DILLON CONSULTING

Enbridge Gas Inc.

Environmental Report

2024 Bluewater and Mandaumin Well Drilling Project

October 2023, Rev. 01 – 23-6171

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Acronyms and Abbreviations

AAQC	Ambient Air Quality Criteria
ANSI	Areas of Natural and Scientific Interest
CHER	Cultural Heritage Evaluation Report
CNR	Canadian National Railway
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CHVI	cultural heritage value or interest
DSA	Designated Storage Area
DFO	Fisheries and Oceans Canada
Dillon	Dillon Consulting Limited
EA	environmental assessment
EASR	Environmental Activity and Sector Registry
ECCC	Environment and Climate Change Canada
ELC	Ecological Land Classification
Enbridge Gas	Enbridge Gas Inc.
EPP	Environmental Protection Plan
ER	Environmental Report
ESA	*Endangered Species Act*
GHG	greenhouse gas
HIA	Heritage Impact Assessment
HVA	Highly Vulnerable Aquifer
IPZ	Intake Protection Zone
LIO	Land Information Ontario
masl	metres above sea level
mbgs	metres below ground surface

MBCA	*Migratory Birds Convention Act*
MCM	Ministry of Citizenship and Multiculturalism
MECP	Ministry of the Environment, Conservation and Parks
MMAH	Ministry of Municipal Affairs and Housing
MNR	Ministry of Natural Resources
MNRF	Ministry of Natural Resources and Forestry
MOE	Ministry of Energy
NHIC	Natural Heritage Information Centre
NRCan	Natural Resources Canada
O. Reg.	Ontario Regulation
OEB	Ontario Energy Board
OEB Guidelines	Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition (2023)
OGS	Ontario Geological Survey
OHT	Ontario Heritage Trust
OPCC	Ontario Pipeline Coordinating Committee
OWRA	*Ontario Water Resources Act*
PTTW	Permit to Take Water
SAR	Species at Risk
SARA	*Species at Risk Act*
SARO	Species at Risk in Ontario (List)
SCC	Species of Conservation Concern
SCN	Soybean cyst nematode
SCRCA	St. Clair Region Conservation Authority
SWH	Significant Wildlife Habitat

the Project	2024 Bluewater and Mandaumin Well Drilling Project
the Study	environmental and cumulative effects assessment
TMHC	Timmins Martelle Heritage Consultants Inc.
TTMS	Tri-Tribal Monitoring Services
WHPA	Well Head Protection Area

Executive Summary

Enbridge Gas Inc. (Enbridge Gas) retained Dillon Consulting Limited (Dillon) to conduct an environmental and cumulative effects assessment (the Study) for the 2024 Bluewater and Mandaumin Well Drilling Project (the Project), located in Lambton County, Ontario. If approved, early construction activities on access roads and drilling pads are planned to begin in Fall 2023 and drilling construction is planned to begin in Spring 2024.

The Project will involve the drilling of two new observation wells. One well is to be located in the Bluewater Designated Storage Area (DSA) and the other in the Mandaumin DSA. The Bluewater and Mandaumin well drilling sites are located within 2 kilometres of one another. The Bluewater site is approximately 900 metres west of the intersection of County Road 26 (Mandaumin Road) and County Road 14 (Churchill Line) in the City of Sarnia, and the Mandaumin site is approximately 1,300 metres northeast of the intersection of County Road 26 (Mandaumin Road) and County Road 14 (Churchill Line) in the Town of Plympton-Wyoming.

The Study results have been documented in this Environmental Report (ER), which conforms to the Ontario Energy Board (OEB) (2023) *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition*.

Stakeholder engagement and Indigenous consultation are an important component of the Project. Early and frequent consultation with directly and indirectly affected Indigenous communities, property owners, government agencies, and the public was an integral part of the Study.

The Study involved undertaking an inventory of physical, natural, and socio-economic features within the Bluewater and Mandaumin Study Areas. This information was used to produce maps identifying features that could be impacted by construction and operation. The location of the proposed observation wells and other Project components was selected based on the location of the DSAs, environmental and socio-economic concerns, as well as technical and economic feasibility requirements. The Project components are mainly sited in rural agricultural land, previously disturbed by agricultural activities, which greatly reduces potential adverse effects to the surrounding environment.

Included in this report are recommended mitigation measures to reduce potential negative effects to the environment. These measures will be incorporated into the forthcoming Environmental Protection Plan and Well Drilling Programs being completed for each Project location, and are anticipated to effectively protect the physical, natural, and socio-economic features located in the Project area during construction. With the implementation of the mitigation measures recommended in this report, Dillon does not anticipate any significant adverse effects from construction and operation of the Project.

1.0 Introduction

Enbridge Gas Inc. (Enbridge Gas) retained Dillon Consulting Limited (Dillon) to conduct an environmental and cumulative effects assessment (the Study) for the 2024 Bluewater and Mandaumin Well Drilling Project (the Project), located in Lambton County, Ontario. If approved, early construction activities on access roads and drilling pads are planned to begin in Fall 2023 and drilling construction is planned to begin in Spring 2024.

1.1 Description of the Project

The Project will involve the drilling of two new observation wells. One well is to be located in the Bluewater Designated Storage Area (DSA) and the other in the Mandaumin DSA. DSAs are areas of land designated by the Ontario Energy Board (OEB) under section 36.1(1)(a) of the *OEB Act*, which contain geological formations suitable for storage of natural gas underground. Observation wells are wells used to monitor the operational integrity and conditions and any changes in a gas storage reservoir (for example, pressure changes, reservoir fluid changes, seismic waves, etc.) (Oil and Gas Wells 2012). They are not used for the purpose of input or withdrawal of natural gas.

The Bluewater and Mandaumin well drilling sites are located within 2 kilometres of one another. The Bluewater site is approximately 900 metres west of the intersection of County Road 26 (Mandaumin Road) and County Road 14 (Churchill Line) in the City of Sarnia, and the Mandaumin site is approximately 1,300 metres northeast of the intersection of County Road 26 (Mandaumin Road) and County Road 14 (Churchill Line) in the Town of Plympton-Wyoming.

Project activities at the Bluewater and Mandaumin drilling sites will commence with the construction of a temporary gravel drilling pad measuring up to 80 metres by 100 metres. Upon completion of drilling activities, a permanent gravel pad measuring 8 metres by 8 metres will be installed around the wells. Access to the Bluewater site will require a new permanent access road that will be 5 metres wide by roughly 300 metres long leading south from Churchill Line. Access to the Mandaumin site will also require a new permanent access road, measuring 5 metres wide and approximately 500 metres long leading from an existing gravel farm driveway.

1.2 Project Purpose and Rationale

The proposed observation wells will be used to monitor the gas content and pressure in the underground storage formations at the Bluewater and Mandaumin DSAs. The observation wells will help ensure the continued safe and reliable operation of Enbridge Gas storage facilities.

Figure 1-1: Project Overview

2024 BLUEWATER AND MANDAUMIN WELL DRILLING PROJECT

ENBRIDGE GAS

PROJECT OVERVIEW

FIGURE 1-1

- Proposed Observation Well
- Proposed Temporary Pad (approx. 80m by 100m)
- Proposed Permanent Access Road (approx. 5m wide)
- Proposed Permanent Pad (approx. 8m by 8m)
- Waterbody
- Watercourse
- Major Road
- Minor Road
- Railway

SCALE 1:20,000

0 250 500 1,000 m

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: -ZJB
MAP CHECKED BY: -KG
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

DILLON CONSULTING

PROJECT: 23-6171
STATUS: FINAL
DATE: 2023-06-28

FILE LOCATION: K:\2023\236171\Product\Client\ER\F1-1_ProjectOverview.mxd

1.3 Environmental and Cumulative Effects Assessment

Dillon conducted a Study to identify potential effects that the Project could have on the existing cultural, socio-economic, natural, and physical environment. Mitigation measures to reduce these potential effects were also developed as part of the Study. The Study results have been documented in this Environmental Report (ER), which conforms to the OEB's *Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th edition* (2023) (OEB Guidelines).

1.4 Regulatory Framework

The Study was prepared to meet the requirements of the OEB. More information on the regulatory process is provided in the following subsections.

1.4.1 Ontario Energy Board

For the Project to proceed, a favourable report from the OEB to the Minister of Natural Resources and Forestry (MNRF) is required, pursuant to section 40(1) of the *OEB Act*. The OEB serves as a regulatory body to protect the public interest, to determine that the Project is necessary, and to ensure that Enbridge Gas obtains the necessary approvals to meet health, safety, and environmental standards and regulations. The OEB Guidelines requires that Enbridge Gas complete an ER, which includes an environmental assessment of the proposed works.

Prior to filing the ER with the OEB, a draft copy of the report was submitted to the Ontario Pipeline Coordinating Committee (OPCC) for review and comment. The OPCC coordinates the Ontario government's review of natural gas facility projects that require OEB approval. The OPCC's goal is to reduce adverse environmental effects that could arise from projects by reviewing environmental reports.

During the OPCC review process, the draft ER was circulated to Indigenous communities, municipalities, the local conservation authority, and landowners directly or indirectly impacted by the Project, community members, and interest groups if requested. During the OPCC review process, the aim is to resolve all outstanding issues prior to submission of an application to the OEB.

The OEB will review the ER for the Project (including details of engagement and consultation) as part of the proceeding to obtain well drilling licences under section 40(1) of the *OEB Act*. Once the MNRF refers the well drilling license applications to the OEB for a report, the OEB may order a written or oral hearing based upon the complexity of the Project and the level of public concern. During the hearing, any party with an interest in the Project may apply to the Board to become 'intervenors' or 'interested parties' in order to participate in the decision-making process. Following their review of the application, the OEB will determine whether the Project is in the public interest.

Enbridge Gas plans to submit the Well Drilling Licence Applications to the MNRF in August 2023 and file the Final ER to the OEB in September 2023. Pending receipt of land access approvals and receipt of all other relevant regulatory approvals and permits, early construction activities on the proposed access roads and temporary well drilling pads will begin Fall 2023. Other activities, including drilling of the two proposed wells, are anticipated to begin Spring 2024 once well drilling licences have been obtained.

1.4.2 Other Potential Permits, Approvals, or Notifications

In addition to MNRF and OEB approval, other regulatory (for example, federal, provincial, and municipal) approvals, permits, and notifications may be required for the Project, as shown in **Table 1-1**. An appropriate amount of time should be scheduled to obtain necessary permits and approvals prior to construction.

Table 1-1: Potential Permits, Approvals, or Notifications

Agency	Legislation, Regulation, or Standard	Permit/Approval/Notification
Environment and Climate Change Canada (ECCC)	*Species at Risk Act, 2002* (*SARA*) (SC 2002, c. 29) *Migratory Birds Convention Act, 1994* (*MBCA*) (SC 1994, c. 22)	*SARA* contains general prohibitions that make it an offence to kill, harm, harass, capture or take a federally listed Species at Risk (SAR) or damage or destroy their critical habitat on federal lands (or other designated lands). *SARA* also applies to all lands in Canada for Schedule 1 bird species cited in the *MBCA* and applies to all lands/waters in Canada for Schedule 1 aquatic species. If Project activities are anticipated to affect federally listed SAR and/or their habitat, ECCC should be consulted, as a permit under Section 73 of *SARA* may be required. See **Section 4.2.7** of this report for more information on federally-listed SAR species with the potential to occur in the Project area.
Ministry of the Environment, Conservation and Parks (MECP)	*Endangered Species Act, 2007* (*ESA*) (SO 2007, c. 6) and Ontario Regulation (O. Reg.) 242/08	A permit or approval is required for activities that may affect provincially listed SAR (Endangered or Threatened) and/or their habitat. See **Section 4.2.7** of this report for more information on provincially-listed SAR with the potential to occur in the Project area.

Agency	Legislation, Regulation, or Standard	Permit/Approval/Notification
MECP	*Ontario Water Resources Act* (*OWRA*) (RSO 1990, c. O.40) and O. Reg. 387/04: Water Taking Regulation	Registration under the Environmental Activity and Sector Registry (EASR) is required if the Project will result in dewatering of more than 50,000 litres per day (L/day) but less than 400,000 L/day. A Permit to Take Water (PTTW) will be required if water taking is greater than 400,000 L/day.
MECP	*Environmental Protection Act, R.S.O. 1990, c. E.1:* On-Site and Excess Soil Management O. Reg. 406/19	Applies to all construction projects that involve generation of soil, on-site soil management, and/or import of soil other than virgin material including from a pit or quarry licensed under the *Aggregated Resources Act*. The Project will follow the framework for the excavation, removal, transport, and management of excess soils, as defined in Ontario Regulation 406/19.
Ministry of Citizenship and Multiculturalism (MCM)	*Ontario Heritage Act* (RSO 1990, c. O.18)	**Archaeological Resources** Archaeological assessment(s) are required for areas of archaeological potential. Archaeological concerns have not been addressed until MCM's letter has been received indicating that all reports have been entered into the Ontario Public Register of Archaeological Reports and those reports recommend that: • the archaeological assessment of the project area is complete; and • all archaeological sites identified by the assessment are either of no further cultural heritage value or interest (CHVI) (as per Section 48(3) of the Ontario Heritage Act) or that

Agency	Legislation, Regulation, or Standard	Permit/Approval/Notification
		mitigation of impacts has been accomplished through an excavation or avoidance and protection strategy. **Bluewater Project Location** A Stage 1 and 2 archaeological assessment (under Project Information Form (PIF) P1048-0125-2023) dated July 27, 2023 and undertaken by TMHC Inc. (TMHC), was entered into the Ontario Public Register of Archaeological Reports recommending no further assessment. **Mandaumin Project Location** A Stage 1 and 2 archaeological assessment (PIF P1048-0131-2023) was completed September 19, 2023 by TMHC, and will be submitted to MCM October 2023 recommending no further assessment. Construction will not begin without MCM review and acceptance. **Built Heritage Resources and Cultural Heritage Landscapes** Separate Cultural Heritage Screening - Technical Memorandums (dated July 14, 2023, by TMHC included in **Appendix B**) was undertaken for each Project location. Based on the results of the Cultural Heritage Screenings, a Cultural Heritage Evaluation Report (CHER) has been recommended for the Bluewater and Mandaumin Project locations by the Cultural Heritage Screening - Technical Memorandums. A CHER is currently underway and is being completed by

Agency	Legislation, Regulation, or Standard	Permit/Approval/Notification
		TMHC to determine if the properties at each Project location are (or not) of cultural heritage value or interest (CHVI). If the properties are determined to be of CHVI, a Heritage Impact Assessment (HIA) will be undertaken by a qualified person. The HIA will be submitted for review and comment to MCM, following OEB approval. See **Section 4.3.7** of this report for more information on cultural heritage resources.
St. Clair Region Conservation Authority (SCRCA)	Development and Instructure Permits under O. Reg. 171/06: SCRCA: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, as per *Conservation Authorities Act* (RSO 1990, c. C.27)	Prior to construction, Enbridge Gas will obtain a permit under O. Reg. 171/06.

Agency	Legislation, Regulation, or Standard	Permit/Approval/Notification
County of Lambton	Woodlands Conservation By-Law (No. 04 of 2012)	The cutting or injury of trees is regulated by the provisions of the County of Lambton Woodlands Conservation By-law. Tree removal will be completed with a review by the County of Lambton prior to occurring and a tree replacement program will be implemented for the Project that meets the intent of the By-Law.
City of Sarnia	Noise Control By-Law (No. 144 of 1998)	Project activities at the Bluewater site should adhere to the City of Sarnia Noise Control By-Law. A Noise By-law Exemption is required if construction noises will occur outside of the allowable hours within agricultural areas identified in the By-law (for example, between 8:00 pm and 7:00 am)
City of Sarnia	Idling Control By-Law (No. 81 of 2013)	Project activities at the Bluewater site should adhere to the City of Sarnia Idling Control By-Law which states that no person shall permit a vehicle or engine to idle continuously for more than one minute. Exemptions under section 3.1 of the By-Law are given for work vehicles which must remain in operation, provided the work vehicle is engaged in its basic work function.

Agency	Legislation, Regulation, or Standard	Permit/Approval/Notification
City of Sarnia	Garbage and Waste By-Law (No. 62 of 2006)	Project activities at the Bluewater site should adhere to the City of Sarnia Garbage and Waste By-Law which states that all hazardous waste and all construction materials should be properly disposed at an appropriate waste facility.
Town of Plympton-Wyoming	Streets By-law (No.79-2018)	Project activities at the Mandaumin site should adhere to the Town of Plympton-Wyoming Streets By-Law which permits the obstruction of a roadway or sidewalk. Should construction activities require the closing of a roadway, a request is required to the Town at least 48 hours prior to the intended commencement of the work.
Town of Plympton-Wyoming	Traffic and Parking By-Law (No. 72-2018)	Project activities at the Mandaumin site should adhere to the Town of Plympton-Wyoming Traffic and Parking By-law for the parking of construction vehicles on local roads.

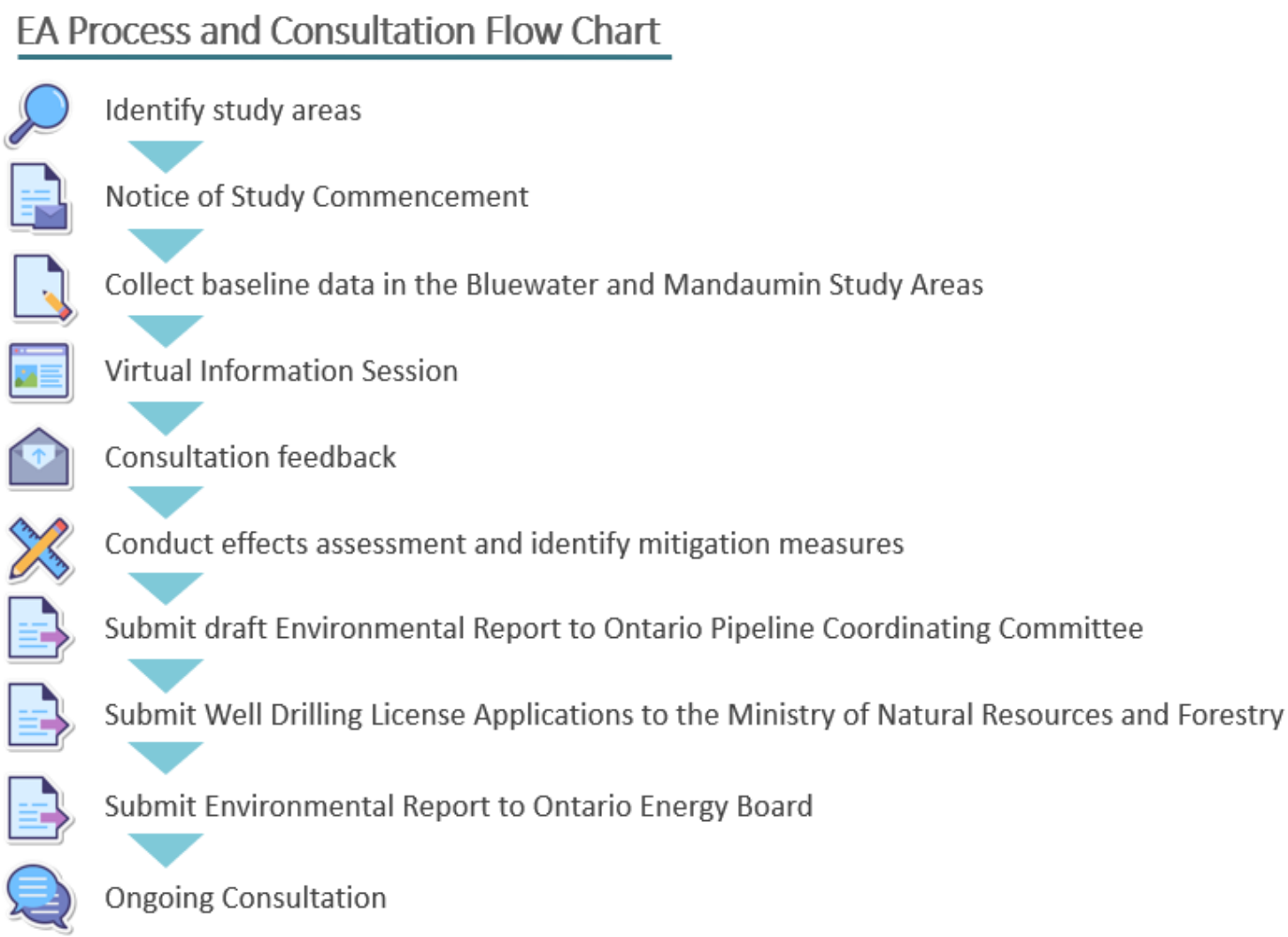
2.0 Study Process

The Study process followed two main steps:

- Identification of Study Areas and Environmental Inventory
- Effects Assessment and Proposed Mitigation Measures

Stakeholder engagement and Indigenous consultation was conducted throughout the Study (see **Section 3.0**). The Study process is illustrated in **Figure 2-1** and described in further detail in the following subsections.

Figure 2-1: Environmental Assessment (EA) Process and Consultation Flow Chart



2.1 Study Methods

The Study methods were designed to achieve the following objectives:

- Select a Study Area;
- Collect data on the cultural, socio-economic, natural, and physical environment to evaluate the potential effects related to the proposed observation wells and associated infrastructure (for example, access roads and temporary and permanent well drilling pads);
- Provide opportunities for Indigenous communities, agencies, potentially-affected landowners, and the general public to comment on the Project; and
- Identify and recommend environmental protection and mitigation measures to be implemented during construction.

The Study was conducted between May 2023 and July 2023.

2.1.1 Identification of Study Area and Environmental Inventory

The first step of the Study involved identifying the Study Areas for the two Project locations. The Study Area boundaries were determined by applying a 125 metre buffer from the various Project components (for example, access roads, proposed observation wells, and proposed temporary and permanent pads) as this area was determined to be most likely to be directly or indirectly affected by the Project (**Figure 2-2**).

During the initial phase of the Study, the Project team also identified the boundaries of the Project Footprint by applying a 30 metre buffer from the various Project components. This 30 metre buffer encapsulates the area that will likely be used by Enbridge Gas as a temporary workspace and laydown area(s). For the purposes of this assessment, the Project Footprint can be considered the area most likely to be directly affected by the Project.

Dillon used the 125 metre Study Area to determine the existing conditions and potential impacts to the cultural, socio-economic, natural, and physical environment. The boundaries of the Project Footprint were used to refine the assessment, for example, more accurately determine direct effects and recommended mitigations.

A cultural, socio-economic, natural, and physical environment constraints inventory and a features mapping exercise was conducted. The features were mapped based on both

primary and secondary sources including data collected through site reconnaissance activities, contacts with local, provincial, and federal agencies, and discussions with stakeholders. Based on Dillon's experience conducting studies of a similar nature and, in accordance with the OEB Guidelines, the mapping generally included topographical features, natural environment features, natural hazard information, and relevant land use planning information.

The purpose of collecting applicable data to compile features mapping was to assist the Study team, Enbridge Gas, Indigenous communities, the public, regulatory agencies, and interested parties in understanding how the environment may be affected by the Project. Feature maps serve as the baseline for evaluation and for assessing the potential adverse effects resulting from construction and operation of the Project.

To confirm potential adverse effects on directly-affected Indigenous communities, stakeholders, and landowners, Dillon undertook a field program that encompassed walking along the proposed access roads and walking within the agricultural fields of the proposed temporary pad, permanent pad, and observation wells.

Primary and secondary source data was collected and used to develop the cultural, socio-economic, natural, and physical environment baseline setting for the Project. Primary sources include data collected during field studies, and secondary sources include data obtained through the review of electronic databases, published reports, existing literature, journals, information letters, and information received from agencies and stakeholders. Proper record-keeping practices were exercised to maintain data and results for future use. A list of key secondary sources is included in **Table 2-1**. Secondary sources reviewed as part of the Bluewater Stage 1 and Stage 2 archeological assessment and Bluewater and Mandaumin Cultural Heritage Screening - Technical Memorandums are included in **Appendix A** and **Appendix B**, respectively.

Table 2-1: Key Data Records and Sources

Source	Records Reviewed
Provincial	
Land Information Ontario (LIO) (Government of Ontario 2022a)	• Interactive Online Mapping Tool (accessed May through early July 2023)

Source	Records Reviewed
Natural Heritage Information Centre (NHIC) (MNRF 2022)	• GIS database of occurrence records for natural heritage features. Uses 1-kilometre squares based on the military grid reference system. Reviewed to determine historical occurrence records of: ○ Species of Conservation Concern (SCC) and SAR; ○ Rare and exemplary plant communities; ○ Wildlife concentration areas; and ○ Natural areas. • NHIC 1-kilometre squares reviewed: 17LH9956, 17LH9954, 17LH9955, 17LH9854
O. Reg. 230/08 (Species at Risk in Ontario [SARO] List)	• Reviewed to confirm status of SAR/SCC
Significant Wildlife Habitat Eco-region 7E Criterion Schedules (MNRF 2015)	• Reviewed to assess potential for significant wildlife habitat within the Study Area
Federal	
SAR Public Registry (Government of Canada 2022a)	• Schedule 1 of SARA reviewed to confirm status of SAR/SCC
Fisheries and Oceans Canada (DFO)	• Aquatic SAR Map
Conservation Authority	
SCRCA (2018)	• Watershed Report Card
Wildlife Atlases	
Atlas of the Mammals of Ontario (Dobbyn 1994) and Mammals of the Western Hemisphere (NatureServe 2007)	• Distribution data for mammals overlapping the Study Area.
Ontario Breeding Bird Atlas (Cadman et al. 2007)	• Breeding bird historical occurrence records for the 10-kilometre grid squares overlapping the Study Area: 17LH95 and 17MH05

Source	Records Reviewed
Ontario Reptile and Amphibian Atlas (Ontario Nature 2022)	• List of reptile and amphibian species occurrences for the 10-kilometre grid squares overlapping the Study Area: 17MH05 and 17LH95
Ontario Moth Atlas (Toronto Entomologists' Association 2020)	• Lepidoptera historical occurrence records for the 10-kilometre grid squares overlapping the Study Area: 17MH05 and 17LH95
Ontario Butterfly Atlas (Toronto Entomologists' Association 2022)	• Lepidoptera historical occurrence records for the 10-kilometre grid squares overlapping the Study Area: 17MH05 and 17LH95
Planning and Policy	
Provincial Policy Statement (Ministry of Municipal Affairs and Housing [MMAH] 2020)	• Policy directions related to infrastructure development and the environment
County of Lambton Official Plan (last consolidated 2020)	• Policy directions related to infrastructure development and the environment
City of Sarnia Official Plan (2014) (last consolidated 2022)	• Policy directions related to infrastructure development and the environment • Land use designations (various) – refer to Map 11 of the Official Plan (2014) (last consolidated 2022)
City of Sarnia Zoning By-Law (By-Law 85 of 2002)	• Implements the objectives and policies of the municipality's official plan
Town of Plympton-Wyoming Official Plan (2001) (last consolidated 2022)	• Policy directions related to infrastructure development and the environment • Land use designations (various) – refer to Schedule A (2001) (last consolidated 2022)
Town of Plympton-Wyoming Zoning By-Law (No. 97 of 2003)	• Implements the objectives and policies of the municipality's official plan

Figure 2-2, Map 1 of 2: Bluewater Study Area and Project Footprint

2024 BLUEWATER AND MANDAUMIN WELL DRILLING PROJECT

ENBRIDGE GAS

BLUEWATER STUDY AREA AND PROJECT FOOTPRINT

FIGURE 2-2, MAP 1 OF 2

- Study Area (125m)
- Project Footprint (30m)
- Proposed Observation Well
- Proposed Temporary Pad (approx. 80m by 100m)
- Proposed Permanent Access Road (approx. 5m wide)
- Proposed Permanent Pad (approx. 8m by 8m)
- Watercourse
- Major Road

SCALE 1:3,400

0 40 80 160 m

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: -ZIB
MAP CHECKED BY: -KG
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

DILLON CONSULTING

PROJECT: 23-6171
STATUS: FINAL
DATE: 2023-07-13

FILE LOCATION: K:\2023\236171\Product\Client\ER\F2-2_ProjectStudyAreas.mxd

Figure 2-2, Map 2 of 2: Mandaumin Study Area and Project Footprint

2024 BLUEWATER AND MANDAUMIN WELL DRILLING PROJECT

ENBRIDGE GAS

MANDAUMIN STUDY AREA AND PROJECT FOOTPRINT

FIGURE 2-2, MAP 2 OF 2

- Study Area (125m)
- Project Footprint (30m)
- Proposed Observation Well
- Proposed Temporary Pad (approx. 80m by 100m)
- Proposed Permanent Access Road (approx. 5m wide)
- Proposed Permanent Pad (approx. 8m by 8m)

SCALE 1:3,400

0 40 80 160 m

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: -ZJB
MAP CHECKED BY: -KG
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

DILLON CONSULTING

PROJECT: 23-6171
STATUS: FINAL
DATE: 2023-07-13

FILE LOCATION: K:\2023\236171\Product\Client\ER\F2-2_ProjectStudyAreas.mxd

2.1.2 Effects Assessment and Proposed Mitigation Measures

The next step in the Study process involved an assessment of the potential effects of the Project on the cultural, socio-economic, natural, and physical environment, along with the identification of mitigation measures, for the Bluewater and Mandaumin construction and operation. The objective of the effects assessment was to:

- Predict and analyze the nature and extent of Project effects;
- Identify mitigation measures to protect valued components; and,
- Determine the significance of any effects remaining following mitigation (that is, residual effects), including the significance of combined effects (where applicable).

The following Project phases were considered when conducting the effects assessment:

- Construction – approximate duration of 10 months (non-continuous), from ground preparation to construction of the access roads and temporary pads, to well drilling and construction of the permanent pad, clean-up and testing; and,
- Operations and Maintenance – begins following the operational date of the observation wells and extends for the useful life of the well (that is, 40+ years).

The methods for the cumulative effects assessment are described in **Section 7.0**.

2.1.2.1 Criteria for Characterizing Residual Effects

The qualitative criteria defined in **Table 2-2** were used to characterize residual effects (an environmental effect of a Project that remains, or is predicted to remain, after mitigation measures have been implemented) and assess the likelihood of a significant effect.

Table 2-2: Characterization Criteria for Evaluation of Significance

Assessment Criteria	Rating and Definition
Duration	• **Immediate** – Effect is limited to 2 days or less. • **Short-term** – Effect is limited to the construction phase or any 1 year during the life of the observation wells, or 1-year post-abandonment. • **Medium-term** – Effect extends into the operations phase of the observation wells for up to 10 years, or up to 10 years post- abandonment. • **Long-term** – Effect extends into the operations phase of the observation wells for more than 10 years, but ceases before or upon abandonment; or, the residual effect extends more than 10 years post- abandonment and reclamation. • **Extended-term** – Effect extends beyond the operational life of the Project.
Frequency	• **Rare** – Effect occurs uncommonly or unpredictably (such as, the result of an accident or malfunction) over the assessment period. • **Isolated** – Effect is confined to specified phase of the assessment period (for example, during construction). • **Occasional** – Effect occurs intermittently and sporadically over the assessment period. • **Periodic** – Effect occurs intermittently but repeatedly over the assessment period. • **Continuous** – Effect occurs regularly throughout the assessment period.
Reversibility	• **Reversible** – Effect is reversible to pre-construction or equivalent conditions. • **Irreversible** – Effect is permanent.

Assessment Criteria	Rating and Definition
Magnitude	• **Negligible** – Effect is not detectable (no detectable change from baseline conditions). • **Low** – Effect is detectable, but is well within environmental or regulatory standards, or has no effect on the socio-economic environment beyond that of an inconvenience. • **Medium** – Effect is detectable and may approach, but is still within, environmental or regulatory standards, or results in moderate modification in the socio-economic environment. • **High** – Effect is beyond environmental or regulatory standards or results in a severe modification in the socio-economic environment.

2.1.2.2 Evaluation of Significance of Residual Effects

All assessment criteria (**Table 2-2**) were considered when determining the significance of each residual effect. Qualitative significance determinations incorporate professional judgment, which allows for the integration of all effects criteria ratings to provide relevant significance conclusions that are sensitive to context and facilitate decision-making (Lawrence 2007).

For the purposes of this assessment, a "significant residual effect" is defined as a permanent or extended-term residual effect of high magnitude that has a high probability of occurrence and cannot be technically or economically mitigated.

2.1.2.3 Identification of Mitigation Measures

Mitigation measures for construction and well drilling activities were identified which will conform to the American Petroleum Institute for industry standards for wellhead design, relevant permitting authority and regulatory requirements, industry standards. The mitigation measures will be incorporated in the forthcoming Environmental Protection Plan (EPP) and Well Drilling Programs being developed for each Project location. The development of the mitigation measures was also based on Dillon's professional experience and field study, feedback received as part of the consultation program, industry best practices, and guidelines provided by local conservation authorities and other agencies. Recommended mitigation measures are described in **Section 6.0**.

2.1.2.4 Project Activities Considered in the Effects Assessment

If approved, Enbridge Gas plans to begin construction of the Project in Fall 2023 and have Project construction completed by Summer 2024. Construction will involve a number of distinct steps that may have cultural, socio-economic, natural, and physical environmental effects. These steps apply to both the Bluewater and Mandaumin sites and are described below and depicted in **Appendix C**.

- **Site Preparation** – Site preparation is the first step of the construction process. It involves staking or marking the location of the proposed access roads, proposed temporary pads, and observation wells, identifying where other utilities are located, clearing vegetation (only as required), sweeping for wildlife, placing wildlife exclusion fencing (as required), and grading to allow for the movement of equipment and preparation of workspaces. In vegetated areas and on agricultural land, topsoil will be stripped and stored in piles until construction is complete. After construction, topsoil will be replaced in temporary work areas and any remaining topsoil that cannot be replaced where permanent facilities are installed, will be placed for re-use according to landowner instructions or removed from site in accordance with O. Reg. 406/19.
- **Early Construction Activities** – Once prepped, construction will start with the permanent access roads and temporary gravel drill pads. The access roads at both sites will be approximately 5 metres wide and the temporary pads will be approximately 80 metres by 100 metres. To install the new access roads and temporary pads, topsoil will be excavated and crushed gravel will be placed on top of geotextile material. These construction activities are proposed to commence in Fall 2023.
- **Well Drilling Activities** – The new observation wells will then be drilled with a rotary rig (which is essentially a rotating drill bit). This method of drilling will involve the removal of drill cuttings via a fluid. The wells will be drilled from surface to the planned total depth (approximately 760 metres). It is a sequential operation that involves drilling holes, running casing, and cementing the hole in place from larger to smaller diameters. The casing set depth selection process is designed to protect the environment. The surface casing sections protect the water bearing zones and the intermediate and production casings isolates the gas zones.

- **Installation of a Permanent Pad** – Once the observation wells are installed, the temporary pads will be reduced in size by removing extraneous crushed gravel and the underlying geotextile cloth and replacing the stockpiled topsoil. The remaining areas is the permanent graveled well pads that will each be approximately 8 metres by 8 metres in size. Well drilling activities, as well as the reduction of the temporary pads is proposed to occur between Spring and late Summer 2024.
- **Testing** – As these are observation wells, an American Petroleum Institute pressure rated wellhead will be installed along with telemetry to monitor the gas pressure in the underground storage formations. Following installation, the wellheads will be tested in accordance to the applicable regulatory requirement based on the maximum operating pool pressure.
- **Clean-up** – The construction area is then carefully cleaned up after the observation wells are installed and tested and construction activities are complete. All construction material and equipment will then be removed. A final grading of the area will be done followed by excess soil removal. Enbridge Gas will complete any reclamation work necessary following construction.

