to support a collaborative approach between the NWMO and South Bruce while maintaining independence during the process. In accordance with the peer review protocol process, SME Laura Lawlor and GHD Lead Consultants Jennifer Son and Greg Ferraro reviewed the Draft Report having the following questions in mind:

– Are there any significant concerns, issues, and/or omissions with the Draft Report relative to the scope of work outlined in the Work Plan?
– What are our initial observations/impressions on the quality of the Draft Report?
– Are the baseline study findings interpreted and presented in a clear and understandable manner?

3. Peer review comments

As stated above, the comment disposition table (**Table 1**) lists our initial comments on the Draft Report. The NWMO and their consultants provided responses to these comments and addressed each comment where appropriate as part of finalizing the Draft Report.

The PRT understands that the Draft Report is an interim report presenting and interpreting data collected during the initial Tier 1 field program. The peer review identified a number of inconsistencies throughout the Draft Report regarding the study area and what species were detected and reported on. This leaves the reader with a high level of uncertainty as to the reliability of the initial study findings

However, based on completion of the peer review, PRT finds the Draft Report provides an early indication of the potential composition of species within the Area of Interest (AOI) and Local Study Area (LSA) and potential interactions between the Adaptive Phased Management (APM) Project and biodiversity values (BVs) that could result in changes to those BVs.

Table 1 Comment Disposition Table - Draft Biodiversity Impact Studies – Southwestern Ontario Region: Appendix E - Environmental DNA 2023 Baseline Report

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
1	Section 2.0 Study Areas and Section 3.1 Survey Locations	The workplan references that eDNA samples will be collected from the AOI, LSA and RSA. The eDNA baseline report Section 2 states study areas will focus on the AOI and LSA and control sites from within the RSA Per section 3.1 results are only presented for the AOI and the LSA. Please identify why samples were only collected from the AOI and LSA and if an expanded study area is being planned for.	The text throughout the document has been updated to reflect that sampling occurred within the AOI, LSA_{AQU}, RSA_{AQU}, and outside the RSA_{AQU}. Due to the small number of sites outside the LSA_{AQU}, results from the RSA_{AQU} and outside the RSA_{AQU} are included with the LSA_{AQU} results in the Appendices; the table captions have been updated to reflect this. The sites located in the RSA_{AQU} or outside of the RSA_{AQU} are specified in the appendix tables. Sites within the AOI and LSA_{AQU} were the focus of the eDNA metabarcoding studies due to these areas receiving the expected impacts of the Project. Waterbody and watercourse sites in the RSA_{AQU} and outside the RSA_{AQU} were chosen for sampling as these reference sites are meant to be close to the conditions of lakes in the Greenock Swamp, which is in the LSA_{AQU}, and the inlets and outlets of those lakes. eDNA metabarcoding studies may expand into and outside of the RSA_{AQU} as part of Tier 2 studies ,should the SON-South Bruce siting area be chosen for Tier 2 studies.	Comment satisfactorily addressed.
2	Section 3.1 Survey Locations	The workplan anticipated 181 sample locations, while the eDNA baseline report only sampled 132 stations. Consider providing a concordance table in the eDNA baseline report that identifies which sample locations were anticipated vs which were sampled, and the rationale those which remained unsampled. Without this the reviewers are unable to confidently determine that the 2022 sampling program was completed in accordance with the proposed workplan.	We added a concordance table to Appendix J (Table J-1) listing the number of sites for each study area and habitat type that were planned, sampled, and attempted but unsampleable. We added a note to Table J-1 that sites planned but not visited in 2022 were not accessible at the time of sampling. We expanded on the rationale for unsampled locations in Section 3.1 and Section 3.2.1 regarding the limitations of access and lack of water at sites during field work. Please note that Table J-1 indicates that 97 sites were sampled, and Table 3-1 indicates there were 158 sampling locations across two sampling seasons (occasions) The discrepancy is due to some sites being sampled in both seasons. We added language to Section 3.1 to reflect that some locations were sampled in both seasons.	Comment satisfactorily addressed.
3	Section 3.3	A highlighted reference to another section/chapter is present in this section. Please provide a clean version of the report.	The highlight in question is for adding a cross-reference to another section of the 2023 Baseline Report. Cross-references will be added and highlights will be removed after the document is finalized.	Comment satisfactorily addressed and thank you for clarifying.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
4	Sections 3.1 & 3.4	Please clarify the number of eDNA samples collected; the values are different between Section 3.1 (630) and 3.4 (609)	There is a discrepancy between the numbers because there was a subset of collected samples that were excluded from analysis because their date of collection could not be verified. The text in Section 3.1 has been updated to reflect that there were 609 samples with verified provenance and that were included in data summaries.	Comment satisfactorily addressed.
5	Section 3.4	When results indicated species present that are not found in the area, what process did the Hanner lab take as further investigation, and are the results of this additional investigation included in this report?	Information about what the Hanner Lab does to review the results that we flag as out-of-range, species of conservation concern, or invasive species was and is included in Section 4.2.1 (Geographic Curation), as are the results of their investigations. We added a phrase, “and barcode gap analyses, if possible” to this statement in Section 4.2.1, which now reads, “The Hanner Lab investigated the out-of-range taxa for identification data available in public databases, the quality of those data, the quality of the eDNA result, considered the geographic range of the identified species and known relatives, and performed barcode gap analyses, if possible.”	Comment satisfactorily addressed.
6	Section 3.4	Please provide R code for the statistical analyses.	R code used in the statistical analysis of sampling location covariates will be made available via a digital link.	Comment satisfactorily addressed.
7	Sections 3.#	Appendix referencing is inconsistent between report sections.	We cannot find inconsistencies in appendix referencing within the eDNA Appendix. A full verification for consistency in referencing between chapters of the BIS Baseline Report will occur before document finalization.	Comment satisfactorily addressed.
8	General	Please clarify at what stage and in which report the results of the eDNA baseline will be validated against/compared with the results of any visual observations (direct and indirect) of species presence, Significant Wildlife Habitat implications and habitat suitability.	The intent of the eDNA Appendix is to present overall results of eDNA metabarcoding studies. Individual BV chapters address and interpret results from eDNA metabarcoding and all other Tier 1 studies that apply to the BVs in question. For example, Tier 1 results from AHM, TEM, eDNA, and SWH studies pertaining to fish are addressed in the Fish and Fish Habitat Chapter (Chapter 8) of the 2023 BIS Baseline Report. As Tier 1 studies focus on broad-scale, foundational environmental data collection, the results of all Tier 1 studies should be considered together to inform decision-making for more focused data collection in Tiers 2 and 3, should the SON-South Bruce siting area be chosen for Tier 2 studies.	Comment satisfactorily addressed and thank you for clarifying.
9	Figures and Section 4.1.4	Presence of Species of Concern is referenced in Section 4.1.4 but are not identified on any figures. Consider	This comment is incorrect. Locations of detections of Species of Conservation Concern were and are depicted in Figure I-1 (Species at risk detections from eDNA samples collected in	Thank you for clarifying. Upon review the PRT acknowledge that Figures I-1 do include the

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
		updating all relevant figures with this information so it is not interpreted as an omission or devaluing of the results.	2022), which is referenced in Section 4.1.4. It is unclear if there are other "relevant figures" intended by this comment. We added additional references to Figure I-1 within Section 4.1.4 and in the Discussion section when the text mentions species of conservation concern to help assure that future readers do not miss this figure reference.	identification of Species of Conservation Concern. Comment satisfactorily addressed.
10	Figures and Section 4.1.5	Similar to Item 9, when the species of interest to rights-holders are identified, mapping of the presence of these species should be included in this report.	When species of interest to stakeholders, rights-holders, and species of potential socio-economic interest are identified, they will be discussed in detail in future iterations of the BIS Baseline Report. This topic is addressed in Section 4.1.5. In some cases, it is not prudent to map certain species following NHIC guidance and data masking principles that the NWMO values, as rights-holders do not want maps of key species of interest mapped in a way that could lead to their exploitation.	Where data sensitivity exists, the PRT agree that it must be handled appropriately. Respecting that and as inclusion of this is important to the fulsome analysis, the PRT look forward to future iterations of the BIS Baseline Report. Comment satisfactorily addressed.
11	Figures and Section 4.1.6	Similar to Item 9, consider updating all relevant figures to indicate where the detections of invasive fauna were made.	Similar to Item 9, locations of detections of invertebrate invasive species were and are depicted in Figure I-2 (Invertebrate invasive species detections from eDNA samples collected in 2022), which is referenced in Section 4.1.6. It is unclear if there are other "relevant figures" intended by this comment. We added additional references to Figure I-2 within Section 4.1.6 and in the Discussion section when the text mentions invasive species to ensure that this figure is not overlooked by future readers.	Thank you for clarifying. Upon review the PRT acknowledge that Figures I-2 do include the identification of invasive species. Comment satisfactorily addressed.
12	Appendix A – Barcode Gap Analyses	A number of species appear to be missing from this analyses, namely species of special concern. It is also inconsistent as to whether or not invasive species are included. Please identify why these species were not subjected to the gap analyses.	Due in part to the complexity of eDNA metabarcoding data analysis and the short timeframe to complete the 2023 BIS Baseline Report, we limited the number of species submitted to the Hanner Lab for further investigation to the multiple out-of-range species and SAR with a NatureServe Conservation Rank in Ontario of S2 or lower (as stated in Section 4.1.4). The results for pugnose shiner and monarch (the two S2 species detected with eDNA in the current study) are presented in Table 4-3; as this information is included in the main text it was not repeated in Appendix A. The common and expected species of concern, with known or previously documented presence in the area, such as digger crayfish, were not examined further using a barcode gap analysis. We included further investigations for S2 species as a starting point; S3 and other species may be assessed in the future as eDNA studies continue. The data used in the present eDNA Appendix has been stored in its entirety, and thus will be available to be reanalyzed with eDNA samples collected in the	Comments partially addressed. Acknowledged that statements are made in the report text that these lists include species from both siting locations being considered, however it is confusing for readers to understand which species in these lists pertain to this project locations. Clarity on which species listed in appendix tables A-1 and A-2 are relevant to this project vs the WLON-Ignace is recommended for the understanding of the reader.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			future against more updated reference libraries, therefore any updates to publicly available data that enhance species detections will be available in later summaries and analyses. The species included in Table A-1 are from a list of species submitted to the Hanner lab for barcode gap analyses before data were collected (and is outlined in the first paragraph of Section 3.3, Laboratory Analyses) as "potentially occurring" species of importance. This list was created based on investigations of species ranges and previous records of species of interest (to rights-holders, stakeholders), including species of conservation concern or invasive species. Table A-1 includes barcode gap analysis results for some invasive species, such as the rusty crayfish, as indicated in Section 4.1.6. The species included in Table A-2 are a result of previous eDNA metabarcoding results from the WLON-Ignace siting area (as outlined in Section 5.2, Ongoing Investigations), and are included in this report because there is some overlap of invasive, out-of-range, or unexpected species detections between the WLON-Ignace and SON-South Bruce siting areas. As indicated in Section 4.1.6, Table A-2 includes results for invasive invertebrates such as the octagonal tail worm, red earthworm, and spongy moth. It is inaccurate to state that some species are "missing" from Appendix A because it was never intended for a barcode gap analysis to be performed for every species detected with eDNA metabarcoding. Added text to the caption for Table A-1 to clarify that the species in the table were designated prior to data collection.	If the desire is to present data once is maintained, consider adding a note to the Appendix A tables to identify that these are not entire lists of project species identified where the species of special concern or invasive species are identified in the report body.
13	Appendix A – Barcode Gap Analyses	The extensive number of species without a barcode gap analysis reduces the confidence in the results provided.	We disagree with this interpretation. Detection of a species with a barcode gap is more reliable than detection of a species without a barcode gap or a species for which a barcode gap has not been assessed; however, lack of a barcode gap, insufficient data to assess the existence of a barcode gap, or not being assessed for a barcode gap does not mean that the result is incorrect or should be discarded. Performing the bioinformatics procedures to execute a barcode gap analysis is complicated and time-consuming, which makes performing barcode gap analyses for all detected species impractical. For many species, particularly the common species that we are confident are present because they are widely detected (e.g., muskrat) or have been detected with other means (e.g., incidental observations), there is no advantage in performing a barcode gap analysis. It is more efficient and logical to focus efforts on using barcode gap analyses to increase	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			confidence in detections of species that are unexpected (e.g., outside of their known range), of conservation concern, or invasive. Focusing additional bioinformatics effort on detections of a subset of species makes sense to enhance confidence in detections of cryptic species, but often the more unusual species will be more difficult to assess for barcode gaps, as available data may be limited (addressed in Section 5.1). In addition, eDNA metabarcoding and other Tier 1 studies are not meant to be interpreted in isolation, but together to provide information on biodiversity patterns and habitat. For some species that are not ideal candidates for detection with eDNA metabarcoding (e.g., those with a more terrestrial or arboreal lifestyle), Tier 2 studies using traditional sampling methods may be planned should the SON-South Bruce siting area be chosen for Tier 2 studies (as addressed in Section 5.3). *A priori*, we requested barcode gap analyses on species we identified as potential species of interest that may be present, including common species we expected to detect as well as potential invasive species and SAR. As species of interest to stakeholders, rights-holders, and species of potential socio-economic interest are identified, or more unexpected species are detected, additional barcode gap analyses may be performed to better understand the biodiversity patterns across the study areas. We added a sentence clarifying metabarcoding to the Methods section (Section 3.3). We added the term “metabarcoding” throughout the eDNA Appendix, as appropriate, to emphasize the nature of this eDNA study, as well as a footnote in Section 1.0 indicating that all eDNA studies referred to in this Baseline Report are eDNA metabarcoding. We added language to Section 5.3 (Future Directions) regarding the future re-assessment of results presented in this report as more samples are collected and techniques improve.	
14	Section 4 tables	Consider updating notes to remove reference to barcode gap assessment or add the associated data into the tables.	References within the table to barcode gap analyses have been removed and replaced with a general reference to Appendix A.	Comment satisfactorily addressed.
15	Table 4-7 (Amphibian Species	How are the absence of common species (e.g., leopard frog) considered in this report? Further, how are absences of common species expected	It is important to note and acknowledge that eDNA metabarcoding does not verify absence of a taxa, rather that taxa are either detected or not detected. Therefore, certain species are not “absent”; they were not detected. Potential reasons for	Inclusion into this report of a statement related to the additional work being completed to primer updates are valuable,