Activities during operations and maintenance phase include, but are not limited to, periodic site visits, periodic integrity assessment related activities, vehicle use, remote surveillance, and monitoring.

2.1.2.5 Potential Project Interactions

Potential Project interactions with the cultural, socio-economic, natural, and physical environment are identified in **Table 2-3**. The information presented in **Section 4.0** provides the context and rationale for these potential interactions, which are assessed in **Section 6.0**.

Table 2-3: Interaction Matrix

Component	Interaction with the Project (Yes [Y]/No [N])	
	Construction	Operations
Physiography and Topography	N	N
Surficial Geology and Soils	Y	N
Bedrock	Y	N
Groundwater	Y	N
Atmospheric Environment	Y	N
Aquatic Environment	N	N
Wetlands	N	N
Areas of Natural and Scientific Interest and Other Environmentally Significant Areas	Y	Y
Vegetation	Y	Y
Wildlife and Wildlife Habitat	Y	Y
Species at Risk	Y	Y
Planning Policies	N	N
Existing and Planned Land Use	N	N
Population, Employment, and Economic Activities	N	N
Human Occupancy and Resource Use	Y	Y
Infrastructure and Services	Y	N
Indigenous Community Land and Resource Use	N	N
Cultural Heritage Resources	Y	N

2.2 Stakeholder Engagement and Indigenous Consultation

Stakeholder engagement and Indigenous consultation are requirements of the Project. Early and frequent consultation and engagement with directly and indirectly affected Indigenous communities, landowners, government agencies, and the public was an

integral part of this Study. The objectives of the consultation and engagement process were to:

- Identify all potentially affected parties;
- Provide information to the parties on relevant components of the Study;
- Obtain input from these parties; and,
- Integrate information received into the decision-making process.

A number of methods were utilized to achieve these objectives, including:

- Identification of key community members and interest groups, including the local conservation authority, utility companies, government agencies, as well as directly and indirectly impacted landowners;
- Preparation and completion of a stakeholder engagement program (Section 3.0);
- The provision of key Project information to the Aamjiwnaang First Nation;
- Circulation of notices via Canada Post to approximately 38 residents and businesses in proximity to the Bluewater and Mandaumin Study Areas which informed recipients of the upcoming Project, the Study, and the virtual public information session;
- Advertisement of the Project in a local newspaper (The Independent of Petrolia and Central Lambton) prior to the virtual public information session;
- One virtual public information session to present the Project and facilitate public and stakeholder participation;
- Provision of Project information and updates via the Enbridge Gas website;
- Receipt of and response to public input through letters, e-mails, and phone calls;
- Analysis of Project comment forms from the virtual public information session; and,
- Circulation of information at key points in the process to Indigenous communities and all stakeholders including municipal governments, government agencies, residents, and other interested parties.

Stakeholder engagement and Indigenous consultation also included early and frequent contact with regulatory agencies to provide or request information regarding the Project. Details of stakeholder engagement and Indigenous consultation are provided in **Section 3.0**.

3.0 Stakeholder Engagement and Indigenous Consultation

Stakeholder engagement and Indigenous consultation was undertaken for the Project. This section provides an overview of the consultation and engagement activities undertaken as part of the Study.

3.1 Objectives

The objectives of the consultation and engagement program were to:

- Inform potentially affected Indigenous communities as well as government agencies, landowners, community members, and interest groups about the Project;
- Seek and facilitate the involvement of potentially affected Indigenous communities, government agencies, landowners, community members, and interest groups;
- Make all reasonable efforts to identify the interests and meet the needs of participants;
- Provide participants with the information they required to engage in a meaningful way;
- Commit to consider Indigenous communities and public issues/concerns during Project design and when making Project approval decisions;
- Incorporate feedback and evolve, as necessary, in response to the input and needs (access, format, etc.) of participants; and,
- Communicate to participants how their input affected outcomes (for example, Project design and review/approval decisions).

3.2 Consultation Activities

Indigenous consultation was guided by the OEB's Environmental Guidelines and Enbridge Gas's Indigenous Peoples Policy. From the outset, and throughout the Study process, Enbridge Gas stressed the importance of consulting with Indigenous communities, and engaging government agencies, landowners, community members, and interest groups.

Communication activities included letters of Upcoming Project Notice, letters of notification of the Study and invitation to participate in the Study and consultation activities, Canada Post ad-mail campaign, a newspaper ad, one virtual public information session presented via a Project webpage hosted by Dillon, and the Enbridge Gas Project-specific webpage. In addition, correspondence by electronic mail were also undertaken by the Project team.

3.2.1 Contact List

As part of the engagement and consultation process, a list of regulatory agencies and interest groups active in the area was compiled using a variety of sources, including government listings (for example, the MECP's Environmental Assessment Government Review Team Master Distribution List and the OEB's OPCC Members List), previous studies completed in the area, online sources, and telephone calls.

Recognizing the proximity of the Project to Aamjiwnaang First Nation's reserve, Aamjiwnaang First Nation was identified.

A contact list was then developed that divided the groups into the following categories:

- Aamjiwnaang First Nation;
- Federal and Provincial Elected Officials;
- Federal Agencies;
- Provincial Agencies, including the OPCC, and local Conservation Authority (SCRCA);
- Municipal Agencies and Elected Officials;
- Interest Groups (for example, the Ontario Federation of Agriculture, Lambton Federation of Agriculture, Sarnia-Lambton Economic Partnership, Source Protection Committee in the Thames-Sydenham and Region, and the Sarnia-Lambton Environmental Association); and
- Landowners within and directly adjacent to the two Project locations/DSA's.

A copy of the Project's Contact List is provided in **Appendix D**.

3.2.2 Project Webpage and Project Email

In order to make information accessible to as many groups as possible, Enbridge Gas created a Project-specific webpage. All materials presented at the virtual public information session, in Project notices, and Project reports were (or in the case of the

ER, will be) posted on the Project webpage at www.enbridgegas.com/2024WellProject. By including all information in an accessible, downloadable format, Enbridge Gas provided a simple and expeditious method of communicating with stakeholders.

Dillon also hosted a separate Project webpage to facilitate the virtual public information session; further details on the virtual public information session and associated webpage are provided in **Section 3.2.5**.

In addition to the Project webpages, a Project-specific email (BluewaterMandauminWellDrilling@dillon.ca) was created by Dillon and used to communicate directly with stakeholders. The Project-specific email will be monitored and emails will continue to be responded to throughout the OEB process and until substantial construction on the Project is complete.

The final ER will be posted on the Enbridge Gas Project website in an accessible, downloadable format once it has been submitted to the OEB for review. **Figure 3-1** shows a snapshot of the Enbridge Gas Project webpage.

Figure 3-1: Snapshot of Enbridge Gas Project Webpage

ENBRIDGE

Residential | Business & Industrial | Storage & Transportation | Sustainability | About Us | Connect to Gas

Home / About Enbridge Gas / Projects

2024 Well Project

The project will involve the construction two new observation wells; one in the Bluewater Designated Storage Area (DSA) and one in the Mandaumin DSA. DSAs are areas of land designated by the Ontario Energy Board (OEB) under Section 36.1 (1) (a) of the OEB Act, which contain geological formations used for underground storage of natural gas.

The observation wells constructed for this project will be used to monitor the gas content and pressure in these underground storage formations and help ensure the continued safe and reliable operation of Enbridge Gas storage facilities.

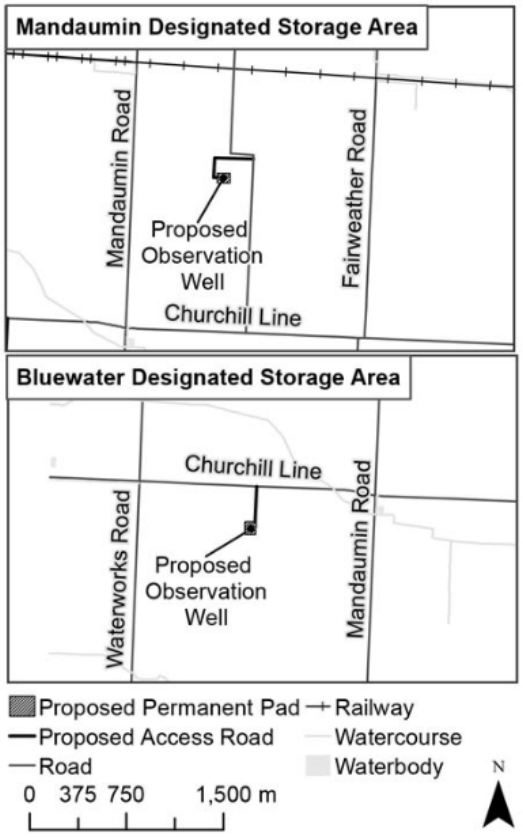
The Bluewater and Mandaumin well drilling sites are located within 2 km of one another. The Bluewater site is approximately 900 m west of the intersection of Mandaumin Road and Churchill Line in the City of Sarnia, and the Mandaumin site is approximately 1,300 m northeast of the intersection of Mandaumin Road and Churchill Line in the Town of Plympton-Wyoming.

Project activities at the Bluewater and Mandaumin drilling sites will commence with the construction of a temporary gravel drilling pad measuring up to 80 m by 100 m. Upon completion of drilling activities, a permanent gravel pad measuring 8 m by 8 m will be installed around the wells.

Access to the Bluewater site will require a new permanent access road that will be 5 m wide by roughly 300 m long, and access to the Mandaumin site will also require a new permanent access road, measuring 5 m wide and approximately 500 m long.

Project status/timeline

Feasibility | Environmental studies | Regulatory review | Regulatory approval | Under construction | In-service



3.2.3 Project Notices

3.2.3.1 Notice of Upcoming Project

A Notice of Upcoming Project was mailed to the Aamjiwnaang First Nation, select agency representatives (such as members of the OPCC and SCRCA), and select landowners on May 1, 2023 prior to the commencement of the Study. The intent of the notice was to begin engagement as early as possible, inform recipients of the upcoming Project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the MNRF/OEB review process. A copy of the Notice of Upcoming Project is provided in **Appendix E**.

3.2.3.2 Notice of Commencement

A Notice of Study Commencement and Public Information Session (Notice of Commencement) that provided a map of the Project and a high-level summary of the Bluewater and Mandaumin well drilling activities was mailed to approximately 38 residences and businesses in proximity to the Study Area during the week of June 5, 2023 via Canada Post. A copy of the Notice of Commencement is provided in **Appendix E**.

The Notice of Commencement was also published in the local newspaper and ran in The Independent of Petrolia and Central Lambton on June 1, 2023.

Questions and comments received following the release of the Notice of Commencement, and input received throughout the engagement and consultation process from Indigenous communities, agencies, landowners, interest groups, and other potentially affected stakeholders is provided in **Appendix F**.

3.2.4 Agency Letters

The Notice of Commencement was sent out with letters requesting cultural, socio-economic, natural, and physical environmental data and inviting government agencies (federal, provincial, and municipal) to the virtual public information session which was held June 12 to June 18, 2023. These letters were distributed on June 1, 2023.

To expedite the process, letters were sent by email (copies of the letters sent to agencies are provided in **Appendix G**).

3.2.5 Virtual Public Information Session

The purpose of the virtual public information session was to provide an opportunity for the public and stakeholders to comment on the Study, planning process, and the Project. The public information session was designed to achieve the following objectives:

- Introduce participants to the Project, the Study process, the MNRF and OEB review process, and consultation plans; and,
- Seek feedback from participants on local cultural, socio-economic, natural, and physical environment considerations, issues, or concerns that should be addressed as part of the Study.

The virtual public information session was hosted by Dillon via the Project-specific webpage: www.BluewaterMandauminWellDrilling.ca. The webpage was active for a 1-week period and was live from Monday, June 12, 2023 to Sunday, June 18, 2023.

On the virtual public information session webpage, a video presentation was available providing an overview of the Project and environmental assessment process. The presentation slides and a copy of the video transcript of the virtual public information session were provided for download. The presentation discussed the following:

- Introduction to Enbridge Gas and their commitment to meaningful engagement, environmental sustainability, and safe work practices;
- Purpose of the public information session;
- Enbridge Gas' Indigenous Peoples Policy;
- Project purpose and overview of the proposed construction activities that will occur at the Bluewater and Mandaumin well drilling sites;
- Project map;
- Physical and natural environment considerations;
- Cultural and socio-economic considerations;
- Cultural heritage resource considerations;
- Wellhead design and safety;
- Well drilling construction sequence;
- Mitigation and monitoring;
- Regulatory framework (MNRF review/OEB);
- Environmental assessment process and Project schedule;

- Continuous stakeholder engagement; and,
- Information on how to stay informed.

Copies of the presentation and video transcript for the virtual public information session is provided in **Appendix H**.

3.2.5.1 Results from the Virtual Public Information Session

The virtual information session webpage was viewed by 5 unique visitors and there was a total of 7 site views. Of the 5 unique visitors, 2 were viewing from Toronto, 1 viewer was from Guelph, 1 viewer was from Ottawa, and 1 visitor was from Saint-Jerome, Québec.

Visitors to the virtual information session were encouraged to submit comments – either through the online Project comment form, or by downloading a PDF version of the Project comment form and submitting it to the Project email. Copies of the comment form that was provided on the webpage for the virtual information session is provided in **Appendix H**, following the session's respective presentation and transcript. No completed comment forms were received through the webpage for the virtual public information session.

While the virtual public information session resulted in minimal public comment, the Project Notice of Commencement elicited greater stakeholder engagement, either through the Project email or by telephone, and included correspondence with a nearby landowner, provincial government agencies (for example, the Conservation and Source Protection Branch of MECP, the Species at Risk Branch, Land and Water Division of the MECP, MCM, MNRF, SCRCA, Hydro One Networks Inc. [HONI], OPCC), and one municipal agency (that is, the City of Sarnia). This correspondence is provided in the Stakeholder Engagement Logs in **Appendix F**.

Following the issuance of the Notice of Commencement, a member of the public who had received a copy of the notice via ad-mail, reached out to the Project team. The main theme of the comments received from the notice recipient were related to impacts on below-ground mineral rights and ensuring landowners had also received a copy of the Notice of Commencement. The recipient also had general questions on DSAs, the type of wells being installed, the proposed depth of the wells, and the Project scope.

3.3 Indigenous Consultation

As provided in section 3.2.1 of this report, recognizing the proximity of the Project to Aamjiwnaang First Nation's reserve, Aamjiwnaang First Nation was identified as an Indigenous community to be consulted during the Study.

The Notice of Upcoming Project was provided to the Aamjiwnaang First Nation on May 1, 2023 and a Notice of Commencement letter was provided on June 2, 2023 via email. The notices introduced the Project and provided an opportunity to comment. The Notice of Commencement letter invited the community to provide input and comments on the proposed Project and participate in the virtual public information session. Enbridge Gas also offered the opportunity to meet with the community to discuss the Project.

Consultation with Indigenous communities, up to July 10, 2023, is summarized in **Appendix I**.

3.4 Project Refinements Resulting from Input

Through the Notice of Commencement and virtual public information session, no suggestions or concerns were made that would result in a change to the proposed Project scope.

3.5 Ongoing Engagement Activities

Upon completion of the ER, Enbridge Gas is committed to ongoing communication with Indigenous communities, government agencies, landowners, community members, and interest groups.

Enbridge Gas will continue to actively engage all identified Indigenous groups in meaningful dialogue concerning the Project and endeavour to meet with Indigenous communities for the purposes of exchanging information regarding the Project, responding to inquiries, discussing issues and concerns regarding the Project, and will respond to communities in a timely manner.

4.0 Cultural, Socio-Economic, Natural and Physical Environment Setting

This section describes the existing cultural, socio-economic, natural, and physical environment setting for lands that are located within the Study Area established for the Project.

4.1 Physical Environment

This subsection provides baseline information on the following components:

- Physiography and Topography;
- Surficial Geology and Soil;
- Bedrock; and,
- Groundwater.

Physical environment features identified from background data sources are shown on **Figure 4-1** and **Figure 4-2**.

4.1.1 Physiography and Topography

The Project is located within the Bevelled Till Plains physiographic region of southern Ontario, a region characterized as having relatively flat, reworked plains that were deposited and then over-ridden by a subsequent glacial event (Chapman and Putnam 1984; 2007).

Topography in the Bluewater Study Area is generally flat, and ranges from 197 metres above sea level (masl) to 199 masl, increasing in elevation to the south. Topography in the Mandaumin Study Area is also generally flat, with the highest elevation at the location of the proposed temporary pad site at 201 masl.

4.1.2 Surficial Geology and Soil

Surficial geologic mapping indicates the Bluewater Study Area and Mandaumin Study Area lie primarily within a clay to silt-textured till (derived from glaciolacustrine deposits or shale).

Perth Clay is the soil type identified in both Study Areas (LIO, Ontario Ministry of Agriculture, Food and Rural Affairs [OMAFRA] 2021). Perth Clay is an imperfectly drained soil that belongs to the Grey-Brown Podzolic Soil Group. Perth soils are well suited to the production of most crops grown in Lambton County, with the exception of tree fruits and early vegetables (Ministry of Agriculture and Food 1957). They are best utilized for corn, soybeans, and spring grains and with improvements to drainage, can also be good for the growing of fall wheat and alfalfa (Ministry of Agriculture and Food 1957).

The Project is located in a rural setting that is comprised almost entirely of agricultural land. Soil capability for agriculture is mapped by Agriculture and Agri-Food Canada (2005). Lands classified as Class 1 are the most agriculturally productive, while those classified as Class 7 have the lowest capacity for agriculture. Class 1 to 5 agricultural lands are generally arable, while Classes 1 through 3 are defined by OMAFRA to be prime agricultural soils for common field crop production.

Most rural land in Lambton County is comprised of prime agricultural lands (Classes 1-3), including speciality crop areas that are suitable to produce fruits and vegetables.

Soils in the Bluewater Study Area have been classified as Class 1 and Class 3. Class 1 soils can be managed and cropped without difficultly and are moderately high to high in productivity for a wide range of field crops. Class 3 soils have moderately severe limitations that restrict the range of crops or require special conservation practices. Soils in the Mandaumin Study Area have been classified as Class 1.

A search of the Federal Contaminated Sites Inventory revealed no records of historical contamination (closed and active sites) within the Bluewater Study Area or Mandaumin Study Area (Treasury Board of Canada Secretariat 2023). A search of the MECP record of site conditions website (2023a), also found no previous record of soil or groundwater contaminations exceeding the allowable levels in the Study Areas.

4.1.2.1 Soybean Cyst Nematode (SCN)

In southwestern Ontario, soybean cyst nematode (SCN) is present in the topsoil of many agricultural fields in populations large enough to impact soybean yields. SCN is a parasitic pest that negatively affects soybean crop production on agricultural lands. It can spread in many ways such as wind, animals, or in topsoil stuck to machinery as the

machinery passes from an impacted field to a non-impacted field. Once a field has been infested, there is significant potential for soybean crop yield reductions (Olechowski 1990). SCN is common in agricultural lands in Lambton County and may be present within either the Bluewater or Mandaumin Study Area.

4.1.2.2 Agricultural Tile Drains

Agricultural fields in Lambton County commonly have tile drainage to increase agricultural productivity.

- **Bluewater Study Area** – Approximately 100 per cent of the Bluewater Study Area contains agricultural tile drainage (systematic) (LIO, OMAFRA 2019).
- **Mandaumin Study Area** – Approximately 86 per cent of the Mandaumin Study Area contains agricultural tile drainage (systematic) (LIO, OMAFRA 2019).

4.1.3 Bedrock

The bedrock in Lambton County is primarily Kettle Point bituminous shale strata with occurrence of shales and limestones of the Hamilton Group Formation (Vandenberg et al, 1977). The bedrock of the Bluewater Study Area and Mandaumin Study Area is uniform in nature and both Study Areas lie over the Hamilton Group formation where the bedrock is comprised of limestone, dolostone, and shale (Ontario Geological Survey [OGS] 1991).

In the Bluewater Study Area and Mandaumin Study Area, drift thickness varies from 40 metres to 50 metres. Based on available MECP well records, at the two closest water supply wells to the Bluewater Study Area (MECP Well Record No. 3402275 and No. 3402300), limestone and dolostone bedrock was encountered at approximately 45.5 metres below ground surface (mbgs). At the wells closest to the Mandaumin Study Area (MECP Well Record No. 3406507 and No. 3401876), limestone bedrock was encountered at approximately 40 mbgs and 44 mbgs.

The target depth of the proposed observation wells is approximately 760 mbgs, meaning bedrock will be encountered during the well drilling process at both Project locations.

4.1.4 Groundwater

Source water protection information and water well information was reviewed in the vicinity of the Bluewater Study Area and Mandaumin Study Area to better understand local groundwater conditions.

4.1.4.1 Source Water Protection

Detailed policy information for new development within mapped Well Head Protection Areas (WHPAs) and Intake Protection Zones (IPZs) have been developed by the Thames-Sydenham and Region Drinking Water Source Protection Committee (2015) and County of Lambton (2020). WHPAs and IPZs have been identified as areas that are particularly sensitive to surface water contamination (for example, spills, leaks, surface leaching, etc.). As shown on mapping provided by these sources, the Project does not overlap any WHPAs or IPZs (Thames-Sydenham and Region Drinking Water Source Protection Committee 2015). The nearest IPZ is located 12 kilometres north of the Project within Lake Huron.

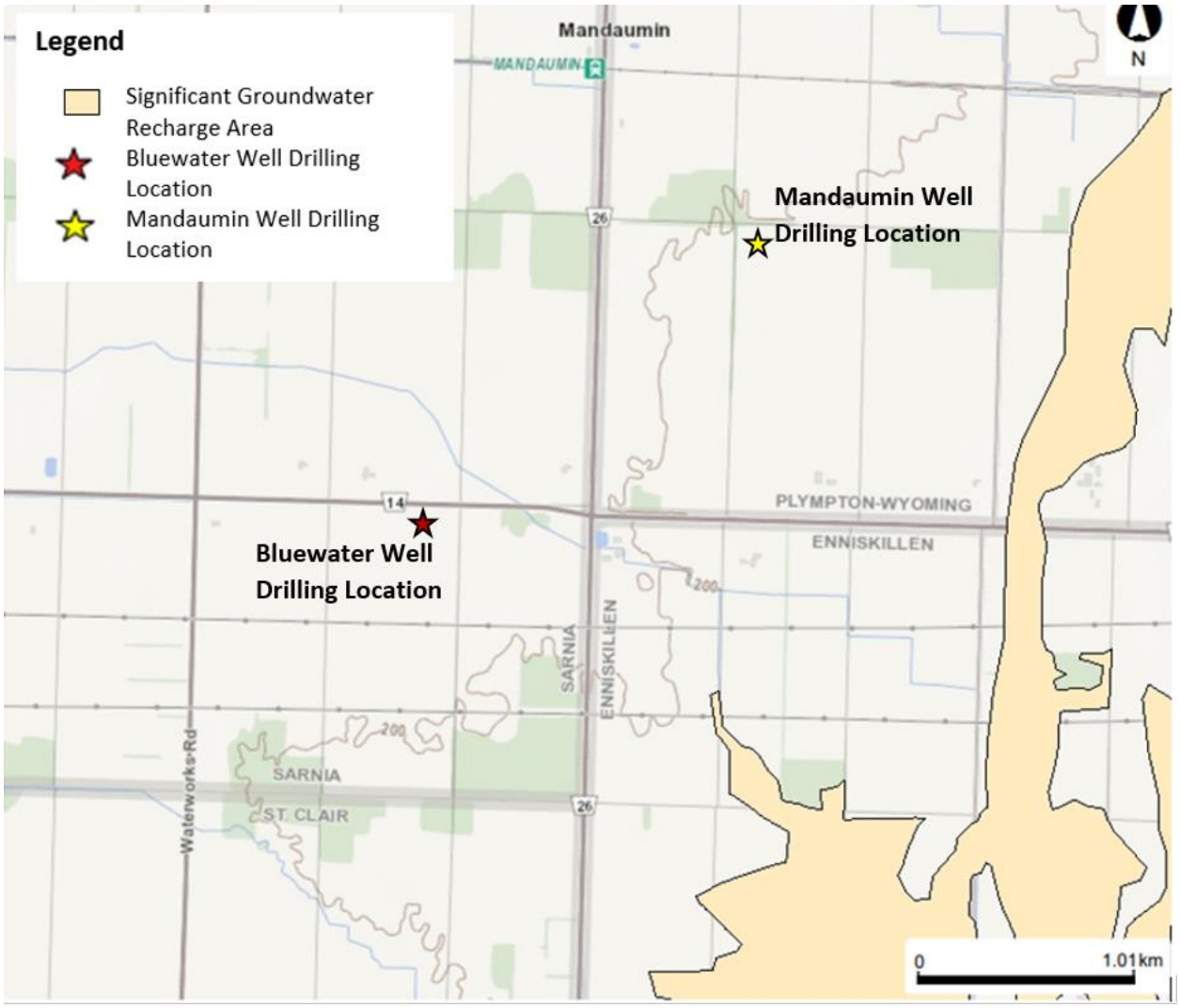
Highly Vulnerable Aquifer (HVA) areas are also considered particularly susceptible to contamination due to shallow, near-surface groundwater, or a permeable soil layer above the aquifer (MECP 2020). An aquifer can be considered highly vulnerable based on several factors, such as how deep it is underground and the characteristics of the soil or rock surrounding it (CLOCA 2022). The nearest HVA area to the Project is located 1 kilometre east of the Mandaumin Study Area. This feature is shown on **Figure 4-1**.

Figure 4-1: Highly Vulnerable Aquifers (HVA) in Proximity to Study Areas

Source of base map and source water feature: MECP Source Protection Information Atlas (MECP 2020)

Significant Groundwater Recharge Area (SGRA) is another important source water protection feature. A SGRA is a recharge area that helps maintain the water level in an aquifer that supplies a community with drinking water. The soils in these areas is typically characterized by permeable, loosely packed, coarse materials, which allows the water to seep easily into the ground. Areas with shallow fractured bedrock are also often recharge areas (LSRCA 2022). The nearest SGRA area to the Project is located 1 kilometre east of the Mandaumin Study Area. This feature is shown on **Figure 4-2**.

Figure 4-2: Significant Groundwater Recharge Area (SGRA) in Proximity to Study Areas



Source of base map and source water feature: MECP Source Protection Information Atlas (MECP 2020)

In a memo provided by the Conservation and Source Protection Branch of the MECP in response to the Notice of Commencement (provided by email June 16, 2023), it was noted that "natural gas projects are not identified as a threat to drinking water sources under the *Clean Water Act, 2006*. However, certain activities accompanying natural gas project construction may pose a risk to sources of drinking water." The memo also noted that based on the Source Protection Branch's rudimentary review of the Project, "[…] neither of the proposed observation wells or access roads intersect with any identified vulnerable areas specifically".

4.1.4.2 Water Well Information

Well information contained in the MECP (2023b) Water Well Information System was reviewed in the vicinity of the Bluewater Study Area and Mandaumin Study Area. Information on depth to bedrock and static water levels recorded in the well information available within 500 metres of the Project are as follows:

- A total of 6 unique well IDs were identified within 500 metres of the Project, which includes 4 water supply wells and 2 records for well abandonment. The wells identified within 500 metres of the Project range in depth between 48.5 mbgs and 51.8 mbgs, with an average depth of approximately 50.25 mbgs. Static water levels range in depth between 0 mbgs and 16.2 mbgs, with an average of 7.4 mbgs. Depths to bedrock range between 0 mbgs and 48.2 mbgs, with an average depth of approximately 31.45 mbgs.

4.2 Natural Environment

This subsection provides baseline information on the following components:

- Atmospheric Environment;
- Aquatic Environment;
- Wetlands;
- Areas of Natural and Scientific Interest;
- Vegetation;
- Wildlife and Wildlife Habitat; and
- Species at Risk.

Existing natural environment features identified from background data sources are shown on **Figure 4-3**, climatic patterns are shown on **Figure 4-4**, Ecological Land Classification (ELC) of the Study Area is shown on **Figure 4-5,** and significant natural features are shown on **Figure 4-6**. A complete list of flora and fauna species identified through background review and observed during the preliminary field investigation is included in **Appendix J** and incidental observations are included in **Appendix K**.

Figure 4-3: Existing Natural Features

2024 BLUEWATER AND MANDAUMIN WELL DRILLING PROJECT

ENBRIDGE GAS

EXISTING NATURAL FEATURES

FIGURE 4-3

- Study Area (125m)
- Proposed Observation Well
- Proposed Temporary Pad (approx. 80m by 100m)
- Proposed Permanent Access Road (approx. 5m wide)

Ministry of Natural Resources and Forestry (MNRF)

- Wooded Area
- Waterbody
- Watercourse
- Major Road
- Minor Road
- Railway

SCALE 1:12,500

0 155 310 620 m

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: -ZJB
MAP CHECKED BY: -KG
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

DILLON CONSULTING

PROJECT: 23-6171
STATUS: FINAL
DATE: 2023-07-07

FILE LOCATION: K:\2023\236171\Product\Client\ER\F4-3_ExistingNaturalHeritage.mxd

4.2.1 Atmospheric Environment

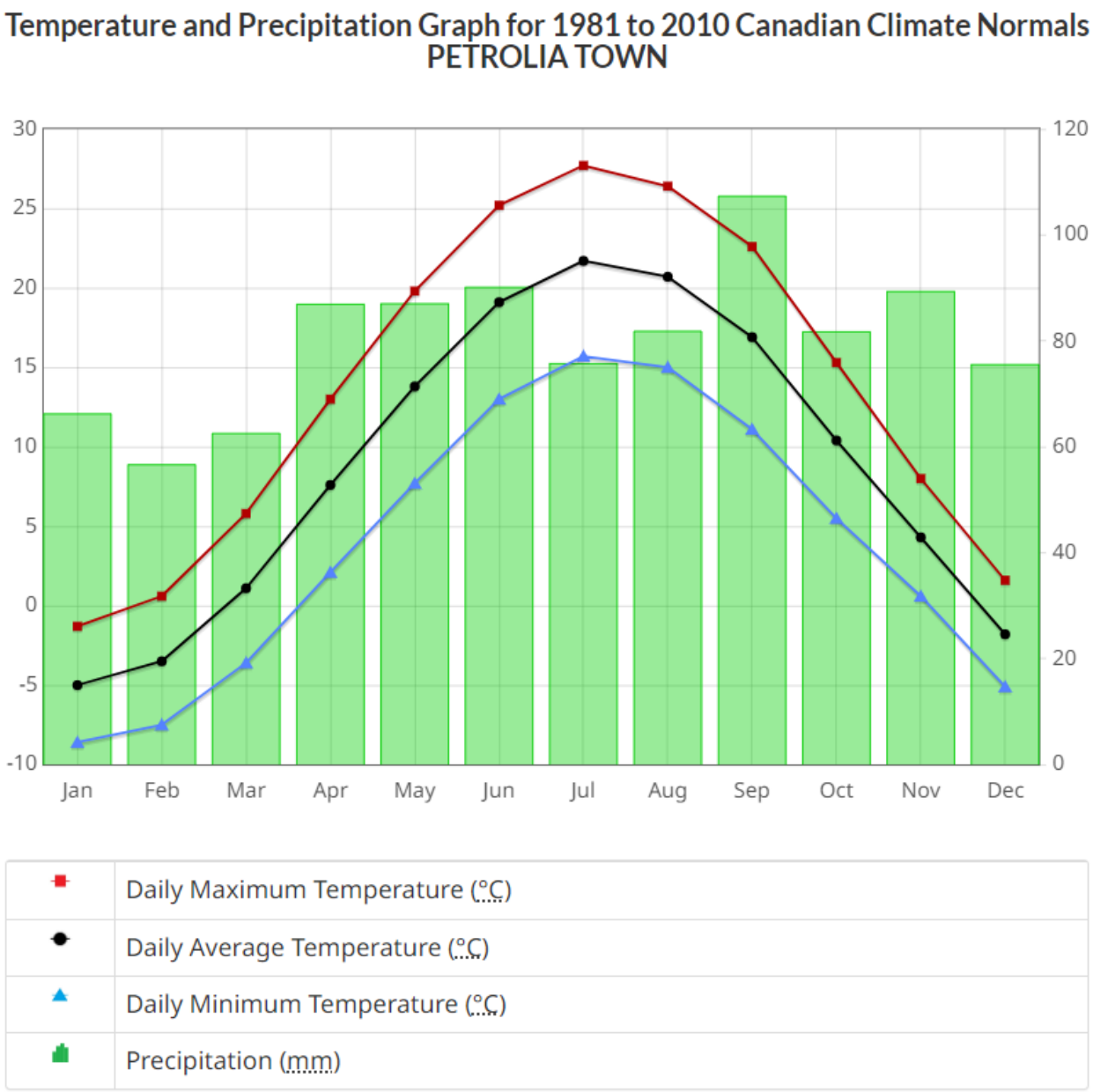
4.2.1.1 Climate

Climate averages are commonly used to describe the climatic conditions of a particular location in Canada. At the end of each decade, ECCC updates its climate averages for several locations across Canada and for as many climatic characteristics as possible. The climate averages and extremes are obtained from Canadian climate stations with at least 15 years of data between 1981 and 2010 (ECCC 2022).

The nearest ECCC climate station to the Project was identified as the Petrolia Town station, located approximately 8 kilometres southwest of the Bluewater Study Area and Mandaumin Study Area.

Figure 4-4 shows temperature and precipitation data averaged over the 29-year period of 1981 to 2010 recorded at the Petrolia Town station.

Figure 4-4: Temperature and Precipitation Graph for 1981 to 2010 – Petrolia Town



The historical climate data is summarized below based on averages for the period of 1981 to 2010 (ECCC 2022):

- The annual daily average temperature recorded at the Petrolia Town station was 8.8 degrees Celsius (°C), with January being the coldest month (average daily temperature of -5.0°C) and July being the warmest month (average daily temperature of 21.7°C). The extreme minimum temperature on record was -30.0°C on January 19, 1994 and the extreme maximum temperature was 39.5°C on June 11, 1988.
- The annual average precipitation recorded at the Petrolia Town station was 960.6 millimetres, with September being the rainiest month (average rainfall of 107.3 millimetres) and January being the snowiest month (average snowfall of 39.2 centimetres). The extreme daily rainfall recorded for Petrolia Town station was 142.6 millimetres on June 11, 1986 and the extreme daily snowfall was 40.6 centimetres on February 24, 1965.

4.2.1.2 Air Quality and Greenhouse Gases

Air quality criteria, standards, and objectives in Ontario have been established by MECP and federally by ECCC. The purpose of air quality objectives and standards is to protect against adverse effects on health and the environment. The MECP has established a network of 39 ambient air monitoring stations across Ontario that collect air pollution data (MECP 2010). Annually, MECP prepares an Air Quality Report which assesses the state of air quality in Ontario.

Based on a review of the most recent Air Quality Report, over the 10-year period of 2010 to 2020, air quality in Ontario has improved due to the decrease of ambient concentrations of common air pollutants and emissions (MECP 2022). During this 10-year period, concentrations of nitrogen dioxide decreased by 22 percent, sulphur dioxide concentrations decreased by 50 percent, fine particulate matter concentrations decreased by 25 percent, and maximum ground-level ozone levels decreased by 13 percent on average across the province (MECP 2022). Although the 10-year trend shows a general improvement in air quality, in 2020, there were exceedances of the provincial Ambient Air Quality Criteria (AAQC) and/or Canadian Ambient Air Quality Standard for ground-level ozone, fine particulate matter, and sulphur dioxide in some Ontario communities (MECP 2022).

Due to the variety of factors that influence air quality, such as pollutant emissions, weather, natural events, and the long-range transport of air pollutants, air quality can vary year to year across Ontario. As such, long-term trends provide a better reflection of air quality in Ontario and the improvements or deterioration in air quality over time (MECP 2022).

Ambient air quality in the Study Areas is influenced by local sources, distant processes through the transport of contaminants from other regions, vehicles, and other transportation sources including road particulate matter. The Study Areas is centrally located in proximity to the following Air Quality Health Index (AQHI) monitoring stations:

- **Sarnia (urban station)** – The Bluewater Study Area and Mandaumin Study Area are located approximately 13.9 kilometres and 14.6 kilometres southeast, respectively, from the urban Sarnia AQHI monitoring station. The monitoring station is located within an area of the City known as Chemical Valley. The area is classified as "Air Zone Category 3", that is, an area with a concentration of large industrial sources (nitrogen dioxide and sulfur dioxide) due to the number of industrial companies operating within the area. The 10-year trend (2010 to 2019) for Sarnia shows a decrease in the annual mean of nitrogen dioxide and a decrease of fine particulate matter (MECP 2019). Improvement of air quality in Sarnia may be attributed to the reduction in industrial emissions in the area in conjunction with the elimination of coal-fired power plants in Ontario. For example, levels of sulfur dioxide and total reduced sulphur measured in 2016 are approximately 60 per cent less compared to levels measures 10 years ago in Sarnia and are now well below the Ontario annual acceptable levels (SLEA 2016).
- **Grand Bend (rural station)** – The Bluewater Study Area and Mandaumin Study Area are located approximately 60.5 kilometres and 59 kilometres southwest, respectively, from the rural Grand Bend monitoring station, an area where the ambient air quality is not influenced by local industrial operations. The 10-year trend (2010 to 2019) for Grand Bend shows a decrease in the annual mean of nitrogen dioxide and a decrease in the annual mean of fine particulate matter (MECP 2019). Due to transboundary flow of pollutants along the eastern shores of Lake Huron, Ontario's one-hour AAQC for ozone was exceeded at Grand Bend on eight occasions (MECP 2019).

Similar to air quality, greenhouse gases (GHGs) in the Study Area may be influenced by local sources, as well as long-range transport of GHGs from outside the Study Areas. Due to the long-lived nature of GHGs and long-range transport, GHGs are considered at local, provincial, and national levels, and where data is available.

Through the federal Facility Greenhouse Gas Emissions Reporting Program, administered by ECCC, large industrial emitters that emit 10 kilotonnes or more must submit an annual report of their GHG emissions based on a reporting threshold. The Sarnia Fractionation Plant, an oil and gas extraction facility owned and operated by Plains Midstream Canada ULC, is the nearest large industrial emitter of GHGs to the Project. It is located approximately 10.3 kilometres from the Bluewater Study Area, and approximately 11.5 kilometres west of the Mandaumin Study Area on the outskirts of the Sarnia Urban Area (ECCC 2023a). In 2021, they reported a total emission of 165.61 kilotonnes carbon dioxide equivalent (ECCC 2023b).

4.2.2 Aquatic Environment

A combination of desktop review of available agency resources and a preliminary field investigation was conducted to determine the location of existing surface water features and the potential for fish habitat within the Study Areas.

The desktop review revealed that the Project is located within the jurisdiction of the SCRCA, which manages the watersheds of all streams draining into southern Lake Huron, the St. Clair River, and northeastern Lake St. Clair. A total of 14 subwatersheds are located within the SCRCA watershed. Both the Bluewater Study Area and Mandaumin Study Area lie within the larger St. Clair Watershed, and in the subwatershed of Cow and Perch Creeks. According to the SCRCA St. Clair Watershed Report Card (2018), surface water quality is generally poor within this watershed, largely due to the lack of wetland features which help reduce flooding and filter water.

Based on air photo evaluation and the desktop review of agency resources, no unmapped or mapped aquatic feature exists within the Bluewater or Mandaumin Study Areas. The nearest feature, a permanent mapped, unnamed watercourse, is located approximately 223 metres to the east from the start/northern extent of the access road to the Bluewater observation well (LIO; Watercourse Dataset, 2022). This watercourse feature is shown on **Figure 4-3**. Based on a review of DFO mapping, no aquatic SAR or critical habitat for these species were identified in this watercourse (DFO n.d.).

The preliminary field investigation completed on May 26, 2023 confirmed that the location of the watercourse feature is outside the Study Area. No additional watercourse features were identified in either the Bluewater or Mandaumin Study Area.

4.2.3 Wetlands

A desktop review of available agency resources was conducted to determine the potential presence of wetlands within the Study Areas. A preliminary field investigation was also conducted to asses for the potential presence of wetlands within the Study Areas; an Environmental Land Classification (ELC) assessment (further described in **Section 4.2.5** and illustrated in **Figure 4-5**) was also completed during the preliminary field investigation.

A review of available agency mapping did not identify any wetlands within the Bluewater or Mandaumin Study Area. However, based on air photo evaluation, potential unmapped and unevaluated wetland areas may exist within the deciduous forest located in the northwest portion of the Mandaumin Study Area. No potential wetland features were identified in the Bluewater Study Area through the air photo evaluation.

During the preliminary field investigation completed on May 26, 2023, no wetland communities were identified in the Bluewater Study Area.

Similarly, no wetland communities were identified in the Mandaumin Study Area; however, the forested area at the northwest portion of the Mandaumin Study Area was determined to have potential to support wetland community pockets. This potential wetland area is located at the furthest extent of the 125 metre Study Area boundary and could not be confirmed due to property access.

4.2.4 Areas of Natural and Scientific Interest

Based on a review of available agency mapping, no Areas of Natural and Scientific Interest are present within the Bluewater or Mandaumin Study Area.

4.2.5 Vegetation

4.2.5.1 Ecological Land Classification

Preliminary ELC surveys were conducted using the ELC System for Southern Ontario, and second approximation classifications (Lee et al. 1998; 2008) were used to classify and map ecological communities within the Study Areas. The ecological community polygon boundaries were determined through a review of aerial photography and further refined during the preliminary field investigation conducted on May 26, 2023.

The results of the preliminary ELC survey determined that lands in the Bluewater Study Area and Mandaumin Study Area are primarily classified as 'cultural' communities with some natural communities occurring in the north and northwest portion of the Mandaumin Study Area. Current ELC mapping is provided on **Figure 4-5**, and further described for each Study Area below:

- **Bluewater Study Area** – Cultural communities most prevalent within the Bluewater Study Area included a rural property (CVR_4) and active agricultural fields, which included annual row crops (OAGM1) and hayfields (OAGM2). At the time of the May 26, 2023 preliminary field investigation, the hayfields had recently been cut. The rural properties (CVR_4) identified are residential properties with manicured lawns, fencerows (TAGM5), and planted landscape trees.
- **Mandaumin Study Area** – Cultural communities most prevalent within the Mandaumin Study Area included active agricultural fields of planted row crops (OAGM1). Naturally occurring communities were present in the north and northwest portion of the Study Area, and consist of a sugar maple dominated deciduous forest (FODM5) and a naturalized deciduous hedge-row (FODM11) comprised of native and non-native tree and shrub species. Two sections of a fencerow (TAGM5) were present on the eastern and western extent of the Study Area.

A full list of ELC community types and their total area within the Study Areas is provided in **Table 4-1**, below.

A list of vegetation (vascular plants) were recorded during the preliminary field investigation. A summary for each Study Area is provided below:

- **Bluewater Study Area** – A total of 29 vascular plant species were documented within the Bluewater Study Area. Of the 29 species identified, 13 (45%) are listed as native

species considered to be Secure (SRank of S5) in the province of Ontario, and 16 species (55%) are listed as introduced species (SRank of SE and SNA). A full list of the botanical species observed within the Study Areas during the preliminary field investigation is included in **Table K-3**, **Appendix K.**

- **Mandaumin Study Area** – A total of 39 vascular plant species were documented within the Mandaumin Study Area. Of the 39 species identified, 24 (62%) are listed as native species considered to be Apparently Secure (SRank of S4) to Secure (SRank of S5) in the province of Ontario, and 15 species (15%) are listed as introduced species (SRank of SE and SNA).

A full list of the botanical species observed within the Study Areas during the preliminary field investigation is included in **Table K-5**, **Appendix K.**

Table 4-1: ELC Communities within the Study Areas and Project Footprint

ELC Category	ELC Community Code	ELC Community Type	Bluewater Study Area hectares (ha)	Bluewater Project Footprint hectares (ha)	Mandaumin Study Area (ha)	Mandaumin Project Footprint hectares (ha)
Cultural	CVR_4	Rural Property	1.33	Not applicable (N/A)	N/A	N/A
Cultural	IAGM1	Agricultural Buildings/Infrastructure	0.28	N/A	N/A	N/A
Cultural	OAGM1	Annual Row Crops	9.86	2.69	18.37	3.76
Cultural	OAGM2	Perennial Cover Crops	4.28	0.74	N/A	N/A
Cultural	TAGM5	Fencerow	0.53	0.43	0.89	0.35
Natural (Upland) – Forest	FODM5	Dry – Fresh Sugar Maple Deciduous Forest	N/A	N/A	1.85	0.28
Natural (Upland) – Forest	FODM11	Naturalized Deciduous Hedge-row	N/A	N/A	0.75	0.73

Figure 4-5, Map 1 of 2: Ecological Land Classification in the Bluewater Study Area

2024 BLUEWATER AND MANDAUMIN WELL DRILLING PROJECT

ENBRIDGE GAS

ECOLOGICAL LAND CLASSIFICATION BLUEWATER STUDY AREA

FIGURE 4-5, MAP 1 OF 2

- Study Area (125m)
- Proposed Observation Well
- Proposed Temporary Pad (approx. 80m by 100m)
- Proposed Permanent Access Road (approx. 5m wide)
- Proposed Permanent Pad (approx. 8m by 8m)
- Watercourse
- Major Road

Ecological Land Classification

- CVI_1 - Road
- CVR_4 - Rural Property
- IAGM1 - Agricultural buildings
- OAGM1 - Annual Row Crops
- OAGM2 - Perennial Cover Crops (Hay Field)
- TAGM5 - Fencerow

SCALE 1:3,400

0 40 80 160 m

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: -ZJB
MAP CHECKED BY: -KG
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

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FILE LOCATION: K:\2023\236171\Product\Client\ER\F4-5_ELC.mxd

Figure 4-5, Map 2 of 2: Ecological Land Classification in the Mandaumin Study Area

2024 BLUEWATER AND MANDAUMIN WELL DRILLING PROJECT

ENBRIDGE GAS

ECOLOGICAL LAND CLASSIFICATION MANDAUMIN STUDY AREA

FIGURE 4-5, MAP 2 OF 2

- Study Area (125m)
- Proposed Observation Well
- Proposed Temporary Pad (approx. 80m by 100m)
- Proposed Permanent Access Road (approx. 5m wide)
- Proposed Permanent Pad (approx. 8m by 8m)

Ecological Land Classification

- FODM11 - Naturalized Deciduous Hedge-row
- FODM5 - Dry - Fresh Sugar Maple Deciduous Forest
- OAGM1 - Annual Row Crops
- TAGM5 - Fencerow

SCALE 1:3,400

0 40 80 160 m

N W E S

MAP DRAWING INFORMATION:
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4.2.5.2 Woodlands

A review of available agency mapping did not identify woodland features within the Bluewater Study Area; one MNRF woodland feature and designated Significant Woodland was identified within the Mandaumin Study Area.

The woodland feature in the Mandaumin Study Area is approximately 9.5 hectares in size in its entirety, with 1.85 hectares located in the Study Area. This woodland community occurs within and adjacent to the northwest portion of the Mandaumin Study Area (**Figure 4-6**). The Town of Plympton-Wyoming Official Plan (2021) as well as the County of Lambton Official Plan (2020), identifies this feature as significant woodland.

According to the County of Lambton Official Plan (2020), significant woodlands are forested areas designated for Environmental Protection in a primary corridor or Significant Natural Area, or any contiguous forested area that is 2 hectares or greater.

According to the Town of Plympton-Wyoming Official Plan (2021), significant woodlands are defined using the following criteria:

a) is 2 hectares or greater in size;
b) has woodland interior habitat (100 metres from all edges);
c) is the largest woodland patch by landform or soil type;
d) is the largest woodland patch occurring on a particular valleyland; or
e) is 0.5 hectares or greater in size and:
    i. is located within 30 metres of another natural heritage feature specifically identified in the Map 2 feature inventory;
    ii. provides linkage (a "stepping stone") between (is in a line between and within 120 metres of) two or more significant woodlands that are separated by more than 120 metres of each other;
    iii. is located on or within 30 metres of a surface water feature,
    iv. is located above a highly vulnerable aquifer or significant groundwater recharge area;
    v. has unique woodland diversity - i.e. contains target communities for Ecodistrict 7E-2 that help to conserve the biodiversity of the Great Lakes region of Ontario as identified by The Great Lakes Conservation Blueprint (Henson et al. 2005);

vi. has uncommon characteristics such as unique species composition; a rare vegetation community (NHIC provincial ranking of S1, S2, or S3); rare, uncommon, or restricted woodland plant species habitat; older woodlands, or larger tree size structure; or

vii. has high socio-economic, cultural, historic, or educational value as identified in a local official plan.

During the preliminary field investigation conducted on May 26, 2023, no woodland communities were identified within the Bluewater Study Area and the presence of the woodland feature in the Mandaumin Study Area was confirmed in association with the FODM5 community.

Woodlands identified as significant are shown on **Figure 4-6**.

4.2.6 Wildlife and Wildlife Habitat

A records review of the information included in **Table 2-1** identified a number of flora and fauna species with historical occurrence records within 1 kilometre of the Bluewater and Mandaumin Study Areas. The majority of species identified through background review within the Study Areas are considered Secure or Apparently Secure (SRank of S5 or S4) in the Province of Ontario. A complete list of flora and fauna species identified through background review and observed during the preliminary field investigation is included in **Appendix J**.

4.2.6.1 Fauna

- **Birds** – the records review and preliminary field investigation identified 20 bird species as having the potential to occur in the vicinity of the Study Areas. Of the 20 species, 3 are listed as SAR provincially and 6 are listed as SAR federally; 6 species are considered SCC.
- **Mammals** – the records review and preliminary field investigations identified 43 species as having the potential to occur in the general vicinity of the Study Areas. Of the 43 species, 6 are listed as SAR provincially and 5 are listed federally; 2 are considered SCC.
- **Herptiles** – the records review and preliminary field investigations identified 13 species as having the potential to occur in the general vicinity of the Study Areas. Of

the 14 species, 8 are listed as SAR provincially and federally; 4 species are considered a SCC.

- **Carabidae** – the records review and preliminary field investigations identified 1 species as having the potential to occur in the general vicinity of the Study Areas. The species is listed as SAR provincially and federally.
- **Lepidoptera** – the records review and preliminary field investigations identified 10 species as having the potential to occur in the general vicinity of the Study Areas. Of the 10 species, 1 is listed as SAR provincially and 1 species is considered a SCC.

4.2.6.2 Incidental Wildlife Observations

Incidental wildlife observations recorded during the preliminary field investigation completed on May 26, 2023 included live wildlife observations and indirect wildlife evidence (that is, sounds, scat, tracks, feeding sites, road kill, dens, and dams).

- **Bluewater Study Area** - A total of 9 bird species and 1 mammal were observed during the preliminary field investigation within the Bluewater Study Area. With the exception of Barn Swallow (Hirundo rustica), which is considered Special Concern provincially, the remaining species observed are considered common in Ontario. A full list of the incidental wildlife observations is included in **Tables K-1** and **K-2**, **Appendix K**.
- **Mandaumin Study Area** - A total of 8 bird species were observed during the preliminary field investigation within the Mandaumin Study Area. The species observed are considered common in Ontario. A full list of the incidental wildlife observations is included in **Table K-4**, **Appendix K**.

4.2.6.3 Wildlife Habitat

Wildlife habitat is defined as an area where plants, animals, and other organisms live, including areas where species concentrate at a vulnerable point in their life cycle, and areas that are important to migratory and non-migratory species (Ministry of Natural Resources [MNR] 2000). To assist planning authorities, the MNRF developed the Significant Wildlife Habitat (SWH) Technical Guide (MNR 2000) which provides information on the identification, description, and prioritization of SWH in Ontario. To account for the ecological diversity across the province, MNRF developed the SWH Ecoregional Criteria Schedules to support the SWH Technical Guide. These schedules are

specific to each geographic area of each ecoregion. The Study Area is located in Ecoregion 7E. Under the Criteria Schedule for Ecoregion 7E (MNRF 2015), SWH has been divided into four broad categories consisting of:

- Seasonal concentration areas;
- Rare vegetation communities or specialized habitats for wildlife;
- Animal movement corridors; and,
- Habitats of SCC, excluding the habitats of endangered and threatened species.

Wildlife habitat has been preliminarily identified within the Study Areas through the initial field assessment and ELC mapping. Areas identified as having the potential to support SWH have been identified as candidate SWH. Candidate SWH identified within the Study Areas is predominantly associated with natural or naturalized features that overlap with the Study Areas, as shown on **Figure 4-6**. Community types described in the following four broad categories, below, are outlined in **Table 4-1**.

1. Seasonal Concentration Areas

Seasonal concentration areas are sites that support large numbers of a species to gather together at one time of the year, or where several species congregate. Based on the preliminary field assessment conducted on May 26, 2023, the following has been identified for the Bluewater and Mandaumin Study Areas:

No candidate seasonal conservation areas were identified to have the potential to occur in the Bluewater Study Area.

One type of candidate seasonal concentration area has the potential to occur in the Mandaumin Study Area:

- **Bat maternity colonies** – These colonies are supported by mature mixed and deciduous forests and swamps with large diameter dead or dying trees. Areas that have the potential to support bat maternity habitat include the woodland community (FODM5) and the connected naturalized deciduous hedgerow (FODM11) community located in the northwest portion of the Mandaumin Study Area.

2. Rare Vegetation Communities or Specialized Habitats

This category consists of two separate components. Rare habitats are those with vegetation communities that are considered rare in the province. SRanks are rarity

rankings applied to species at the provincial level. Generally, SRanks of S1 to S3 (that is, extremely rare to rare-uncommon in Ontario), as defined by the NHIC, could qualify. Specialized habitats are microhabitats that are critical to some wildlife species.

Based on the preliminary field investigation conducted on May 26, 2023, no rare habitats were identified in the Bluewater or Mandaumin Study Area.

No specialized habitats were identified in the Bluewater Study Area. The Mandaumin Study Area has the potential to support one specialized habitat type:

- **Amphibian breeding habitat (woodland)** – Suitable specialized habitat includes wetlands, ponds, or areas that are likely to support vernal (seasonal) pooling that are within or adjacent to a woodland or solely exist as a wetland feature. Areas that have the potential to support amphibian breeding habitat include the deciduous woodland community FODM5. As access to this wooded area was limited during the preliminary field investigation, locations of potential candidate amphibian breeding habitat could not be determined. Based on an interpretation of aerial imagery, vernal pools may be located in the wooded area at the northwestern extent of the Study Area.

3. Animal Movement Corridors

Animal movement corridors are elongated, naturally-vegetated parts of the landscape used by animals to move from one habitat to another, and are typically identified by MNRF and/or planning authorities. Based on the initial site assessments conducted on May 26, 2023, including the records reviewed in **Table 2-1**, no animal movement corridors were identified in either Study Area.

4. Habitat for Species of Conservation Concern

The SWH Technical Guide (MNR 2000) defines SCC as globally, nationally, provincially, regionally, or locally rare (SRank of S1, S2 or S3) but does not include SAR (species listed as Threatened or Endangered; species identified as provincially and/or federally-listed SAR are further defined and discussed in **Section 4.2.7**). SCC include the following:

- Species that are assigned a conservation rank of S1-S3 by the NHIC;
- Species that are listed as Special Concern on the SARO list;

- Species that are listed as Special Concern, Threatened, or Endangered on Schedule 1 of *SARA*; and/or,
- Species that are classified as Special Concern, Threatened, or Endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) but have not yet been added to Schedule 1 of *SARA*.

Based on the results of the preliminary field investigation, the following SCC were identified to potentially occur at the Bluewater and Mandaumin Study Areas (below), and are described in detail in **Table 4-2**:

- **Bluewater Study Area** – has the potential to support 3 SCC, including 2 birds (Grasshopper Sparrow, Barn Swallow), and 1 mammal (Eastern Mole).
- **Mandaumin Study Area** – has the potential to support 5 SCC, including 2 birds (Eastern Wood-pewee, Wood Thrush), 2 mammals (Woodland Vole, Eastern Mole), and 1 vascular plant species (Puttyroot).

Consideration of SCC habitat potentially present in the Study Areas was determined based on existing land uses, the general habitat requirements of the species, and the ELC communities identified during the preliminary field assessment conducted May 26, 2023.

Table 4-2: Species of Conservation Concern with Potential to Occur in the Study Area

Notes:

1 Federal SARA (THR = Threatened; SC = Special Concern)

2 Provincial ESA (SC = Special Concern)

3 Ontario S-Rank (S4 = apparently secure; S3 = vulnerable; S2 = imperilled; B = breeding status; N = non-breeding status)

4 Information sources include: DFO = Department of Fisheries and Oceans; NHIC= Natural Heritage Information Centre; OBA = Ontario Butterfly Atlas; OBBA = Ontario Breeding Bird Atlas; OHA = Ontario Herpetofaunal Atlas; ON = Ontario Nature: Ontario Reptile and Amphibian Atlas

5 N/A - No information available or not applicable

Study Area	Scientific Name	Common Name	Federal Status	Provincial Status	SRank	Info Source	General Habitat Requirements
Mandaumin	*Contopus virens*	Eastern Wood-pewee	SC	SC	S4B	OBBA	This species nests in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It is most abundant in intermediate-age mature forest stands with little understory vegetation. Potential habitat for this species may occur in association with the deciduous forest (FODM5) community within the Mandaumin Study Area.

Study Area	Scientific Name	Common Name	Federal Status	Provincial Status	SRank	Info Source	General Habitat Requirements
Bluewater	*Ammodramus savannarum*	Grasshopper Sparrow	SC	SC	S4B	OBBA	This species prefers well-drained grassland or prairie with low cover of grasses, and can also include hayfields or weedy fallow fields. This species typically requires tracts of grassland >10 hectares. Potential habitat for this species may occur in the hayfield (OAGM2). The proposed Project Footprint does not overlap with this feature.

Study Area	Scientific Name	Common Name	Federal Status	Provincial Status	SRank	Info Source	General Habitat Requirements
Bluewater	*Hirundo rustica*	Barn Swallow	THR	SC	S4B	OBBA	Barn Swallow typically nest on buildings or other man-made structures. Foraging habitat occurs over open country areas, meadows, fields, as well as wetlands and bodies of water. Potential nesting habitat may occur on the existing agricultural and rural buildings in the Study Area; potential foraging habitat may occur over the hayfield (OAGM2) area. This species was observed flying over the proposed location of the Bluewater observation well during the preliminary field assessment. Although this species was identified in the Study Area, no buildings or foraging habitat is proposed for removal as a result of the Project.

Study Area	Scientific Name	Common Name	Federal Status	Provincial Status	SRank	Info Source	General Habitat Requirements
Mandaumin	*Hylocichla mustelina*	Wood Thrush	THR	SC	S4B	OBBA	This species prefers large tracks of deciduous and mixed forests. Potential habitat for this species may occur in association with the deciduous forest (FODM5) community within the Mandaumin Study Area.
Mandaumin	*Microtus pinetorum*	Woodland Vole	SC	SC	S3?	MWH	This species occurs within the mature deciduous forest in the Carolinian Zone with a deep litter layer that allows individuals to burrow. Potential habitat for this species may occur in association with the deciduous forest (FODM5) community within the Mandaumin Study Area.

Study Area	Scientific Name	Common Name	Federal Status	Provincial Status	SRank	Info Source	General Habitat Requirements
Bluewater and Mandaumin	*Scalopus aquaticus*	Eastern Mole	SC	SC	S2	MWH	This species can occur in a range of habitats, including forests, open woodlands, meadows, pastures and fields. Also found in urban settings such as parks, cemeteries and residential yards. Preferred habitat is stone-free sand and sandy loam soil with a cover of woody plants. Potential habitat for this species may occur in the: Bluewater Study Area in the fencerow community (TAGM5); and, the Mandaumin Study Area in the deciduous forest communities (FODM5, FODM11).
Mandaumin	*Aplectrum hyemale*	Puttyroot	N/A	N/A	S2	NHIC	A species of rich, moist deciduous woods. Potential habitat for this species may occur in the deciduous forest community (FODM5) within the Mandaumin Study Area.

Figure 4-6, Map 1 of 2: Significant Natural Features in the Bluewater Study Area

2024 BLUEWATER AND MANDAUMIN WELL DRILLING PROJECT

ENBRIDGE GAS

SIGNIFICANT NATURAL FEATURES BLUEWATER STUDY AREA

FIGURE 4-6, MAP 1 OF 2

- Study Area (125m)
- Proposed Observation Well
- Proposed Temporary Pad (approx. 80m by 100m)
- Proposed Permanent Access Road (approx. 5m wide)
- Proposed Permanent Pad (approx. 8m by 8m)
- Watercourse
- Major Road

Candidate Significant Wildlife Habitat

- Candidate Habitat for Species of Conservation Concern

Potential SAR Habitat

- Bobolink/Eastern Meadowlark

SCALE 1:3,400

0 40 80 160 m

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: -ZJB
MAP CHECKED BY: -KG
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

DILLON CONSULTING

PROJECT: 23-6171
STATUS: FINAL
DATE: 2023-07-07

FILE LOCATION: K:\2023\236171\Product\Client\ER\F4-6_SignificantNaturalFeatures.mxd

Figure 4-6, Map 2 of 2: Significant Natural Features in the Mandaumin Study Area

2024 BLUEWATER AND MANDAUMIN WELL DRILLING PROJECT

ENBRIDGE GAS

SIGNIFICANT NATURAL FEATURES MANDAUMIN STUDY AREA

FIGURE 4-6, MAP 2 OF 2

- Study Area (125m)
- Proposed Observation Well
- Proposed Temporary Pad (approx. 80m by 100m)
- Proposed Permanent Access Road (approx. 5m wide)
- Proposed Permanent Pad (approx. 8m by 8m)
- Candidate Significant Woodland

Candidate Significant Wildlife Habitat

- Candidate Habitat for Species of Conservation Concern
- Candidate Seasonal Concentration Areas - Bat Maternity Colonies
- Candidate Specialized Habitats - Amphibian Breeding Habitat (woodlands)

Potential SAR Habitat

- American Badger, Little Brown Myotis, Northern Myotis, Tri-colored Bat, Butternut, Eastern Flowering Dogwood

SCALE 1:3,400

0 40 80 160 m

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: -ZJB
MAP CHECKED BY: -KG
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

DILLON CONSULTING

PROJECT: 23-6171
STATUS: FINAL
DATE: 2023-07-07

FILE LOCATION: K:\2023\236171\Product\Client\ER\F4-6_SignificantNaturalFeatures.mxd

4.2.7 Species at Risk

4.2.7.1 Regulatory Context

Federal

The federal *SARA* applies to species listed under Schedule 1 of the Act on federal lands and/or aquatic species, as well as migratory birds listed under the *Migratory Birds Convention Act, 1994*. Under *SARA*, species listed on Schedule 1 receive species protection (Section 32) and residence protection (Section 33). Critical Habitat is defined under Section 2 of *SARA* as "the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species".

Provincial

The provincial *Endangered Species Act, 2007* applies to species listed as Extirpated, Endangered, or Threatened under O. Reg. 230/08 on private and public lands under provincial jurisdiction, and provides both species protection (Section 9) and habitat protection (Section 10). Under the Act, habitat is defined as either General Habitat or Regulated Habitat. General Habitat is defined as the area a species currently depends on, either directly or indirectly, to carry out its life processes (under clause 2(1)(b) of the Act), including: dens, nests, hibernacula, or other residences. General Habitat does not include areas where a species once lived and/or where it may be re-introduced. General Habitat protection is in place until a regulation is made prescribing an area as Regulated Habitat.

Regulated Habitat is the area prescribed for a species in a habitat regulation (under clause 2(1)(a) of the Act), and may include: specific features/boundaries and areas where the species lives, used to live, or is believed to be capable of living.

4.2.7.2 Potential for Species at Risk in the Study Areas

Based on the results of the records review, a total of 24 provincial SAR were identified as having the potential to occur in the general vicinity of the Study Areas (**Appendix J**). However, following the preliminary field investigation results for both the Study Areas, the habitat requirements associated with each of the 24 SAR identified during the

background review, and the age of these historical records, the Study Areas were ultimately assessed as having the potential to support the following:

- **Bluewater Study Area** – has the potential to support 2 SAR, including 2 birds (Bobolink, Eastern Meadowlark).
- **Mandaumin Study Area** – has the potential to support 6 SAR, including 4 mammal (American Badger, Little Brown Myotis, Northern Myotis, Tri-colored Bat) and 2 vascular plant species (Butternut, Eastern Flowering Dogwood).

Consideration of potential SAR/SAR habitat that may be present in the Study Areas was determined based on the general habitat requirements of the species and the existing conditions identified during the preliminary field investigation conducted on May 26, 2023. Habitat characteristics for potential SAR in the Bluewater and Mandaumin Study Areas are described below in **Table 4-3**.

Of the 8 SAR that may potentially occur within the combined Study Areas, 7 species receive General Habitat Protection under the *ESA, 2007*, whereas 1 species has Regulated Habitat Protection (Eastern Flowering Dogwood; O.Reg.832/21).

Table 4-3: Federal and Provincial Species at Risk with Potential to Occur in the Study Areas

Notes:

1 Federal SARA (THR = Threatened, END = Endangered)

2 Provincial ESA (THR = Threatened, END = Endangered, SC = Special Concern)

3 Ontario SRank (S4 = apparently secure; S3 = vulnerable; S2 = imperilled; ? = inexact or uncertain; B = breeding status; N = non-breeding status)

4 Information sources include: MECP = Ministry of the Environment, Conservation and Parks; MWH = Mammals of the Western Hemisphere; NHIC= Natural Heritage Information Centre; OBA = Ontario Butterfly Atlas; OBBA = Ontario Breeding Bird Atlas; OHA = Ontario Herpetofaunal Atlas; ON = Ontario Nature: Ontario Reptile and Amphibian Atlas; TOC = Trees of Canada

5 N/A – No information available or not applicable

Study Area	Scientific Name	Common Name	Federal Status	Provincial Status	SRank	Info Source	General Habitat Requirements
Bluewater	*Dolichonyx oryzivorus*	Bobolink	THR	THR	S4B	OBBA, NHIC	This species requires large, open expansive grasslands (typically >4 ha in size) with dense ground cover, and can occur in hayfields, meadows or fallow fields. Potential habitat for this species may occur in the Bluewater Study Area in association with the perennial cover crops (OAGM2 - hayfield). The proposed Project Footprint does not overlap with this feature.
Bluewater	*Sturnella magna*	Eastern Meadowlark	THR	THR	S4B	OBBA	This species prefers open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches. It may also occur in cultivated land and weedy areas with trees and old orchards with adjacent, open grassy areas. Potential habitat for this species may occur in the Bluewater Study Area in association with the perennial cover crops (OAGM2 - hayfield). The proposed Project Footprint does not overlap with this feature.
Mandaumin	*Taxidea taxus jacksoni*	American Badger (Southwestern Ontario population)	END	END	N/A	MWH	Lives in open fields or forest openings, including natural grasslands and man-made habitats such as uncultivated portions of agricultural fields, and often in close proximity to linear corridors, including roads, fencerows, field edges and hedgerows. A key requirement is friable soil suitable for burrowing and containing a supply of small burrowing mammals used as prey. Potential habitat for this species may occur in the fencerow community (TAGM5) in the Bluewater Study Area; however, no dens were observed during preliminary field investigations. Potential habitat may also occur in the treed/woodland communities (FODM11 and FODM5, respectively) within the Mandaumin Study Area. Additionally, potential habitat for this species may occur in the fencerow community (TAGM5) in the Mandaumin Study Area; however, no dens were observed during preliminary field investigations within this community.

Study Area	Scientific Name	Common Name	Federal Status	Provincial Status	SRank	Info Source	General Habitat Requirements
Mandaumin	*Myotis lucifugus*	Little Brown Myotis	END	END	S4	MWH	This species uses caves, quarries, tunnels, hollow trees, or buildings for roosting. Hibernation occurs in humid caves, whereas maternity sites are selected in dark warm areas such as attics and barns. Individuals typically hunt for insect prey primarily in wetlands, along forest edges, or any other open area such as meadow or riparian areas. Potential habitat for this species may occur in the treed/woodland communities (FODM11 and FODM5, respectively) in the Mandaumin Study Area.
Mandaumin	*Myotis septentrionalis*	Northern Myotis	END	END	S3	MWH	This species hibernates in mines or caves during the winter; during the summer season, males roost alone and females form maternity colonies of up to 60 adults. Roosting habitat occurs in houses, or other man-made structures, but more commonly prefers hollow trees or under loose bark. Individuals typically hunt for insects within forests, below canopy. Potential habitat for this species may occur in the treed/woodland communities (FODM11 and FODM5, respectively) in the Mandaumin Study Area.
Mandaumin	*Pipistrellus subflavus*	Tri-colored Bat	END	END	S3?	MWH	This species can be found in a variety of forested habitats where day roosts and maternity colonies occur in older forests, and less commonly in barns or other structures. Hibernation occurs in caves. Individuals forage over water and along streams in the forest. Potential habitat for this species may occur in the treed/woodland communities (FODM11 and FODM5, respectively) in the Mandaumin Study Area.
Mandaumin	*Juglands cinera*	Butternut	END	END	S3?	MECP	Butternut can be found individually or in small clusters in or along the edge of deciduous forests and tree lines. Favourable conditions include moist, well-drained soils. Potential habitat for this species may occur in the treed/woodland communities (FODM11 and FODM5, respectively) in the Mandaumin Study Area; however, Butternut was not observed during the preliminary field investigation on May 26, 2023. No Butternut was observed in community FODM11 or along the edge of FODM5; however, due to limited property access in community FODM5, presence/absence of this species could not be determined in this community overlapping with the Study Area.

Study Area	Scientific Name	Common Name	Federal Status	Provincial Status	SRank	Info Source	General Habitat Requirements
Mandaumin	*Cornus florida*	Eastern Flowering Dogwood	END	END	S2?	MECP	Eastern Flowering Dogwood grows under taller trees in mid-age to mature deciduous or mixed forests. Commonly grows on floodplains, slopes, bluffs and in ravines. Sometimes found along roadsides and fencerows. Potential habitat for this species may occur in the treed/woodland communities (FODM11 and FODM5, respectively) in the Mandaumin Study Area; however, Eastern Flowering Dogwood was not observed during the preliminary field investigation on May 26, 2023. No Eastern Flowering Dogwood was observed in community FODM11 or along the edge of FODM5; however, due to limited property access in community FODM5, presence/absence of this species could not be determined in this community overlapping with the Study Area.