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
	Detected) / General	to be present but not documented in the eDNA results considered in the modification of future study designs and data collection events?	nondetection of certain species known or suspected to be present is considered in detail in Section 5.1, Current Limitations. eDNA metabarcoding is a rapidly advancing field of study, with data, methods, and procedures being refined as more is learned. The lack of detections of species that are expected may be due to locations sampled not containing eDNA. However, primers and eDNA library deficiencies can also be at play. Mock community studies and samples of local tissues are being used by the Hanner Lab to ensure that primers and current eDNA reference libraries can detect local species. These studies will be used to refine methods (e.g., add additional primers) where needed if the SON-South Bruce site is selected. The data used in the present eDNA Appendix has been stored in its entirety, and thus will be available to be reanalyzed with eDNA samples collected in the future against more updated reference libraries, therefore any updates to publicly available data that enhance species detections will be available in later summaries and analyses. eDNA metabarcoding results are not meant to be reviewed in isolation, nor meant to replace other studies or sampling methods. As Tier 1 studies focus on broad-scale, foundational environmental data collection, the results of all Tier 1 studies should be considered together to inform decision-making for more focused data collection in Tiers 2 and 3, should the SON-South Bruce siting area be chosen for Tier 2 studies. For some species that are not ideal candidates for detection with eDNA metabarcoding (e.g., species with low shedding rate such as reptiles), Tier 2 studies using traditional sampling methods may be planned should the SON-South Bruce siting area be chosen for Tier 2 studies. We added language to Section 5.3 (Future Directions) regarding the future re-assessment of results presented in this report as more samples are collected and techniques improve.	as is stating in the report that eDNA metabarcoding results are not meant to be reviewed in isolation.
16	Section 4.2.5 - Fish	Where in the results are the 3 other native crayfish species documented in the eDNA results? They are not listed in Tables 4-9, 4-10 nor Appendix A.	Crayfish and bivalve species were and are included in Section 4.2.5 because aquatic invertebrates are discussed in the same chapter with fish species because they share habitat (Chapter 8, Fish and Fish Habitat). We added crayfish and bivalve species to Table 4-9 and Section 4.2.5 was renamed to “Fish, Crayfish, and Mussels.” Crayfish species were and are included in Table 4-10, (Invertebrate families detected with eDNA samples in 2022, organized by class; freshwater crayfish are class Malacostraca,	Apologies for missing their presence in Table 4-10. Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			family Cambaridae). We added a note to Table 4-10 to indicate the crayfish family and detected species. Appendix A is for barcode gap analyses, thus if a species was not investigated for barcode gaps, then it would not be listed in Appendix A. At this time, the only crayfish species investigated for barcode gaps is the invasive species rusty crayfish (discussed in Section 4.1.6 and included in Table A-1). The crayfish are invertebrates and as such the locations of detections of these species are included in Appendix G.	
17	Table 4-9 (Fish Species Detected) and Appendix A	Please review all tables against appendix results. For example, Wels catfish is listed in Appendix A as having been analyzed for a barcode gap, but the invasive fish species is not listed in Table 4-9 as being present in the samples collected in 2022.	Table 4-9 includes fish species detected with eDNA samples collected in 2022. Wels catfish is not listed in Table 4-9 because it was not detected via eDNA metabarcoding. The species included in Table A-1 are from a list of "potentially occurring" species submitted to the Hanner lab for barcode gap analyses before data were collected (outlined in the first paragraph of Section 3.3, Laboratory Analyses), and do not correspond to detected species. The species included in Table A-2 are a result of eDNA metabarcoding results from the WLON-Ignace siting area (as outlined in Section 5.2, Ongoing Investigations), and are included here because there is some overlap of invasive, out-of-range, or unexpected species detections between the WLON-Ignace and SON-South Bruce siting areas. It was never intended for a barcode gap analysis to be performed for every species detected with eDNA metabarcoding, nor did we expect to detect every species for which a barcode gap was assessed. Added text to the caption for Table A-1 to clarify that the species in the table were designated prior to data collection.	Comment satisfactorily addressed.
18	Section 5.1 - Current Limitations	How will the 2022 results guide updates to the workplan? In particular how is the absence or under-representation of expected species going to influence changes in survey timing, volume of sample collected, frequency of sampling, etc.?	It is important to note and acknowledge that eDNA metabarcoding does not verify absence of a taxa, rather that taxa are either detected or not detected. Therefore, certain species are not "absent"; rather they were considered to be 'not detected'. Potential reasons for nondetection of certain species known or suspected to be present is considered in detail in Section 5.1, Current Limitations. There are multiple reasons for nondetections, such as suitability of primers to amplify taxa and sufficient data in databases, that are the result of "taxonomic blind spots" and are areas of active research, including adjustments to laboratory and bioinformatic methods. Nondetections as the result of taxonomic blind spots will not be affected by adjustments to field methods. Other species may not have been detected because they are only	Comment partially addressed. It is agreed that eDNA analyses do not verify absence of taxa; the comment was intended to identify that while eDNA is an extremely powerful tool, these results alone should not be considered representative of the entire faunal community (as exampled by non-detections of common, expected species). It reflects a limitation of use of

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			present seasonally, thus may be detected with future sampling, as is planned as part of Tier 1 studies. eDNA metabarcoding is a rapidly changing field, with data, methods, and procedures updating on a regular basis. The data used in the present eDNA Appendix will be reanalyzed with eDNA samples collected in the future, therefore any updates to publicly available data that enhance species detections will be available in later summaries and analysis. eDNA metabarcoding results are not meant to be reviewed in isolation, nor meant to replace other studies or sampling methods. As Tier 1 studies focus on broad-scale, foundational environmental data collection, the results of all Tier 1 studies should be considered together to inform decision-making for more focused data collection in Tiers 2 and 3, should the SON-South Bruce siting area be chosen for Tier 2 studies. Section 5.3 addresses potential future studies. For some species that are not ideal candidates for detection with eDNA metabarcoding (e.g., species with low shedding rate such as reptiles), Tier 2 studies using traditional sampling methods may be planned should the SON-South Bruce siting area be chosen for Tier 2 studies. We added language to Section 5.3 (Future Directions) regarding the future re-assessment of results presented in this report as more samples are collected and techniques improve. We added language to Section 3.3 to clarify that a non-detection is not interpreted as absence.	eDNA at the Tier 1 stage and fixed methodologies versus establishing sample methodologies designed to capture habitat-relevant methods (e.g., monitoring in seasons of high shed rates for species of interest in riverine environments). Request clarification for what 2024 eDNA efforts will be built into the workplan.
19	Section 5.3 - Future Directions	Consider including targeted surveys for all species of concern identified in 2022 eDNA results, along with those identified in background reviews. Targeted surveys should occur in all areas of identified suitable habitat within the AOI and representative LSA. This requires coordination between the results of the Aquatic Habitat Mapping, eDNA and baseline reports.	The current eDNA metabarcoding program is part of Tier 1 studies, foundational data collection, which will be used to direct more specific studies should the SON-South Bruce siting area be selected for Tier 2 studies. Tier 2 studies will focus on target taxa and biodiversity values identified from Tier 1 studies, should the SON-South Bruce siting area be chosen for Tier 2 studies. If the reviewer is thinking of targeted eDNA studies, targeted assays for SAR may be included as part of Tier 2 studies. However, if the reviewer is referring to targeted studies using traditional survey methodologies, these are also planned within Tier 2 and potentially Tier 3 studies if the SON-South Bruce area is selected for the project. Some species that have more terrestrial and arboreal lifestyles, or that have low shedding rates are not ideal candidates for detection with eDNA metabarcoding, therefore Tier 2 studies using traditional sampling methods or other targeted	As it stands, the existing Section 5.3 does not provide detail on what additional work will be completed as part of the Tier 1 studies. Please clarify what additional eDNA work is being completed in 2024.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			survey methods for unexpected species would be required as part of Tier 2 studies. Section 5.3 addresses potential future studies.	
20	Appendix G	Consider including a sum taxa richness value to the tables to provide an easier understanding for the reader of the results.	We added a table (Table K-1) of counts of species detected with eDNA by site, season, and taxa group in Appendix K.	Comment satisfactorily addressed.
21	Appendix J	Many sample locations appear to not be represented in the results of covariates summarized in this appendix. Consider explaining why not all variables were sampled and documented at all sample locations.	We added text to Section 3.4 regarding field crew comments as to why environmental variables were not collected at every sampling site.	Comment satisfactorily addressed.

Memorandum

7 November 2023 – updated 23 January 2024

To	Dave Rushton/Steven Travale, Municipality of South Bruce		
Copy to	Michelle Nearing/Katie Langdon, NWMO		
From	Chris Ellingwood, Jennifer Son and Greg Ferraro/AD/mma	**Tel**	+1 519 884 0510
Subject	Biodiversity Impact Studies – Southwestern Ontario Region: Appendix C - Significant Wildlife Habitat 2023 Baseline Report – Peer Review Comments	**Project no.**	11224152-MEM-64

1. Introduction

This interim memo provides the Municipality of South Bruce (South Bruce) peer review team's (PRT's) comments on the *Draft Biodiversity Impact Studies – Southwestern Ontario Region: Appendix C - Significant Wildlife Habitat 2023 Baseline Report* (Draft Report) prepared by Zoetica Environmental Consulting Services (Zoetica) for your consideration and internal circulation as per the South Bruce Nuclear Exploration Project joint study review flow process. In addition, the memo will be submitted to the Nuclear Waste Management Organization (NWMO) and their consultants (Zoetica) by GHD Limited (GHD) as per the peer review protocol process.

2. Peer review approach

The peer review of the Draft Report was carried out by GHD (Subject Matter Experts [SMEs] and Lead Consultant). The peer review process was completed in alignment with the peer review protocol that was developed to support a collaborative approach between the NWMO and South Bruce while maintaining independence during the process. In accordance with the peer review protocol process, GHD SME Chris Ellingwood and GHD Lead Consultants Jennifer Son and Greg Ferraro reviewed the Draft Report having the following questions in mind:

– Are there any significant concerns, issues, and/or omissions with the Draft Report relative to the scope of work outlined in the Work Plan?
– What are our initial observations/impressions on the quality of the Draft Report?
– Are the baseline study findings interpreted and presented in a clear and understandable manner?

3. Peer review comments

As stated above, the comment disposition table (**Table 1**) lists our initial comments on the Draft Report. The NWMO and their consultants provided responses to these comments and addressed each comment where appropriate as part of finalizing the Report.

During the review of the *NWMO APM Phase 2 Baseline Environmental Studies – South Bruce, ON, Biodiversity Terrestrial Ecosystem Mapping & Significant Wildlife Habitat Field Data Collection Draft Work Plan* (see MEM-50), the PRT raised several questions about the data collected in the first year of the field program and the next steps in the confirmation of SWH features within the study area.