4.3 Socio-Economic Environment

This subsection provides baseline information on the following components:

- Planning Policies;
- Existing and Planned Land Use;
- Population, Employment, and Economic Activities;
- Human Occupancy and Resource Use;
- Infrastructure and Services;
- Indigenous Community Land and Resource Use; and,
- Cultural Heritage Resources.

Socio-economic features are shown on **Figure 4-7**.

Figure 4-7: Socio-Economic Features

FILE LOCATION: K:\2023\236171\Product\Client\ER\F4-7_Socio Economic Features.mxd

2024 BLUEWATER AND MANDAUMIN WELL DRILLING PROJECT

ENBRIDGE GAS

SOCIO-ECONOMIC FEATURES

FIGURE 4-7

- Bluewater Well Drilling Location
- Mandaumin Well Drilling Location
- Business
- Cemetery
- Property identified in Cultural Heritage Screening
- Recreation
- Religious Organization
- School
- Bluewater Well Location 5km Buffer
- Mandaumin Well Location 5km Buffer
- Railway
- Highway
- Major Road
- Minor Road
- Watercourse
- Waterbody

SCALE 1:45,000

0 500 1,000 2,000 m

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: -ZJB
MAP CHECKED BY: -KG
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

DILLON CONSULTING

PROJECT: 23-6171
STATUS: FINAL
DATE: 2023-07-07

4.3.1 Planning Policies

Municipalities are the primary decision-makers for their communities and are required to implement provincial policies through municipal official plans and planning-related decisions.

Plans and policies reviewed as part of the Project include:

- Provincial Policy Statement, 2020 (MMAH 2020);
- County of Lambton Official Plan, 2020;
- City of Sarnia Official Plan, 2014 (2022 consolidation); and,
- Town of Plympton-Wyoming Official Plan, 2001 (2021 consolidation) (County of Lambton 2001).

4.3.1.1 Provincial Policy Statement

The Provincial Policy Statement, 2020 (PPS) is issued under Section 3 of the *Planning Act* (RSO 1990, c. P.13) and came into effect on May 1, 2020. As with the previous Provincial Policy Statement, 2014, the new policy provides direction on matters of provincial interest related to land use planning and development. According to MMAH (2020), the goals of the proposed changes to the policy were to:

- Encourage an increase in the mix and supply of housing;
- Protect the environment and public safety;
- Reduce barriers and costs for development and provide greater certainty;
- Support rural, northern and Indigenous communities; and,
- Support the economy and job creation.

Natural gas pipelines and associated facilities (such as natural gas storage areas and observation wells) are defined as “infrastructure” and “petroleum resource operations” in the PPS.

In reviewing the intent of the PPS against the Project, Dillon is of the opinion that the Project is consistent with the PPS direction for achieving efficient and resilient development and land use patterns as well as supporting long-term economic prosperity.

Section 1.1 provides direction that “healthy, liveable and safe communities are sustained by ensuring that necessary infrastructure and public service facilities are or

will be available to meet current and projected needs" (MMAH 2020). Section 1.7.1 provides direction that "long-term economic prosperity should be supported by optimizing the long-term availability and use of land, resources, infrastructure and public service facilities" (MMAH 2020). The observation wells constructed for the Project will be used to monitor the gas content and pressure in the Bluewater and Mandaumin DSAs and will help ensure the continued safe and reliable operation of Enbridge Gas storage facilities.

4.3.1.2 County of Lambton Official Plan

The County of Lambton Official Plan is a key part of the overall planning policy structure for the 11 lower-tier municipalities located within the County (including the City of Sarnia and Town of Plympton-Wyoming, where the Project occurs). It is a multipurpose document that provides a framework to guide economic, environmental, social, and land use planning decision-making. The County of Lambton Official Plan aims to satisfy the needs of each of the 11 municipalities within the County in a way that is consistent with the Provincial Policy Statement (County of Lambton 2020).

The County's economy is supported by electrical generation, petroleum refining, and natural gas storage, transmission and distribution (County of Lambton 2020). The County possesses a large amount of provincially significant natural gas storage (County of Lambton 2020).

The Project is in alignment with the policies in Chapter 3 – County Development and Growth of the Official Plan, which outlines the policies and strategies related to growing the County in a sustainable manner, as well as the importance of ensuring the protection of existing investments in infrastructure and development of infrastructure to support future growth. The Project supports the County's Growth-Ready Environment goal, outlined in Section 5.4, to "provide the services and infrastructure needed to support existing and new business and industry" (County of Lambton 2020).

The Project conforms to the County's policies in Chapter 9 – Mineral Resources of the Official Plan, which provides direction to ensure the long-term protection and proper development of petroleum resources including provincially significant reservoir storage (such as OEB defined DSAs). Section 9.1.2 states that "the County supports the subsurface storage of gas or other hydrocarbons" and that "Designated hydrocarbon

storage areas shall be protected from encroachment of incompatible development at the surface" (County of Lambton 2020).

4.3.1.3 City of Sarnia Official Plan

The City of Sarnia Official Plan is a comprehensive land use plan providing policy direction on the development and planning of the City of Sarnia. The Official Plan is consistent with the Provincial Policy Statement, conforms to the County of Lambton Official Plan, and provides detailed policies specific to the local needs and long-term goals of the City (City of Sarnia 2014).

Section 6.3.5 indicates that natural gas pipelines and accessory works "are permitted in all land use categories, subject to the development policies of this Plan" (City of Sarnia 2014). The Bluewater DSA is located within the Prime Agricultural Area land use designation. Natural gas storage wells are defined as "petroleum resource operations" under the Official Plan. In accordance with Section 4.2.3.4, petroleum resource operations are explicitly cited as being permitted in the Prime Agricultural Area and are subject to site plan control and site rehabilitation (City of Sarnia 2014). Furthermore, the integrity of these sites is protected in the Official Plan through the limiting of development in these areas. As provided in Chapter 4 "development proposed adjacent to or above known petroleum, mineral and mineral aggregate resources including pools, deposits or storage areas is discouraged. Development may be permitted only if it is determined, in consultation with the Province, that resource extraction or underground storage would not be feasible and that issues of public health, public safety, and environmental impact are addressed" (City of Sarnia 2014).

4.3.1.4 Town of Plympton-Wyoming Official Plan

The Plympton-Wyoming Official Plan is a comprehensive plan providing land use policy guidance on the development and planning of the Town of Plympton-Wyoming. The Official Plan outlines Town policies for land use, environmental, social, and economic matters. The Official Plan is consistent with the Provincial Policy Statement and conforms to the County of Lambton Official Plan (County of Lambton 2001).

Section 15.1.1 indicates that natural gas pipelines and accessory works "are permitted in all land use categories, subject to the development policies of this Plan" (County of Lambton 2001). The Mandaumin Designated Storage Area is located within the

Agricultural Area land use designation. In accordance with Section 2.17, natural gas storage is explicitly cited as being permitted in the Agricultural Area (County of Lambton 2001).

4.3.2 Existing and Planned Land Use

The County of Lambton Official Plan (2020), City of Sarnia Official Plan (2014), and the Town of Plympton-Wyoming Official Plan (2001) outline land use designations within their respective boundaries, implemented through a range of detailed land-use zones in the City of Sarnia Zoning By-Law (2002) and Town of Plympton-Wyoming Zoning By-Law (2003). Natural gas storage falls under the "resource extraction" definition in both zoning by-laws.

Section 3.1.6 of the Town of Plympton-Wyoming Zoning By-Law states that "nothing in this By-law shall prevent the Use of any land for any Petroleum Well or Petroleum Work subject to the regulations of the *Oil, Gas and Salt Resources Act*, R.S.O. 1990, Chap. P.12, as amended." Similarly, Section 3.48.5 of the City of Sarnia Zoning By-Law states that "nothing in this By-law shall prevent the use of any land for any gas, oil, brine or other liquid or gaseous product transmission or distribution pipeline and appurtenances thereto which have been approved under the authority of the National or Ontario Energy Boards."

The Bluewater Study Area is zoned as RU1 (Rural 1) in the City of Sarnia Zoning By-Law and the Mandaumin Study Area is zoned A1 (Agricultural 1) in the Town of Plympton-Wyoming Zoning By-Law.

4.3.3 Population, Employment, and Economic Activities

4.3.3.1 Population and Demographics

According to the 2021 Census, the County of Lambton has a population of 128,154 people, representing an increase of 1.2% from 126,638 people in 2016 (Statistics Canada 2017a, Statistics Canada 2023a). As of the 2021 Census, the City of Sarnia has a population of 72,047 people, representing an increase of 0.6% from 71,594 people in 2016 (Statistics Canada 2017b; Statistics Canada 2023b). The 2021 Census also indicates that the Town of Plympton-Wyoming has a population of 8,308 people, representing an increase of 6.6% from 7,795 in 2016 (Statistics Canada 2017c; Statistics Canada 2023c).

Comparatively, the Province of Ontario experienced a population increase of approximately 5.8% over the same period (Statistics Canada 2017d, Statistics Canada 2023d).

In 2021, the County of Lambton had an average population density of approximately 42.7 people per square kilometre and the average age of the population was 44.7 years (Statistics Canada 2023a). The City of Sarnia's average population density was 42.7 people per square kilometre with an average population age of 44.7 (Statistics Canada 2023b), and the Town of Plympton-Wyoming's average population density was 26.1 people per square kilometre with an average population age of 43 (Statistics Canada 2023c).

The 2021 Census also indicates that the total visible minority population of the County of Lambton was 7,125 (Statistics Canada 2023a), 5,900 in the City of Sarnia (Statistics Canada 2023b), and 245 in the Town of Plympton-Wyoming (Statistics Canada 2023c). Of the visible minorities in the City of Sarnia and the Town of Plympton-Wyoming, the majority of individuals identified as South Asian (1,945 individuals or 32% in the combined areas) and Black (1,175 individuals or 19% in the combined areas) (Statistics Canada 2023b; Statistics Canada 2023c). There are 6,030 individuals who identify as Indigenous in the County of Lambton (Statistics Canada 2023a), 3,000 in the City of Sarnia (Statistics Canada 2023b), and 100 in the Town of Plympton-Wyoming (Statistics Canada 2023c).

4.3.3.2 Employment and Economy

According to the 2021 Census, the County of Lambton has a labour participation rate of 56.1% and an unemployment rate of 11.2% (Statistics Canada 2023a). The City of Sarnia has a labour participation rate 54.7% and an unemployment rate of 13.0% (Statistics Canada 2023b), while the Town of Plympton-Wyoming has a labour participation rate of 61.2% and an unemployment rate of 7.5% (Statistics Canada 2023c). Comparatively, the Province of Ontario has a labour participation rate of 62.8% and an unemployment rate of 12.2% (Statistics Canada 2023d).

More recent data from the Sarnia Lambton Workforce Development Board (SLWDB) indicates that the unemployment rate for Sarnia-Lambton was 6% and the participation rate was 62%, as of June 2023 (SLWDB 2023).

The Sarnia-Lambton Economic Partnership (SLEP) Municipal Data and Statistics indicates that the largest employment industries in the County of Lambton are health care and social assistance, manufacturing, retail trade, and construction (SLEP 2023a). Sarnia's leading industries are retail trade, health care and social assistance, manufacturing, and accommodation and food services (SLEP 2023b). Plympton-Wyoming's leading industrials are health care and social assistance, manufacturing, agriculture, forestry, fishing and hunting, and educational services (SLEP 2023c).

The median household income in the County of Lambton increased by almost 19% from $70,022 in 2015 (Statistics Canada 2017a) to $83,000 in 2020 (Statistics Canada 2023a). Similarly, the median household income in Sarnia increased by 17% from $66,050 in 2015 (Statistics Canada 2017b) to $77,500 in 2020 (Statistics Canada 2023b) and in Plympton-Wyoming it increased by 18% from $91,451 in 2015 (Statistics Canada 2017c) to $108,000 in 2020 (Statistics Canada 2023c).

4.3.3.3 Main Economic Sectors

Petrochemical and Refining

The petrochemical and refining sector in Lambton County is the second-largest in Canada and consists of three refineries and more than thirty-five chemical facilities (SLEP n.d.a). Lambton County is strategically located along the Canada-United States border and hosts a skilled workforce specializing in the petrochemical and refining industry. Lambton County currently employs 21,700 individuals in the manufacturing and service industry (SLEP n.d.a).

Agriculture and Agri-business

The agriculture and agri-business sector is the second largest economic sector in Lambton County consisting of large volumes of cash crops and animal production, as well as a thriving sub-sector of value-added agriculture businesses (SLEP n.d.b). Lambton County has 2,000 farms and over 500,000 acres of farm land and produces the largest volume of soybeans in Ontario (SLEP n.d.b).

4.3.4 Human Occupancy and Resource Use

4.3.4.1 Culture, Tourism, and Recreation

The County of Lambton has a rich culture rooted in history and the arts. The area is known for its wineries, arts, Victorian architecture, agricultural history, and a culture rooted from oil pioneers of the 1800s (Tourism Sarnia-Lambton n.d.a). The County's history can be experienced through Heritage Sarnia-Lambton which is made up of seven museums and one archival facility (Tourism Sarnia-Lambton n.d.b). The Lambton Heritage Museum houses over 25,000 historic artifacts from Lambton County and displays feature exhibits throughout the year. The Lambton County Archives, a local historic archival club, preserves and shares historic documents that tell the stories of the events that shaped the County (Tourism Sarnia-Lambton n.d.b). The Judith & Norman Alix Art Gallery and the Lawrence House Centre for the Arts and various local studios contribute art and inspiration to those who live in the area (Tourism Sarnia-Lambton n.d.c). Community events are hosted year-round including the Celebration of Lights competition, Plympton-Wyoming Fall Fair, and Bluewater Border Fest (SLEP 2023d). The Plympton-Wyoming Museum (located at 6745 Camlachie Road, Camlachie, ON, Canada) displays cultural artifacts and historic documents of the municipality (Tourism Sarnia-Lambton n.d.b).

4.3.4.2 Neighbourhoods and Residences

The Study Areas are agricultural with some rural residential land use located in the Bluewater Study Area. There are no settlement areas within or adjacent to the Study Areas.

4.3.5 Infrastructure and Services

4.3.5.1 Existing Linear Infrastructure

The County of Lambton is served by an extensive network of local, collector and arterial roads, and highways that provide linkages within the community, to other parts of Ontario, and to the United States. Highway 402 and Highway 21 are the major highways in the region. Highway 402 is located approximately 7 kilometres north of the Bluewater Study Area and approximately 5 kilometeres north of the Mandaumin Study Area. Highway 21 is located well outside the Study Area. The Bluewater Study Area is located

southwest and the Mandaumin Study Area is located northeast of the intersection of County Roads 14 (Churchill Line) and 26 (Mandaumin Road). County Roads 14 (Churchill Line) and 26 (Mandaumin Road) are maintained and serviced by the County of Lambton (County of Lambton 2020).

An active CNR rail corridor is located approximately 2 kilometres north of the Bluewater Study Area and approximately 750 metres from the Mandaumin Study Area. During consultation and engagement, Hydro One confirmed that there are no existing Hydro One transmission assets in the subject area.

4.3.5.2 Community Services and Institutions

The County of Lambton provides municipal services including social housing, emergency medical and public health services, libraries, long term care homes, and child care and children's services. The City of Sarnia and Town of Plympton-Wyoming are responsible for providing municipal services including emergency and protective services, waste management, roads, sewers, water, and parks and recreation. The City of Sarnia also provides transit services.

Community services are services that are sought by residents and tourists including grocery stores, pharmacies, parks, sports and recreation, schools, health and wellness centres, libraries, pet care, financial institutions, general retail and convenience stores, and gas stations. Most municipal and community services can be found within the settlement boundaries of the City of Sarnia and the Town of Plympton-Wyoming.

4.3.6 Indigenous Community Land and Resource Use

To date, Aamjiwnaang First Nation has not identified potential impacts of the Project on Indigenous use of land and resources in the Study Area. Additional information pertaining to consultation with Indigenous communities is provided in **Section 3.3**.

4.3.7 Cultural Heritage Resources

4.3.7.1 Archaeological Resources

Bluewater Project Location

A Stage 1 and 2 archaeological assessment (PIF P1048-0125-2023) was undertaken by TMHC, on July 27, 2023 and is included in **Appendix A**. A Stage 1 and 2 archaeological

assessment consists of a review of geographic, land use, and historical information for the property and the relevant surrounding area, and contacting MCM to find out whether, or not, there are any known archaeological sites on or near the property, and a site visit. Its purpose is to identify areas of archaeological potential and further archaeological assessment (for example, Stage 3 and Stage 4) as necessary.

The Stage 1 and 2 archaeological assessment found that the 2821 Churchill Line property (the property in which the Bluewater site occurs) had potential for the recovery of archaeological resources due the proximity (for example, within 300 metres) of a feature that signals archaeological potential, namely:

- mapped 19th-century thoroughfares (Churchill Road).

As the Project Area consists entirely of active agricultural field it was subject to Stage 2 assessment via standard pedestrian survey at a 5 metre transect interval (100 per cent; 1.34 hectares) in keeping with provincial standards. All work met provincial standards and no archaeological material was documented during the assessment. As such, the Project Area should be considered free of archaeological concern and no further archaeological assessment is recommended. The Stage 1 and 2 archaeological assessment report was accepted into the Ontario Public Register of Archaeological Reports on August 1, 2023. The corresponding clearance letter from the MCM is provided at the end of **Appendix A**.

Mandaumin Project Location

A Stage 1 and 2 archaeological assessment (PIF P1048-0131-2023) was completed September 19, 2023 by TMHC alongside a representative of Tri-Tribal Monitoring Services (TTMS), and will be submitted to MCM October 2023. The Stage 1 and 2 archaeological assessment found that the Project Area on the 3106 Churchill Line property had potential for the recovery of archaeological resources due the proximity (for example, within 300 metres) of a feature that signals archaeological potential, namely:

- mapped 19th-century thoroughfares (Churchill Road).

The portion of the Project Area that consists of active agricultural field was subject to Stage 2 assessment via standard pedestrian survey at a 5 m transect interval (74%; 1.88 ha) while the grassed area was subject to Stage 2 assessment via test pit survey at a 5 m

transect interval (1%; 0.01 ha). The remainder of the Project Area consists of built features that were previously disturbed (25%; 0.66 ha). These areas were deemed of low archaeological potential and were photo-documented. All work met provincial standards and no archaeological material was documented during the assessment. As such, the Project Area should be considered free of archaeological concern and no further archaeological assessment is recommended. Construction will not begin without MCM review and acceptance.

4.3.7.2 Built Heritage Resources and Cultural Heritage Landscapes

Bluewater Project Location

A Cultural Heritage Screening - Technical Memorandum (dated July 14, 2023, by TMHC) was undertaken for the Bluewater Project location. The Cultural Heritage Screening identified the Project location as being part of a property containing a building over 40 years of age which is one of the indicators of potential CHVI (for example, built heritage resource or cultural heritage landscape).

Mandaumin Project Location

A Cultural Heritage Screening - Technical Memorandum (dated July 14, 2023, by TMHC) was undertaken for the Mandaumin Project location. The Cultural Heritage Screening identified the Project location as being part of a property containing a building over 40 years of age with potential CHVI.

Based on the results of the Cultural Heritage Screenings, a CHER has been recommended for the Bluewater and Mandaumin Project locations by the Cultural Heritage Screening - Technical Memorandums (included as **Appendix B)**. A CHER is currently underway and is being completed by TMHC to determine if the properties at each Project location are (or not) of CHVI.

5.0 Site Selection Process

Enbridge Gas identified the sites for the Bluewater and Mandaumin observation wells based on the location of the DSAs. Given the necessity to locate wells within the DSAs, no site selection constraints analysis was conducted for the Project.

5.1 Determining Location of Project Components

To minimize the impacts of the Project components within the DSAs, Enbridge Gas and Dillon undertook technical feasibility studies and site assessments to determine the most suitable location for the proposed access roads, temporary and permanent pad, and observation wells. Location of access roads and well pads were selected in consultation with the landowners and were based on minimizing impacts to the active agricultural fields and agricultural operations. The following criteria was used to determine the location of the various Project components to reduce the potential for adverse environmental and socio-economic effects:

- Minimize impacts to active agricultural fields and agricultural operations;
- Identify locations within previously disturbed areas;
- Select locations close to the area of construction to minimize ground disturbance;
- Avoid areas with native vegetation and other natural features such as woodlands;
- Avoid, where possible, known locations of SAR;
- Avoid sloped and poorly drained areas; and,
- Avoid areas with known cultural heritage resources.

Prior to the commencement of the environmental study, two potential well locations were considered by Enbridge Gas in the Bluewater DSA. Geologic conditions within the Mandaumin DSA limited the proposed well location to the selected area; however, three alternative access roads were considered. The location of these Project components was determined with the above criteria in mind and described below.

Bluewater DSA

- **Alternative 1** was a well approximately 315 metres south of Churchill Line, in the eastern field of the 2821 Churchill Line property. This well was accompanied by a permanent access driveway that extended south from Churchill Line, and travelled along the eastern perimeter of the agricultural field. As a field entry driveway,

travelling from Churchill Line east into the agricultural field already existed, a new culvert within the roadside ditch would not be needed for this alternative.

- **Alternative 2** was a well approximately 400 metres south of Churchill Line, in the western field of the 2821 Churchill Line property. This well was accompanied by a permanent access driveway that extended south from Churchill Line, and travelled along the western perimeter of the agricultural field. As there is no existing field entry driveway from Churchill Line located on the western perimeter of the property, a new culvert within the roadside ditch would be required.

As Alternative 1 would require a shorter access road and would not require installation of a culvert, it was determined to be the preferred well location.

Mandaumin DSA

- **Alternative 1** involved construction of a 1-kilometre permanent access road along the western perimeter of the agricultural field of the 3106 Churchill Line property. This alternative would require the greatest amount of agricultural land to be developed into permanent access road and was not favorable for the landowner as heavy construction and drilling equipment would travel along this access road, in close proximity to a farm house located on the property.
- **Alternative 2** involved construction of a 234-metre permanent access road west from the existing farm gravel driveway, located directly east of the 3106 Churchill Line property, to the proposed well location. The siting of this access route would sever the norther portion of the farm field and was determined to result in greater impacts to field drainage. As such, this alternative was not preferred by the landowner.
- **Alternative 3** involved construction of a 500-metre permanent access road leading from the existing gravel farm driveway around the field perimeter to the proposed well pad location.

As Alternative 3 involved routing the access road along the perimeters of the field, this alternative was determined to have the least impact on site drainage and least impact to field access for the farmer. For these reasons, alternative 3 was selected as the preferred access road location.

Mitigation measures provided in **Section 6.0** of this ER should be considered when constructing the Project and siting temporary facilities. Applicable agency approvals will be required.

6.0 Effects Assessment and Proposed Mitigation

This section provides the assessment of the potential effects associated with the Project on the cultural, socio-economic, natural, and physical environment. Recommended mitigation measures are also described in this section and select mitigation measures are shown on **Figure 6-1**.

The criteria for the characterization of residual effects and evaluation of significance are provided in **Section 2.1.2**. All assessment criteria (**Table 2-2**) were considered when determining the significance of each residual effect.

6.1 Physical Environment

6.1.1 Physiography and Topography

The access roads, temporary and permanent pads, and observation wells will be installed within, or immediately adjacent to, active agricultural fields. The topography in these areas is generally level, and is heavily influenced by grading and tilling from agricultural operations; however, the permanent above-ground Project components represent a long-term change in the topography of the Project locations and natural surface drainage patterns will be altered, which may result in pooling/ponding of water.

Table 6-1: Assessment of Potential Effects of the Project on Physiography and Topography

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
Alteration of natural surface drainage patterns at permanent above-ground Project components	• Store excavated material in a manner that does not interfere with natural drainage patterns. • Maintain surface water drainage across the construction site, during all phases of construction. • Control surface drainage on construction site, if warranted, to prevent surface water from entering areas of disturbed and erodible soils. • Ensure construction activities do not cause the ponding of water or unintentional channelization of surface water flow.	No residual effects to surface drainage patterns are anticipated following implementation of the recommended mitigation measures.	N/A

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	• Follow the recommendations of Enbridge Engineering with regards to permanent site drainage plans. • Restore pre-construction topography to maintain proper drainage of surface water. • If prepared, contour facility sites as per the Engineering Plans for the site. • Regrade areas with vehicle ruts or erosion gullies. • In the event that construction or maintenance activities result in changes in surface water regimes, corrective action, in consultation with the landowners and SCRCA should be conducted to resolve the issue.		

6.1.2 Surficial Geology and Soil

The access roads, temporary and permanent pads, and observation wells will be installed within, or immediately adjacent to, active agricultural fields. Although the soils and subsoils in the Project Footprint have been heavily disturbed by past agricultural operations, it can be assumed that soil productivity and capability may be impacted by and construction activities.

During construction activities impacts on soils could include, but are not limited to:

- Soil compaction from the movement of equipment within the Project Footprint;
- Wind and/or water erosion and soil loss from the clearing of vegetation and handling of soil;
- Mixing of topsoil with less productive subsoils; and
- Introduction or spread of SCN. SCN is common in agricultural lands in Lambton County and may be present within either the Bluewater Study Area or Mandaumin Study Area. Construction activities may lead to the spread of SCN if construction machinery passes from an impacted field to a non-impacted field.

The potential for leaks or spills from Project activities to affect soils is considered in Accidents and Malfunctions (**Section 8.0**).

Table 6-2 identifies these and other potential effects, mitigation measures, and residual effects for the surficial geology and soil component and provides an assessment of the significance of the residual effects, where present.

Table 6-2: Assessment of Potential Effects of the Project on Surficial Geology and Soil

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
Loss of soil productivity on cultivated land as a result of topsoil and subsoil mixing, erosion, and compaction and rutting.	**Erosion and Sediment Control (ESC) Measures** • Where there is potential for soil erosion, the need for and location of ESC measures should be determined by an inspector with appropriate qualifications and installed prior to the commencement of work in the area. • When land is exposed, the exposure should be kept to the shortest practical period.	Minor loss of soil productivity as a result of topsoil and subsoil mixing, erosion, and compaction and rutting.	The residual effect is reversible and isolated to the construction period. It is anticipated to be low magnitude, short- to medium-term in duration, and not significant.

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	• The Contractor should obtain adequate quantities of materials to control erosion. Additional supplies should be maintained in a readily accessible location for maintenance and contingency purposes. ESC structures should be monitored to maintain their effectiveness through the life of construction and post-construction rehabilitation. • Even with ESC measures, extreme precipitation events could result in collapse of silt fencing, overflow or bypass of barriers, and other situations which could lead to erosion. When site conditions permit, permanent protection measures should be installed on erosion susceptible surfaces. If the erosion is resulting from a construction-related activity, the activity should be halted immediately until the situation is rectified. • ESC and stabilization measures should be maintained during construction, restoration, and rehabilitation until the site is established. Where evidence of erosion exists, corrective control measures should		

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	be implemented as soon as conditions permit. • Permits obtained from the SCRCA may contain conditions pertaining to ESC. **Wet Soil Shutdown** • Wet weather shutdown must be enforced in agricultural areas where soils are susceptible to rutting, compaction, topsoil and subsoil mixing, and/or loss of soil structure because of saturated soil conditions. During wet weather events where there is excessive saturation of the soil (for example, heavy rainfall events), construction activities should be temporarily halted. Enbridge Gas' on-site inspection team should determine when construction activities may be resumed. • ESC and stabilization measures should be maintained during construction, restoration, and rehabilitation until the site is established. Where evidence of erosion exists, corrective control measures should be implemented as soon as conditions permit.		

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	• If a situation develops that necessitates construction during wet soil conditions, soil protection measures should be implemented, such as confining construction activity to the narrowest area practical, installing surface protection measures, and using wide tracked or low ground pressure vehicles. **High Winds** • During construction activities, weather conditions should be continually monitored to identify the potential onset of high wind conditions and to preserve topsoil. In the event that high winds occur, the Contractor should implement protective measures such as: ○ Suspend earth moving operations ○ Apply dust suppressants or vegetate the piles ○ Protect soil stockpiles with a barrier or windscreen • In conjunction with the above measures, all required materials and equipment should		

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation

	be readily accessible and available for use as required.
	
	Soil Stripping
	• Enbridge Gas should review the construction footprint and determine if soil stripping is feasible. If stripping is undertaken, the topsoil layer and subsoil should be stripped and stockpiled separately to avoid mixing.
	  ○ Keep subsoil pile separate from the topsoil pile. Maintain a minimum separation distance of 1 m between topsoil, subsoil piles on agricultural lands. Alternatively, install a physical barrier (for example, landowner-approved straw, coloured tackifier, geotextile buffer).
	  ○ Ensure that gravel / well pad material is not deposited on unsalvaged topsoil prior to placement in the well pad footprint unless a segregation layer is present.
	• Topsoil stripping and replacement must be carried out when the soil is relatively dry so that the soil structure is preserved and, if		

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	possible, soil stripping must be conducted in an uphill direction in order to improve drainage. • If clean-up is not practical during the construction year, it should be undertaken in the year following construction, starting once the soils have sufficiently dried. Interim soil protection measures should be implemented in sensitive areas to stabilize the soil for over-wintering. • Further details on topsoil stripping should be included in the forthcoming EPP and Well Drilling Programs. **Soil Compaction** • Within agricultural lands, the Contractor must make every reasonable effort to utilize such equipment and techniques necessary to minimize topsoil compaction as follows: ○ Topsoil must not be used as a working pad; ○ Soil compaction must be minimized by working or moving soils only when they are dry; and		

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	○ Stones which are 75 millimetres in diameter and larger that are left on the ground must be removed from agricultural fields. • Where soil has been compacted by the construction process, an agrologist should determine where decompaction may be necessary. Compaction can be alleviated by using farm equipment such as an agricultural subsoiler prior to replacing the topsoil. Sub-soiling with an agricultural subsoiler, followed by discing, chisel ploughing and cultivating, to smooth the surface, should be considered on agricultural lands. In high traffic areas where deep compaction persists, additional deep tillage or subsoiling may be required on a site-specific basis. Soil density and/or penetrometer measurements on and off the easement may be used as a means of assessing the relative degree of soil compaction caused by construction as well as determining that soil has been sufficiently de-compacted.		

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
SCN introduction and/or spread	• In consultation with the landowner(s) and an agrologist, Enbridge Gas may develop and implement an agricultural soil sampling plan for potential pests and/or diseases that are known to the area. If the results indicate an issue or concern, Enbridge Gas will work with the agrologist and landowner to develop a best practice protocol. • Any imported topsoil used for rehabilitation will have a composite sample analyzed for identified concerns. • Machinery should arrive on site in a clean condition. • At a minimum, clumps of accumulated soil or crop debris from openings, tracks, tires and wheels should be removed using a hand scraper, shovel, broom or wire brush. This level of cleaning must occur on-site before leaving a property or work area and before entering a different property or work area. Ensure cleaning is completed off	No residual effects are anticipated following the implementation of the recommended mitigation measures.	N/A

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	of the roadway, preferably in temporary workspace, and ensure a visual inspection is completed. • If needed, compressed air may be utilized after completing a rough clean, as described above.		
Discovery of historical contamination during construction	• The Contractor should proceed with construction cautiously and be aware of the potential for contaminated soils. Details on the safe handling and disposal requirements should be included in the forthcoming EPP and Well Drilling Programs. • Additional subsurface investigations (confirmatory and waste classification samples) should take place in areas suspected of having soil contamination. The forthcoming EPP and Well Drilling Programs as should provide direction for managing contaminated sites that are encountered during construction. Should suspect soils be encountered, third-party consultants are on-call 24/7 to provide support. Suspect	No residual effects are anticipated following implementation of the recommended mitigation measures.	N/A

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	soils are typically identified based on the following: ○ An odour emanating from the excavation; ○ A significant change in colour, oil sheen, texture or stunted vegetation condition; ○ The presence of coloured, odorous or non-water like liquid seeping into the excavation; and, ○ The presence of solid wastes including drums, containers or tanks. • If suspect soils are identified, implement the Suspect Soils Procedure that will be outlined in the EPP and Well Drilling Programs		

6.1.3 Agricultural Tile Drains

As provided in **Section 4.1.2.2**, approximately 100 per cent of the Bluewater Study Area contains agricultural tile drainage (systematic) and approximately 86 per cent of the Mandaumin Study Area contains agricultural tile drainage (systematic) (OMAFRA 2019). Where there is interaction with agricultural land, construction activities have the potential to crush and/or sever agricultural tile drains. Crushing or severing of drainage tiles is closely related to ground conditions and more likely to occur in wet (versus dry) soil conditions. Where numerous tile runs are encountered, damage may be extensive.

Table 6-3 identifies potential effects, mitigation measures, and residual effects for agricultural tile drains and provides an assessment of the significance of the residual effects, where present.

Table 6-3: Assessment of Potential Effects of the Project to Agricultural Tile Drains

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
Crushing and/or severing of agricultural tile drains	Enbridge Gas should undertake consultation with landowners of agricultural fields to confirm where systematic tile drainage is present. If tile drainage is present, Enbridge Gas should undertake standard mitigation during ground disturbance, including: • Develop site specific tile plans with an independent tile Contractor; • Conduct pre-tiling, and install header tile to maintain tile system function; • Mark severed or crushed tile drains immediately; • If a tile drain is severed, stop work immediately, maintain field drainage, and prevent flooding of the work area and adjacent lands through temporary repairs; • Retain a local drainage tile specialist to advise on tile repair where many tiles can be affected and the use of a header is being considered;	No residual effects are anticipated following implementation of the recommended mitigation measures.	N/A

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	• Cap the downstream side of severed drains that cross the excavation to prevent the entry of soil, debris and rodents, as required; • Repair damaged and severed drains following construction; • After repair and before backfilling, invite the landowner to inspect and approve the repair; and, • Ensure that backfill is properly compacted under repaired tiles and that backfilling is conducted carefully.		

6.1.4 Bedrock

In the Bluewater Study Area and Mandaumin Study Area, drift thickness varies from 40 metres to 50 metres. Based on available MECP well records, and the depth to bedrock recorded at the two closest water supply wells in the Bluewater Study Area, depth to bedrock at the Bluewater observation well is likely around 45 mbgs. The depth to bedrock at the Mandaumin observation well is likely around 40 mbgs to 44 mbgs. The target depth of the proposed observation wells is approximately 760 mbgs, meaning bedrock will be encountered during the well drilling process at both Project locations. As such, bedrock removal will be required and adverse effects to bedrock are expected to occur as a result of Project activities.

Table 6-4 identifies potential effects, mitigation measures, and residual effects for bedrock and provides an assessment of the significance of the residual effects, where present. The assessment presented in the table below

assumes bedrock will be removed through drilling and that blasting or removal of bedrock with a hoe-ram will not be required.

Table 6-4: Assessment of Potential Effects of the Project to Bedrock

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
Bedrock removal and disposal	• Do not allow stones from bedrock removal to interfere with topsoil or subsoil piles and do not allow stones to be placed on unsalvaged topsoil. Dispose of stones at locations approved by the landowner (for re-use) or in accordance with the excess soil regulations. • General approaches for excavating solid beds of rock or masses of rock that must be removed by drilling will be included in the forthcoming EPP and Well Drilling Programs.	No residual effects are anticipated following implementation of the recommended mitigation measures.	N/A

As a result of encountering bedrock, a reduction in groundwater quality and quantity and potential interference with private water wells may occur. Refer to the mitigations outlined in **Table 6-5**.