Based on completion of the peer review, the PRT finds the Draft Report provides a complete summary of all data collected in 2022 but that additional data is still necessary to collect for confirmation of Significant Wildlife Habitat (SWH).

Table 1 Comment Disposition Table - Draft Biodiversity Impact Studies – Southwestern Ontario Region: Appendix C - Significant Wildlife Habitat 2023 Baseline Report

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
1	Appendix C - baseline report Table 41	Table 41 provides overview of all SWH, the mapped habitat, and next steps. The reports provided to date have not provided dates for those additional surveys required to confirm SWH, particularly seasonal targeted surveys. Is there going to be methodology prepared for all those additional surveys (e.g., deer yards, turtle nesting, amphibian, colonial nesting, turtle wintering areas, etc.)?	Detailed field investigations to confirm SWH, including seasonal targeted surveys, are planned as part of Tier 2 baseline studies. These Tier 2 studies would only be conducted if the SON-South Bruce siting area is selected for the Project. The NWMO currently anticipates that Project site selection will occur at the end of 2024. At that point, Zoetica would prepare an updated BIS Baseline Program Design (BPD) Report that describes Tier 2 studies anticipated to begin in 2025.	Comment satisfactorily addressed.
2	Throughout report	Many comments of "*should be assessed*", "*ongoing research…may identify*", and "*should be further investigated*". There is no commitment to further studies or when regulatory agencies will be engaged.	Please see Zoetica's response to Comment #1 – detailed Tier 2 studies are anticipated to commence in 2025, provided the SON-South Bruce siting area is selected for the Project. The language is understood to be non-committal because certain future studies will not be pursued if the SON-South Bruce site is not selected. If the SON-South Bruce site is not selected, future studies will focus on the WLON-Ignace site. Regulatory agencies are being engaged throughout the pre-planning phase and will continue to do so once a site is selected to confirm that the NWMO is meeting regulatory expectations.	Comment satisfactorily addressed.
3	3.0 Methods	No reference is made to the work plan. Were all works conducted as proposed?	The field data collection contractor is responsible for submitting a field report summarizing the work completed. Zoetica received the 2022 TEM/SWH field report from the NWMO on 17 November 2023. Works were conducted as proposed in Tulloch's work plan except for the total number of plots visited vs. planned due to access limitations, and the need for post-hoc data QC (rather than ongoing during the field season) due to digital field form and database issues. Zoetica will incorporate pertinent details from the 2022 field report into the final SWH Appendix C, including any discrepancies between the work plan and works conducted.	Comment satisfactorily addressed.
4	4.1.1 Waterfowl Stopover and Staging Areas (Terrestrial)	*"…five (1.1%) were assigned as "unknown", and the remaining 468 (98.9%) were not considered suitable Waterfowl Stopover and Staging Areas (Terrestrial)"* The five unknown plots were justified	The field data form for Tier 1 SWH surveys included a data field for whether Habitat Criteria from the SWH Criteria Schedule for Ecoregion 6E (6E ECS) were met, with the options of "Yes", "No", and "Unknown". Zoetica instructed field surveyors to record additional habitat details and	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
		(potential to flood), what is the justification for the not suitable ones?	rationale for "Yes" and "Unknown" plots but not for "No" plots because this would have been excessively onerous. Tulloch's field crews were provided with the 6E ECS during training and were also experienced and knowledgeable about SWH. When TEM plots were marked as "No" – not suitable as candidate SWH – it is assumed that the plot did not meet the 6E ECS habitat criteria. With respect to Waterfowl Stopover and Staging Areas (Terrestrial), of the 468 plots marked as "No", field surveyors indicated that 459 plots did not meet the ecosite criteria noted in the 6E ECS. Where field surveyors recorded additional habitat details for these "No" plots, they noted the lack of open fields or the unsuitable habitat (e.g., swamp). No additional habitat details were available for the nine plots where the plot ecosite matched the 6E ECS, but habitat criteria were still unmet.	
5	4.1.2 Waterfowl Stopover and Staging Areas (Aquatic)	*"…surveyors determined this marsh polygon to be unsuitable as SWH"* Can justification be provided?	Please see Zoetica's response to Comment #4 regarding documentation of unsuitable/not-candidate SWH plots. With respect to Waterfowl Stopover and Staging Areas (Aquatic) and this specific marsh polygon, field surveyors indicated that the plot ecosite matched 6E ECS criteria, but habitat characteristics did not. No additional habitat notes were available. Zoetica will include this clarification/justification in our report revisions.	Comment satisfactorily addressed.
6	4.1.3 Shorebird Migratory Stopover Area	*"Unfortunately, this ecosite was not selected for Tier 1 terrestrial field studies in 2022."* Can justification be provided as why it was not selected?	Although this marsh ecosite polygon within the AOI was partially accessible, it was not selected for Tier 1 TEM studies (which drove the terrestrial study design) as it did not meet the minimum area size and/or shape requirement for TEM plots (20x20 or 10x40 m with a 20 m buffer). Tier 1 SWH surveys were conducted opportunistically alongside TEM. Should the SON-South Bruce siting area be selected for the Project, future Tier 2 SWH studies will prioritize surveying ecosites/habitats where pertinent desk- and/or field-based species observations were made, especially within the AOI and LSA_{TER} where direct and indirect Project impacts are expected to extend (pending access limitations), including for Shorebird Migratory Stopover Area at the marsh ecosite in question.	Comment satisfactorily addressed.
7	4.1.9 Colonially-nesting	"*Unfortunately, this area was not surveyed in 2022*"	This marsh ecosite within the AOI, adjacent to where cliff swallows were observed (desk-based data), and through	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
	Breeding Bird Habitat (Bank and Cliff)	Can justification be provided as to why it was surveyed? Will it be surveyed in 2024?	which a tributary to Alps Creek flows (potentially with eroding banks suitable for cliff swallows), was not accessible in 2022 and was, therefore, not selected for Tier 1 TEM studies. However, it may be possible to survey this area for Colonially-Nesting Breeding Bird Habitat (Bank and Cliff) from a distance from Bruce Road 6; this location will be prioritized in Zoetica's future Tier 2 SWH study design and survey location selection, should the SON-South Bruce siting area be selected for the Project.	
8	4.3.1 Waterfowl Nesting Area	"*Unfortunately, this ecosite was not surveyed in 2022."* Can justification be provided as to why it was not surveyed?	Please see Zoetica's response to Comment #6 – the marsh ecosite where 15 Canada geese were observed during the nesting season is the same location where a variety of shorebirds were observed during migration (all from GBIF dataset).	Comment satisfactorily addressed.
9	4.3.1 Waterfowl Nesting Area	"…s*urveyors did not consider this ecosite to be suitable as Waterfowl Nesting Area*" Why was it not considered? Can justification be provided?	Please see Zoetica's response to Comment #4 regarding documentation of unsuitable/not-candidate SWH plots. With respect to Waterfowl Nesting Area and the specific ecosite, field surveyors indicated that the plot's habitat characteristics did not match 6E ECS criteria. No additional habitat notes were available. Zoetica will include this clarification/justification in our report revisions.	Comment satisfactorily addressed.
10	4.3.4 Turtle Nesting Areas	*"Unfortunately, the single polygon identified as candidate SWH within the AOI, via desk-based ecosite analyses, was not ground-truthed in 2022."* Why was it not ground-truthed? Can justification be provided?	Although this marsh polygon within the AOI was accessible in 2022, it was not selected for Tier 1 TEM studies (which drove the terrestrial study design) as it did not meet the minimum area size and/or shape requirement for TEM plots (20x20 or 10x40 m with a 20 m buffer). Tier 1 SWH surveys were conducted opportunistically alongside TEM. Should the SON-South Bruce siting area be selected for the Project, future Tier 2 SWH studies will prioritize surveying ecosites/habitats where pertinent desk- and/or field-based species observations were made, especially within the AOI and LSA_{TER} where direct and indirect Project impacts are expected to extend (pending access limitations), including for Turtle Nesting Areas at the marsh ecosite in question.	Comment satisfactorily addressed.
11	4.3.5 Seeps and Springs	*"Water saxifrage (Saxifraga aquatica) is a European species and is not known in Ontario, Canada, or North America. A similar local species may have been observed during 2022 terrestrial field studies and colloquially recorded as "water saxifrage".*	The field data collection contractor is responsible for completing QA/QC of their own data prior to submission to the NWMO and then to Zoetica. Data received by Zoetica were assumed to be in a cleaned, error-free, useable format.	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
		Was there no QA/QC of data to confirm species prior to reporting?	"Water saxifrage" was noted within Habitat Details and Rationale (a text/string field on the digital data form), and it may have been difficult to QA/QC such observations. Once the data were received by Zoetica, we also completed data verification for incidental species observations, such as resolving ambiguously named species. However, due to time constraints for the draft deliverable submission, we were unable to confirm this particular observation with Tulloch. We have since contacted Tulloch for clarification; they suspect the observation was of swamp saxifrage (*Micranthes pensylvanica*). We will revise this species identification in the SWH appendix.	
12	4.3.5 Seeps and Springs	*"The 2022 summer survey results are valuable as they would have identified potential seeps/springs that provide year-round moist conditions and are more important than those that dry up in the summer (OMNR 2000)"* Why are there no summer survey results for 2022?	Zoetica apologizes if the language was confusing. The results presented in Section 4.3.5 **are** the 2022 summer survey results for Seeps and Springs. The quoted wording is meant to explain that the summer data collected in 2022 may be particularly useful for identifying candidate and potentially confirmed SWH, as these summer surveys identified more persistent or permanent seeps and springs (i.e., those that did not dry up during the summer). We will attempt to clarify the report wording by removing "would have", which is likely the confusing wording. Instead, we will change this to read, "*The 2022 baseline data are valuable as these summer surveys identified potential seeps/springs that provide year-round moist conditions, which are likely more important than seeps/springs that are present in the spring but dry up prior to or early in the summer (OMNR 2000)*."	Comment satisfactorily addressed.
13	4.3.6 Amphibian Breeding Habitat (Woodland)	*"It is likely that the two surveyors witnessed the same group of frogs moving through the forest."* What was the determination that it is likely that they witnessed the same group of frogs?	The two observations of "100" juvenile wood frogs were made approximately 30 m from each other on the same date (July 27, 2022) and two minutes apart (13:05 and 13:07). Zoetica has contacted Tulloch for confirmation: Tulloch explained that while their surveyors were on the same crew and travelling together, they were in a swamp with intermittent pooling throughout. Tulloch believes that these were two different observations of two groups of wood frogs in proximity to one another. Zoetica will revise the report text in the SWH appendix.	Comment satisfactorily addressed.
14	4.3.8 Woodland Area-Sensitive	*"…field studies in 2022 either did not visit the area/polygon or determined the polygon to not*	There are four locations of GBIF observations associated with GHD's comment:	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
	Bird Breeding Habitat	*be candidate SWH."* Why?	1. Please see Zoetica's response to Comment #7 regarding why this area/ecosite was not surveyed in 2022 (yellow-bellied sapsucker observation off Bruce Road 6). 2. The location where a red-breasted nuthatch was recorded south of Concession Rd 8 in the AOI was not accessible in 2022. This location was also outside natural/naturalized ecosites; TEM/SWH surveys were not completed on farmland. 3. The location where an ovenbird was recorded in the southwest portion of the LSA_{TER} was not accessible in 2022. The hardwood ecosite where the observation is technically located (though it is very close to the adjacent mixedwood ecosite) crosses the study area boundaries. This hardwood polygon was surveyed within the AOI (approximately 500 m away from the GBIF observation) and deemed to be candidate SWH based on habitat criteria. Nevertheless, the forested ecosites surrounding the species observation may also be suitable Woodland Area-Sensitive Bird Breeding Habitat and will be prioritized for future studies (pending access limitations). 4. The marsh ecosite with the yellow-bellied sapsucker observation off Concession Rd 8 was not selected during desk-based ecosite screening against the 6E ECS, and field surveyors indicated that this marsh habitat did not meet the habitat criteria for Woodland Area-Sensitive Bird Breeding Habitat. Zoetica will clarify these details in the report text.	
15	4.3.8 Woodland Area-Sensitive Bird Breeding Habitat	*"However, it is unclear if any of these observations include active nests or confirmation of breeding."* If it is unclear, what are the follow up recommendations?	Breeding bird point count surveys and detailed field investigations to confirm SWH are planned as part of Tier 2 baseline studies, which would be conducted if the SON-South Bruce siting area is selected for the Project. Areas with pertinent species observations and/or habitat data from both desk- and field-based surveys (e.g., plots/polygons identified as candidate SWH and this GBIF species-rich 'hotspot' potentially relevant to Woodland Area-Sensitive Breeding Bird Habitat) will be prioritized for survey (pending access limitations). Tier 2 studies to confirm SWH will focus on the AOI and LSA_{TER}; however, the Tier 2 study design may be adjusted when more	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			information is available about the Project description and the extent of direct and indirect Project impacts. To avoid reiterating what future Tier 2 studies will entail in each subsection/for each SWH type, Zoetica proposes to create a "Next Steps" section of the report to expand upon the information outlined in Table 4-1 ("2023 Summary and Next Steps") and to address GHD's concerns.	
16	4.4.1 Marsh Bird Breeding Habitat	*"Surveyors noted whether the habitat was suitable for a variety of marsh/wetland breeding bird species or for selected species."* Are these notes reported anywhere?	Section 4.4.1 describes the observations linked to the candidate SWH plots identified as Marsh Bird Breeding Habitat, as detailed from the surveyor's field notes. Figure D-24 provides a visual for these observations and identifies the observation source (GBIF, SWH Survey, Incidental). Additionally, more details can be seen in Chapter 7 (Birds). E.g., Section 2.3.1.2. The physical field notes are not included in the report as this would make the report massive. The Baseline Report presents a summary and analysis of the field notes. The NWMO has a digital database to house raw field data (including field notes), which can be provided to stakeholders, rights-holders, and other interested parties upon request.	Comment satisfactorily addressed.
17	4.4.1 Marsh Bird Breeding Habitat	*"It is unclear if any of these observations include active nests or confirmation of breeding."* Why is it unclear?	With respect to observation data, GBIF records include – at most – the species name, location, date, and count. There is no information about habitat, activity/behaviour, demographics, type of sign, or other comments that would further inform the identification of candidate SWH. As such, Zoetica interprets existing desk-based data with caution (see Section 5.3, Limitations) and is planning breeding bird surveys and detailed field investigations to confirm SWH as part of Tier 2 studies, provided the SON-South Bruce siting area is selected for the Project. Zoetica will clarify in the report text for the quoted statement (and other similar statements throughout SWH Appendix C) that we are referring to GBIF observations. We will also clarify in the new "Limitations and Next Steps" section that "*GBIF records may include the species name, location, date, and count, but there is no information about habitat, activity/behaviour, demographics, type of sign, or*	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			other comments that would further inform the identification of candidate SWH."	
18	4.4.2 Open Country Bird Breeding Habitat	*"…the surveyor noted that it is likely suitable habitat for vesper sparrow."* What is going to be done with this information?	Please see Zoetica's response to Comment #15 regarding future Tier 2 studies and prioritization of areas with evidence to support candidate or confirmed SWH, provided the SON-South Bruce siting area is selected for the Project. As the single candidate SWH plot for Open Country Bird Breeding Habitat (and suspected suitable habitat for vesper sparrow) is located within the AOI, it will be prioritized for Tier 2 breeding bird and SWH surveys.	Comment satisfactorily addressed.
19	5.2 Candidate Significant Wildlife Habitat	*"Exit surveys and acoustic monitoring could focus on these areas to further investigate candidate Bat Maternity Colonies SWH (OMNR 2011a)."* Could focus? Will it or won't it focus?	Apologies for the vague wording. Zoetica will amend the statement to read, "*Exit surveys and acoustic monitoring will focus on ~~these~~ areas* ***with high and medium snag densities within the AOI and LSA$_{TER}$*** *to further investigate candidate Bat Maternity Colonies SWH*." The original statement was meant to allow for flexibility in Tier 2 study design because 1) not all suitable habitats within the AOI and LSA$_{TER}$ have been surveyed for the presence and abundance of snags (due to access limitations), and 2) data being collected by the Toronto Zoo's Native Bat Conservation Program (NBCP) may allow for informed refinement of survey locations. At the time of writing the draft SWH Appendix C, Zoetica had not received the NBCP's summary report for their 2022 activities.	Comment satisfactorily addressed.