6.1.5 Groundwater

The target depth of the proposed observation wells is approximately 760 mbgs, meaning the groundwater table will likely be encountered during the well drilling process at both Project locations. Water well data for the water supply wells located within 500 metres of the Project indicate that static water levels range in depth between 0 mbgs and 16.2 mbgs, with an average of 7.4 mbgs.

Should the groundwater table be encountered during construction, groundwater may exfiltrate into the well and may require dewatering to facilitate construction. There is the potential to encounter contaminated groundwater in conjunction with the discovery of historically contaminated soils.

The potential for leaks or spills from Project activities to affect groundwater is considered in Accidents and Malfunctions (**Section 8.0**).

Table 6-5 identifies potential effects, mitigation measures, and residual effects for the surface water and groundwater component, and provides an assessment of the significance of the residual effects, where present.

Table 6-5: Assessment of Potential Effects of the Project on Groundwater

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
Reduction in groundwater quality	**General Measures** • Review and adhere to the Hazardous Waste Management and Disposal Plan that should be included in the EPP and Well Drilling Programs to avoid contaminant introduction during construction.	No residual effects are anticipated following implementation of the recommended mitigation measures.	N/A

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	• Maintain equipment in good working condition such that equipment and vehicles are free of leaks. • Store all fuels, chemicals, and other lubricants away from drainage features and on relatively flat areas in contained storage areas. • Re-fuelling activities should be undertaken a minimum of 30 metres away from drainage features and other sensitive environmental features. • Should a spill occur, the MECP Spills Action Centre (1-800-268-6060) should be contacted immediately and containment should occur as soon as practical; Enbridge's Environment Department should also be notified (1-855-336-2056). **Dewatering** • Register under the EASR where dewatering in excess of 50,000 L/day and up to 400,000 L/day is required. Excess water should be directed away from sensitive natural features. • Obtain a PTTW from the MECP where dewatering in excess of 400,000 L/day is		

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	required. Excess water should be directed away from sensitive natural features. • Potentially contaminated groundwater should be managed and disposed of in accordance with applicable regulatory requirements. **Water Well Monitoring Program** • A pre-drilling and post-drilling private water well survey will be offered for properties within 500 metres of the Project. The private water well surveys will be conducted to assess potential interference with groundwater supply wells as a result of the Project. • Should a private water well be affected by construction, a potable water supply should be provided and water well should be repaired or restored as required.		

6.2 Natural Environment

6.2.1 Atmospheric Environment

Air emissions (including greenhouse gases) from vehicle and equipment use (for example, exhaust and dust) will occur during construction and site-specific maintenance activities during operations.

Air contaminants from vehicle and equipment use include sulphur dioxide, nitrogen oxide, volatile organic compounds, carbon monoxide, and particulate matter. In addition, carbon dioxide, a greenhouse gas, is emitted from internal combustion engines.

Table 6-6 identifies potential effects, mitigation measures, and residual effects on the atmospheric environment component, and provides an assessment of the significance of the residual effects, where present.

Table 6-6: Assessment of Potential Effects of the Project on the Atmospheric Environment

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
Increase in air emissions during construction and where site-specific preventative maintenance is performed during operations	• Equip vehicles with emission controls, as applicable, and operate within regulatory requirements. • Limit long-term idling, where possible, and in accordance with the City of Sarnia Idling By-Law. • Implement dust control measures during dry and windy conditions. Dust control measures should be monitored regularly to increase efficiency. • Limit construction activities during high wind events.	Temporary, localized increase in air emissions.	The residual effect is reversible and will occur occasionally over the assessment period. It is anticipated to be low magnitude, short-term in duration, and not significant.

6.2.2 Aquatic Environment

No unmapped or mapped aquatic features exists within either the Bluewater or Mandaumin Study Areas. As such, no adverse effects to the aquatic environment are expected to occur as a result of Project activities.

6.2.3 Wetlands

There are no mapped provincially significant or unevaluated wetlands present within or immediately adjacent to the Study Areas of both proposed wells. Furthermore, no unmapped wetlands were observed during the preliminary field investigation completed on May 26, 2023.

Based on air photo evaluation of the Mandaumin Study Area, potential wetland pockets may be present within the deciduous forest community at the northwestern extent of the Study Area. At the time of the preliminary field investigation, property access to this portion of the Study Area was not available and field confirmation of wetland features in this deciduous forest community was not possible. This potential wetland feature is located along the 125 metre Study Area boundary and is located well beyond the Project Footprint, and encroachment or work within 30 metres of this potential wetland area is not anticipated. As such, no adverse effects to wetlands are expected to occur as a result of Project activities.

6.2.4 Areas of Natural and Scientific Interest

There are no designated ANSIs located within the Bluewater or Mandaumin Study Areas. As such, no adverse effects to ANSIs areas are expected to occur as a result of Project activities.

6.2.5 Vegetation

The majority of the Bluewater Study Area can be classified as agricultural (perennial cover crop, annual row crops, and hayfields) with some small areas of rural residential properties and agricultural buildings. Similarly, the majority of the

Mandaumin Study Area can be classified as agricultural (annual row crops) with some naturalized areas (the sugar maple deciduous forest). Hedgerows and fencerows (TAGM5) also occur throughout the Study Areas.

Both the observation wells and proposed temporary and permanent pads will be installed within active agricultural fields. The proposed construction access roads will follow existing gravel or grassy laneways adjacent to the agricultural fields. As such, vegetation encountered will likely consist of common roadside vegetation of minor ecological value (vegetation capable of colonizing disturbed sites).

However, if construction activities (for example, temporary laydown areas, equipment encroachment) extend into vegetated areas, activities could result in the temporary loss or alteration of vegetation. Construction activities could also result in the introduction or spread of invasive species and/or weeds.

The potential for leaks or spills from Project activities to affect vegetation is considered in Accidents and Malfunctions (**Section 8.0**).

Table 6-7 identifies potential effects, mitigation measures, and residual effects on the vegetation component, and provides an assessment of the significance of the residual effects, where present.

Table 6-7: Assessment of Potential Effects of the Project on Vegetation

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
Loss or alteration of vegetation during construction	• Minimize the width of the construction area to reduce the amount of vegetation affected. • Limits of the workspace should be clearly marked to avoid encroachment into adjacent vegetated areas and to avoid unnecessary tree removals and encroachment.	Temporary, localized loss or alteration of vegetation.	The residual effect is reversible and will be isolated to the construction period. It is anticipated to be low magnitude, short

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	• Where feasible, construction traffic should be limited to the existing road allowance and existing access roads/laneways to avoid potential compression of tree root zones. • Protect vegetation adjacent to the working area from construction traffic and/or materials storage. • If tree removals are planned, a tree inventory should be conducted to inform permitting requirements. • If tree removals are required, it will be completed with a review by the County of Lambton prior to occurring. • Implement tree protection zones once vegetation removal is complete. The tree drip line plus an additional 1 metre demarcated by fencing should be established around remaining edge vegetation to avoid soil compaction. • Upon completion of construction, all vegetation removed or damaged should be replaced with appropriate native species. Ontario native seed mixes should be appropriate for the habitat type and existing land use.		to medium-term in duration, and not significant.

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
Introduction or spread of invasive species and/or weeds	• All equipment should arrive to the site clean and free of soil and/or vegetation to prevent the introduction and spread of invasive species and weeds. • Ontario native seed mixes that are free of weed species should be used for revegetation.	No residual effects are anticipated following implementation of the recommended mitigation measures.	N/A

6.2.6 Wildlife and Wildlife Habitat

The results of the preliminary ELC survey determined that lands in the Bluewater Study Area and Mandaumin Study Area are primarily classified as 'cultural' communities with some natural communities occurring in the north and northwest portion of the Mandaumin Study Area.

Cultural features like outbuildings, barns, hedgerows, and houses that occur in the Study Areas may provide habitat for bats and nesting birds; as well, the graveled access road shoulders could provide habitat to ground nesting birds and basking areas for reptiles. The monitoring wells and permanent pads will be installed within active agricultural areas, and construction access will be limited to existing laneways or agricultural fields. As a result, direct interaction with wildlife and wildlife habitat is expected to be minimal.

Vegetation removal during construction may potentially limit or alter wildlife habitat. The removal of vegetation can impact nesting birds if conducted during known breeding bird timing windows (generally between April 1 and August 31). Tree removal during construction can impact bat roosting and maternity trees if conducted during the bat active season (April 1 to September 30).

Construction activities have the potential to cause physical harm to slower moving animals such as frogs and snakes. Snakes may use open areas such as road shoulders to bask, potentially putting them at risk from construction activities.

Noise from construction activities can cause some temporary disturbance to local wildlife, if present in the Study Areas.

The potential for leaks or spills from Project activities to affect wildlife and wildlife habitat is considered in Accidents and Malfunctions (**Section 8.0**).

Table 6-8 identifies potential effects, mitigation measures, and residual effects on the wildlife and wildlife habitat component, and provides an assessment of the significance of the residual effects, where present.

Table 6-8: Assessment of Potential Effects of the Project on Wildlife and Wildlife Habitat

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
Alteration or loss of wildlife habitat, disruption of wildlife movement, and/or increase in wildlife mortality during construction and where	**General Measures** • Flag or fence off nearby natural vegetation communities that should not be disturbed, prior to construction. • Undertake environmental awareness training for all workers onsite to highlight issues specific to the Project. Training should focus on protocols for injured wildlife and the identification of SAR that may be encountered.	Temporary alteration or loss of wildlife habitat, disruption of wildlife movement, and/or increase in wildlife mortality.	The residual effect is reversible and will occur occasionally over the assessment period. It is anticipated to be low magnitude, short-term in duration, and not significant.

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
maintenance is performed during operations	• All wildlife encountered should be handled by a qualified professional using approved MNRF/MECP handling protocols and relocated away from the construction area to prevent incidental harm. • Nuisance and large wildlife encounters or incidents involving wildlife should be reported to the MNRF/MECP. • Food waste and debris should be removed from the site daily and disposed of at an approved waste facility. • Conduct pre-construction planning that includes a review of the areas of potential habitat. • Minimize the width of the construction area to reduce the amount of vegetation affected. ○ Suspend construction if active habitat is discovered and an adequate setback distance cannot be maintained. • Maintain habitat connections, where possible, during construction. • Implement measures to restore lost habitat/habitat connections.		

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	Birds • Abide by regulatory timing windows for migratory birds (generally April 1 to August 31) and setback distances when vegetation removal (including individual trees) is required or when working in or directly adjacent to natural features. • For vegetation removal/disturbance also adhere to the Eastern Meadowlark and Bobolink restricted access period (May 1 – July 31) (specific to Bluewater Study Area). • Conduct pre-construction nest sweeps if construction will occur within the migratory bird restricted activity period (April 1 to August 31). Nest sweeps are valid for 7 days; however, it is recommended to clear vegetation within 48 hours of a migratory bird nest sweep. • Protect active nests by flagging or fencing off an appropriate setback distance as determined by a qualified professional. • If a nest is found during construction activities, stop work and notify the site inspector and Project Environmental Advisor.		

	Bats • Narrow construction footprint, where possible, to limit tree removals. • Should tree removal be required, complete assessments prior to clearing to determine if candidate maternity trees (those with loose bark, crevices, hollows or cavities) are present. • Clearing of potential bat roosting trees is to be avoided between April 1 and September 30. If potential bat roosting trees require removal during this window, additional surveys may be required. Contact a qualified individual prior to clearing. **<u>Herptiles</u>** • If a snake is encountered on site, stop work and allow the individual to leave the area. • Take extra caution during the early morning or on colder days are snake species are more likely to use road shoulders during these periods. • Prior to the timing windows for the nesting and breeding season, flag or fence off identified habitat features, if possible. The recommended depth of the fence and height of the fence differs depending on the reptile group: ○ Snakes: varies by species – consult the MNR (2013) document *Species at Risk*		

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	Best Practices Technical Note, Reptile and Amphibian Exclusion Fencing (Version 1.1). Note, stakes should be installed on the activity side to prevent snakes using stakes to climb fencing. • Release captured wildlife to pre-determined areas of similar or better habitat, where possible, preferably downstream of the work site. • Complete a wildlife sweep within the exclusion area following fence installation to ensure there is no trapped wildlife. • Visually inspect machinery and/or engine compartments each day during construction for basking reptiles such as snakes.		

6.2.7 Species at Risk

Desktop review and field studies determined that the Study Areas have the potential to support a combined total of 8 SAR. The breakdown by Study Area is as follows:

- **Bluewater Study Area** – has the potential to support 2 SAR, including 2 birds (Bobolink, Eastern Meadowlark).
- **Mandaumin Study Area** – has the potential to support 6 SAR, including 4 mammals (American Badger, Little Brown Myotis, Northern Myotis, Tri-colored Bat) and 2 vascular plant species (Butternut, Eastern Flowering Dogwood).

Following the 2023 field studies, it was determined that the Bluewater Project Footprint does not overlap with potential habitat for Bobolink or Eastern Meadowlark, as the proposed Project Footprint is located outside of the hayfield (OAGM2). The hayfield (OAGM2) is a rotational crop (as confirmed by the current landowner), and is proposed for an annual row crop (corn) for 2024. As corn fields are not conducive to breeding habitat for Bobolink or Eastern Meadowlark, potential impacts to these two species are not anticipated as a result of construction activities in 2024.

Although the Mandaumin Study Area was identified to potentially support 6 SAR, field studies were completed in May during the leaf-on period where Butternut and Eastern Flowering Dogwood could be determined as present or absent. As these two species were not identified during 2023 field studies within or adjacent to the Project Footprint, both species are considered absent in the Project Footprint. The Project Footprint is located adjacent to deciduous forest (FODM5) and hedgerow (FODM11 and TAGM5) communities; however, tree removal and/or pruning is not proposed as a result of Project activities. As such, potential impacts to SAR bats are not anticipated. Additionally, no American Badger individuals or evidence of American Badger site activity (including burrows or dens) were observed within the Project Footprint or Study Area. American Badger is considered absent in the Project Footprint.

Table 6-9 identifies potential effects, mitigation measures, and residual effects on the species at risk with potential to occur within or immediately adjacent to the Project Footprint, and provides an assessment of the significance of the residual effects, where present.

Table 6-9: Assessment of Potential Effects of the Project on Species at Risk

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
Alteration of SAR habitat, disruption of SAR movement,	• Implement recommended mitigation measures and timing windows in reference to the following SAR:	No residual effects are anticipated following implementation of	N/A

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
and/or increase in SAR mortality during construction and where maintenance is performed during operations	○ Bobolink and Eastern Meadowlark (for vegetation removal/disturbance, adhere to the restricted access period of May 1 – July 31 when working adjacent to OAGM2 at the Bluewater Project location if hayfield [OAGM2] is still present May 2024). If construction activities at the Bluewater Project location cannot avoid the restricted access period and the hayfield (OAGM2) is present, a targeted SAR grassland bird survey(s) may be completed prior to the initiation of construction during this period to determine the presence of breeding SAR grassland birds. In the event breeding evidence of SAR grassland birds are observed, Enbridge Gas will engage in follow-up discussions with MECP to discuss potential permitting requirements prior to the initiation of construction activities; and ○ SAR Bat timing windows (April 1-September 30) in the event tree removals are required. • Abide by the conditions of regulatory permits or approvals when working in areas where there is potential to interact with SAR.	the recommended mitigation measures.	

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	• Provide SAR identification sheets to workers that outline habitat, identifying characteristics and mitigation measures. • Document SAR encounters and notify appropriate regulatory authorities.		

6.3 Socio-Economic Environment

6.3.1 Planning Policies

Under the relevant plans and policies reviewed for this report, the Project is consistent with and conforms to the municipal and provincial land use policies. The Project is consistent with Provincial direction for supporting long-term economic prosperity and sustaining healthy, liveable, and safe communities (MMAH 2020). The Project is also in alignment with the County of Lambton's policies on development and economic growth, outlined in the Official Plan (2020). As highlighted in **Section 4.3.1**, the County of Lambton Official Plan specifically states that "the County supports the subsurface storage of gas or other hydrocarbons."

No adverse effects to planning policies are expected to occur as a result of Project activities. The Project conforms to the existing applicable official plans and zoning by-laws and no amendments are required.

6.3.2 Existing and Planned Land Use

It is not anticipated that Project activities will impact existing or planned land use. The observation wells are intended to monitor the gas content and pressure of existing underground storage formations on the Mandaumin and Bluewater properties. The Project does not require re-designation or re-zoning of lands and will not restrict existing or

future agricultural, rural, and infrastructure land uses occurring within and adjacent to the Study Area. Enbridge Gas will obtain the required permits and approvals prior to construction and operations.

6.3.3 Population, Employment and Economic Activities

The Project is located in a rural area where there are numerous farms and agricultural businesses. The Project is not anticipated to have a noticeable impact on the economic activities of surrounding businesses as construction will be contained within property boundaries, construction activities will be short-term in duration, and appropriate traffic control measures will be implemented, as needed.

There will be a minor loss of productive agricultural land base to accommodate the Project that will result in an economic impact on the directly affected property owners. However, the economic effects are anticipated to be negligible and fully mitigated through easement agreements.

The Project will employ a small workforce for a short period of time and no permanent jobs will be created or lost as a result of the Project. As such, no adverse effects to population, employment and economic activities are anticipated to occur as a result of Project activities.

6.3.4 Human Occupancy and Resource Use

The Project is located in a rural area and is surrounded by agricultural and rural residential uses that are generally set further back from the road than in urban or residential developments. Construction activities may temporarily cause nuisance noise for local residents and businesses.

The installation of the Project components directly within agricultural lands will disrupt agricultural activities for the private landowners at the Bluewater and Mandaumin Project locations. During construction, these landowners will lose small portions of agricultural land to accommodate the Project and, during the operations phase, planting regimes and patterns may be impacted by the location of the access roads and observation wells located directly within the agricultural land.

While visual effects of construction cannot be mitigated they will be short term and localized. During operations, visual effects will be negligible as the observation wells and the accompanying gravel pads will not be visible from the municipal road right-of-way (for example, County Road 14 [Churchill Line] and County Road 26 [Mandaumin Road]).

Table 6-10 identifies potential effects, mitigation measures, and residual effects on the human occupancy and resource use component, and provides an assessment of the significance of the residual effects, where present.

Table 6-10: Assessment of Potential Effects of the Project on Human Occupancy and Resource Use

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
Increase in nuisance noise during construction	• General construction activities (for example, installation of the access roads, and the temporary and permanent pads) will be carried out in compliance with municipal noise by-laws with respect to noise and construction equipment usage. However, well drilling activities will take place 24 hours a day, 7 days a week and therefore, applicable noise by-law exemptions will be sought as activities cannot be avoided on Statutory Holidays, Sundays, or at night. ○ General noise control measures will be implemented during construction (for example, proper maintenance of equipment, muffling systems, minimum idling of equipment and vehicles).	Temporary, localized increase in nuisance noise during construction.	The residual effect is reversible and is isolated to the construction period. It is anticipated to be low magnitude, short-term in duration, and not significant.

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
Disruption to agricultural activities during construction and operations	• Enbridge Gas will work with private landowners to determine appropriate locations for Project components. • Enbridge Gas will work with private landowners to coordinate harvesting/planting schedules with the schedule for construction activities and any required surveys/assessments that necessitate clearing (for example, agricultural assessments) to limit disturbance. • Notify affected landowners of the construction schedule and any maintenance activities and provide construction details in advance of the activity.	No residual effects are anticipated following implementation of the recommended mitigation measures.	N/A

6.3.5 Infrastructure and Services

The Project is located within a rural area along two-lane arterial roads (for example, County Road 14 [Churchill Line] and County Road 26 [Mandaumin Road]) and farming equipment is likely to be present on these roads. Construction may cause temporary traffic disruptions during construction and a temporary increase in hazardous/non-hazardous wastes.

Table 6-11 identifies potential effects, mitigation measures, and residual effects on the infrastructure and services component, and provides an assessment of the significance of the residual effects, where present.

Table 6-11: Assessment of Potential Effects of the Project on Infrastructure and Services

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
Traffic disruptions during construction	• Traffic access will be maintained, where possible, during construction. Good management and best practices will be implemented during construction to minimize traffic disruption. If required, temporary detour routes will be provided to reduce potential impacts to drivers. • As the Project occurs in a largely agricultural area, Enbridge Gas should consult with local landowners to avoid busy times for agricultural equipment movement and operations. • A common parking area should be established for construction crews to reduce traffic and better manage parking congestion. The Contractor should be encouraged to transport construction staff to the site from a central collection point via bus or other method to reduce the potential for parking issues and traffic congestion. • Enbridge Gas will respond to any construction complaints promptly. • Vehicle traffic will be managed in accordance with the Traffic Control and Protection Plan,	Temporary traffic disruptions during construction.	The residual effect is reversible and is isolated to the construction period. It is anticipated to be low magnitude, short-term in duration, and not significant.

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	and forthcoming EPP and Well Drilling Programs. ○ Where required, an appropriate Traffic Control and Protection Plan will be developed and implemented in accordance with Ontario Traffic Manual (OTM) Book 7 – Temporary Conditions.		
Increase in wastes during construction	• Solid waste will be collected and disposed of appropriately in accordance with applicable regulations at a licensed waste facility. • Hazardous wastes will be transported by MECP licensed waste haulers to a MECP registered disposal site. • Temporary storage of wastes onsite will include the use of secured containers in designated sites away from sensitive areas.	No residual effects are anticipated following implementation of the recommended mitigation measures.	N/A

6.3.6 Indigenous Community Land and Resource Use

To date, Aamjiwnaang First Nation has not identified any specific issues or concerns regarding the impact of the Project on their use of land and resources in the Study Areas. As such, no adverse effects to Indigenous communities' use of land and resources are expected to occur as a result of Project activities.

Enbridge Gas will continue to engage with Indigenous communities throughout the Project and will work with Indigenous communities to address issues or concerns, should they arise.

6.3.7 Cultural Heritage Resources

The Stage 1 and Stage 2 archaeological assessment (PIF P1048-0125-2023) for the Bluewater Project location found the 2821 Churchill Line property (the property in which the Bluewater site occurs) had potential for the recovery of archaeological resources due the proximity (i.e., within 300 metres) of a feature that signals archaeological potential, namely: mapped 19th-century thoroughfares (Churchill Road). As the Project Area consists entirely of active agricultural field it was subject to Stage 2 assessment. All work met provincial standards and no archaeological material was documented during the assessment. As such, the Project Area should be considered free of archaeological concern and no further archaeological assessment is recommended.

A Stage 1 and 2 archaeological assessment (PIF P1048-0131-2023) was completed September 19, 2023 by TMHC alongside a representative of TTMS, and will be submitted to MCM October 2023. The Stage 1 and 2 archaeological assessment found that the 3106 Churchill Line property (the property in which the Mandaumin site occurs) had potential for the recovery of archaeological resources due the proximity (for example, within 300 metres) of a feature that signals archaeological potential, namely: mapped 19th-century thoroughfares (Churchill Road). A Stage 2 assessment was completed and all work met provincial standards. No archaeological material was documented during the assessment. As such, the Project Area should be considered free of archaeological concern and no further archaeological assessment is recommended. Construction will not begin without MCM review and acceptance.

The results of the Cultural Heritage Screenings determined that both Project locations are part of a property containing a building over 40 years of age with potential CHVI. A CHER is currently being undertaken by TMHC to determine if the properties are (or not) of CHVI. If the properties are determined to be of CHVI, a HIA will be undertaken by a qualified person. The HIA will be submitted for review and comment to MCM, following OEB approval.

Table 6-12 identifies potential effects, mitigation measures, and residual effects on the cultural heritage resources component, and provides an assessment of the significance of the residual effects, where present.

Table 6-12: Assessment of Potential Effects of the Project on Cultural Heritage Resources

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
Disturbance of previously undiscovered archaeological resources during construction	• Follow the recommendations of the Stage 1 and Stage 2 archaeological assessment for the Bluewater Project location. • Follow the recommendations of the forthcoming Stage 1 and Stage 2 archaeological assessment for the Mandaumin Project location. • Should previously undocumented archaeological resources be discovered, there may be a new archaeological site and therefore subject to section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out an archaeological assessment, in compliance with section 48(1) of the *Ontario Heritage Act*. • The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 requires that any person discovering human remains must cease all activities immediately and notify the police or coroner. If the coroner does not suspect foul play in the disposition of the remains, in	No residual effects are anticipated following implementation of the recommended mitigation measures.	N/A

Potential Effects	Mitigation Measures	Residual Effects	Characterization and Significance Evaluation
	accordance with Ontario Regulation 30/11 the coroner shall notify the Registrar, Ontario Ministry of Public and Business Service Delivery, which administers provisions of that Act related to burial sites. In situations where human remains are associated with archaeological resources, the Ministry of Citizenship and Multiculturalism should also be notified (at archaeology@ontario.ca) to ensure that the archaeological site is not subject to unlicensed alterations which would be a contravention of the *Ontario Heritage Act*.		
Disturbance of built heritage resources or cultural heritage landscapes during construction	• Implement recommendations in the forthcoming CHER or HIA undertaken for the Bluewater and Mandaumin Project locations.	No residual effects are anticipated following implementation of the recommended mitigation measures.	N/A

Figure 6-1, Map 1 of 3: Mitigation Mosaic for the Bluewater Site

2024 BLUEWATER AND MANDAUMIN WELL DRILLING PROJECT

ENBRIDGE GAS

MITIGATION MOSAIC FOR THE BLUEWATER SITE

FIGURE 6-1, MAP 1 OF 3

- Study Area (125m)
- Potential Built Heritage Resource
- Proposed Observation Well
- Proposed Temporary Pad (approx. 80m by 100m)
- Proposed Permanent Access Road (approx. 5m wide)
- Proposed Permanent Pad (approx. 8m by 8m)
- Watercourse
- Major Road

MECP Water Well (Type)

- Domestic Well
- Livestock Well
- Unknown Well

Significant Wildlife Habitat

- Candidate Habitat for Species of Conservation Concern

Potential SAR Habitat

- Bobolink/Eastern Meadowlark

SCALE 1:3,500

0 40 80 160 m

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: -ZIB
MAP CHECKED BY: -KG
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

DILLON CONSULTING

PROJECT: 23-6171
STATUS: FINAL
DATE: 2023-07-13

FILE LOCATION: K:\2023\236171\Product\Client\ERI\F6-1_MitigationMap_Map1.mxd

Figure 6-1, Map 2 of 3: Mitigation Mosaic for the Mandaumin Site

Figure 6-1, Map 3 of 3: Mitigation Map

MITIGATION AND PROTECTIVE MEASURES:

1. Where there is potential for soil erosion, the need for and location of Erosion and Sediment Control (ESC) measures should be determined by an inspector with appropriate qualifications and installed prior to the commencement of work in the area. Refer to Section 6.1.2, Table 6-1 of the Environmental Report (ER). Permits obtained from the St. Clair Region Conservation Authority (SCRCA) may also contain conditions pertaining to ESC; review all permits and permit conditions related to the Project prior to construction.
2. ESC and stabilization measures should be maintained during construction, restoration, and rehabilitation until the site is established. Where evidence of erosion exists, corrective control measures should be implemented as soon as conditions permit. Refer to Section 6.1.2, Table 6-1 of the ER.
3. Wet weather shutdown must be enforced in agricultural areas where soils are susceptible to rutting, compaction, topsoil and subsoil mixing, and/or loss of soil structure because of saturated soil conditions. During wet weather events where there is excessive saturation of the soil (i.e., heavy rainfall events), construction activities should be temporarily halted. Enbridge Gas' on-site inspection team should determine when construction activities may be resumed. Refer to Section 6.1.2, Table 6-1 of the ER.
4. Soil compaction must be minimized during construction. The Contractor must make every reasonable effort to utilize equipment and techniques necessary to minimized topsoil compaction, as per Section 6.1.2, Table 6-1 of the ER.
5. If contaminated soils are suspected, follow the mitigation and protection measures outlined in Section 6.1.2, Table 6-1 of the ER.
6. In consultation with the landowner(s) and an agrologist, Enbridge Gas may develop and implement an agricultural soil sampling plan for potential pests (i.e., soybean cyst nematode [SCN]) and/or diseases that are known to the area. If the results indicate an issue or concern, Enbridge Gas will work with the agrologist and landowner to develop a best practice protocol.
7. Any imported topsoil used for rehabilitation will have a composite sample analyzed for identified concerns related to SCN.
8. Machinery should arrive on site in a clean condition. Refer to Section 6.1.2, Table 6-2 and Section 6.2.5, Table 6-7 of the ER.
9. Enbridge Gas should undertake consultation with landowners of agricultural fields to confirm where systematic tile drainage is present. If tile drainage is present, Enbridge Gas should undertake standard mitigation during ground disturbance, as per Section 6.1.3, Table 6-3 of the ER.
10. Bedrock removal should be undertaken in accordance with the site-specific Well Drilling Program, as per Section 6.1.4, Table 6-4 of the ER.
11. Register under the Environmental Activity and Sector Registry where dewatering in excess of 50,000 L/day and up to 400,000 L/day is required. A Permit to Take Water will be required if water taking is greater than 400,000 L/day. Excess water should be directed away from sensitive natural features. Refer to section 6.1.5, Table 6-5 of the ER.
12. There are four private water wells near the Bluewater site. Two private water wells are located within 500 m of the Mandaumin site, but interaction with these wells is not anticipated. Consultation should occur with landowners at both Project sites to confirm distance of the drilling for the new wells to private water wells. A pre-drilling and post-drilling private water well survey will be completed for properties within 500 metres of the Project.
13. Bentonite slurry generation can be reduced by using a centrifuge to screen out solids and fines, allowing the bentonite to be reused on-site to a certain extent. Prior to disposal, bentonite slurry can be treated by solidification methods and removed from the site under the appropriate waste classification. Refer to section 6.1.5, Table 6-5 of the ER.
14. During construction and maintenance activities, equip vehicles with emission controls, as applicable, and operate within regulatory requirements. Limit long-term idling, where possible, and in accordance with the City of Sarnia Idling By-Law.
15. Implement dust control measures during dry and windy conditions, as per Section 6.2.1, Table 6-6 of the ER.
16. Minimize the width of the construction area, clearly mark the limits of the workspace and flag or fence off nearby natural vegetation communities that should not be disturbed. Refer to Section 6.2.5, Table 6-7 and Section 6.2.6, Table 6-8 of the ER.
17. If tree or vegetation removal is required, follow the mitigation and protection measures outlined in Section 6.2.5, Table 6-7 of the ER.
18. Undertake environmental awareness training for all workers onsite to highlight issues specific to the Project. Training should focus on protocols for injured wildlife and the identification of SAR that may be encountered. All wildlife encountered should be handled by a qualified professional as per Section 6.2.6, Table 6-8 and Section 6.2.7, Table 6-9 of the ER.
19. Construction activities will be carried out in compliance with relevant provincial permits and regulatory requirements related to wildlife, wildlife habitat, and SAR. To reduce impacts on wildlife, wildlife habitat, and SAR, follow the timing windows outlined in Section 6.2.6, Table 6-8 and Section 6.2.7, Table 6-9.
20. Conduct pre-construction nest sweeps if construction will occur within the migratory bird restricted activity period (April 1 to August 31). Nest sweeps are valid for 7 days; however, it is recommended to clear vegetation within 48 hours of a migratory bird nest sweep. Refer to Section 6.2.6, Table 6-8 for additional details on post-construction survey requirements.
21. Construction activities related to the installation of the access roads and temporary/permanent pad will be carried out in compliance with municipal noise by-laws. As drilling activities will be 24 hours/7 days a week until completion, noise by-law exemptions will be sought as activities cannot be avoided on Statutory Holidays, Sundays or at night.
22. General noise control measures will be implemented during construction (i.e., proper maintenance of equipment, muffling systems, minimum idling of equipment and vehicles). Refer to section 6.3.4, Table 6-10 of the ER.
23. Traffic access will be maintained, where possible, during construction. Good management and best practices will be implemented during construction as per section 6.3.5, Table 6-11 of the ER.
24. Should previously undocumented (i.e., unknown or deeply buried) archaeological resources be discovered, the person discovering the archaeological resources will notify the Environmental Inspector and Enbridge Environmental Advisor, as per Section 6.3.7, Table 6-12 of the ER.
Should previously undocumented archaeological resources be discovered, the Contractor must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out an archaeological assessment. Refer to Section 6.3.7, Table 6-12 of the ER.
25. Follow the recommendations of the combined Stage 1 and Stage 2 Archaeological Assessment, and any recommended archaeological assessments (e.g., Stage 3 and 4). Also apply recommendations outlined in the Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment and/or Heritage Impact Assessment.

2024 BLUEWATER AND MANDAUMIN WELL DRILLING PROJECT

ENBRIDGE GAS

MITIGATION MOSAIC NOTES

FIGURE 6-1, MAP 3 OF 3

DILLON CONSULTING

PROJECT: 23-6171
STATUS: FINAL
DATE: 2023-07-07

7.0 Cumulative Effects Assessment

The cumulative effects assessment evaluates the significance of residual effects of the Project (that is, effects remaining after the application of mitigation measures) in combination with the effects of other existing or proposed projects or developments. The cumulative effects assessment recognizes that while individual actions may not have a significant effect on the cultural, socio-economic, natural, and physical environment, multiple actions of a similar nature that occur over an extended period of time may have a significant effect.

Proposed projects or developments that were considered for the cumulative effects assessment are illustrated in **Figure 7-1** and cumulative and residual effects have been illustrated in **Figure 7-2** and are described in further detail in the following subsections.

7.1 Methods

The cumulative effects assessment was conducted in accordance with the OEB Guidelines and included developing a cumulative effects Study Area with appropriate boundaries.

For the purposes of this assessment, cumulative effects are defined as follows:

- The combination and interaction of effects of the same project;
- The combination and interaction of the effects of the proposed Project with other projects; and,
- The combined effects over time in the same space.

Two conditions must be met to pursue an assessment of cumulative environmental effects:

- There are likely residual Project effects on a specific element as identified through the assessment in **Section 6.0**; and
- Residual Project effects could act cumulatively with effects of other past, present, and reasonably foreseeable future projects or physical activities.

7.1.1 Spatial and Temporal Boundaries

Based on Dillon's professional experience, it was determined that the spatial boundaries for the cumulative effects assessment on environmental components be established as a 5-kilometre buffer around each of the Project locations for environmental components (that is, a 5-kilometre radius around the proposed permanent and temporary Project infrastructure). For socio-economic elements, the Study Area includes the jurisdictional boundaries of the City of Sarnia and Town of Plympton-Wyoming.

The temporal boundaries identified for the assessment considered existing activities or disturbances that have shaped the current land use in the Project area and recently constructed projects, projects currently under review, under construction, or planned (that is, there are publicly disclosed plans to proceed and seek necessary permits or approvals).

7.1.2 Characterization of Cumulative Effects and Evaluation of Significance

The same criteria that were used to characterize and evaluate the significance of residual effects were used for the cumulative effects assessment (see **Section 2.1.2**).

The cumulative effects assessment predicted the level of significance of total cumulative effects; however, in order to determine the incremental increase in total cumulative effects caused by the Project, the cumulative effects assessment focuses on an evaluation of the significance of the Project's contribution to total cumulative effects (that is, the extent to which the Project alone is contributing to the total cumulative effect). Predicted levels of significance of total cumulative effects and the significance evaluation of Project contribution to the total cumulative effects are provided for each identified cumulative effect.