Memorandum

23 November 2023 – updated 23 January 2024

To	Dave Rushton/Steven Travale, Municipality of South Bruce		
Copy to	Michelle Nearing/Katie Langdon, NWMO		
From	Laura Lawlor, Chris Ellingwood, Jennifer Son and Greg Ferraro/AD/nv	**Tel**	+1 519 884 0510
Subject	Biodiversity Impact Studies – Southwestern Ontario Region: Baseline Report Chapters 1 to 9 – Peer Review Comments	**Project no.**	11224152-MEM-65

1. Introduction

This memo provides the Municipality of South Bruce (South Bruce) peer review team's (PRT's) comments on Chapters 1 to 9 of the *Draft Biodiversity Impact Studies – Southwestern Ontario Region: 2023 Baseline Report* (Draft Report) prepared by Zoetica Environmental Consulting Services (Zoetica). Chapters 1 to 9 include:

– Chapter 1: Introduction
– Chapter 2: Vegetation
– Chapter 3: Wetland and Riparian Environments
– Chapter 4: Mammals
– Chapter 5: Herpetofauna
– Chapter 6: Terrestrial Invertebrates
– Chapter 7: Avifauna
– Chapter 8: Fish and Fish Habitat
– Chapter 9: Ecosystem Function and Services

Peer reviews have also been completed on the appendices of the Draft Report and are provided in the following memos:

– Appendix A – *2023 Dataset Quality Report* (MEM-68)
– Appendix B – *2023 Ecological Land Classification and Terrestrial Ecosystem Mapping Report* (MEM-61)
– Appendix C – *Significant Wildlife Habitat 2023 Baseline Report* (MEM-64)
– Appendix D – *2023 Aquatic Habitat Mapping Report* (MEM-62)
– Appendix E – *Environmental DNA 2023 Baseline Report* (MEM-63)

The peer review comments are provided for South Bruce's consideration and internal circulation as per the South Bruce Nuclear Exploration Project joint study review flow process. In addition, this memo will be submitted to the Nuclear Waste Management Organization (NWMO) and their consultants (Zoetica) by GHD Limited (GHD) as per the peer review protocol process.

2. Peer review approach

The peer review of the Draft Report was carried out by GHD (Subject Matter Experts [SMEs] and Lead Consultant). The peer review process was completed in alignment with the peer review protocol that was developed to support a collaborative approach between the NWMO and South Bruce while maintaining independence during the process. In accordance with the peer review protocol process, GHD SMEs Laura Lawlor and Chris Ellingwood and GHD Lead Consultants Jennifer Son and Greg Ferraro reviewed the Draft Report having the following questions in mind:

– Are there any significant concerns, issues, and/or omissions with the Draft Report?
– What are the initial observations/impressions on the quality of the Draft Report?
– Are the baseline study findings interpreted and presented in a clear and understandable manner?
– Does the Draft Report reflect the most current information available?
– Does the information provided contribute to developing an understanding of baseline conditions for the NWMO's Adaptive Environmental Management Program?

3. Peer review comments

The comment disposition tables included in this memo list the PRT's initial comments on the Draft Report. The NWMO and their consultants provided responses to these comments and addressed each comment where appropriate as part of finalizing the Report.

For ease of reviewing, the tables are separated by chapter:

– **Table 3.1** – Chapter 1: Introduction
– **Table 3.2** – Chapter 2: Vegetation
– **Table 3.3** – Chapter 3: Wetland and Riparian Environments
– **Table 3.4** – Chapter 4: Mammals
– **Table 3.5** – Chapter 5: Herpetofauna
– **Table 3.6** – Chapter 6: Terrestrial Invertebrates
– **Table 3.7** – Chapter 7: Avifauna
– **Table 3.8** – Chapter 8: Fish and Fish Habitat
– **Table 3.9** – Chapter 9: Ecosystem Function and Services

Overall, the PRT found the Draft Report to be of good quality with information generally presented in a clear and understandable manner. The Draft Report provides a good summary of the study findings, the interactions with the species identified, and biodiversity values (BVs) that could experience changes due to the construction and operation of the Project.

It is noted however that some inconsistencies throughout the chapters regarding the data that was reported were identified. These inconsistencies may leave the reader with a level of uncertainty as to the completeness and appropriateness of the results.

The information provided in the chapters contributes to developing an understanding of the baseline conditions for biodiversity. However, the use of passive language throughout the chapters (e.g., "*may*" versus "*will*") detracts from what should be commitments to review and include additional datasets and analyses to better represent and consider the baseline biodiversity functions and services of the study areas.

In addition, it would be valuable if the NWMO indicated how the baseline biodiversity information will be integrated with the results of the Environmental Media Baseline Program and geoscience study programs

currently being conducted to build the comprehensive Conceptual Site Model (CSM) for the Deep Geological Repository (DGR) site setting.

Table 3.1 Comment Disposition Table – Chapter 1: Introduction

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
1	2.0	WLON is not in the acronym list nor spelt out in its entirety the first use.	Thank you for pointing this out. We have spelled out WLON in its first use and have added it to the glossary.	Comment satisfactorily addressed.
2	Figures 2-2, 2-3	Saugeen No. 29 is delineated on the figures at quite a distance from the Area of Interest (AOI), but not mentioned in the Chapter. Recommend elaborating on its inclusion or as least mentioning that it is a First Nations reserve.	Thank you for pointing this out. We have added “Reserve” in brackets after the legend line item to specify it is a First Nation reserve.	Comment satisfactorily addressed.
3	3.2.2	Internal Zoetica review comments still remain in the document. The comment raises a good point about the Safety Assessment and would like to get a better understanding how this will be integrated into this report.	The internal comment was left by Zoetica for the NWMO to ensure that it wasn’t lost in translation between draft versions. The NWMO has confirmed that the boundaries align between the safety assessment and the environmental studies.	Comment satisfactorily addressed.
4	General	Summary of Regional Study Area (RSA), Local Study Area (LSA), and AOI is helpful in reminding reader of the study areas and extent of the areas. References to figure should be Figure 3-1, 3-2, 3-3. Text references the figures as 31, 32, and 33.	We are not sure if this was a formatting issue when opening the document on different computers, but we can’t find any instances where the dash has been deleted in the text. Zoetica will ensure that all Figure and Table referencing is in the correct format during the finalization of the report.	Comment satisfactorily addressed.

Table 3.2 Comment Disposition Table – Chapter 2: Vegetation

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
1	1.2.3	Text states e-DNA focused on animals rather than plants. Were butternut hybridity DNA samples collected in the Tier 1 studies?	No, butternut hybridity DNA samples were not collected during Tier 1 BIS studies. Zoetica contacted the field data collection contractor for clarification on the single butternut field observation in 2022, which was in the AOI. However, no additional insight could be provided for this observation; thus, we cannot be certain whether the trees were native butternut (*Juglans cinerea*) or potentially hybrids. Zoetica recognizes the importance of	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			accurately identifying native butternut trees as the native species is protected under the Ontario *Endangered Species Act*, while hybrids are not. Rare vegetation surveys and Butternut Health Assessments are planned as part of Tier 2 BIS baseline studies (provided the SON-South Bruce siting area be selected for the Project). Butternut Health Assessments will be conducted by Butternut Health Experts following the MECP's guidelines (MECP 2021), which also include guidance for field identification of butternut hybrids. The location with the butternut observation in 2022 will be revisited at this point. DNA analysis of butternut hybrids could be considered part of Tier 3 studies if the MECP methodology is deemed insufficient for determining hybridity; however, further discussions with MECP and subject matter experts are needed before these decisions are made. We have added the following to the discussion: "The observation of butternut was not confirmed to be definitively the native species, as this must be determined by a Butternut Health Expert per the MECP (MECP 2021b). If SON-South Bruce is selected for Tier 2 studies, Zoetica will plan for Butternut Health Assessments following MECP guidelines within the AOI, which include guidance for field identification of butternut hybrids (MECP 2021b). The field location with the butternut observation in 2022, which was in the AOI, would be revisited at this point to confirm the species identification."	
2	1.3.2	Single individuals of green dragon have been noted throughout the chapter. Further investigation may indicate Significant Wildlife Habitat (SWH) for this species. Will future studies look at adjacent suitable habitat for specimens of this species to confirm SWH, beyond the plots?	Zoetica has noted in the vegetation chapter and SWH appendix that further investigation of the area may be warranted to identify SWH for green dragon. As these green dragon observations were outside the AOI in the southern LSA_{AQU}, Zoetica anticipates being able to avoid the habitat around these	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			observations during project development. However, if the SON-South Bruce site is selected, and once a project description is released, if project-related effects are anticipated to extend to the southern LSA_{AQU}, Zoetica will plan studies to confirm these observations as SWH.	
3	1.2.3, and tables 1-2 and B1-B4	Species of interest is noted throughout report and defined in glossary. Table 1-2 shows all of the species of interest found and reason for interest. Tables B-1 to B-4 contain list of species in certain habitats. Is this presented to show some importance of those species shown in table? How will that relate to future surveys, impact assessment, management plans, and future reports?	Table 1-2 indicates the general study area that each species of interest was found in Tables B-1 to B-4 indicate which species of interest were detected at each surveyed plot during TEM and AHM field work. These tables are meant to provide more detailed information to support Table 1-2 and the discussion of species of interest in the text. These tables, along with the maps of species of interest (Figures B-2 and B-3), provide spatially detailed records of species of interest. Species' (including species of interest) habitat associations (either terrestrial, wetland/riparian, or aquatic) are outlined in Table A-1 and species are only studied within their relevant LSA according to this habitat association (i.e., terrestrial species studied to LSA_{TER}, others to LSA_{AQU}). As additional plots are surveyed for Tier 1 studies, a clearer picture of where species of interest occur within the BIS study areas will inform survey protocols for Tier 2 studies and the impact assessment. Management plans may be tailored based on such spatial data; for example, if a cluster of invasive species is present in one area, it can be managed before it spreads into adjacent areas disturbed by project activities. Ultimately, we will be collecting a great deal of detailed habitat information through TEM and AHM mapping. Accurate habitat mapping products along with known habitat associations of SOI will enable us to plan more detailed tier 2 studies to document SOI. We can then plan to use the mitigation	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			hierarchy around important habitats for SOI, and to make IA predictions based on the direct or indirect loss of these habitats due to the Project.	
4	Tables B1-B4	Even though Table 1-2 shows overall reason for each species, would be helpful to add that label to top row of Tables B-1 to B-4 to show why each species is on those tables.	Zoetica has added labels to each species in these appendix tables indicating whether they are introduced, weeds, invasive, rare, or SAR.	Comment satisfactorily addressed.
5	General	Figures are referenced as B1 and B2 but labelled as B-1 and B-2 on figures.	Throughout the vegetation chapter, the figures are referred to as Figure B-1, B-2, and B-3. They are labelled as such in the figure captions, and on the Figures in the top right corners. We are not sure if this was a formatting issue when opening the document on different computers, but we can't find any instances where the dash has been deleted in the text. Zoetica will ensure that all Figure and Table referencing is in the correct format during the finalization of the report.	Acknowledged.