The Project's contribution to potential cumulative effects depends on many factors, including:

- The source of the disturbance;
- Resilience of the receiving environment; and
- The way in which disturbances interact within the spatial and temporal boundaries defined for the Project.

A qualitative assessment was considered the most appropriate method to evaluate the significance of predicted cumulative effects in consideration of the nature and context of the Project activities. The assessment of cumulative effects relied on available literature, baseline data and information, and the professional judgement of the assessment team.

There is limited confidence in the assessment of total cumulative effects due to the inherent assumptions and uncertainties at the regional scale and assessment approach that is proportionate to the scope and regional context of the Project. The significance of the Project's contribution to cumulative effects is determined in a manner similar to that employed in determining the significance of residual effects as previously outlined in **Section 2.1.2**.

7.2 Past, Present, and Reasonably Foreseeable Activities and Disturbances

Past and present activities and disturbances or reasonably foreseeable developments that may occur in the Project area were considered within the spatial and temporal boundaries outlined in **Section 7.1.1**. Future projects considered in the assessment do not include proposed or hypothetical projects where formal plans have not been disclosed.

7.2.1 Past and Present Activities and Disturbances

This subsection includes a high-level summary of past and present disturbances within the spatial boundaries of the cumulative effects assessment to provide an understanding of the Project's contribution to the current state of the environment in the context of existing cumulative impacts from successive past and present activities.

In general, existing activities in the Study Area include the following:

- Rural residential;
- Agricultural and industrial development and activities;
- Recreation and leisure activities (such as, cycling, trails, conservation areas, and a golf course);
- Utility activities and municipal services and developments (power, gas, and water lines);

- Transportation and infrastructure development and activities (roads and railways); and,
- Oil and gas activities (existing pipelines, facilities, and natural gas storage).

7.2.1.1 Lambton County

Prior to the 1830s, Lambton County was sparsely occupied by people of European descent. One of the reasons for this was that historical Lambton County was composed of mainly forested and swampy areas that made settling and traveling to the County difficult. A few French settlers were living along the banks of the St. Clair River. An unfortified British military reserve was set up along the eastern bank of the St. Clair River at the entrance to Lake Huron, in the location of what was to eventually become the Village of Point Edward around 1800. This military reserve was established to protect the entrance of Lake Huron from possible American invaders (Elford 1967). It is thought that the earliest European settlement in Lambton County was focused along Bear Creek (or the Sydenham River) in what has come to be known as the Baldoon Settlement (H. Belden & Co. 1880). This area was settled by Highland Scotch immigrants who came to the area around 1804 under the direction of Lord Selkirk (H. Belden & Co. 1880). However, no sizable European populations settled in the County until the early 1830s when there was an influx of British settlers. By 1834, there were 1,728 settlers in the county and by 1891 the population had increased to 58,810 people (Elford 1967). By 1835, the ten townships that would eventually comprise the County were laid out and surveyed. It was not until 1850 that Lambton became a provisional county and three years later it became an independent municipality (Elford 1967). By 1881, nearly half the county was still covered by forested lands (Matthews et al. 1957).

The Grand Trunk Railway first opened in 1859 and helped increase the County's shipping profile and provided passage to new immigrants. Transportation through the County was considerably hindered by the lack of good thoroughfares. Given that much of the county was essentially a vast level clay plain with few streams and rivers, it was poorly drained and good, dry roads were hard to come by. Swamplands often prohibited the establishment of early through roads. Nonetheless, a few early major transportation routes offered some solace to travelers. These included the Egremont/London Road (now Highway 22), the Plank Road (connecting Sarnia to Petrolia), and the Fourth Line (Confederation Line).

The oil and gas industry, from the late 1860s through to today, greatly influenced the County's settlement, physical landscape, and economy. With the start of the "oil boom" in 1858, both the rail and shipping industry expanded and ferry service to the United States was formed (County of Lambton n.d.). In the twelve years from 1858 to 1860 following the discovery of oil in Oil Springs, approximately 1.5 million litres of crude oil were extracted and shipped to various refineries in the United States and Hamilton, Ontario (Ford 1987). However, it was not until the 1860s when the oil industry took off that there was a dramatic increase in land prices and influx of labourers coming to the County for work. During this decade, using a standard drilling rig, natural gas wells were sunk, and by the end of 1861, there were approximately 400 wells drilled in the County (Ford 1987). The boom lasted only briefly as the flow from most of the wells became intermittent or ceased all together, according to Ford (1987).

While the late 1800s was a time of exploitation of oil, salt mining was hugely exploited in Sarnia for the better half of the 1900s but by 1960, production slowed (Ford 1987). Dominion Salt, later Sifto Salt, operated on the site of what is now Centennial Park on Sarnia Bay, and produced the bulk of the salts mined and exported.

Agriculture and oil and gas operations continue in present day and, when compared to other areas in southwestern Ontario, the County is still largely rural in nature.

7.2.1.2 City of Sarnia

Although there was some French settlement in the area as early as 1807, significant settlement in the area now known as the City of Sarnia began in the 1830s (Johnston 1925; Elford 1967). To early settlers, the area was known as "The Rapids" with the name "Port Sarnia" adopted in 1836 (City of Sarnia, n.d.b). Sarnia was incorporated as a town in 1856 and later became the "City of Sarnia" in 1914 (City of Sarnia, n.d.b).

Industrial and residential areas developed along the St. Clair River, including Sarnia's first steam grist mill, built in 1843 by James Flintoft (Elford 1967). By 1857, the population of Sarnia was over 2,000 and by 1871 Sarnia was home to 2,929 people (Elford 1967). Prior to the 1830s, settlement was hindered by the fact that much of the Township consisted of forested and swampy areas. Early on, there were few passible roads in the area but improvements were made in 1862 and 1864 when plank roads were constructed from Oil Springs to Wyoming and Oil Springs to Sarnia (Ford 1987). The road from Oil Springs to Sarnia is still known as Plank Road (Ford 1987). In 1875 the

first streetcar track was laid in the City running along Front Street carrying passengers as well as freight (Mathewson 2003). By 1931, as a result of the Great Depression and the growing prevalence of the automobile, streetcars were no longer in use (Mathewson 2003).

The City of Sarnia continues to be a mix of urban and rural land uses with urban areas concentrated to the west along the shorelines of Lake Huron and St. Clair River.

7.2.1.3 Town of Plympton-Wyoming

The Town of Plympton-Wyoming was established in 2001 following the amalgamation of the Township of Plympton and the Village of Wyoming. The area is largely rural and agricultural land uses with hamlets concentrated along the shoreline of Lake Huron (for example, Errol Village, Camlachie, and Blue Point) as well as the settlement areas of Wyoming and Wanstead located in the southern portion of the Town.

Egremont Road opened in 1832 and was the earliest colonization road that cut through Upper Canada's Western District (Nielsen 1993). Running through Middlesex and Lambton Counties, the Egremont Road stretched through Adelaide, Warwick and Plympton Townships before ending near the shore of Lake Huron (Nielsen 1993). Settlement in the Township of Plympton dates back to 1833 when an influx of immigrants settled along Egremont Road as well as at Camlachie (Johnston 1925; Lauriston 1949).

A station for the Great Western Railway was built on farmland that would eventually become the Village of Wyoming to serve the oil field that was discovered at Oil Springs. The Great Western Railway operated a line from Wyoming to Petrolia that carried passengers until 1931 and freight until 1943 (Elford 1982). Early on, there were few passable roads in the area but improvements were made in 1862 and 1864 when plank roads were constructed from Oil Springs to Wyoming and Oil Springs to Sarnia (Ford 1987). Wyoming was incorporated into a village in 1873 (Lauriston 1949).

In 1921, the population of Plympton was 2,829 and the population of Wyoming was 482 (Johnston 1925). Throughout its history, agriculture has (and continues to be) a dominant industry in the Town. Today, agriculture and related industries provide approximately 350 jobs in the Town (Statistics Canada 2023c).

7.2.2 Reasonably Foreseeable Developments

The best practices approach described in the Cumulative Effects Assessment Practitioners' Guide (Hegmann et al. 1999) advise inclusion of certain (that is, actions that will proceed or have a high probability of proceeding) and reasonably foreseeable (that is, actions that may proceed, but there is some uncertainty) activities for cumulative effects assessment. The certain and reasonably foreseeable developments and activities identified for the Project adopt this approach, using the following criteria:

- **Certain** – the activity or development will proceed or there is a high probability it will proceed (that is, the development is either under construction or has been approved).
- **Reasonably foreseeable** – the activity or development is expected to proceed (that is, the development is in the process of obtaining approval and permits, or the proponent has publicly disclosed its intention to seek the necessary approvals to proceed).

Reasonably foreseeable activities and developments included in the assessment were identified as of June 30, 2023.

Sources reviewed included: the Canadian Impact Assessment Registry (Impact Assessment Agency of Canada 2023); Natural Resources Canada Major Projects Inventory (Government of Canada 2023b); Investing in Canada Plan Project Map (Infrastructure Canada 2023); Infrastructure Ontario Projects Map (Infrastructure Ontario 2023); Environmental Registry of Ontario (Government of Ontario 2023b); Hydro One Major Projects (Hydro One Networks Inc. 2023); Ontario Energy Board Active Applications (OEB n.d.); 2022-2026 Roads Construction Program (County of Lambton 2023); City of Sarnia Active Planning Applications (City of Sarnia n.d.a); and, Public Notices – Town of Plympton-Wyoming (Town of Plympton-Wyoming n.d.).

No reasonably foreseeable activities or developments were identified within the 5-kilometre buffer; however, the following projects, summarized in **Table 7-1**, were identified within the jurisdictional boundaries of the City of Sarnia and Town of Plympton-Wyoming.

Table 7-1: Projects Identified for Inclusion in the Cumulative Effects Assessment

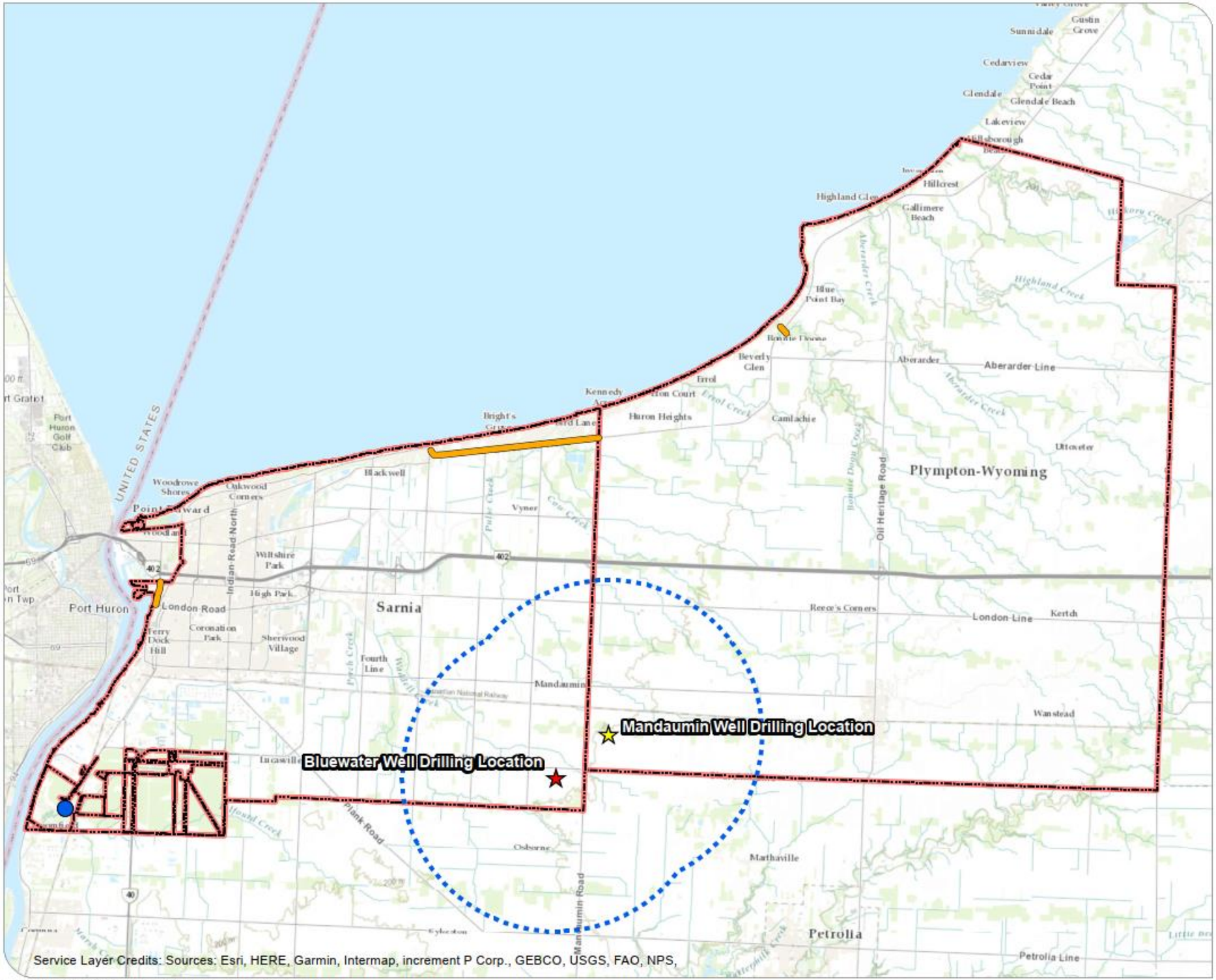
Source	Project Name	Description
Lambton County 2023-2027 Construction Program	County Road 7 (Lakeshore Road)	• Project Status: Proposed 2023 project • Construction Dates: TBD • Project Scope: Pavement resurfacing with new partially-paved shoulders and drainage improvements • Location: Telfer Road to County Road 26 (City of Sarnia)
Lambton County 2023-2027 Construction Program	County Road 33 (Front Street)	• Project Status: Proposed 2023 project • Construction Dates: TBD • Project Scope: Pavement resurfacing • Location: County Road 16 (London Road) to Exmouth Street (City of Sarnia)
Lambton County 2023-2027 Construction Program	Bonnie Doon Bridge County Road 7 (Lakeshore Road)	• Project Status: In progress • Construction Dates: Currently under construction with expected completion by late September 2023 • Project Scope: Bridge rehabilitation • Location: County Road 7 (Lakeshore Road) at Bonnie Doon Bridge (Town of Plympton-Wyoming)
Canadian Impact Assessment Registry	Vidal Street South Area Watermain Replacement	• Project Status: March 30, 2023 – IAA issued Notice of Determination that the project is not likely to cause significant adverse environmental effects • Construction Dates: 2023-2026 • Project Scope: Watermain replacement • Location: Watermain located from St. Clair Parkway along Lasalle Line and Vidal Street South and southwest of Suncor (City of Sarnia)

It can be assumed that unplanned road work and maintenance to County Road 14 (Churchill Line) or County Road 26 (Mandaumin Road) could occur at the same time as

Project construction. As such, in addition to the above-mentioned projects, road work/maintenance have been considered as part of the assessment of cumulative effects discussed below.

Figure 7-1 shows the approximate locations of planned projects summarized in **Table 7-1**.

Figure 7-1: Planned Projects



2024 BLUEWATER AND MANDAUMIN WELL DRILLING PROJECT

ENBRIDGE GAS

PLANNED PROJECTS

FIGURE 7-1

- Bluewater Well Drilling Location
- Mandaumin Well Drilling Location
- Assessment Area of Environmental Components
- Assessment Area of Socio-Economic Elements
- Planned Utility and Maintenance Projects
- Planned Road Work Projects

SCALE 1:120,000

0 1,400 2,800 5,600 m

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: -ZJB
MAP CHECKED BY: -KG
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

DILLON CONSULTING

PROJECT: 23-6171
STATUS: FINAL
DATE: 2023-07-13

FILE LOCATION: K:\2023\236171\Product\Client\ER\F7-1_Cumulative_Effect_Assessment_Map1.mxd

7.3 Residual Effects Carried forward in the Cumulative Effects Assessment

Residual effects are those effects that remain following the application of mitigation measures and they are the effects that are carried forward into the cumulative effects assessment.

The following residual effects were identified in **Section 6.0** and have been carried forward for the cumulative effects assessment:

- Loss of soil productivity;
- Increase in air emissions;
- Loss or alteration of vegetation;
- Alteration or loss of wildlife habitat, disruption of wildlife movement, and/or increase in wildlife mortality;
- Increase in nuisance noise; and
- Traffic disruptions.

7.4 Identification and Analysis of Potential Cumulative Effects

The potential residual environmental effects associated with the Project along with identified existing activities and reasonably foreseeable developments acting in combination with the Project are presented in the following subsections.

7.4.1 Loss of Soil Productivity

Soil productivity within the Study Areas has been altered from past and existing activities such as agriculture, rural settlement, utility activities, transportation and infrastructure development, and oil and gas activities. The Project will act cumulatively with existing activities (namely, agricultural activities) in the Study Areas to lead to an incremental change in soil productivity.

In the Project Footprint, existing agricultural activities have likely impacted soil productivity through the use of fertilizers and pesticides, as the use of these products can influence the natural cycling of nutrients in soil and the application of synthetic fertilizers may lead to a decrease in soil's microbiological diversity (Lekberg et al. 2021). Mechanical tillage and the use of heavy farming machinery can also lead to loss of soil productivity as both may result in soil compaction and soil erosion if soils are not managed effectively. Soil compaction is caused by heavy farm machinery use and tilling

when soils are too wet. According to Magdoff and scholars (2021), “compaction has become an increasing problem as farm equipment has [become] increasingly heavier”.

The mitigation measures outlined in **Section 6.0** will reduce the Project-related cumulative impacts to soil productivity. It is anticipated that landowners will implement best practices for agriculture to limit impacts to soil.

Although total soil disturbance will increase as a result of the Project, the magnitude is considered to be low since the estimated increase is of limited areal extent and effect on end land use, and mitigation measures are to be implemented for soil conservation. The cumulative effect of the Project is considered reversible since the increased disturbance of soils is expected to approximate pre-disturbance productivity in less than 10 years once identified (for example, short to medium-term in duration). Only a very small footprint of soil will be permanently removed from productivity at the permanent access roads and well sites. Consequently, the Project’s contribution to total cumulative effects on soil and soil productively through an incremental change in soil productivity will be not significant.

7.4.2 Increase in Air Emissions

The primary sources of air emissions resulting from the Project will be from fuel combustion and dust related to the use of transportation vehicles and heavy equipment. The Project will act cumulatively with existing activities and reasonably foreseeable developments in the Study Area to increase air emissions, predominantly during construction activities, although, it is expected that air contaminant concentrations will quickly attenuate.

The mitigation measures in **Section 6.0** will reduce the Project-related cumulative air emissions. It is also anticipated that other reasonably foreseeable developments will implement mitigation measures in accordance with provincial and industry standards for air emissions and meet applicable AAQCs during construction and operation. It is also expected that best management practices will be implemented by municipalities, landowners, and industry to reduce air emissions in the Study Area. No mitigation measures beyond the Project-specific mitigation already recommended for air emissions in **Section 6.0** are deemed warranted.

The Project's contribution to cumulative effects on air quality will be reversible, short-term in duration, and low magnitude and, therefore, not significant.

7.4.3 Loss or Alteration of Vegetation

The Project is located in an agricultural and rural residential setting with deciduous woodland. As a result of the Project, loss or alteration of vegetation will occur within the Project Footprint. Reasonably foreseeable developments listed in **Section 7.2.2** may also result in the loss or alteration of vegetation in the Study Areas. As an example, if road construction or rehabilitation work is required along County Road 14 (Churchill Line), loss or alteration of vegetation may occur within the road right-of-way.

No locally or regionally adopted threshold or standard exists against which an incremental change in vegetation composition can be judged. However, given that the proposed works will occur in rural residential and active agricultural land, the amount of loss and alteration of vegetation within the Study Areas is considered low in magnitude and will have a negligible contribution to the cumulative change to vegetation composition in this setting.

Lands supporting vegetation disturbed by construction will be seeded with the appropriate seed mixture following clean-up activities.

To reduce the potential for cumulative effects on loss or alteration of vegetation, Project-specific mitigation recommended in **Section 6.0** and additional mitigation will be included in the forthcoming EPP and Well Drilling Programs.

The Project's contribution to cumulative change of vegetation composition within the Study Areas is considered reversible, low magnitude, and short to medium-term in duration, depending on the time needed for various species to regenerate following disturbance, and, therefore, not significant.

7.4.4 Alteration or loss of Wildlife Habitat, Disruption of Wildlife Movement, and/or Increase in Wildlife Mortality

7.4.4.1 Wildlife Habitat

Direct alteration of habitat (for example, vegetation clearing) and indirect alteration of habitat (for example, construction activity and human activity) resulting from existing

activities and reasonably foreseeable developments will act cumulatively with the Project to affect wildlife habitat. Past developments and existing activities that have disturbed or encroached on wildlife habitat are mostly attributed to agricultural, rural residential, and transportation and utility corridor development and the associated anthropogenic sources (for example, pesticides, runoff, and use of vehicles and heavy farm machinery).

Studies suggest that as habitat loss increases, the remaining habitat becomes increasingly fragmented or the habitat patches are increasingly isolated, which may compound the effects of habitat loss (Swift and Hannon 2010). The extent and frequency of disturbance in agricultural and residential landscapes, such as the Study Areas, have exceeded levels at which the ecosystems are capable of supporting some wildlife populations with natural biodiversity and abundance.

The proposed construction activities, including vegetation removal required for the installation of the access road and other Project components, have the potential to temporarily disturb wildlife habitat adjacent to the Project Footprint. These activities will be conducted within the previously-disturbed residential and agricultural lands and, therefore, no new habitat fragmentation or removal is anticipated.

At the Bluewater Project location, there is the potential for indirect disturbance to grassland SAR (Bobolink and Eastern Meadowlark) if construction occurs during the core nesting period (May 1 to July 31) if the hayfield (OAGM2) is present. During this time, the Project will act cumulatively with existing activities (namely, agricultural activities) and foreseeable developments (such as road maintenance on Churchill Line) in the Study Area to potentially directly disturb SAR grassland birds in the active agricultural (hay) fields in the Study Area.

Should Project activities follow the mitigation measures outlined in **Section 6.2.6** and **Section 6.2.7**, the Project's contribution to the cumulative change to wildlife habitat, including grassland SAR habitat, is considered to be negligible, isolated, reversible, and short to medium-term in duration and, therefore, not significant.

7.4.4.2 Wildlife Movement

The Project may act cumulatively within the existing landscape which is dominated by agriculture, rural residential development, roads and transportation corridors, and

utility infrastructure (for example, electric transmission lines). These activities may cause changes in the natural movement patterns of wildlife.

Displacement and sensory disturbance of wildlife resulting from Project construction may act cumulatively with current sources of auditory and visual disturbances, such as vehicular traffic noise, sound emissions from nearby industrial and agricultural activities, as well as human domestic activities and natural sounds. The existing environment may already cause wildlife to alter their movement patterns (for example, through avoidance). Reasonably foreseeable developments that may act cumulatively with the Project in the Study Areas to affect wildlife movement patterns include municipal road work/maintenance on County Road 14 (Churchill Line) and/or County Road 26 (Mandaumin Road).

To reduce or avoid changes to wildlife movement during Project construction, mitigation measures will be implemented such as conducting wildlife surveys at appropriate times, and consulting and engaging with a qualified environmental professional for proper handling/relocation of wildlife, if required. Early construction is anticipated to begin in Fall 2023 and well drilling activities will commence in Spring 2024, which overlaps several sensitive timing windows for herptiles, migratory birds, SAR bats, and SAR birds. The Project will be constructed within rural residential and agricultural lands adjacent to existing linear utility corridors (for example, electric transmission lines and roadways); therefore, no barriers to movement caused by fragmentation are anticipated after construction activities are completed.

The Project is predicted to have a negligible contribution to the cumulative effects on wildlife movement patterns in the Study Areas. With the implementation of mitigation measures, the Project's contribution to cumulative effects on wildlife movement patterns within the Study Areas is anticipated to be short-term in duration, isolated, and reversible and, therefore, not significant.

7.4.4.3 Wildlife Mortality Risk

The Project may act cumulatively within the existing landscape which is dominated by agriculture, rural residential development, roads, and utility infrastructure (for example, electric transmission lines). These activities may increase wildlife mortality risk from habitat and sensory disturbance, or vehicle/wildlife collisions.

Risk of wildlife mortality will be mitigated by limiting vehicle speeds in Project construction zones, relocating wildlife observed on the construction footprint, conducting bird and bat surveys prior to construction (namely within areas of the proposed access roads), properly managing waste storage and disposal to avoid attracting wildlife, and erecting exclusion fencing in specific areas, if needed.

The Project's contribution to cumulative changes in wildlife mortality risk within the Study Areas is considered to be negligible in magnitude, short-term in duration, and isolated to the construction phase and, therefore, not significant.

7.4.5 Increase in Nuisance Noise

Ambient sound levels in the Study Area are a product of vehicular traffic noise from County Road 14 (Churchill Line) and County Road 26 (Mandaumin Road), noise emissions from agricultural activities, as well as human domestic activities and natural sounds. Nuisance noise will increase during construction activities due to the increased truck traffic and operation of heavy equipment and may act cumulatively with existing activities and reasonably foreseeable developments that may also increase noise (for example, road construction and agricultural activities). Well drilling activities will take place 24 hours a day, 7 days a week and noise from these activities will also act cumulatively with existing activities and reasonably foreseeable developments.

It is expected that operators of existing and reasonably foreseeable developments will implement mitigation developed in accordance with industry standards for noise emissions.

The Project's contribution to a cumulative increase in nuisance noise within the Study Areas is considered reversible, isolated to the construction phase, medium magnitude, and short-term in duration (since the cumulative increase in nuisance noise will be alleviated upon completion of Project construction activities) and, therefore, not significant.

7.4.6 Traffic Disruptions

The Project will act cumulatively with existing activities and reasonably foreseeable developments in the Study Area to increase traffic on local roads during construction. During construction, there may be temporary disturbance to laneways and accesses when construction passes in front of homes or agricultural lands; however, access to

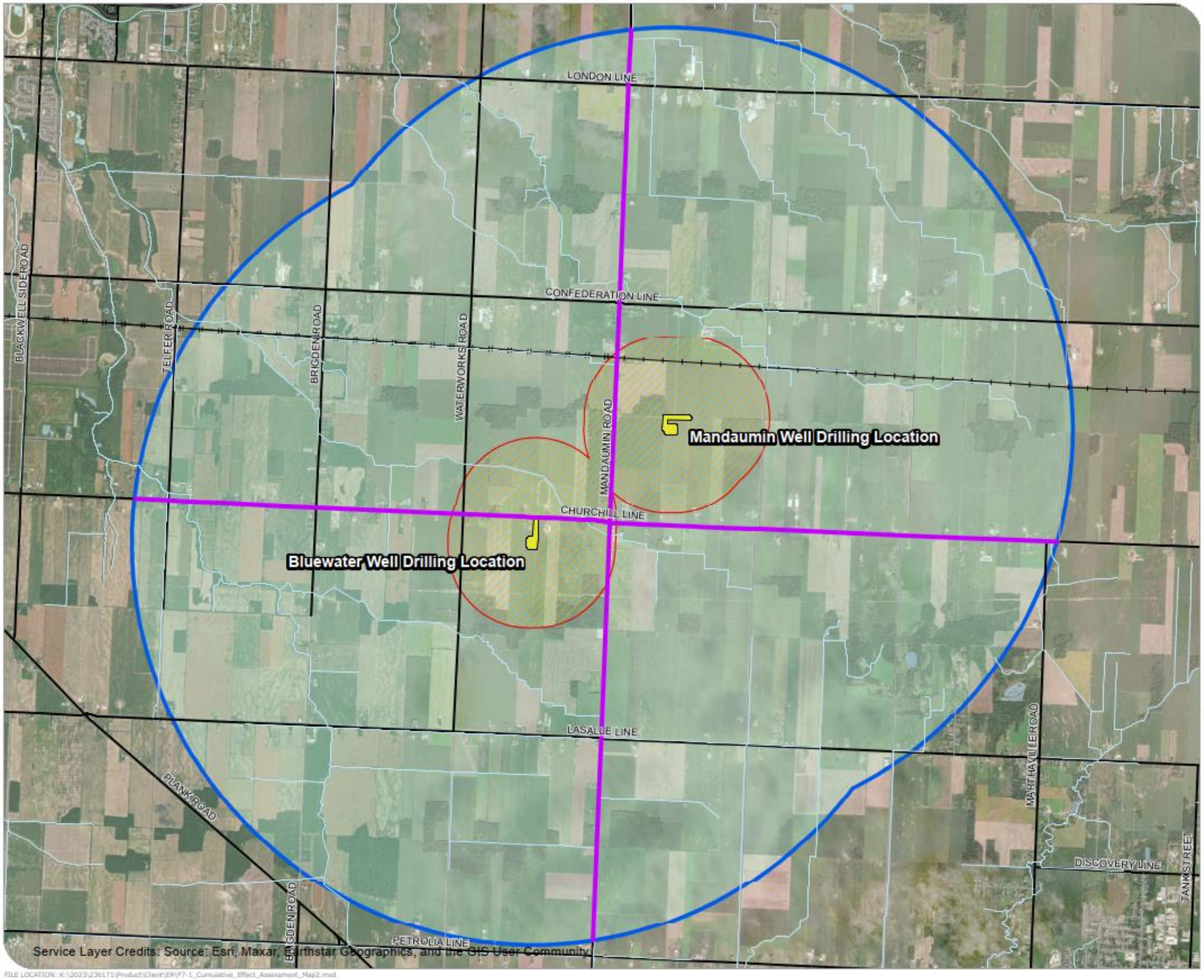
private properties (for example, laneways, driveways, and agricultural land) will be maintained at all times during construction. Nuisance impacts associated with an increase in traffic on local roads will be felt particularly during the spring and summer, when agricultural activities and use of local roads in the Study Areas will be at their peak.

Enbridge Gas should engage with local landowners to avoid, to the extent feasible, extensive use of local roads during times of heavy traffic due to agricultural activities.

With the implementation of appropriate mitigation measures, including on-going consultation, the Project's contribution to a cumulative change in traffic is considered to be of medium magnitude, reversible, short-term in duration, isolated to the construction period and, therefore, not significant.

Figure 7-2 shows the estimated extent of cumulative and residual effects discussed above.

Figure 7-2: Residual and Cumulative Effects



FILE LOCATION: K:\2023\236171\Product\Client\ER\F7-1_Cumulative_Effect_Assessment_Map2.mxd

2024 BLUEWATER AND MANDAUMIN WELL DRILLING PROJECT

ENBRIDGE GAS

RESIDUAL AND CUMULATIVE EFFECTS

FIGURE 7-2

- Project Footprint
- Assessment Area of Environmental Components
- Railway
- Highway
- Major Road
- Minor Road
- Watercourse
- Waterbody

Residual and Cumulative Effects

- Occurring within 30 m of the Project Components (includes the following effects: Loss of soil productivity; Loss or alteration of vegetation; Alteration or loss of wildlife habitat, disruption of wildlife movement, and/or increase in wildlife mortality)
- Occurring within 1 km of the Project Components (includes the following effect: Increase in nuisance noise)
- Occurring within 5 km of the Project Components (includes the following effect: Increase in air emissions)
- Traffic Distruptions

SCALE 1:45,500

0 550 1,100 2,200 m

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: ZJB
MAP CHECKED BY: KG
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

DILLON CONSULTING

PROJECT: 23-6171
STATUS: FINAL
DATE: 2023-07-13

7.5 Cumulative Effects Assessment Summary

With the implementation of mitigation measures, there are no situations where the Project's contribution to cumulative effects is predicted to result in a permanent or long-term effect of high magnitude that has a high probability of occurrence and cannot be technically or economically mitigated.

8.0 Accidents and Malfunctions

This section provides an overview of potential adverse effects that may result from accidents and malfunctions associated with the Project.

8.1 Accidents and Malfunctions Considered

Accidents and malfunctions are unplanned events that have the potential to result in adverse effects on the environment, should they occur. While the rigorous standards and practices that are in place make accidents or malfunctions unlikely for the Project, the potential consequences are evaluated so that emergency response and contingency planning can be identified to reduce the risk and the severity of the consequences.

Accidents and malfunctions have the potential to occur during all phases of the Project and may include the following:

- Equipment or machinery leaks or other spills;
- Inadvertent return (release of drilling fluid to the surface) during well drilling activities; and
- Casing failure and integrity issues during operation.

Accidents and malfunctions can result from various unplanned events including equipment failure, human error, natural perils, third-party damage, or vandalism. The assessment of accidents and malfunctions considers the type, scale, and location of the Project, the characteristics of the product to be transported, sensitivities in the Study Areas, and Enbridge Gas' internal preventative protocols for reducing the likelihood of such events.

Enbridge Gas takes steps to ensure the safe and reliable operation of their natural gas infrastructure, including continuously monitoring the entire network and performing regular field surveys to confirm integrity. Strategies aimed at preventing potential accidents and malfunctions include:

- Constructing the wellhead to American Petroleum Institute and other standards;
- Proactively identifying possible causes of casing failure and adopting prevention and control measures during the design and operation phase; and
- Monitoring and inspecting the wells using vehicles and foot patrols.

8.1.1 Equipment or Machinery Leaks or Other Spills

Hazardous materials are a component of vehicles, machinery, and construction equipment and some hazardous materials will be stored onsite during the construction period. Potential contaminants associated with the Project may include gasoline, diesel fuel, lubricants, and hydraulic fuels. If equipment is not properly maintained or if hazardous materials are not stored or handled properly, spills may occur.

8.1.2 Inadvertent Return during Well Drilling Activities

Well drilling activities have the potential to result in an inadvertent return of drilling fluid to the surface. This is most likely to occur at the drill entry locations and would only affect the terrestrial environment.

Drilling mud is typically composed of water or brine. The activities involved in cleaning up an inadvertent return may cause an adverse effect on the environment, as clean-up may require removal of topsoil where it may not have previously been required for construction.

8.1.3 Casing Failure and Integrity Issues during Operation

Well integrity issues are most commonly associated with casing corrosion, shearing, collapsing, and axial buckling. Casing failure is the result of many effects – and the causing factors of casing failure can include geological, production, engineering, and man-made factors. Integrity issues can also be the result of cement quality, dynamic drilling and production pressures, and completion and abandonment complexities. If common factors leading to casing failure and other integrity issues are not identified pre-emptively, accounted for during the design phase, and if continuous monitoring of the wells does not occur during operation, the risk of a loss of integrity, accidents, and production interruptions increases and may result in negative environmental impacts (for example, greenhouse gas emissions and contamination of surface and ground water).

8.2 Effects Assessment and Significance

The assessment of potential effects and identification of key mitigation measures for accidents and malfunctions is provided in **Table 8-1**. Additional mitigation measures will be found in the forthcoming EPP and Well Drilling Programs.

Table 8-1: Potential Effects, Mitigation Measures, and Potential Residual Effects of Accidents and Malfunctions

Potential Effect(s)	Project Activity	Spatial Boundary	Mitigation Measures	Potential Residual Effect(s)

Equipment or machinery leaks or other spills resulting in contamination of the surrounding environment	Construction or site-specific maintenance during operations	Project Footprint	• Equipment and machinery should be kept in good working order and maintained on a regular basis.
			• Safe work procedures will be followed when working with, or storing, chemicals. Crews should be properly trained in the handling of wastes.
			• Immediately contain and clean up spills in accordance with regulatory requirements and Enbridge Gas procedures.
			• Contractor(s) and construction crews should have appropriate spill containment and hazardous material and response training.
			• Implement applicable sections of Enbridge Gas' internal protocols for safety, pre-emergency preparedness, and emergency response actions.
			• Depending on the type/extent and or nature of spill, the following should be contacted:
			  ○ MECP Spills Action Centre at 1-800-268-6060 (out of Province 1-416-325-3000)
			  ○ MECP Pollution 24-hour public hotline at: 1-866-MOE-TIPS (1-866-663-8477)
			  ○ Report emergencies by calling 911 (Emergency Services)
				A release of hazardous materials would be immediately contained and recovered. A release of this nature is expected to be avoided, or effectively mitigated, therefore, no residual effects are predicted.

Potential Effect(s)	Project Activity	Spatial Boundary	Mitigation Measures	Potential Residual Effect(s)
Inadvertent return during well drilling activities resulting in release of drilling fluid to the surface	Wellhead drilling activities	Project Footprint	• In the event of an inadvertent return, implement the drilling fluid release contingency measures in the Project-specific EPP. • Appropriate spill kits with absorbent spill clean-up materials should be on-site at all times. Any significant spills (spills that have an adverse impact on water or wetland features) should be reported to the appropriate authorities, including the City of Sarnia (Bluewater site), Town of Plympton-Wyoming (Mandaumin site), County of Lambton, MECP Spills Action Centre, SCRCA, and the landowner, as appropriate. All spills should be contained, cleaned up immediately, and removed from site, wherever feasible, to prevent them from entering into any wetlands or watercourses. Any used spill clean-up materials should be appropriately disposed of off-site at an appropriate facility that can accept the waste. • Suspend drilling operations immediately if an excessive loss of drilling mud is noted and conduct a detailed examination of the drill path and surrounding area for evidence of a release to the surface.	A release of drilling fluid is considered reversible and immediate in duration (clean-up would occur right away) and the magnitude may be low to medium, depending on the amount of topsoil affected and time required for complete remediation and restore pre-disturbance soil productivity in affected areas. The residual effects of a release of drilling fluid are not likely to be significant.

Potential Effect(s)	Project Activity	Spatial Boundary	Mitigation Measures	Potential Residual Effect(s)
			• If no surface release is noted, it may be necessary to increase monitoring (terrestrial frac detection) to ensure early detection while the drill continues. Measures should be taken by the Contractor to establish cause and mitigate for the drilling mud loss.	
Casing failure and other compromises to well integrity	Operation of observation wells	Project Footprint	• Design and install observation wells that meet applicable standards and regulations. • Pre-emptively identify factors that may contribute to casing failure and design accordingly. • During operation, monitor well and casing conditions. • Implement applicable sections of Enbridge Gas' internal protocols for safety, pre-emergency preparedness and emergency response in the event of an integrity issue.	With the implementation of mitigation and protective measures, residual effects are not likely to be significant.

8.3 Summary of Residual Effects

The likelihood of a significant residual effect is considered low with the implementation of appropriate preventative and mitigation measures. No significant residual effects from accidents and malfunctions are predicted for the Project.

9.0 Effects of the Environment on the Project

This section identifies the potential effects of the environment on the Project.

Potential effects of the environment on the Project are considered unlikely but may result from environmental conditions such as serve weather events and natural hazards.

Enbridge Gas is aware of the range of environmental conditions that may affect the Project and this knowledge has been incorporated into Project planning, design, and proposed mitigation measures to avoid such effects as best as possible. The observation wells will be constructed and operated in accordance with applicable industry standards (for example, the American Petroleum Institute for industry standards for wellhead design and the Canadian Standards Association Standard Z341) and regulatory requirements.

9.1 Environmental Conditions Considered

The following environmental conditions were identified as potentially affecting the Project in the Study Area:

- Severe weather events (heavy or persistent precipitation, extreme temperatures, high winds, or frequent/intense storms [lightning, ice]); and,
- Natural hazards (seismic activity, flooding).

According to the County of Lambton Official Plan, Schedule D (2020), there are no areas identified as having natural hazard features (that is, potential hazardous forest types for wildland fire or karst natural hazard features) within the Study Area. As evidenced through the Official Plan, and SCRCA mapping, potential natural hazards in the Study Area are limited and would likely be the result of flooding and seismic activity.

9.1.1 Severe Weather Events

Severe weather events are increasingly more common as a result of global climate change. Severe weather events may include heavy or persistent precipitation, extreme temperatures, high winds, or frequent/intense storms. These events may, in turn, lead to natural hazards such as flooding or mass wasting events, depending on the location

and circumstances. Refer to **Section 9.1.2.2** where details on potential effects of flooding are discussed.

9.1.2 Natural Hazards

9.1.2.1 Seismic Activity

Shifting of large sections of the earth's crust (tectonic plates) has the ability to cause severe earthquakes and accounts for over 97% of earthquakes worldwide (Natural Resources Canada [NRCan] 2021a). Central and Eastern Canada have a relatively low rate of earthquake activity due to their location in a stable continental region within the North American Plate. Rather than being caused by the shifting of earth's tectonic plates, seismic activity in this zone appears to be related to regional stress fields with earthquake activity concentrated in areas of crustal weakness (NRCan 2021a).

The Project is located within the Southern Great Lakes Seismic Zone (NRCan 2021a) and is in an area with a low seismic hazard rating (NRCan 2021b). No significant earthquakes have been recorded in the Study Area over the past 50 years (NRCan 2022).

9.1.2.2 Flooding

The effects of climate change and severe weather (for example, heavy or persistent precipitation) can lead to flood events. The Project is in a rural environment dominated by perennial crop covers, annual row crops, vegetation, and natural soils in an area with systematic agricultural drainage tiles where storm water is managed to a great extent by this man-made infiltration. Agricultural practices on lands in the Project area can lead to increased runoff depending on the type of farming that is being conducted at the time. Flooding can occur where the drainage tiles are overwhelmed by inputs either from extreme precipitation, overland flooding from nearby watercourses, accelerated runoff from intensively farmed lands, or some combination thereof, including factors such as snow/ice melt and frozen or saturated ground conditions.

Flooding in the St. Clair Region watersheds is uncommon but, historically, has been associated with major waterbodies such as Lake St. Clair and areas of low topographic relief (SCRCA 2008). There are no recent records of flooding within the Cow and Perch Creeks sub-watershed. Within the St. Clair Region, recent flooding events have occurred

along the St. Clair River and in the Wallaceburg area, located southwest of the Project, well beyond the Study Areas (SCRCA 2008).

9.2 Effects Assessment and Significance

The assessment of effects of the environment on the Project is provided in **Table 9-1**.

Table 9-1: Potential Effects, Mitigation Measures, and Potential Residual Effects of Effects of the Environment on the Project

Potential Effect(s)	Project Activity	Spatial Boundary	Mitigation Measures	Potential Residual Effect(s)
Severe weather events (heavy or persistent precipitation, extreme temperatures, high winds, or frequent/intense storms [lightning, ice]) and natural hazards (seismic activity, flooding) may affect the Project in the following ways: • Delay the Project schedule; • Damage construction equipment; • Increase safety concerns for workers during construction; and • Damage the observation wells during operation.	Construction and Operations	Project Footprint and Study Area	• Notify the site inspector and the Project Environmental Advisor in the event mitigation measures identified in the Project-specific EPP are ineffective at avoiding or reducing environmental effects or if alternative measures to address environmental issues are warranted due to site or weather conditions. • Postpone work during severe weather events that may pose a hazard to safety and/or result in damage to Project infrastructure and equipment. • Design and construct the observation wells in accordance with all applicable industry standards (for example, the American Petroleum Institute and Canadian Standards Association Standard Z341). • Conduct regular monitoring during operations and maintenance in accordance with regulatory requirements.	With the implementation of mitigation measures, no residual effects are predicted for potential effects of the environment on the Project.

9.3 Summary of Residual Effects

The likelihood of a significant residual effect on the Project is considered low with the implementation of appropriate preventative and mitigation measures. No significant residual effects due to severe weather events or natural hazards are predicted for the Project.

10.0 Inspection and Monitoring Recommendations

Recommendations and commitments made in this ER should become part of the contract specification with the contractor selected to construct the Project. Trained and qualified personnel should be on-site to monitor construction and should be responsible for checking that the mitigation and protective measures and monitoring requirements in the ER are executed and construction is compliant with permit conditions. Enbridge Gas will implement an orientation program for inspectors and contractor personnel to provide information regarding Enbridge Gas' environmental program and commitments, SAR identification, as well as safety measures.

Environmental Monitors (typically Qualified Professionals) should be used as-needed during construction (for example, handling wildlife).

A licensed archaeologist or heritage specialist may be required to monitor work in sensitive heritage resource areas, if identified in the cultural heritage resource assessments completed for the Project.

The primary objective of compliance and effects monitoring is to determine the effectiveness of mitigation measures (and modify as needed), inspect the construction site and determine compliance with applicable environmental legislation, regulations, industry standards, and project permit conditions, including any notification requirements or conditions set by the OEB.

Additional objectives of compliance and effects monitoring are to monitor the cultural, socio-economic, natural, and physical environment to determine any adverse effects and to verify that the construction site is returned to pre-construction conditions as soon as possible. The purpose of post-construction monitoring is to ascertain the success of the restoration effort and mitigation measures. The knowledge gained from inspection and monitoring can be used in future projects to avoid or minimize similar problems that may arise. Monitoring reports also allow for the collection of quantitative data for the assessment of effects, and to recommend mitigation measures for future projects.

10.1 Pre-Construction

A number of activities should be undertaken prior to construction including:

- Acquisition of all necessary permits and approvals;
- The development of a Project-specific EPP with accompanying mitigation mosaic and Well Drilling Programs, including appropriate management and contingency plans (for example, Waste Management, Spill Contingency);
- Environmental training for the Contractor. This usually occurs with the Construction Manager and Project Supervisor. The purpose of the training is to educate the construction crew on the key components of the EPP, including the location of sensitive environmental features and associated mitigation measures including SAR and working within residential areas. Other areas of concern within the Project Footprint are also reviewed in the field at this time; and,
- A water well monitoring program. As outlined in **Table 6-5**, a pre-drilling private water well survey will be offered for properties within 500 metres of the Project. The private water well survey will be conducted to determine the Project's potential interference with groundwater supply wells.

10.2 Post-Construction

The following activities may be undertaken post-construction, as needed and as required:

- Clean-up and remediation;
- Post-construction environmental monitoring;
- Final reporting (for example, completion of a Post-Construction Report and Final Monitoring Report); and
- Post-Drilling Private Water Well Survey. As part of the water well monitoring program, a water well survey will be conducted following drilling activities for properties who participated in the pre-drilling survey. This follow-up survey will be used to determine if changes to water quality or quantity were sustained as a result of the Project.

11.0 Summary and Conclusions

The Study involved undertaking an inventory of cultural, socio-economic, natural, and physical environmental features within the defined Bluewater and Mandaumin Study Areas. This information was used to produce maps identifying features that could be impacted by construction, drilling activities, and operation. The location of the observation wells and other Project components were selected for the Study based on cultural, socio-economic, and natural and physical environmental features, the location of the DSAs, as well as technical and economic feasibility requirements.

Mitigation measures were recommended to reduce potential negative effects to the environment. These recommendations, in combination with the forthcoming EPP and Well Drilling Programs, are anticipated to effectively protect the cultural, socio-economic, natural, and physical environmental features within the Project Footprint. The mitigation recommendations contained in this report, along with Enbridge Gas' construction policies, should be included in contract specifications.

Lastly, inspection and monitoring the area will assist in determine any changes to the environment from pre-construction conditions following the construction period.

Dillon does not anticipate any significant adverse effects from the construction and operation of the Project with the implementation of the mitigation measures recommended in this report.

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Appendix A

Stage 1 and Stage 2 Archeological Assessment of the Bluewater Project Location and MCM Clearance Letter

Stage 1-2 Archaeological Assessment
Bluewater OBS Well Drilling
2821 Churchill Line, City of Sarnia
Part of Lot 2, Concession 2
Geographic Township of Sarnia
Lambton County, Ontario

Original Report

Submitted to:
Ministry of Citizenship and Multiculturalism

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PIF No:	P1048-0125-2023
Project No:	2023-204
Dated:	July 27, 2023

EXECUTIVE SUMMARY

A Stage 1 and 2 archaeological assessment was conducted for Enbridge Gas Inc.'s (Enbridge) Bluewater OBS Well Drilling Project (the "Project"). The Project is located on the property at 2821 Churchill Line which itself is located in a rural area of the City of Sarnia, within Lot 2, Concession 2 of the Geographic Township of Sarnia, Lambton County, Ontario. The Project involves the establishment of a 10-meter-wide access route on the property and the preparation of a roughly 120 m by 150 m work area in the field to the south of the residential portion of the legal parcel (the "Project Area"). It should be noted these dimensions represent the areas considered for potential impact for the purpose of this study which are larger than the proposed construction footprint size. The Project Area is roughly 1.34 ha (3.31 ac) in size and consists entirely of a section of active agricultural field. The Stage 1-2 archaeological assessment was triggered by Enbridge's Archaeology Protocol and due diligence for construction projects, which is informed by the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario* (OEB 2023). In 2023, TMHC Inc. (TMHC) was contracted by Dillon Consulting Ltd. (Dillon) on behalf of Enbridge to carry out the assessment, which was conducted in accordance with the provisions of the *Provincial Policy Statement*. The purpose of the assessment was to determine if archaeological resources were present within the Project Area.

The Stage 1 background study included a review of current land use, historic and modern maps, past settlement history for the area and a consideration of topographic and physiographic features, soils and drainage. It also involved a review of previously registered archaeological resources within 1 km of the Project Area and previous archaeological assessments within 50 m. The background study indicated that the property had potential for the recovery of archaeological resources due the proximity (i.e., within 300 m) of a feature that signals archaeological potential, namely:

- a mapped 19th-century thoroughfares (Churchill Road).

As the Project Area consists entirely of active agricultural field it was subject to Stage 2 assessment via standard pedestrian survey at a 5 m transect interval (100%; 1.34 ha) in keeping with provincial standards.

All work met provincial standards and no archaeological material was documented during the assessment. As such, the Project Area should be considered free of archaeological concern and no further archaeological assessment is recommended.

If the extent of the Project Area changes to incorporate lands not addressed in this report, further assessment will be required.

Our recommendations are subject to the conditions laid out in Section 5.0 of this report and to the MCM's review and acceptance of this report into the provincial registry.

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PROJECT PERSONNEL

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ACKNOWLEDGEMENTS

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Alissa Lee	Dillon Consulting Ltd.
Avid Banihashemi	Dillon Consulting Ltd.
Kayla Ginter	Dillon Consulting Ltd.
Lauren Whitwham	Enbridge Gas Inc.

TERRITORIAL ACKNOWLEDGEMENT

The Project Area is located within the Huron Tract Purchase (Treaty No. 29) of 1827, on the traditional lands and territory of the Anishinaabek (Ah-nish-in-a-bek) people of the Aamjiwnaang (Am-JIN-nun) First Nation and the Walpole Island First Nation who represent the Three Fires Confederacy of Ojibwa (ow-jib-wei), Odawa (ow-daa-wuh), and Potawatomi (pow-tuh-waa-tuh-mee) Nations. These First Nation groups are the stewards of the lands, waters and resources of their territories, including archaeological resources and cultural heritage values. These lands also continue to be home to diverse Indigenous peoples (e.g., First Nations, Métis and Inuit) whom we recognize as contemporary stewards of the land and vital contributors of our society.

INDIGENOUS PARTICIPANTS

Aamjiwnaang First *Nation (AFN)*

Coordinator	Cathleen O'Brien

Tri-Tribal Monitoring Services

Coordinator	Wanda Maness

ABOUT TMHC

Established in 2003 with a head office in London, Ontario, TMHC Inc. (TMHC) provides a broad range of archaeological assessment, heritage planning and interpretation, cemetery, and community consultation services throughout the Province of Ontario. We specialize in providing heritage solutions that suit the past and present for a range of clients and intended audiences, while meeting the demands of the regulatory environment. Over the past two decades, TMHC has grown to become one of the largest privately-owned heritage consulting firms in Ontario and is today the largest predominately woman-owned CRM business in Canada.

Since 2004, TMHC has held retainers with Infrastructure Ontario, Hydro One, the Ministry of Transportation, Metrolinx, the City of Hamilton, and Niagara Parks Commission. In 2013, TMHC earned the Ontario Archaeological Society's award for Excellence in Cultural Resource Management. Our seasoned expertise and practical approach have allowed us to manage a wide variety of large, complex, and highly sensitive projects to successful completion. Through this work, we have gained corporate experience in helping our clients work through difficult issues to achieve resolution.

TMHC is skilled at meeting established deadlines and budgets, maintaining a healthy and safe work environment, and carrying out quality heritage activities to ensure that all projects are completed diligently and safely. Additionally, we have developed long-standing relationships of trust with Indigenous and descendent communities across Ontario and a good understanding of community interests and concerns in heritage matters, which assists in successful project completion.

TMHC is a Living Wage certified employer with the Ontario Living Wage Network and a member of the Canadian Federation for Independent Business.

KEY STAFF BIOS

Matthew Beaudoin, PhD, Principal, Manager – Archaeological Assessments

Matthew Beaudoin received a PhD in Anthropology from Western University in 2013 and became a Principal at TMHC in 2019. During his archaeological career, Matthew has conducted extensive field research and artifact analysis on Indigenous and Settler sites from Labrador and Ontario. In addition, Matthew has also conducted ethnographic projects in Labrador. Since joining TMHC in 2008, Matthew has been involved with several notable projects, such as the Imperial Oil's Waterdown to Finch Project, the Camp Ipperwash Project, and the Scugog Island Natural Gas Pipeline Project.

Matthew is an active member of the Canadian Archaeological Association, the Ontario Archaeological Society, the Ontario Historical Society, the World Archaeology Congress, the Council for Northeastern Historical Archaeology, the Society for American Archaeology, and the Society for Historical Archaeology.

Liam Browne, MA – Project Manager

Liam holds a MA in Anthropology from Trent University specializing in late Paleo projectile points in Ontario and New York. With over 10 years in the field, Liam has conducted extensive field research and artifact analysis on Indigenous and 19th century sites in Ontario. Liam's role at TMHC has involved background research, support for Indigenous engagement for archaeological projects, report production and project management. He also served as archival assistant at the Trent Valley Archives. Liam has volunteered on both the Dutton Burial Salvage excavation project and the Fugitive Slave Chapel Project in London, and is a member of the Ontario Archaeological Society.

Liam is a professional-licensed archaeologist with significant experience managing large archaeological projects and working with Indigenous communities since 2012.

STATEMENT OF QUALIFICATIONS AND LIMITATIONS

The attached Report (the "Report") has been prepared by TMHC Inc. (TMHC) for the benefit of the Client (the "Client") in accordance with the agreement between TMHC and the Client, including the scope of work detailed therein (the "Agreement").

The information, data, recommendations and conclusions contained in the Report (collectively, the "Information"):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the "Limitations");
- represents TMHC's professional judgment in light of the Limitation and industry standards for the preparation of similar reports;
- may be based on information provided to TMHC which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
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This Statement of Qualifications and Limitations is attached to and forms part of the Report and any use of the Report is subject to the terms hereof.

QUALITY INFORMATION

Report prepared by: _____

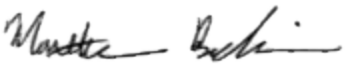
Matthew Severn, BA (R1093)

Archaeology Specialist

Licensee: _____

Liam Browne, MA (P1048)

Project Manager



Report reviewed by: _____

Matthew Beaudoin, PhD (P324)

Principal/Manager of Archaeological Assessment

1 PROJECT CONTEXT

1.1 Development Context

1.1.1 Introduction

A Stage 1 and 2 archaeological assessment was conducted for Enbridge Gas Inc.'s (Enbridge) Bluewater OBS Well Drilling Project (the "Project"). The Project is located on the property at 2821 Churchill Line which itself is located in a rural area of the City of Sarnia, within Lot 2, Concession 2 of the Geographic Township of Sarnia, Lambton County, Ontario. The Project involves the establishment of a 10-meter-wide access route on the property and the preparation of a roughly 120 m by 150 m work area in the field to the south of the residential portion of the legal parcel (the "Project Area"). It should be noted these dimensions represent the areas considered for potential impact for the purpose of this study which are larger than the proposed construction footprint size. The Project Area is roughly 1.34 ha (3.31 ac) in size and consists entirely of a section of active agricultural field. The Stage 1-2 archaeological assessment was triggered by Enbridge's Archaeology Protocol and due diligence for construction projects, which is informed by the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario* (OEB 2023). In 2023, TMHC Inc. (TMHC) was contracted by Dillon Consulting Ltd. (Dillon) on behalf of Enbridge to carry out the assessment, which was conducted in accordance with the provisions of the *Provincial Policy Statement*. The purpose of the assessment was to determine if archaeological resources were present within the Project Area.

All archaeological assessment activities were performed under the professional archaeological license of Liam Browne (P1048) and in accordance with the *Standards and Guidelines for Consultant Archaeologists* (MTC 2011, "Standards and Guidelines"). Permission to enter the property and carry out all required archaeological activities, including collecting artifacts when found, was given by Anieca Lloyd of Dillon.

1.1.2 Purpose and Legislative Context

The *Ontario Heritage Act* (R.S.O. 1990) makes provisions for the protection and conservation of heritage resources in the Province of Ontario. Heritage concerns are recognized as a matter of provincial interest in Section 2.6.2 of the *Provincial Policy Statement* (PPS 2020) which states:

> *development* and *site alteration* shall not be permitted on lands containing *archaeological resources* or *areas of archaeological potential* unless *significant archaeological resources* have been *conserved*.

In the PPS, the term conserved means:

> the identification, protection, management and use of *built heritage resources, cultural heritage landscapes* and *archaeological resources* in a manner that ensures their cultural heritage value or interest is retained. This may be achieved by the implementation of recommendations set out in a conservation plan, archaeological assessment and/or heritage impact assessment that has been approved, accepted or adopted by the relevant planning authority and/or decision-maker. Mitigative measures and/or alternative development approaches can be included in these plans and assessments.

The Stage 1-2 archaeological assessment was triggered by Enbridge's Historical and Cultural Resources Manual – US & Canada and due diligence for construction projects, which is informed by the OEB's *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario* (OEB 2023), which requires that where a project may affect known or potential resources further study must be undertaken.

2 STAGE 1 BACKGROUND REVIEW

2.1 Research Methods and Sources

A Stage 1 overview and background study was conducted to gather information about known and potential cultural heritage resources within the Project Area. According to the *Standards and Guidelines*, a Stage 1 background study must include a review of:

- an up-to-date listing of sites from the Ministry of Citizenship and Multiculturalism (MCM) PastPortal for 1 km around the property;
- reports of previous archaeological fieldwork within a radius of 50 m around the property;
- topographic maps at 1:10,000 (recent and historical) or the most detailed scale available;
- historical settlement maps (e.g., historical atlas, survey);
- archaeological management plans or other archaeological potential mapping when available; and,
- commemorative plaques or monuments on or near the property.

For this Project, the following activities were carried out to satisfy or exceed the above requirements:

- a database search was completed through MCM's PastPortal system that compiled a list of registered archaeological sites within 1 km of the Project Area (completed July 5, 2023);
- a review of known prior archaeological reports for the property and adjacent lands;
- Ontario Base Mapping (1:10,000) was reviewed through ArcGIS and mapping layers under the Open Government Licence – Canada and the Open Government Licence- Ontario;
- detailed mapping provided by the client was also reviewed; and,
- a series of historic maps and photographs was reviewed related to the post-1800 land settlement.

Additional sources of information were also consulted, including modern aerial photographs, local history accounts, soils data provided by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), physiographic data provided by the Ontario Ministry of Northern Development and Mines, and detailed topographic data provided by Land Information Ontario.

When compiled, background information was used to create a summary of the characteristics of the Project Area, in an effort to evaluate its archaeological potential. The Province of Ontario (MTC 2011; Section 1.3.1) has defined the criteria that identify archaeological potential as:

- previously identified archaeological sites;
- water sources;
    - primary water sources (e.g., lakes, rivers, streams, creeks);
    - secondary water sources (e.g., intermittent streams and creeks, springs, marshes, swamps);
    - features indicating past water sources (e.g., glacial lake shorelines, relic river or stream channels, shorelines of drained lakes or marshes, cobble beaches);
    - accessible or inaccessible shorelines (e.g., high bluffs, sandbars stretching into a marsh);
- elevated topography (e.g., eskers, drumlins, large knolls, plateau);
- pockets of well-drained sandy soils;
- distinctive land formations that might have been special or spiritual places (e.g., waterfalls, rock outcrops, caverns, mounds, promontories and their bases);

- resource areas, including:
    - food or medicinal plants (e.g., migratory routes, spawning areas, prairies);
    - scarce raw materials (e.g., quartz, copper, ochre, or chert outcrops);
    - early Settler industry (e.g., fur trade, logging, prospecting, mining);
- areas of early 19th-century settlement, including:
    - early military locations;
    - pioneer settlement (e.g., homesteads, isolated cabins, farmstead complexes);
    - wharf or dock complexes;
    - pioneer churches;
    - early cemeteries;
- early transportation routes (e.g., trails, passes, roads, railways, portage routes);
- a property listed on a municipal register, designated under the *Ontario Heritage Act*, or that is a federal, provincial, or municipal historic landmark or site; and,
- a property that local histories or informants have identified with possible archaeological sites, historical event, activities, or occupations.

In Southern Ontario (south of the Canadian Shield), any lands within 300 m of any of the features listed above are considered to have potential for the discovery of archaeological resources.

Typically, a Stage 1 assessment will determine potential for Indigenous and 19th-century period sites independently. This is due to the fact that lifeways varied considerably during these eras, so the criteria used to evaluate potential for each type of site also varies.

It should be noted that some factors can also negate the potential for discovery of intact archaeological deposits. The *Standards and Guidelines* (MTC 2011; Section 1.3.2) indicates that archaeological potential can be removed in instances where land has been subject to extensive and deep land alterations that have severely damaged the integrity of any archaeological resources. Major disturbances indicating removal of archaeological potential include, but are not limited to:

- quarrying;
- major landscaping involving grading below topsoil;
- building footprints; and,
- sewage and infrastructure development.

Some activities (agricultural cultivation, surface landscaping, installation of gravel trails, etc.) may result in minor alterations to the surface topsoil but do not necessarily affect or remove archaeological potential. It is not uncommon for archaeological sites, including structural foundations, subsurface features and burials, to be found intact beneath major surface features like roadways and parking lots. Archaeological potential is, therefore, not removed in cases where there is a chance of deeply buried deposits, as in a developed or urban context or floodplain where modern features or alluvial soils can effectively cap and preserve archaeological resources.

2.2 Project Context: Archaeological Context

2.2.1 Project Area: Overview and Physical Setting

The Project Area is located south of Churchill Line, west of Mandaumin Road on the property at 2821 Churchill Line in a rural area of the City of Sarnia, Lambton County, Ontario. It is roughly 1.34 ha (3.31 ac) in size and is located within Lot 2, Concession 2 in the Geographic Township of Sarnia. The Project Area consists entirely of a section of an active agricultural field (Maps 1-2). It is bound to the north by Churchill Line and to the east by a tree line dividing agricultural fields. This treeline also contains the Harris Drain.

The Project Area falls within the St. Clair Clay Plains physiographic region, as defined by Chapman and Putnam (1984:147; Map 3). The region consists of an extensive clay plain covering over 2,000 square miles east of the St. Clair River and south of the Lake Huron shoreline (Chapman and Putnam 1984:147). The plain shows very little notable relief yet minor elevation changes have a marked effect on soils and vegetation (Chapman and Putnam 1984:147). The St. Clair Clay Plain was formerly the bed of glacial lakes Whittlesey and Warren (Chapman and Putnam 1984:147) and the former shorelines of these and related glacial lake phases have been documented along the eastern edge of the plain. The soil survey for Lambton County maps the soils in this area as Perth clay (Mathews et al. 1957; Map 4). These soils are classified as being imperfectly drained and are developed on undulating topography. Due to the imperfect drainage the profile development and soil horizons are very poorly defined.

Numerous drains and channelized creeks lie within the vicinity of the Project Area. Harris Drain abuts the eastern edge of the Project Area. There is no indication that this drain is a modified natural water course. Waddell Creek, a channelized natural watercourse, location roughly 400 m to the northeast. The *Map of Sarnia Township* in H. Belden & Co.'s 1880 *Illustrated Historical Atlas of the County of Lambton* (Map 5) provides a view of the natural path of Waddell Creek.

2.2.2 Summary of Registered or Known Archaeological Sites

According to PastPortal (accessed July 5, 2023) there are no registered archaeological sites within 1 km of the Project Area.

2.2.3 Summary of Past Archaeological Investigations within 50 m

During the course of this study no record was found of any archaeological investigations within 50 m of the Project Area. However, it should be noted that the MCM currently does not provide an inventory of archaeological assessments to assist in this determination.

2.2.4 Dates of Archaeological Fieldwork

The Stage 2 fieldwork was conducted on July 10, 2023, in sunny and hot weather conditions under the direction of Amelia Pilon, MA (P1265).

2.3 Project Context: Historical Context

2.3.1 Indigenous Settlement in Lambton County

Our knowledge of the Indigenous occupation of Lambton County is incomplete. Nevertheless, based on our knowledge of existing sites and using models generated from Province-wide and region-specific archaeological data, it is possible to provide a basic summary of Indigenous settlement in Lambton County. The following paragraphs provide a basic textual synthesis of the general archaeological trends and a tabular summary appears in Table 1.

Table 1: Chronology of Indigenous Settlement in Lambton County

Period	Time Range	Diagnostic Features	Archaeological Complexes
Early Paleo	9000-8400 BCE	fluted projectile points	Gainey, Barnes, Crowfield
Late Paleo	8400-8000 BCE	non-fluted and lanceolate points	Holcombe, Hi-Lo, Lanceolate
Early Archaic	8000-6000 BCE	serrated, notched, bifurcate base points	Nettling, Bifurcate Base Horizon
Middle Archaic	6000-2500 BCE	stemmed, side & corner notched points	Brewerton, Otter Creek, Stanly/Neville
Late Archaic	2000-1800 BCE	narrow points	Lamoka
Late Archaic	1800-1500 BCE	broad points	Genesee, Adder Orchard, Perkiomen
Late Archaic	1500-1100 BCE	small points	Crawford Knoll
Terminal Archaic	1100-950 BCE	first true cemeteries	Hind
Early Woodland	950-400 BCE	expanding stemmed points, Vinette pottery	Meadowood
Middle Woodland	400 BCE-500 CE	dentate, pseudo-scallop pottery	Saugeen/Couture
Transitional Woodland	500-900 CE	first corn, cord-wrapped stick pottery	Princess Point/Riviere au Vase
Late Woodland	900-1300 CE	first villages, corn horticulture, longhouses	Glen Meyer/Younge
Late Woodland	1300-1400 CE	large villages and houses	Uren, Middleport/Springwell
Late Woodland	1400-1650 CE	tribal emergence, territoriality	
Contact Period - Indigenous	1700 CE-present	treaties, mixture of Indigenous & European items	
Contact Period - Settler	1796 CE-present	industrial goods, homesteads	

2.3.1.1 Paleo Period

The first human populations to inhabit what is now Lambton County arrived between 12,000 and 10,000 years ago, coincident with the end of the last period of glaciation. Climate and environmental conditions were significantly different than they are today; local environs would not have been welcoming to anything but short-term settlement. Termed Paleo by archaeologists, Indigenous peoples would have crossed the landscape in small groups (i.e., bands or family units) searching for food, particularly migratory game species. In this area, caribou may have provided the staple of the Paleo period diet, supplemented by wild plants, small game, birds and fish.

Given the low density of populations on the landscape at this time and their mobile nature, Paleo period sites are small and ephemeral. They are sometimes identified by the presence of fluted projectile points manufactured on a highly distinctive whitish-grey chert named "Fossil Hill" (after the formation) or "Collingwood." This material was acquired from sources near the edge of the escarpment on Blue Mountain. It was exploited by populations from as far south as the London area, who would have traveled to the source as part of their seasonal round.

2.3.1.2 Archaic Period

Settlement and subsistence patterns changed significantly during the Archaic period as both the landscape and ecosystem adjusted to the retreat of the glaciers. Building on earlier patterns, early Archaic period populations continued the mobile lifestyle of their predecessors. Through time and with the development of more resource rich local environments, these groups gradually reduced the size of the territories they exploited on a regular basis. A seasonal pattern of warm season riverine or lakeshore settlements and interior cold weather occupations has been documented in the archaeological record.

Since the large cold weather mammal species that formed the basis of the Paleo period subsistence pattern became extinct or moved northward with the onset of warmer climate conditions, Archaic period populations had a more varied diet, exploiting a range of plant, bird, mammal and fish species. Reliance on specific food resources like fish, deer and nuts becomes more pronounced through time and the presence of more hospitable environments and resource abundance led to the expansion of band and family sizes. In the archaeological record, this is evident in the presence of larger sites and aggregation camps, where several families or bands would come together in times of plenty. The change to more preferable environmental circumstances led to a rise in population density. As a result, Archaic sites are more plentiful than those from the earlier period. Artifacts typical of these occupations include a variety of stemmed and notched projectile points, chipped stone scrapers, ground stone tools (e.g., celts, adzes) and ornaments (e.g., bannerstones, gorgets), bifaces or tool blanks, animal bone (where and when preserved) and waste flakes, a by-product of the tool making process.

2.3.1.3 Early, Middle and Transitional Woodland Periods

Significant changes in cultural and environmental patterns are witnessed in the Woodland period (c. 950 BCE-1700 CE). By this time, the coniferous forests of earlier times were replaced by stands of mixed and deciduous species. Occupations became increasingly more substantial in this period, culminating in major semi-permanent villages by 1,000 years ago. Archaeologically, the most significant changes by Woodland times are the appearance of artifacts manufactured from modeled clay and the construction of house structures. The Woodland period is often defined by the occurrence of pottery, storage facilities and residential areas similar to those that define the incipient agricultural or Neolithic period in Europe.

Early and Middle Woodland period peoples are also known for a well-developed burial complex and ground stone tool industry. Unique Early Woodland period ground stone items include pop-eyed birdstones and gorgets. In addition, there is evidence of the development of widespread trading with groups throughout the northeast. The recovery of marine shells from the Lake Superior area indicates that exchanges of exotic materials and finished items from distant places were commonplace.

2.3.1.4 Late Woodland Period

During the Late Woodland period, much of Southwestern Ontario was occupied by two groups: Iroquoians and what are thought by archaeologists to be Algonquin speaking populations (the term "Western Basin Tradition" has been used to describe this cultural complex). In the east, the Iroquoian occupants were the Attawandaron, a tribal group described by European missionaries and whose historic homeland was significantly further east. Like other known Iroquoian groups including the Huron (Wendat) and Petun (Tionontati), the Attawandaron practiced a system of intensive horticulture based on three primary subsistence crops (corn, beans and squash). Their villages incorporated a number of longhouses, multi-family dwellings that contained several families related through the female line. The Jesuit Relations describe several Attawandaron centres in existence in the 17th century, including a number of sites where missions were later established. While precontact Attawandaron sites may be identified by a predominance of well-made pottery decorated with various simple and geometric motifs, triangular stone projectile points, clay pipes and ground stone implements, sites post-dating European contact are recognized through the appearance of various items of European manufacture. The latter include materials acquired by trade (e.g., glass beads, copper/brass kettles, iron axes, knives and other metal implements) in addition to the personal items of European visitors and Jesuit priests (e.g., finger rings, stoneware, rosaries, glassware). The Attawandaron were dispersed and their population decimated by the arrival of epidemic European diseases and inter-tribal warfare. Many were adopted into other Iroquoian communities.