Table 3.3 Comment Disposition Table – Chapter 3: Wetland and Riparian Environments

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
1	1.2.3.2	Report notes 88.75% of wetlands were too dry to sample during surveys conducted from July 13 to September 29, 2022. As many wetlands are seasonally flooded, noted in section 1.4.4 that additional sampling required in the spring to document BV. Has this been conducted in 2023 or next year in the AOI and LSA wetlands?	Fieldwork was not conducted at the SON-South Bruce site in 2023. Zoetica is planning spring seasonal flooding surveys of wetlands in 2024. We've expanded the statement at the end of page 3 to say "Thus, AHM data presented in this Chapter are limited and will be updated in future iterations of the BIS Baseline Report after additional Tier 1 AHM studies are conducted in 2024."	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
2	1.3.3.1	SWH in wetlands is noted to be completed in the spring. For marsh breeding birds, are specific wetlands targeted where habitat is most suitable or for all wetlands that show that ELC code of M (marsh)?	SWH surveys were conducted opportunistically along with TEM surveys during the summer in 2022 at accessible ecosite polygons (n = 473) to identify candidate SWH. 2022 fieldwork did not target specific wetlands. Future fieldwork in Tier 2, if SON-SB is selected, will target all wetlands and candidate SWH identified during Tier 1 studies that overlaps or is within the potential Project footprint in the AOI (once the footprint is known). Zoetica confirms that marsh breeding bird surveys would be conducted where habitat is most suitable (not just marsh ecosites), as field crews in 2022 observed candidate SWH plots for Marsh Breeding Bird Habitat in other ecosite types too (e.g., shrub swamp, mixedwood swamp; see Figure D-24 in Appendix C to Chapter 1).	Comment satisfactorily addressed.
3	Figure D-3c	As wetlands and buffers do cover over 48% of the LSA area and PSW are protected, are future studies on BV and SWH focused on the unevaluated wetlands with limited biological data versus the PSWs?	Zoetica agrees with the approach of focusing the Tier 2 OWES on unevaluated wetlands, while also studying adjacent lands (120 m buffers) around both unevaluated and evaluated wetlands. We have added this sentence to Section 1.4.4 (Next steps): “Tier 2 OWES studies may focus on unevaluated wetlands, as opposed to comparatively well-studied PSWs, along with 120 m adjacent land buffers (around both evaluated and unevaluated wetlands).”	Comment satisfactorily addressed.

Table 3.4 Comment Disposition Table – Chapter 4: Mammals

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
1	2.4	Report notes Tier 2 studies may include spotlight counts, camera surveys, and pellet group counts. To confirm SWH for deer overwintering areas are winter surveys proposed at later stages to identify usage through tracks/trails, deer browse and winter yard counts?	The MNRF is responsible for the identification of Deer Yarding Areas and Deer Winter Congregation Areas. Should the SON-South Bruce siting area be selected for the Project, further discussions with the NWMO and MNRF will be necessary regarding available data, potential data needs, and a potential collaborative plan to fill the data gaps. Detailed field investigations to confirm SWH, including seasonal targeted surveys, are planned as part of Tier 2 baseline studies, which would be conducted only if the SON-South Bruce siting area is selected for the Project.	Comment satisfactorily addressed.
2	5.3.1.2 and 5.4	Baseline reports and this section indicated river otter and mink were recorded during Tier 1 surveys. SWH criteria includes den of otter and mink, as fur bearers. Although dens can be difficult to confirm, the presence of those species means a den must be present in the general area. Is the SWH still candidate but not confirmed?	Mammal denning sites are not listed as one of the SWH types for Ecoregion 6e (MNRF 2014, OMNRF 2015). However, even though not considered SWH, any mammal dens observed in the study areas during field work would be recorded and mapped.	Comment satisfactorily addressed.
3	6.4	Report summarizes findings of bat acoustic and netting surveys and indicates additional surveys during Tier 2 may include visual observations and acoustic monitoring. Also states, for example, information about candidate SWH may be used to help design Tier 2 field surveys to evaluate candidate bat maternity colony and roost sites. Does the method proposed entail detailed tree cavity surveys during leaf-on and leaf-off?	Detailed field investigations to confirm SWH, including seasonal targeted surveys, are planned as part of Tier 2 baseline studies, which would be conducted if the SON-South Bruce siting area is selected for the Project. The NWMO currently anticipates that Project site selection will occur at the end of 2024, at which time Zoetica would prepare an updated BIS BPD Report to describe Tier 2 studies anticipated to begin in 2025.	Comment satisfactorily addressed.

Table 3.5 Comment Disposition Table – Chapter 5: Herpetofauna

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
1	1.0	"*Herpetofauna consist of frogs, salamanders, newts, turtles, and snakes*." Is there a reason why toads and lizards are not included? Two sentences later "*amphibians and reptiles*" are mentioned, but there is no connection made that amphibians and reptiles ARE herpetofauna. Suggest explaining this connection upfront for the lay-person audience.	Thank you for noting the non-inclusive language. Zoetica has edited the introductory statement to read, "Herpetofauna consist of amphibians (e.g., frogs, toads, salamanders, newts) and reptiles (e.g., turtles, snakes, lizards)."	Comment satisfactorily addressed.
2	2.3.2	Western chorus frog was found in the Greenock Swamp in late April 2018. As an early spring breeder using a variety of open seasonally flooded fields, roadsides, and wetland habitats, it is best detected from mid-March to April. Surveys in Tier 1 may significantly underestimate population and presence.	Zoetica recognizes that Tier 1 survey timing in the summer and fall of 2022 was not optimal for detecting western chorus frog. However, Tier 1 studies are focused on collecting foundational habitat characteristics through Terrestrial Ecosystem Mapping (TEM) and Aquatic Habitat Mapping (AHM), opportunistic identification of candidate Significant Wildlife Habitat (SWH) at TEM plots, and eDNA metabarcoding studies. Targeted species/species group surveys, including for amphibians and especially species at risk such as the western chorus frog, will be included as part of Tier 2 baseline studies (if the SON-South Bruce siting area is selected for the Project). In addition, a spring campaign (early to mid-April) for the Tier 1 eDNA metabarcoding program is anticipated in 2024, which may detect western chorus frogs and other spring breeders.	Comment satisfactorily addressed.

Table 3.6 Comment Disposition Table – Chapter 6: Terrestrial Invertebrates

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
1	1.1	"*Although terrestrial invertebrates were mentioned during engagement, the cultural importance of species cannot be ascertained by Zoetica™ at this time, as this task requires coordination with the Project's human health and social impact team.*" When will this task take place and why is it not considered at this stage?	Understanding the cultural importance of local biota requires input from rights holders that is not currently available. NWMO continues to engage with local indigenous communities on the Project. Further engagement work will be completed as part of the Human Health and Ecological Risk Assessment, environment and socioeconomic baseline work following Site Selection.	Comment satisfactorily addressed.
2	1.2.2	*"Zoetica investigated findings from the previous Phase 2 environmental studies conducted for the Project in the Saugeen Ojibway Nation (SON)-South Bruce siting area (Tulloch Environmental 2020, 2021).*" Are the Tulloch reports publicly available? What are the overall findings of these reports as it relates to the BIS?	The current plan is that the Tulloch reports will be made available by the NWMO upon request. As shown in Table 1-1, Zoetica reviewed data from Tulloch's July 2020 site reconnaissance and October 2020 natural heritage features reports. These two reports were based on preliminary environmental studies within the AOI. The July 2020 report presented a "Scope of the Natural Heritage Features assessment," which included searches for the presence of, and suitable habitat for, terrestrial crayfish, ground-nesting birds, migratory birds, snakes and other reptiles, as well as any incidental observations. The October 2020 report included surface water and soil sampling, and searches for species' habitats, including bat habitat. Initially, Zoetica included Terrestrial Crayfish in the Terrestrial Invertebrate chapter. Thus Table 1-1 indicated that these reports contained relevant data because they included searches for terrestrial crayfish and their habitats. Neither report found evidence of Terrestrial Crayfish individuals or habitat within the AOI. In 2023, a decision was made to include terrestrial crayfish in Chapter 8: Fish and Fish Habitat to reflect their protection under the Fisheries Act. Thus, these reports are no longer relevant to Chapter 6 but are included in Chapter 8.	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
3	1.3.	In general, the language of "*may be required*" seems a little light.	We found one instance of this phrase in section 1.3.1.2 saying "To be considered SWH for monarchs, there need to be enduring migration aggregations with enough individuals, so further discussions with NHIC or targeted field surveys may be required to confirm this candidate SWH". We altered the sentence to read: "… further discussions with NHIC and/or targeted field surveys are planned for Tier 2 Studies (if SON-South Bruce is selected and the project has potential to interact with these habitats) to confirm this candidate SWH".	Comment satisfactorily addressed.

Table 3.7 Comment Disposition Table – Chapter 7: Avifauna

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
1	2.2.1.2	Report states "*and a "large number of small birds" were reported nesting in a marsh.*" Was this an observation of nesting in a structure near a marsh or swallows foraging over a marsh?	Zoetica contacted the field data collection contractor to clarify this observation. They confirmed that the eDNA surveyors (not terrestrial biologists) who noted a "large number of small birds" observed the same barn swallows reported by the AHM field crew as nesting in an old barn (see Figure B-2; also mentioned earlier in the sentence quoted by GHD). Zoetica will revise the report text in Section 2.3.1.2 to reflect this clarification.	Comment satisfactorily addressed.
2	2.3.1.2 and 2.3.1.2	For borehole screening for SAR at BH-1 and BH-2 incidental observations found barn swallow habitat and potential meadowlark and bobolink habitat. Barn swallows seem to be widespread in the AOI, LSA, and RSA. Do surveyors try to locate where nesting sites are likely when swallows are observed?	In 2022, barn swallows and other SAR were primarily recorded through incidental observations. Although field crews were generally instructed to record as much information as possible on the Incidental Wildlife Observations data form (e.g., number of individuals, activity/behaviour, demographics, type of sign, surrounding habitat, photos), surveyors did not attempt to locate barn swallow nesting sites as these are invariably located on human infrastructure, and nest searches would have been potentially invasive to landowners. Targeted	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			breeding bird surveys, including for species at risk, will be included as part of Tier 2 baseline studies (if the SON-South Bruce siting area is selected for the Project). The borehole screening for SAR at BH-1 and BH-2 noted by GHD refers to preliminary field studies conducted by Tulloch Environmental in July and October 2020. Their scope of work included surveys for barn swallows; they visually searched suitable habitat within and around the borehole sites for evidence of current or recent nesting by barn swallows.	
3	2.3.1.2	Data collected found eastern wood-pewee and wood thrush had not been previously reported in the AOI. This shows that private woodlots may harbour more species than citizen science projects can access. For the Tier 2 studies, and if SON-South Bruce is selected, will additional field work be completed in more woodlots?	Yes, if the SON-South Bruce siting area is selected for the Project, Zoetica plans to complete Tier 2 upland breeding bird surveys in various habitats throughout the AOI, LSA_{TER}, and RSA_{AVI}. The Tier 2 study design for birds will also prioritize suitable habitats, especially within the AOI and LSA_{TER}, for species of conservation concern, such as woodlots for eastern wood-pewee and wood thrush. However, access restrictions to private properties will likely continue to be a limiting factor for where the BIS baseline studies can be completed. The NWMO continues to engage with local landowners to gain permission to access their properties, with input from Zoetica for priority locations to request.	Comment satisfactorily addressed.
4	4.3.1.2	Great blue heron colonies were noted from background literature, will confirmation surveys be completed? Colonies also commonly move to other sites. Are colonial nesting bird sites identified during field surveys in suitable flooded wetlands?	Documentation of any candidate or confirmed Colonially-Nesting Bird Breeding Habitat (Tree/Shrubs) SWH was included as part of the Tier 1 TEM/SWH surveys in the summer of 2022 (see Appendix C of the 2023 BIS Baseline Report). These surveys were completed in a variety of terrestrial and wetland habitats, though no nesting colonies were recorded at the survey plots or incidentally in 2022. Confirmation surveys for known/previously recorded great blue heron nesting colonies will occur as part of Tier 2 studies in areas	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			potentially impacted by the Project (if the SON-South Bruce siting area is selected for the Project). Confirmation surveys may also be included earlier as part of additional Tier 1 TEM/SWH surveys in 2024, pending access limitations. The NWMO is continuing to engage with local landowners to gain permission to access their properties, with input from Zoetica for priority locations to request.	
5	Figure B-6	Is the widely scattered records of bald eagle related to that one nest? Or are other nests possible in the large study area?	All bald eagle observations shown on Figure B-6 were collated from GBIF records, which do not include additional information such as nests or nesting activity. To date, Zoetica has not found/received spatial data indicating that a bald eagle nest occurs within or close to the $RSA_{AVI-AQU}$ boundary. If there is a known bald eagle nest in the BIS study areas based on local knowledge, Zoetica would be very interested in incorporating this information into the next iteration of the BIS Baseline Report. With respect to 2022 field data, bald eagles were incidentally observed once in the northern portion of the Greenock Swamp Wetland Complex; surveyor field notes did not mention a nest. Some areas around larger rivers and lakes (e.g., Teeswater River, Schmidt Lake, Silver Lake) were identified as candidate Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat SWH (see Figure D-17 in Appendix C of the 2023 BIS Baseline Report); however, no actual nests were found during Tier 1 field studies in 2022. Nevertheless, it is possible that bald eagle nests exist elsewhere within the BIS study areas. Any bald eagle nests encountered during additional Tier 1 or Tier 2 studies (if the SON-South Bruce siting area is selected for the Project) will be documented and reported in future iterations of the BIS baseline report.	Comment satisfactorily addressed. And that any nesting activity will be documented in future Tier 1 or 2 surveys.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
6	Appendix A and section 5	The list of raptors is limited to a few species. Is there habitat for accipiters, merlin, osprey, or red-tailed hawk in the AOI, LSA, or RSA?	Yes, there is likely suitable habitat for a variety of raptors within the AOI, LSA_{TER}, and RSA_{AVI} (and $RSA_{AVI-AQU}$ for osprey) based on the findings of the 2022 Tier 1 SWH studies. Surveyors recorded candidate SWH throughout the study areas for Woodland Raptor Nesting Habitat; Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat; and Raptor Wintering Area (see Appendix C of the 2023 BIS Baseline Report). Species-specific habitats were not noted during these Tier 1 SWH surveys; however, systematic breeding bird surveys and targeted raptor surveys will be included in areas potentially impacted by the Project as part of Tier 2 baseline studies (if the SON-South Bruce siting area is selected for the Project). Please note that Table 5-1 and Figure B-6 only include raptor species of interest (e.g., species of conservation concern), of which only four have been detected within the BIS study areas to date. Table D-4 presents a full list of the 17 raptor species recorded within the study areas from both desk- and field-based investigations. This full list includes Ontario's three accipiters (sharp-shinned hawk, Cooper's hawk, northern goshawk), merlin, osprey, and red-tailed hawk.	Comment satisfactorily addressed. Reference to Table D-4 does indeed show the species that were noted in the comments.

Table 3.8 Comment Disposition Table – Chapter 8: Fish and Fish Habitat

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
1	General	There are references throughout the chapter to no type of 'X' habitat feature being documented in existing databases; many of the databases reviewed would not contain this data by their nature. As written, the chapter implies that there is an absence of these features in the landscaping, and therefore undervaluing the BV when there is instead an	While it is true that there were few habitat features documented in existing databases, in Sections 2.3.1.3, 2.3.1.4 and 2.3.1.5, and in the discussion section (Section 2.4.1) we were careful to include that, although desk-based sources searched to date did not contain certain types of habitat and field findings did not conclusively identify these	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
		insufficiency of data. Additionally, there is limited discussion regarding how this baseline data is informing what are appropriate reference areas, a gap that is important to address in order to validate the balance of Tier 1 baseline studies and provide sufficient information for the IA.	habitats during 2022 surveys, field crews documented habitat features that could support these types of habitat (e.g., riffle habitat and seeps and springs that could support spawning habitat). Should the SON-South Bruce siting area be selected for the project, further Tier 2 studies, to inform the seasonal habitat use by fish would be required to conclusively identify these important habitats. The focus of 2022 field studies was to characterize AHM habitat (see Appendix D, Chapter 1), collate existing information on fish presence within the AOI and LSA_{AQU} and use eDNA metabarcoding to detect the seasonal presence (summer and fall) of potentially occurring biota in aquatic habitat (see Appendix E, Chapter 1). As a formal project description has not been released by the NWMO, it is not possible at this time to predict the extent of potential effects within the aquatic habitats in the BIS study areas. Once a site is selected and a project description is released, further investigation on suitable reference areas will be conducted within the RSA_{AQU}. As the GSWC is downstream of the AOI and is an ecologically important area which includes several larger lakes, Zoetica has included in the Tier 1 studies two potential reference lakes outside of the BIS study areas (Hines and Robson Lakes) because the RSA_{AQU} does not contain suitable reference areas for these lakes. We have added a paragraph to this effect to the discussion section (Section 2.4.4). We have also included a statement in the discussion section as follows: “Should the SON-South Bruce site be selected for the Project and once an official project description has been released, Zoetica will review data captured to date to identify suitable reference areas within the BIS study areas (including within the RSA_{AQU}) and outside the BIS study areas, if required.	

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			Reference areas will be selected based on similar habitat characteristics and species to areas potentially impacted by the project, wherever possible."	
2	Section 1.0	It is unclear what the footnote pertaining to the TISG Template is intending to mean. Is the Fish and Fish Habitat Baseline Report prepared in accordance with the TISG Template now out-of-date and will be need to be updated when the new requirements come out of those being developed under the *Nuclear Safety and Control Act*? If yes, it may be clearer to the reader by placing this footnote information into a limitations section of the report.	Zoetica contacted the IAAC on 12 September 2023 and was informed that the older version of the TISG template for nuclear projects was removed and the IAAC and CNSC are developing a new template for nuclear projects that integrates the licensing requirements under the Nuclear Safety and Control Act. The requirements being integrated would mirror those in the generic template and the CNSC's REGDOCs, which are publicly available. The template should be available upon request in the new year. Since the TISG template is referenced in every BIS chapter, Zoetica will replace the footnote in each chapter with the following "See Chapter 1 for limitations on the TISG Template" and will discuss the limitations and anticipated changes to the TISG Template in Chapter 1 to describe the expected update to the TISG Template for Nuclear Projects.	Comment satisfactorily addressed.
3	Section 1.1, last paragraph	Please provide more support for changing the scope of the Tier 1 study by removing identification of indicator species. As these species are key to the determinations of habitat importance and value in the landscape, the PRT propose that it is more appropriate to identify indicator species from the current available information, and refine the list (if needed) in Tier 2 as part of the community composition studies. This allows the original BPPA commitment of considering indicator species in Tier 1 to be upheld.	We acknowledge that indicator species will be considered for the BIS as described in the BPPA, but we are confused about where the commitment to identify indicator species in Tier 1 is found within the BPPA. The text in the BPPA in the fish and fish habitat section with regards to Tier 1 studies and indicator species is as follows: "The proposed studies will ultimately provide information about various waterbodies and watercourses containing high biodiversity values or key species needing additional consideration (e.g., SAR, species of cultural and Indigenous importance, indicator species, invasive species)." We recognize that, currently, there is no fourth level header under the "Presence and Distribution of Species of Interest" section of the BIS Baseline Report for "Indicator	This comment was building off of Zoetica language in Section 1.1 stating "*While Zoetica has recommended the consideration of indicator species in the BPPA report (Zoetica 2021), there are currently no candidate fish indicator species selected for the 2023 BIS Baseline Report*". Perhaps it is the PRT's misunderstanding, expecting that the objectives for the BIS, as noted in Section 1.1, are entirely to be addressed in Tier 1. Based on the response provided, comment is satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			Species." However, in several sections of the BPPA, we state that "our preferred approach is to select indicator species once more information is gathered about potential project impacts and species-habitat associations (e.g., through Tier 2 community composition studies)." Currently, a Project Description has not been released for the project, and it is not possible to predict potential Project impacts. Zoetica has updated the text in Section 1.1 to indicate that once a Project Description is released for the Project, and species habitat associations can be surmised through Tier 2 studies, Zoetica will compile and report on potential indicator fish species for consideration under species of interest.	
4	Section 1.2	Please clarify if any field studies were completed in 2023.	No field studies were carried out in the SON-South Bruce siting area in 2023. Tier 1 field studies are anticipated to continue in 2024.	Comment satisfactorily addressed.
5	General	Highlights are noted throughout the report.	Highlighted references to figures and chapters were included in drafts of the baseline report as prompts to Zoetica to verify these references upon report finalization. These highlights are part of our work procedures and will be removed upon verification and chapter finalization.	Comment satisfactorily addressed.
6	Section 1.2.2, Table 1-1	Recommend that a listing of the Provincial SAR Recovery Strategies which were reviewed be noted within this report (e.g., references list) so it is clear which were reviewed as this may differ for Chapter 8 versus the BPPA published 2 years prior. If they do not, please clarify that in the 'Notes' language. Further, including a review of the Fishwerx data set may provide additional data pertaining to Section 2.3.1.2 Watercourse Habitat.	As the most updated and relevant Provincial SAR Recovery Strategies are presented in the results and discussion sections of the report, we have included a line in the notes section of the table indicating that "the most updated version of the Recovery Strategies for relevant species was reviewed and cited in this report". The cited Recovery Strategies are already included in the References list. We attempted to review the Fishwerks dataset, but the link no longer exists and reroutes to a domain-selling website. All databases that are not publicly available are sourced through the NWMO. Zoetica and the NWMO will try to source the Fishwerks	Comments satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			dataset through the Great Lakes Fishery Commission.	
7	Section 1.2.3.2	Special Concern species represent a SWH category of consideration under 'Special Concern and Rare Wildlife Species'. Based on NHIC records of northern brook lamprey, a provincial Special Concern species, this report section should be revisited.	A few Special Concern and provincially rare fish species (greater redhorse, northern brook lamprey, northern sunfish) have been detected in the BIS study areas through existing desk-based data and are described in Section 2.3.2.1. However, it is Zoetica's understanding that habitats for Special Concern and Rare fish species are not typically reported as SWH because SWH is primarily focused on terrestrial environments and there is a separate provision for fish habitat with respect to Ontario's natural heritage. The Ontario Provincial Policy Statement (PPS), 2020, s.2.1.6 states, "*Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements*", where the definitions of fish and fish habitat in the PPS are the same as those in the federal *Fisheries Act*: - **Fish** includes fish, shellfish, crustaceans, and marine animals, at all stages of their life cycles. - **Fish habitat** means spawning grounds and any other areas, including nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes. As the *Fisheries Act* applies to Canadian fisheries waters, which includes "all internal waters of Canada" (s.2(1)), the habitat of all fish species in Ontario, including Special Concern and Rare species, is protected under this legislation. Zoetica will add the following statement to Section 1.2.3.2 : "*No SWH was considered for fish because the Fisheries Act (2019) protects all fish and fish habitat in all internal waters of Canada and, thus, would cover any SWH for fish. If the Fisheries Act were to become less*	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			protective, SWH for Special Concern and rare fish species would be considered at that time."	
8	Section 2.3.1.2.1 Spawning	Please confirm if identification of potential spawning areas was a data point that was to be collected as part of the Aquatic Habitat Mapping field surveys.	One of the primary objectives of the aquatic habitat mapping (see Appendix D, Chapter 1) for the BIS was to detect important fish areas, including any habitat potentially used for spawning, rearing, overwintering, and migration in the AOI and LSA_{AQU}. During AHM field studies conducted in 2022, field crew recorded potential critical habitat or limiting habitat, including potential spawning habitat, on the watercourse, waterbody and wetland characterization forms. No confirmed spawning areas were recorded during 2022; however, some reaches contained suitable habitat for spawning (e.g., seeps and springs, riffle habitat). Additional Tier 2 fish community studies will be planned, if the SON-South Bruce site is selected, to confirm specialized habitats such as spawning habitats.	Comment satisfactorily addressed.
9	General	Consider applying the term 'anthropogenic' or 'human-made' versus 'man-made'.	Thank you for the feedback. We have replaced the word "man-made" with either "human-made" or "anthropogenic" where relevant.	Comment satisfactorily addressed.
10	Section 2.3.1.4.1 Spawning	Consider conducting surveys of the wetlands which may provide spawning habitat in the appropriate spawning seasons (e.g., spring, summer or fall depending on the species), and updating the text to acknowledge/recommend that for future field studies.	Aquatic Habitat Mapping studies (see Appendix D, Chapter 1) were designed to be conducted in the summer and early fall when vegetation is present (following the timing outlined in the guidelines) to capture all potential habitat features at these locations. These surveys were not conducted to confirm specialized fish habitat but rather to identify potential habitat used by fish during any season for various life-history requirements. Zoetica had also planned for a reconnaissance survey to be conducted in the spring to determine the extent of seasonal flooding and to describe seasonal habitats that may be used by biota for various life history phases (e.g., spawning). Procurement delays for hiring field data collection	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			contractors precluded the ability to conduct field surveys in the spring. Additional Tier 1 studies are planned in the future (anticipated in 2024) to address data gaps. Additional studies will include spring wetland surveys to capture the extent of flooding and spring eDNA metabarcoding sampling to capture these features as potential seasonal fish habitat. If the SON-South Bruce site is selected, and once a project description is released and Zoetica can identify potential project interactions, Tier 2 studies, including seasonal fish community characterization studies, will be designed to confirm use of these habitats for various life-history purposes. We have added the following text to section 2.3.1.4.1: "*Future Tier 1 studies are anticipated in 2024 to fill data gaps and will include spring AHM field surveys of wetlands to account for habitat characteristics present during the relevant period for spring spawning fish. In addition, future Tier 1 eDNA metabarcoding studies are anticipated in the spring of 2024 to detect the presence of fish and other biota that use seasonally wetted wetlands for various life history requirements.*"	
11	Section 2.3.2	Consider qualifying the statement of how many fish species of conservation concern have been identified within the BIS as based on desktop versus field data.	This is an excellent point. We have changed the first sentence of Section 2.3.2 to the following: "Based on available searched desk-based datasets (see Section 1.2.2), a total of five fish species of conservation concern have been recorded in the BIS aquatic study areas, four of which are SAR and one (greater redhorse) that is considered provincially rare." We've also added a sentence to clarify that "One species of conservation concern, pugnose shiner, reported in desk-based sources was also detected during Tier 1 fieldwork". Later paragraphs in Section 2.3.2 detail the sources of detections of species of conservation concern in greater detail.	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
12	Figures A-2, a -d	Great figures with lots of information. Denotation of thermal regime is not consistent across the maps (unknown regime in particular).	The denotation of the thermal regime is consistent across the maps; however, the colour scheme used makes it difficult to identify as the colour appears different depending on the surrounding colours. Zoetica has updated the colour of the "unknown regime" on the maps so that this is no longer an issue.	Comment satisfactorily addressed.
13	Section 2.3.3.1, end of first paragraph	Was this intended to state that 'in general richness decreases the further *UPSTREAM* a watercourse or waterbody' is from the Saugeen River and Lake Huron'?	Thank you for catching this. Yes, it should have been "upstream". We have changed the text.	Comment satisfactorily addressed.
14	Section 2.4.4	There is an absence of detail about what additional Tier 1 baseline data is to be collected and a focus instead on Tier 2. Consider adding more detail around the proposed methods to fill the uncertainties and limitations identified in the preceding sections (e.g., how is a spring eDNA survey going to better address the objectives in Section 1.1?).	Thank you for pointing this out. We have added a paragraph to Section 2.4.4 to address the current limitations of Tier 1 data and Zoetica/NWMO's plan to fill data gaps, especially during the spring.	Comment satisfactorily addressed.
15	Section 3.3.2.1	Consider adding a discussion of how these species of conservation concern have to be considered as SWH.	Please refer to Zoetica's disposition for Comment #7. As the definition of 'fish' in the *Fisheries Act* and Ontario PPS includes fish, "shellfish, crustaceans, and marine animals, at all stages of their life cycles", the rainbow mussel (Special Concern) and its habitat would be protected provincially and federally as fish habitat. Other species of conservation concern described in Section 3.3.2.1 (the provincially rare river bluet and terrestrial crayfish species) are included in Appendix C (SWH) of the 2023 BIS Baseline Report. The observation of river bluet came from a single GBIF record and requires further field investigations to identify as candidate SWH. However, terrestrial crayfish chimneys/burrows were observed throughout the BIS study areas during 2022 field studies; these are described in more detail as SWH in Section 3.3.1.2 of Chapter 8.	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
16	Section 3.4	Similar to Comment #14, consider adding more detail around what the additional Tier 1 baseline collection will include and how it will fill uncertainties and limitations in the current data set.	We have added a subsection to Section 3.4 that discusses next steps, including additional Tier 1 baseline data collection.	Comment satisfactorily addressed.

Table 3.9 Comment Disposition Table – Chapter 9: Ecosystem Function and Services

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
1	General	As it stands, this chapter is focused heavily on the ecosystem services, and lighter on the ecosystem function. The PRT requests clarity on how ecosystem function will be more thoroughly evaluated in the next iteration of the baseline reporting and confirmation that these will be completed as part of Tier 1 to allow for appropriate consideration in the site selection process.	Ecosystem functions are the physical, chemical, and biological processes within the ecosystem that maintain biodiversity. At this stage of Tier 1 Studies, Zoetica is mainly evaluating ecosystem function by examining biodiversity and the distribution of available habitats for species. Areas deemed important habitat for species support biodiversity and thus provide ecosystem functions. Of the three objectives in this chapter, Objective 1 (Identify ecosystems and ecosystem components critical to sustaining biodiversity within the relevant BIS study areas) was focused on ecosystem functions. Wherever the chapter discusses habitats that support biodiversity, it indirectly discusses ecosystem functions. To clarify this in the chapter, Zoetica has added the following statements to the start of section 1.3.1: "Habitats that are important for species support biodiversity and thus provide ecosystem functions. Zoetica considered areas of protected habitat for biodiversity to be important for evaluating ecosystem function." Zoetica has added several statements throughout the chapter to clarify and highlight the relevance of datasets to ecosystem functioning. These included added sentences about the relevance of protected and conserved lands / parks for supporting biodiversity by providing ecosystem functions	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			(Sections 1.3.1.1-1.3.1.5). Zoetica also expanded the discussion as follows: "Protected and conserved lands and parks often provide ecosystem functions and important habitat for supporting biodiversity. For example, ANSIs are lands deemed significant on the provincial or regional landscape, and thus provide key ecosystem functions that may not occur in many nearby areas." Currently, Zoetica does not plan to evaluate ecosystem functions directly by measuring physical and chemical processes, or the flux of energy, nutrients, and organic matter through the environment. Such data may be gathered by the EMBP and later combined with BIS data to determine the most important areas for ecosystem function. As these processes should result in greater biodiversity, examining biodiversity and the distribution of important habitats in the BIS should improve our understanding of ecosystem functioning in the BIS study areas. Regarding future evaluation of ecosystem functions, Zoetica amended a statement in the discussion to read, "In future iterations of the BIS Baseline Report Zoetica will consider all biodiversity data collected (e.g., species of interest observations, SWH locations, forest health disturbances, amount and diversity of eDNA species detections) along with relevant biophysical data from the EMBP to determine areas that may be more ecologically important than others."	
2	S 1.3.3.1	The spread of European ash borer (EAB) across Ontario has dramatically altered swamps, forests, and fencerows in recent years and was found within the NWMO study area. For areas not surveyed in Tier 1, how is the baseline mapping confirmed and ecosystem health assessed as a result of EAB? If SON-South Bruce is chosen,	For sites that are not surveyed during Tier 1, evaluations of ecosystem health have not been conducted. Investigation of the SWOOP 2020 aerial imagery did not include records of EAB or other pests. In future iterations of the baseline report, Zoetica will investigate the MNRF Forest Insect Damage data, as it may provide useful data about EAB.	Comment satisfactorily addressed.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
		ecosystems and pests of all woodlands should be checked where EAB and other pests are changing the structure and canopy of woodlands.	Zoetica agrees that if the SON-South Bruce site was chosen, the AOI would need to be thoroughly surveyed for EAB. A sentence has been added to the end of Section 1.3.3.1 reading: "If the SON-South Bruce siting area is selected, Tier 2 studies will include additional surveys for EAB and other forest pests in all woodlands within the AOI, as these pests change the structure and canopy of woodlands."	
3	Section 1.2.2, paragraph 2	Inclusion of regional and municipal data sources are important data sources in an assessment of ecosystem function and services as it has context in provincial protections of natural heritage. Recommend affirming that this will be included in the future baseline program (versus 'may').	We updated the language to: "…additional available databases (including regional and municipal data sources) will be investigated…".	Comment satisfactorily addressed.
4	Section 1.2.3.2	Similar to Comment #3, consider applying affirmative language (e.g., candidate SWH will be verified).	We updated the section to read: "Field examination of candidate SWH will be expanded to additional survey plots in subsequent years of Tier 1 data collection."	Comment satisfactorily addressed.
5	Section 1.3.1.5	Recommend that future iterations of the BIS Baseline Report will include an assessment of potentially important biodiversity areas to identify biodiversity hotspots.	We changed "may" to "will" in the following sentence: "In future iterations of the BIS Baseline Report, Zoetica will consider important areas for each BV holistically to identify any biodiversity hotspots and assess potentially important areas for sustaining high biodiversity."	Comment satisfactorily addressed.

Memorandum

4 December 2023 – updated 23 January 2024

To	Dave Rushton/Steven Travale, Municipality of South Bruce		
Copy to	Michelle Nearing/Katie Langdon, NWMO		
From	Chris Ellingwood, Laura Lawlor, Jennifer Son and Greg Ferraro/AD/mma	**Tel**	+1 519 884 0510
Subject	Biodiversity Impact Studies – Southwestern Ontario Region: Appendix A – 2023 Dataset Quality Report – Peer Review Comments	**Project no.**	11224152-MEM-68

1. Introduction

This interim memo provides the Municipality of South Bruce (South Bruce) peer review team's (PRT's) comments on the *Draft Biodiversity Impact Studies – Southwestern Ontario Region: Appendix A – 2023 Dataset Quality Report* (Draft Report) prepared by Zoetica Environmental Consulting Services (Zoetica) for your consideration and internal circulation as per the South Bruce Nuclear Exploration Project joint study review flow process. In addition, the memo will be submitted to the Nuclear Waste Management Organization (NWMO) and their consultants (Zoetica) by GHD Limited (GHD) as per the peer review protocol process.

2. Peer review approach

The peer review of the Draft Report was carried out by GHD (Subject Matter Experts [SMEs] and Lead Consultant). The peer review process was completed in alignment with the peer review protocol that was developed to support a collaborative approach between NWMO and South Bruce while maintaining independence during the process. In accordance with the peer review protocol process, GHD SMEs Chris Ellingwood and Laura Lawlor and GHD Lead Consultants Jennifer Son and Greg Ferraro reviewed the Draft Report having the following questions in mind:

– Are there any significant concerns, issues, and/or omissions with the Draft Report?
– What are our initial observations/impressions on the quality of the Draft Report?
– Are the baseline study findings interpreted and presented in a clear and understandable manner?

3. Peer review comments

As stated above, the comment disposition table (**Table 1**) lists our initial comments on the Draft Report. It is understood that NWMO and their consultants will provide responses to these comments and address each comment where appropriate as part of finalizing the Report.

Appendix A of the Draft Report lists the datasets received from external sources used in the Biodiversity Impact Studies (BIS) and assesses their quality for bias, reliability, relevance, and other factors. Given that the PRT did not review each of the datasets, the PRT comments consist only of a review of the completeness and clarifications of the list.

Table 1 Comment Disposition Table - Biodiversity Impact Studies – Southwestern Ontario Region: Appendix A – Dataset Quality Report

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
1	Appendix A, Table A-1	Data sets listed as reviewed do not include SVCA wetland shapefiles, SVCA benthic data results, nor the Ontario Reptile and Amphibian Atlas or Ontario Butterfly Atlas. These datasets may contain additional information relevant to species and habitat presence within the Study Areas.	Thank you for the dataset suggestions. Zoetica is aware of the Ontario Reptile and Amphibian Atlas (ORAA) and the Ontario Butterfly Atlas and used information from the public web-based atlases to identify potential biodiversity values to design the BIS, as described in our *Best Practices and Preferred Approaches* Report (Zoetica 2021). At the time of writing the 2023 BIS Baseline Report, Zoetica had not received the full ORAA and Ontario Butterfly Atlas (and Ontario Moth Atlas) datasets for the SON-South Bruce siting area. If the ORAA and Ontario Butterfly Atlas datasets can be provided to Zoetica in 2024, we will incorporate these data into future iterations of the BIS baseline report. If it is determined that the full datasets cannot be accessed, Zoetica may use the publicly available data to report on species presence. However, it is noted that both the ORAA and Ontario Butterfly Atlas web data have been obscured to 10 km squares that do not coincide with and extend outside the BIS study areas. Zoetica also notes that ORAA data for species of conservation concern are reviewed by the NHIC, and we have received the NHIC Species Occurrence and Species Observation datasets for use for the BIS (assessed for data quality and included in Table A-1). Zoetica reported any NHIC records of provincially tracked reptiles and amphibians within the BIS study areas in our 2023 BIS Baseline Report. NWMO will provide Zoetica with relevant datasets like those suggested from the SVCA for inclusion in future iterations of the baseline report.	Comment satisfactorily addressed. Access to databases and downloads are not always available. Glad to see that publicly accessible data can be used.
2	Appendix A, Table A-1	For Ontario Breeding Bird Atlas squares, was it just the square boundaries obtained and reviewed, or did it include other layers or datasets of bird distribution and point count data?	Data were not obtained or reviewed directly from the Ontario Breeding Bird Atlas (OBBA) for the 2023 BIS Baseline Report. However, Zoetica notes that the GBIF dataset includes data from both the Ontario Breeding Bird Atlas-2 (2001-2005) and the original Ontario Breeding Bird Atlas (1981-1985). The GBIF dataset, as a whole, was assessed for quality and included in Table A-1. In addition, OBBA data for species of conservation concern are reviewed by the NHIC, and Zoetica received the NHIC Species Occurrence and Species Observation datasets for use for the BIS (assessed for data quality and included in Table A-1). Zoetica reported any GBIF and NHIC records of provincially tracked birds within the BIS study areas in our 2023 BIS Baseline Report. For future BIS baseline reports, Zoetica will consider analyzing existing OBBA survey data, including bird distribution and point count data, in more detail as part of bird community characterization objectives. However, we understand that data collection is currently underway for	Comment satisfactorily addressed. Access to databases and downloads are not always available, especially during active data collection like for the OBBA from 2021 to 2025. Glad to see that publicly accessible data can be used.

Comment Number	Report Section Reference	Comments from Peer Review	How and Where Comments are Addressed (NWMO to complete)	Peer Review Responses to NWMO Comments (GHD to complete after previous column completed by NWMO)
			Atlas-3 (2021-2025), and the recency of these data will be more reliable for use in the BIS. Zoetica and the NWMO will seek to obtain these Atlas-3 data in the future to complement the BIS baseline studies and to gather a larger regional picture of bird biodiversity.	
3	Appendix A, Table A-1	For Southern Ontario Land Resource Information System (SOLRIS), which Global Information System (GIS) layers were reviewed (e.g., heron colonies, deer yards)?	The SOLRIS dataset available from Ontario GeoHub does not contain GIS layers for heron colonies, deer yards, or other wildlife features. SOLRIS is a landscape-level inventory of natural, rural, and urban areas and is based on the Ecological Land Classification (ELC) system for southern Ontario. While Zoetica has not used the SOLRIS dataset for the BIS to date (as we required more detailed ecosite classification to design and implement baseline studies), SOLRIS may be used in the future to fill in ecosite data gaps. As the ecosite classification dataset was developed by Zoetica's subcontractor for the BIS, it was not included in Table A-1, which focused on data quality assessments for external datasets. With respect to wildlife features, heron colonies and deer yards are included within the MNRF's Wildlife Values Area and Wildlife Values Site datasets on GeoHub. These wildlife data are included in the following four MNRF datasets that Zoetica assessed for quality and listed in Table A-1: – Medium_Sensitive – Wildlife_Activity_Area – Medium_Sensitive – Wildlife_Activity_Site – Non_Sensitive – Wildlife_Activity_Area – Non_Sensitive – Wildlife_Activity_Site Zoetica reviewed and incorporated relevant data from these Wildlife Activity datasets into our 2023 BIS Baseline Report. Specifically, to address GHD's comment, existing MNRF data on heron colonies are presented in Chapter 7 (Birds) and Appendix C (Significant Wildlife Habitat). Deer yards are also discussed in Appendix C, but none have been mapped by the MNRF within the BIS study areas.	Comment satisfactorily addressed.

Appendix C

36 Guiding Principles

South Bruce Guiding Principles for NWMO's Site Selection Process

The Nuclear Waste Management Organization (NWMO) is seeking an informed and willing host for a deep geologic repository (DGR) to safely store Canada's used nuclear fuel, and a Centre for Expertise. To guide its work, South Bruce held a comprehensive visioning process in 2019 and 2020 to get input on what people cared about most in relation to the Project. The process, in addition to other community input and feedback resulted in the creation of 36 Guiding Principles which focus on safety for people and the environment, ensuring the Project brings meaningful benefits to the community, and ensuring the municipality has a voice in decision-making.

The principles were adopted by Council resolution and they have guided municipal activities and engagement related to the Project. South Bruce is seeking NWMO commitments on how it would meet or address these 36 expectations and aspirations for the Project. This is a key step in determining whether the Project is right for the community and will help people make an informed decision when a public referendum is held to measure willingness to be a host community.

Safety and the Natural Environment

1. The NWMO must demonstrate to the satisfaction of the Municipality that the Project will be subject to the highest standards of safety across its lifespan of construction, operation and into the distant future.

2. The NWMO must demonstrate to the satisfaction of the Municipality that sufficient measures will be in place to ensure the natural environment will be protected, including the community's precious waters, land and air, throughout the Project's lifespan of construction, operation and into the distant future.

3. The NWMO must demonstrate to the satisfaction of the Municipality that used nuclear fuel can be safely and securely transported to the repository site.

4. The NWMO will ensure that the repository site will not host any nuclear waste generated by other countries.

5. The NWMO must commit to implementing the Project in a manner consistent with the unique natural and agricultural character of the community of South Bruce.

6. The NWMO will minimize the footprint of the repository's surface facilities to the extent it is possible to do so and ensure that public access to the Teeswater River is maintained, subject to meeting regulatory requirements for the repository.

7. The NWMO must commit to preparing construction management and operation plans that detail the measures the NWMO will implement to mitigate the impacts of construction and operation of the Project.

People, Community and Culture

8. The NWMO must demonstrate to the satisfaction of the Municipality that it has built broad support for the Project within the community of South Bruce.

9. The Municipality will, in collaboration with community members, develop and establish an open and transparent process that will allow the community to express its level of willingness to host the Project.

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.

12. The NWMO, in consultation with the Municipality, will establish a program to mitigate losses to business owners in the event that their business is adversely affected by the NWMO's site selection process and the development, construction and/or operation of the Project.

13. The NWMO, in partnership with the Municipality, will develop a strategy and fund a program to promote the agriculture of South Bruce and the surrounding communities.

14. The NWMO, in partnership with the Municipality, will develop a strategy and fund a program to promote tourism in South Bruce and the surrounding communities.

15. The NWMO, in partnership with the Municipality, will commit to implement programs to engage with and provide opportunities for youth in the community, including investments in education and the provision of scholarships, bursaries and other incentives for youth to remain in or return to the community.

16. The NWMO will implement the Project in a manner that promotes diversity, equality and inclusion.

17. The Municipality recognizes the important historic and contemporary roles Indigenous peoples have and continue to play in the stewardship of the lands we all call home and will, in the spirit of Reconciliation, work with the NWMO and local Indigenous peoples to build mutually respectful relationships regarding the Project.

18. The NWMO will commit to relocate the working location of a majority of its employees to South Bruce as soon as it is reasonably practicable to do so after the completion of the site selection process.

19. The NWMO will, in consultation with the Municipality, establish a Centre of Expertise at a location within South Bruce to be developed in conjunction with the Project.

Economics and Finance

20. The NWMO, in consultation with the Municipality, will commit to implementing a local employment and training strategy with the objective of ensuring that the majority of employees for the Project are located within South Bruce and surrounding communities.

21. The NWMO, in consultation with the Municipality, will commit to implementing a business opportunities strategy that will provide opportunities for qualified local businesses to secure agreements that support the Project and that requires the NWMO to take all reasonable steps to create opportunities for qualified local businesses to benefit from the Project.

22. The NWMO will commit to implementing a procurement strategy for the Project that gives preference to the selection of suppliers who can demonstrate economic benefit to South Bruce and surrounding communities.

23. The NWMO will enter into an agreement with the Municipality providing for community benefit payments to the Municipality.

Capacity Building

24. The NWMO will cover the costs incurred by the Municipality in assessing community well-being and willingness to host the Project.

25. The NWMO will fund the engagement of subject matter experts by the Municipality to undertake peer reviews of Project reports and independent assessments of the Project's potential impacts on and benefits for the community as determined necessary by the Municipality.

26. The NWMO agrees to cover the costs of the Municipality's preparation for and participation in the Project's regulatory approval processes, including the Canadian Nuclear Safety Commission's licencing process and the assessment of the Project under the Impact Assessment Act (or other similar legislation), that are not otherwise covered by available participant funding.

27. The NWMO will fund the Municipality's preparation of a housing plan to ensure that the residents of South Bruce have access to a sufficient supply of safe, secure, affordable and well-maintained homes.

Services and Infrastructure

28. The NWMO will prepare a review of the existing emergency services in South Bruce and provide appropriate funding for any additional emergency services required to host the Project in South Bruce.

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.

30. The NWMO will prepare a review of the existing and projected capacity of South Bruce's road network and will commit to providing appropriate funding for any required upgrades to the road network.

31. The NWMO will enter into a road use agreement with the Municipality that identifies approved transportation routes during construction and operation of the Project and ensures proper funding for maintenance and repair of municipal roads and bridges used for the Project.

Services and Infrastructure (continued)

32. The NWMO, in consultation with the Municipality and other local and regional partners, will prepare a strategy to ensure there are sufficient community services and amenities, including health, child-care, educational and recreational facilities, to accommodate the expected population growth associated with hosting the Project in South Bruce.

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.

Governance and Community Engagement

34. The NWMO will provide the Municipality with an ongoing and active role in the governance of the Project during the construction and operation phases of the Project.

35. The NWMO will continue to engage with community members and key stakeholders to gather input on community vision, expectations and principles, including concerns, related to the Project.

Regional Benefits

36. The NWMO must demonstrate to the satisfaction of the Municipality that the Project will benefit the broader region outside of the community of South Bruce, including local Indigenous communities.

Reach out anytime with your questions, comments, concerns, or if you are seeking more information. We would be happy to hear from you!

South Bruce Nuclear Exploration Team:

Denny Scott, CLC Project Coordinator
sbclc@southbruce.ca

Dave Rushton, Project Manager
drushton@southbruce.ca

Catherine Simpson, Community Engagement Manager
csimpson@southbruce.ca

Steve Travale, Community Engagement Officer
stravale@southbruce.ca

Tyler Robinson, Communications/ Public Relations Officer
trobinson@southbruce.ca

Visit our website:
www.southbruce.ca

Visit our community engagement tool:
www.southbruceswitchboard.ca

Sign up to get Project updates direct to your inbox:
forms.southbruce.ca/Stay-Connected

Stay Connected!
Follow us online:
@municipalityofsouthbruce
@municipalityofsouthbruce
@MunSouthBruce

Municipality of South Bruce
PO Box 540 | 21 Gordon St. E
Teeswater, Ontario N0G 2S0
Phone: 519-392-6623
Fax: 519-392-6266


GHD