Archaeologists have also documented the in-situ development of Late Woodland period archaeological traditions from Middle Woodland period precedents that are believed to have an Algonquin cultural origin, quite distinct from Iroquoian populations who lived to the east. The archaeological record of these groups has been labeled the "Western Basin Tradition." During the Late Woodland period, complex settlements are characteristic of these people and, at their peak, are characterized by fortified villages containing large, likely extended family, structures. Some of the villages are surrounded by earthworks. There is evidence for the cultivation of corn and beans by roughly 900 CE. The pottery traditions of these people varied significantly from those of their Iroquoian neighbors. Early vessels, called Wayne ware, are small, thin-walled pots covered with vertical cord marking and tool impressions. Vessels become more elaborate through time, incorporating multiple bands of tool impressions, castellated rims and incised decoration. Late pottery is characteristically bag-shaped and often incorporates dentate stamping as well as appliqué strips and strap handles, similar to some Mississippian tradition pottery. As was not the case with much Iroquoian pottery, clay fabrics were mixed with shell temper.

2.3.2 Treaty History

Indigenous peoples have used the lands that are now known as Lambton County for thousands of years. Prior to the displacement caused by early European settlement, this area was actively used for hunting by a number of Anishinaabe peoples. The area which became Plympton Township was part of the Huron Tract, approximately 2.76 million acres of land subject to Provisional Treaty No. 27 ½ between the local Chippewa nations and the British Crown signed on April 26, 1825 (Surtees 1984). An earlier 1819 agreement was never realized and for six years the territory remained in limbo. The provisional treaty was finally reached as a result of John Galt's intention to form the Canada Company which required one million acres of land to sell to prospective settlers (Surtees 1894).

The Chippewa nations transferred most of the Huron Tract to the Crown but maintained their territories in four reserve lands along the St. Clair River and on the shores of Lake Huron near Kettle Point and the Ausable River (River aux Sable). These reserves would become the Aamjiwnaang First Nation and the Chippewas of Kettle and Stony Point First Nation. The agreement was formalized in 1827 through Treaty No. 29 (Canadian Legal Information Institute 2000; Duern 2017).

2.3.3 Nineteenth-Century and Municipal Settlement

The Project Area falls within Lot 2, Concession 2, in the Geographic Township of Sarnia, Lambton County, Ontario. A brief discussion of 19th-century settlement and land use in the township is provided below in an effort to identify features signaling archaeological potential.

2.3.3.1 Lambton County

Prior to the 1830s Lambton County was sparsely occupied by people of European descent. One of the reasons for this was that historical Lambton County was composed of mainly forested and swampy areas that made settling and traveling to the County difficult. A few French settlers were living along the banks of the St. Clair River. An unfortified British military reserve was set up in the along the eastern bank of the St. Clair River at the entrance to Lake Huron, in the location of what was to eventually become the Village of Point Edward around 1800. This military reserve was established to protect the entrance of Lake Huron from possible American invaders (Elford 1982: 114). It is thought that the earliest European settlement in Lambton County was focused along Bear Creek (or the Sydenham River) in what has come to be known as the Baldoon Settlement (H. Belden & Co. 1880:4). This area was settled by Highland Scotch immigrants who came to the area around 1804 under the direction of Lord Selkirk (H. Belden & Co. 1880:4). However, no sizable European populations settled in the County until the early 1830s when there was an influx of British settlers. By 1834, there were 1,728 settlers in the county and by 1891 the population had increased to 58,810 people (Elford 1982: 3-5). By 1835 the ten townships that would eventually comprise the County were laid out and surveyed. It was not until 1850 that Lambton became a provisional county and three years later it became an independent municipality (Elford 1967). By 1881 nearly half the county was still in timber (Matthews et al. 1957:23).

The Grand Trunk Railway first opened in 1859 and helped increase the County's shipping profile and provided passage to new immigrants. Transportation through the County was considerably hindered by the lack of good thoroughfares. Given that much of the county was essentially a vast level clay plain with few streams and rivers, it was poorly drained and good, dry roads were hard to come by. Swamplands often prohibited the establishment of early through roads. Nonetheless, a few early major transportation routes offered some

solace to travelers. These included the Egremont/London Road (now Highway 22), the Plank Road (connecting Sarnia to Petrolia) and the Fourth Line (Confederation Line). The Plank Road was "planked" between 1862 and 1865 following the discovery of oil in Enniskillen Township (Elford 1967:41-42).

2.3.3.2 Sarnia Township

The Township of Sarnia was surveyed in 1829 (Johnston 1925:46). Many of the initial land grants were awarded to land speculators and United Empire Loyalists in reward for their loyalty to the British Crown during the War of 1812. Initially much of the township was set aside for a reservation and some 10,000 acres given to Henry Jones who established a commune of Scottish settlers (Elford 1967:91). Jones received his land from Sir John Colborne, his brother's father-in-law. Jones' dreams were shattered when most of the settlers abandoned the colony two years later. His lakeshore acreage was purchased by Samuel Street in 1830 but deeds were not issued until 1841 (Elford 1967:93, 1982:81). A United Empire Loyalist by the name of John Porter visited the area around 1824 and later established a home along the fourth concession line near Perch Creek (Elford 1967:36). In 1837, only 42 taxpayers were recorded for the township (Elford 1982:81) but settlement continued alongside the growth of industry. The population of the township was greatly enhanced between 1841 and 1846 following the construction of the London Road (Hwy. 22) which facilitated a major movement of persons into the township (Elford 1967:96) as well as the arrival of a large group of families from Lanark County. In 1859, a decision was made to drain Lake Wawanosh, along Perch Creek (earlier called Wawanosh Creek), in order to free up further land for settlement (Elford 1967:93).

2.3.4 Review of Historic Maps

The Project Area falls within Lot 2, Concession 2, in the Geographic Township of Sarnia, now City of Sarnia, Lambton County, Ontario.

The *Map of Sarnia Township* in H. Belden & Co.'s 1880 *Illustrated Historical Atlas of the County of Lambton* (Map 5) does not depict any owners or inhabitants of Lot 2, Concession 2. Some settlement is evident at this time (i.e. William McRie on Lot 1, Concession 2 and Jonathan McFarlane on Lot 3, Concession 3) but overall the area appears to be sparsely populated. It should be noted that the historical atlas was sold on a subscription basis and only names of subscribers appear on the maps. Churchill Line is depicted as open at this time. The course of Waddell Creek is depicted to the north of the Project Area but the creek is identified as having previously been drained.

2.3.5 Review of Heritage Properties

There are no designated heritage properties or plaques within 50 m of the Project Area.

2.4 Analysis and Conclusions

As noted in Section 2.1, the Province of Ontario has identified numerous factors that signal the potential of a property to contain archaeological resources. Based on the archaeological and historical context reviewed above, the Project Area is in proximity (i.e., within 300 m) to a feature that signals archaeological potential, namely:

- a mapped 19th-century thoroughfares (Churchill Line).

2.5 Recommendations

Given that the Project Area demonstrated potential for the discovery of archaeological resources, a Stage 2 archaeological assessment was recommended. In keeping with provincial standards, as the Project Area consists entirely of active agricultural field it is recommended for assessment by a pedestrian survey at a 5 m transect interval to achieve the provincial standard. As the Project Area is considered to have archaeological potential pending Stage 2 field inspection, a separate map detailing zones of archaeological potential is not provided herein (MTC 2011; Section 7.7.4, Standard 1 and Section 7.7.6, Standards 1 and 2).

3 STAGE 2 ARCHAEOLOGICAL ASSESSMENT

3.1 Field Methods

All fieldwork was undertaken in good weather and lighting conditions. No conditions were encountered that would hinder the identification or recovery of artifacts. The exact limits of the Project Area were determined in the field with reference to proponent staking. The location of all stakes present were recorded with a Topcon GRS-1 RTK GPS/Glonass Network Rover, a high precision survey unit that advertises subcentimetre accuracy. GPS co-ordinates taken at stakes were used to generate mapping for the assessment.

As the Project Area consists entirely of active agricultural field it was subject to pedestrian survey, employing a 5 m transect interval following ploughing and weathering under heavy rains (100.0%; 1.34 ha; Images 1 and 2). Surface visibility was good to excellent (80% or greater; Images 3 and 4). It was anticipated that if cultural material was identified the survey transects would be reduced to 1 m or less and a minimum of 20 m radius around each find would be intensively examined to determine the spatial extent of each site.

Map 6 illustrates the Stage 2 field conditions and assessment methods; the location and orientation of all photographs appearing in this report are also shown on this map. Map 7 presents the Stage 2 results on the proponent mapping. An unaltered proponent map is provided as Map 8.

3.2 Record of Finds

No archaeological materials or sites were identified during the Stage 2 archaeological assessment of the Project Area. Table 2 provides an inventory of the documentary records generated during this Project.

All files are currently being stored at the TMHC corporate office located at 1108 Dundas Street, Unit 105, London, ON, N5W 3A7.

Table 2: Documentary Records

Date	Field Notes	Field Maps	Digital Images
July 10, 2023	Digital and hard copies	Digital and hard copies	15 Images

3.3 Analysis and Conclusions

A Stage 2 field assessment was conducted in keeping with the MCM's *Standards and Guidelines* (MTC 2011). The pedestrian survey did not result in the documentation of archaeological resources. As such, the Project Area should be considered free of archaeological concern.

3.4 Recommendations

All work met provincial standards and no archaeological material was documented during the assessment. As such, the Project Area should be considered free of archaeological concern and no further archaeological assessment is recommended.

If the extent of the Project Area changes to incorporate lands not addressed in this report, further assessment will be required.

Our recommendations are subject to the conditions laid out in Section 5.0 of this report and to the MCM's review and acceptance of this report into the provincial registry.

4 SUMMARY

A Stage 1 and 2 archaeological assessment was conducted for Enbridge's Bluewater OBS Well Drilling Project. The Project is located on the property at 2821 Churchill Line which itself is located in a rural area of the City of Sarnia, within Lot 2, Concession 2 of the Geographic Township of Sarnia, Lambton County, Ontario. The Project Area is roughly 1.34 ha (3.31 ac) in size and consists entirely of a section of active agricultural field. The Stage 1 assessment revealed that the Project Area had potential for the discovery of archaeological resources and a Stage 2 survey was recommended and carried out. The Stage 2 assessment consisting of pedestrian survey at a 5 m interval did not result in the documentation of archaeological resources. As such, the Project Area should be considered free of archaeological concern and no further archaeological assessment is recommended.

5 ADVICE ON COMPLIANCE WITH LEGISLATION

This report is submitted to the MCM as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the Project Area of a development proposal have been addressed to the satisfaction of the MCM, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the Ontario Heritage Act for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the Ontario Heritage Act.

Should previously undocumented (i.e., unknown or deeply buried) archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act.*

The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 requires that any person discovering human remains must notify the police or coroner and Crystal Forrest, Registrar of Burial Sites, Ontario Ministry of Government and Consumer Services. Her telephone number is 416-212-7499 and e-mail address is Crystal.Forrest@ontario.ca.

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7 IMAGES

Image 1: Pedestrian Survey at 5 m Interval

Looking East

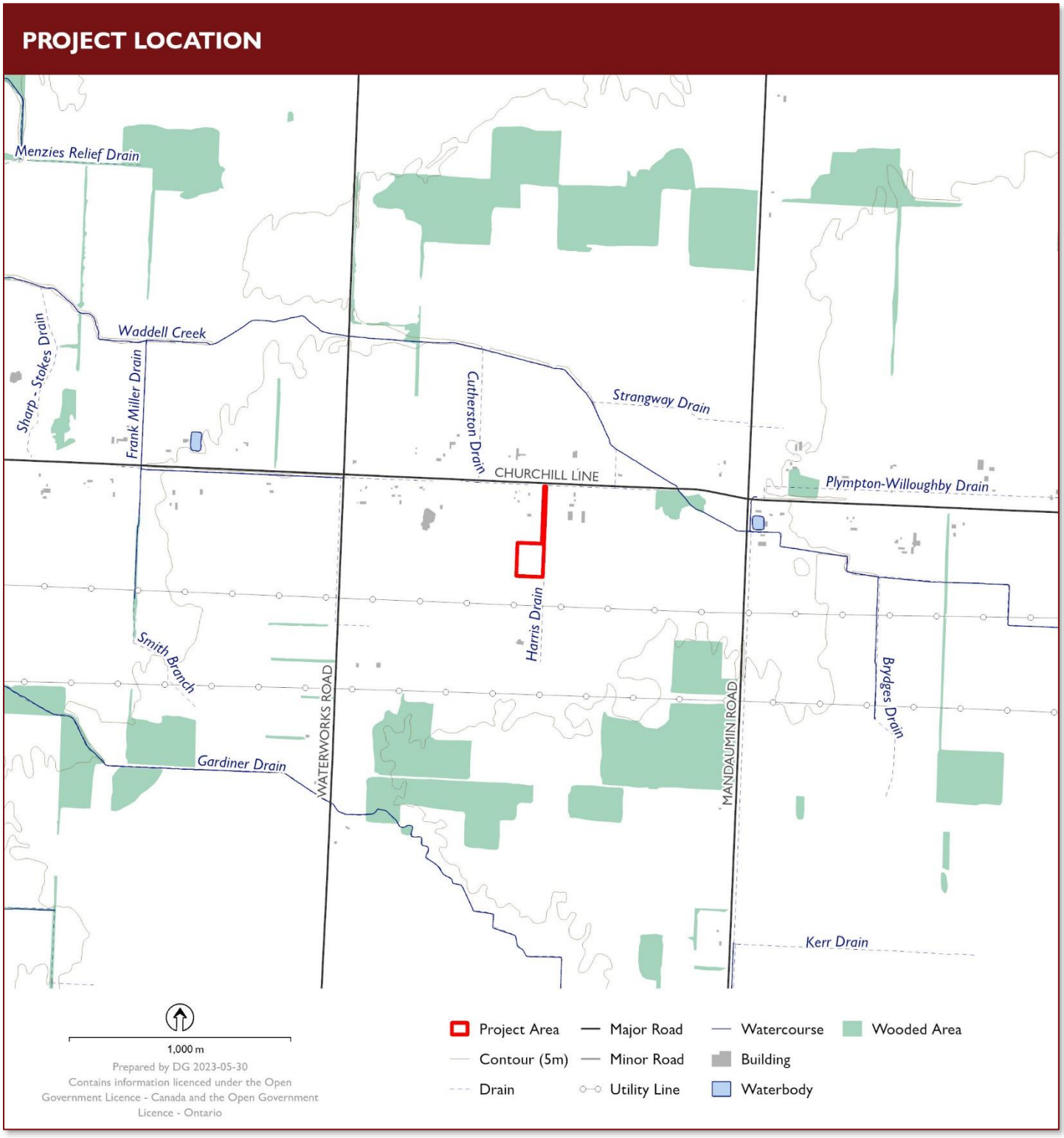
Image 2: Pedestrian Survey at 5 m Interval

Looking North

Image 3: Surface Visibility

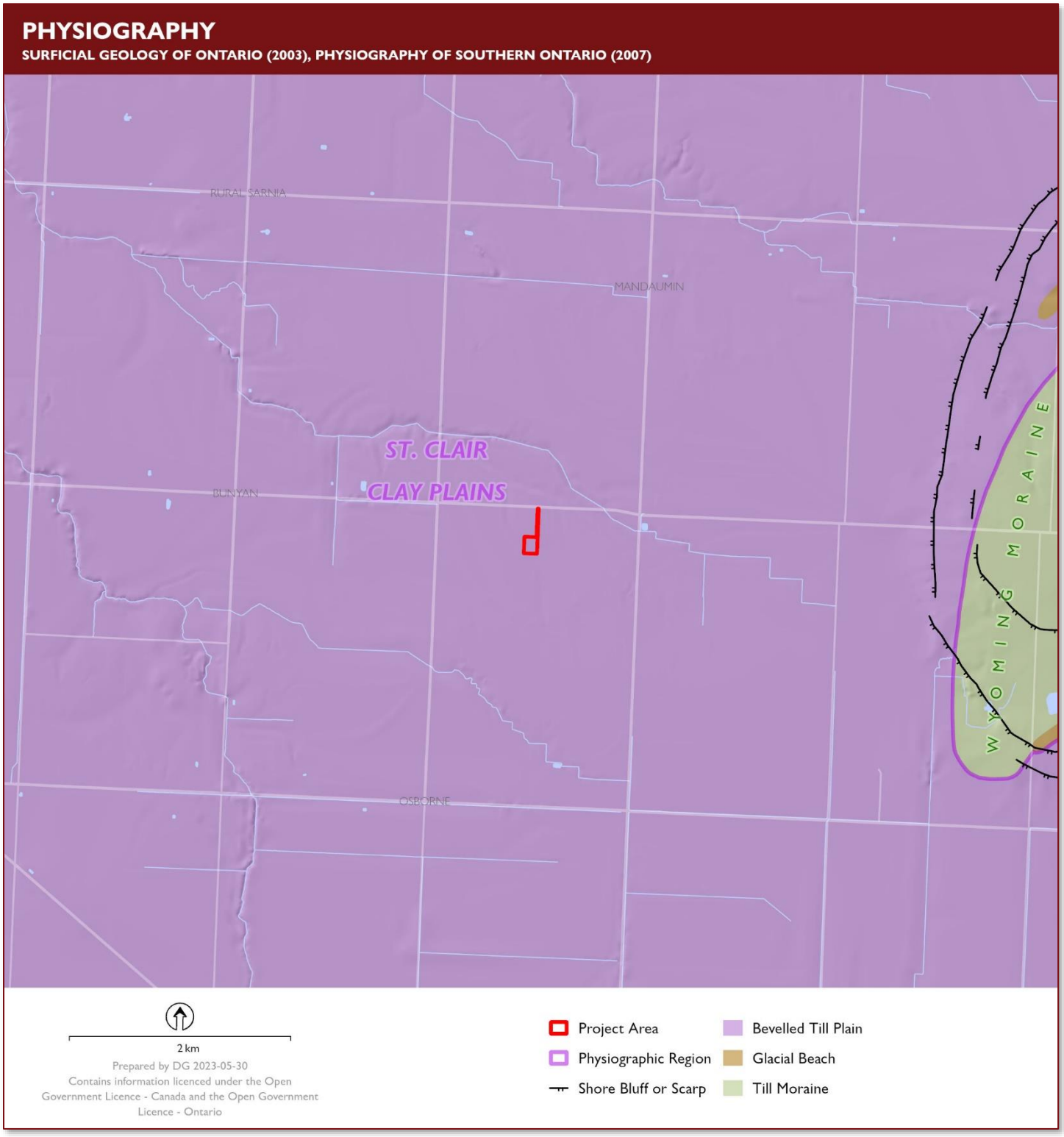
Image 4: Surface Visibility

8 MAPS

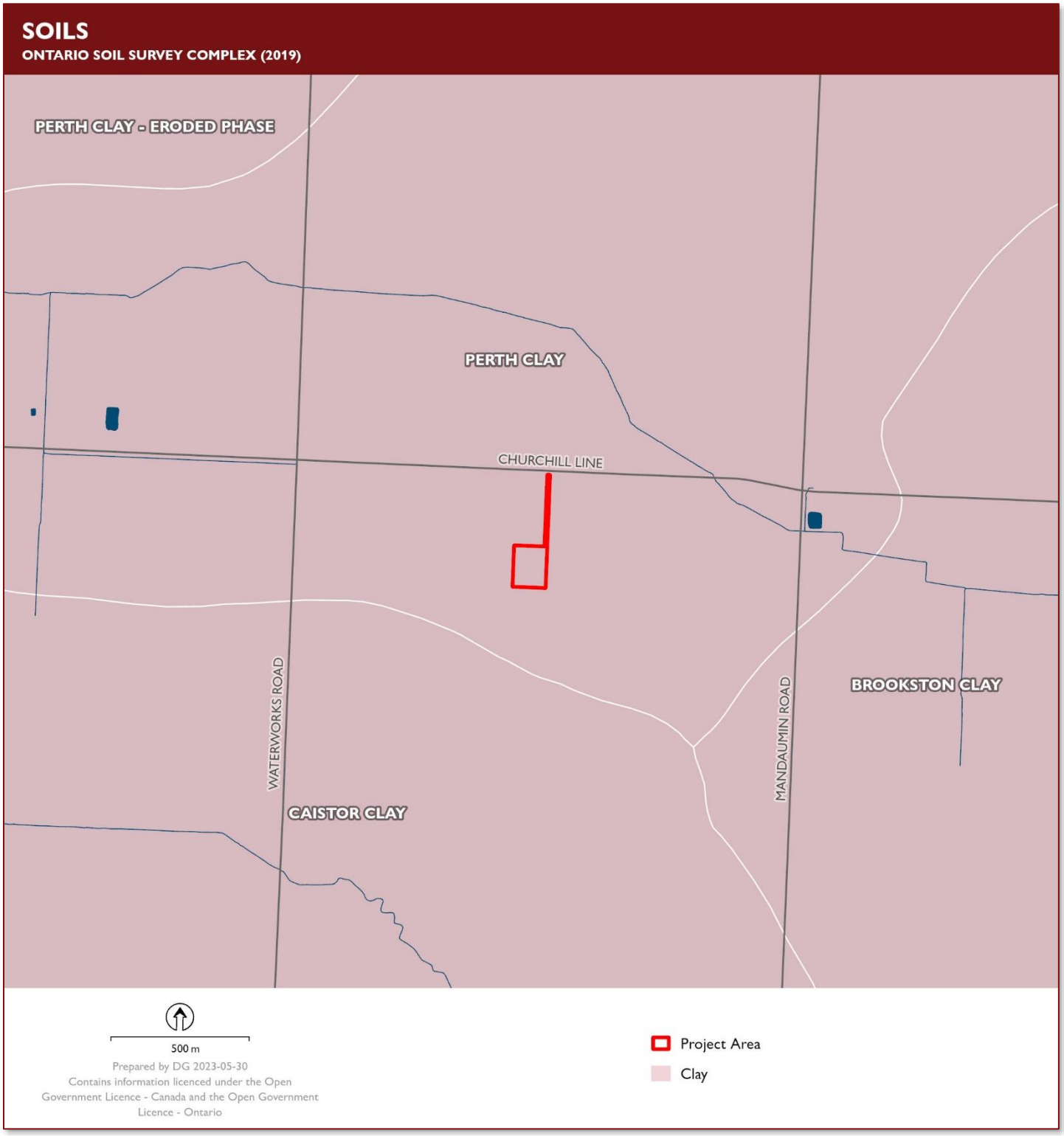


Map 1: Location of the Project Area in Lambton County, ON

Map 2: Aerial Photograph Showing the Location of the Project Area

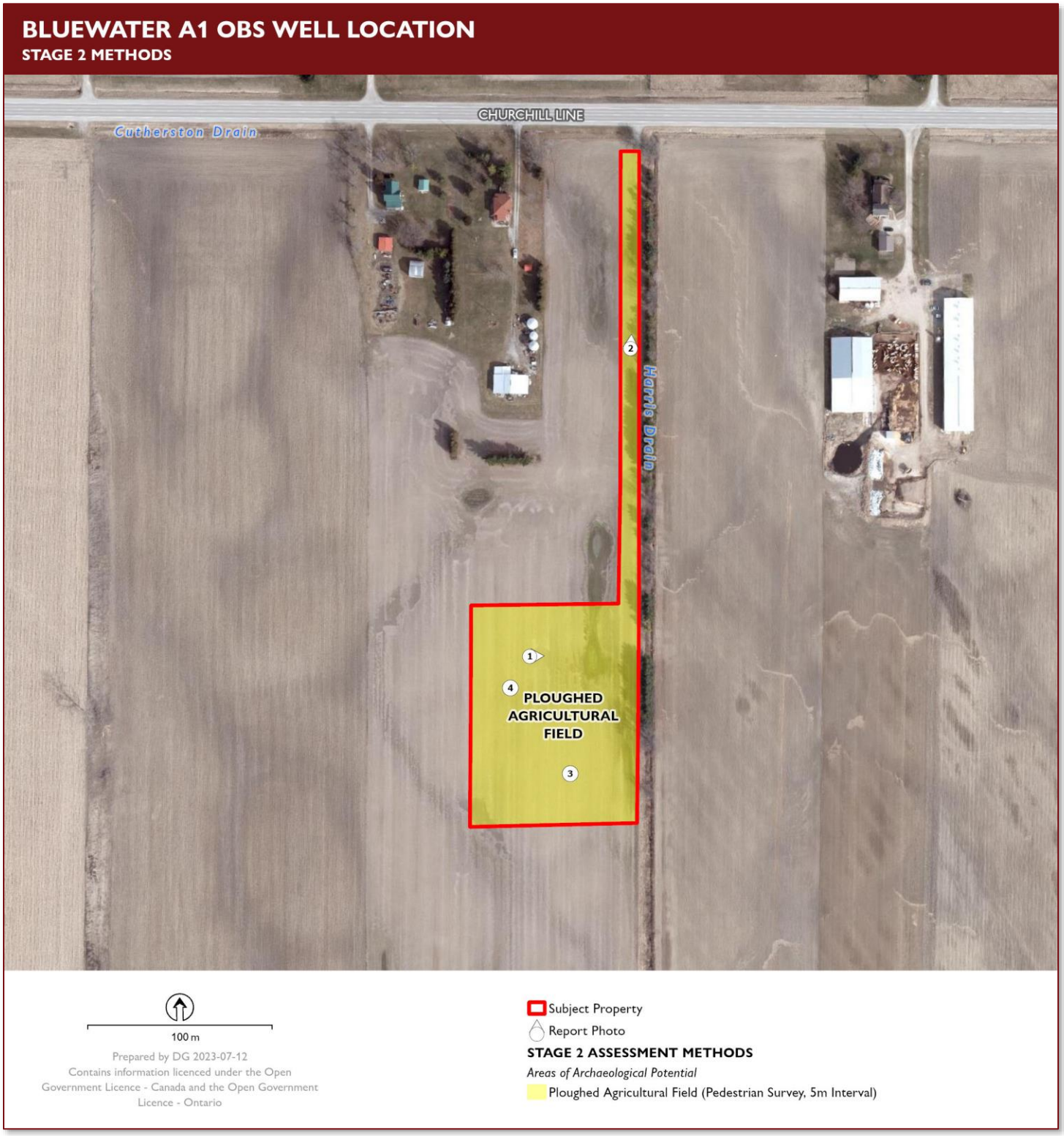


Map 3: Physiography Within the Vicinity of the Project Area



Map 4: Soils Within the Vicinity of the Project Area

Map 5: Location of the Project Area Shown on the 1880 Map of Lambton County



Map 6: Stage 2 Field Conditions and Assessment Methods

Map 7: Stage 2 Field Conditions and Assessment Methods Shown on Proponent Mapping

2024 BLUEWATER AND MANDAUMIN WELL DRILLING PROJECT

ENBRIDGE GAS

BLUEWATER STUDY AREA

FIGURE 2-2, MAP 1 OF 2

- Study Area (125m)
- Proposed Observation Well
- Proposed Temporary Pad (approx. 80m by 100m)
- Proposed Permanent Access Road (approx. 5m wide)
- Proposed Permanent Pad (approx. 8m by 8m)
- Watercourse
- Major Road

SCALE 1:3,400

0 40 80 160 m

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: -ZJB
MAP CHECKED BY: -KG
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

DILLON CONSULTING

PROJECT: 23-6171
STATUS: FINAL
DATE: 2023-06-28

FILE LOCATION: K:\2023\236171\Product\Client\ER\F2-2 ProjectStudyAreas.mxd

Map 8: Unaltered Proponent Mapping

Ministry of Citizenship and Multiculturalism (MCM)

Archaeology Program Unit
Heritage Branch
Citizenship, Inclusion and Heritage Division
5th Floor, 400 University Ave.
Toronto ON M7A 2R9
Tel.: (416) 414-7787
Email: Jessica.Marr@ontario.ca

Ministère des Affaires civiques et du Multiculturalisme (MCM)

Unité des programme d'archéologie
Direction du patrimoine
Division de la citoyenneté, de l'inclusion et du patrimoine
5e étage, 400 ave. University
Toronto ON M7A 2R9
Tél. : (416) 414-7787
Email: Jessica.Marr@ontario.ca

Ontario

Aug 1, 2023

Liam Browne (P1048)
Timmins Martelle Heritage Consultants Inc.
105 - 1108 Dundas London ON N5W 3A7

RE: Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "Stage 1-2 Archaeological Assessment Bluewater OBS Well Drilling 2821 Churchill Line, City of Sarnia Part of Lot 2, Concession 2 Geographic Township of Sarnia Lambton County, Ontario ", Dated Jul 27, 2023, Filed with MCM Toronto Office on N/A, MCM Project Information Form Number P1048-0125-2023, MCM File Number 0019294

Dear Mr. Browne:

The above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18, has been entered into the Ontario Public Register of Archaeological Reports without technical review.[1]

Please note that the ministry makes no representation or warranty as to the completeness, accuracy or quality of reports in the register.

Should you require further information, please do not hesitate to send your inquiry to Archaeology@Ontario.ca

cc. Archaeology Licensing Officer
Anieca Lloyd,Dillon Constructing Limited
TBD TBD,TBD

1 *In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.*

Appendix B

Cultural Heritage Resource Screening Reports

DILLON CONSULTING

Cultural Heritage Screening
Mandaumin OBS Well Drilling, Lambton County
Town of Plympton-Wyoming, Ontario

Cultural Heritage Screening – Technical Memorandum

Prepared for:

Anieca Lloyd
Dillon Consulting Limited
177 Colonnade Rd South Suite 101
Ottawa, ON K2E 7J4

and

Enbridge Gas Inc.
500 Consumers Road
North York, ON M2J 1P8

Prepared by:
TMHC Inc.
1108 Dundas Street
Unit 105
London, ON N5W 3A7
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tmhc.ca

Project No: 2023-216

Revised Draft: July 14, 2023

PROJECT PERSONNEL

Principal	Matthew Beaudoin, PhD
Senior Reviewer	Joshua Dent, PhD, CAHP
Project Manager	Joan Crosbie, MA, CAHP
Cultural Heritage Specialist	Elisabeth Edwards, MA
Project Administrator	Kellie Theaker, CHRP
GIS Technicians	John Moody, PhD
	Andrew Turner, BA

ACKNOWLEDGEMENTS

Ontario Heritage Trust	Samuel Bayefsky
Ministry of Citizenship and Multiculturalism	Karla Barboza & Joseph Harvey
County of Lambton	Luis Esteves

ABOUT TMHC

Established in 2003 with a head office in London, Ontario, TMHC Inc. (TMHC) provides a broad range of archaeological assessment, heritage planning and interpretation, cemetery, and community consultation services throughout the Province of Ontario. We specialize in providing heritage solutions that suit the past and present for a range of clients and intended audiences, while meeting the demands of the regulatory environment. Over the past two decades, TMHC has grown to become one of the largest privately-owned heritage consulting firms in Ontario and is today the largest predominately woman-owned Cultural Resource Management (CRM) business in Canada.

Since 2004, TMHC has held retainers with Infrastructure Ontario, Hydro One, the Ministry of Transportation, Metrolinx, the City of Hamilton, City of Barrie, and Niagara Parks Commission. In 2013, TMHC earned the Ontario Archaeological Society's award for Excellence in CRM. Our seasoned expertise and practical approach have allowed us to manage a wide variety of large, complex, and highly sensitive projects to successful completion. Through this work, we have gained corporate experience in helping our clients work through difficult issues to achieve resolution.

TMHC is skilled at meeting established deadlines and budgets, maintaining a healthy and safe work environment, and carrying out quality heritage activities to ensure that all projects are completed diligently and safely. Additionally, we have developed long-standing relationships of trust with Indigenous and descendent communities across Ontario and a good understanding of community interests and concerns in heritage matters, which assists in successful project completion.

TMHC is a Living Wage certified employer with the Ontario Living Wage Network and a member of the Canadian Federation for Independent Business.

KEY STAFF BIOS

Matthew Beaudoin, PhD – Principal

Matthew received a PhD in Anthropology from Western University in 2013 and has a professional archaeological license with the Province of Ontario (P324). During his archaeological career, Matthew has conducted extensive field research and artifact analysis in Labrador and Ontario, and has taught the Field Methods Course and Principals of archaeology courses as a part-time faculty member at Western University. Matthew has also conducted ethnographic projects in Labrador, and has volunteered with the OAS to provide archaeological training to several Indigenous communities throughout the province.

Over the course of his career, Matthew has supervised over 600 archaeological assessments in Ontario, including Stages 1-4, under a variety of regulatory triggers including provincial and municipal Environmental Assessments, Green Energy projects, development projects under the *Planning Act*, and as due diligence process. Matthew has extensive experience managing large and complex archaeological projects in conjunction with other disciplines, specialists, and Indigenous communities including Enbridge Line 10 Westover Segment, Imperial Oil from Waterdown to Finch, and Highway 3 Widening in Kingsville. Since joining TMHC in 2008, Matthew has also been involved with several notable projects, such as the archaeological assessment of Stoney Point/Camp Ipperwash. For these and other projects, Matthew works closely with heritage staff at TMHC and with heritage staff employed by clients and stakeholder communities.

Matthew is an active member of the Canadian Archaeological Association, the Ontario Archaeological Society, the Society for American Archaeology, and the Society for Historical Archaeology.

Joshua Dent, PhD, CAHP – Manager – Community Engagement & Heritage Division

Joshua (Josh) has worked extensively on cultural heritage and archaeological assessments in Ontario and Western Canada. Josh's role at TMHC has involved background research, community consultation, report production, and project management. Josh specializes in multi-faceted heritage studies including large-scale inventories, environmental assessments, and complex institutional assessments. In his role at TMHC, he regularly communicates with Indigenous communities and a variety of heritage stakeholders. These efforts were recently recognized as part of the Oakville Harbour Cultural Heritage Landscape Strategy Implementation which received the Canadian Association of Heritage Professionals' 2021 Award of Merit for Documentation & Planning. He has volunteered extensively with the heritage community in London, Ontario, in both municipal and not-for-profit roles. Josh is professional member of the Canadian Association of Heritage Professionals (CAHP).

Joan Crosbie, MA, CAHP – Manager – Cultural Heritage

Joan has extensive cultural heritage management experience in both the private and public sectors with a strong background in preservation services, built and landscape heritage assessment, archival/historical research, and Museums services. She earned her MA in Architectural History from York University. In her role in Preservation Services with the Toronto Historical Board (City of Toronto), Joan was part of a small team of professionals who advised City Council on a broad range of heritage preservation and planning matters. Later, as Curator of Casa Loma, she gained extensive experience as part of the Senior Management team and honed her skills in cultural and community engagement and was a key staff liaison with the restoration architects and skilled trades as the Casa Loma Estate underwent a major exterior restoration program. More recently, as Manager of Culture and Community Services, Town of Whitchurch-Stouffville, Joan managed the Heritage and Museums services portfolios and has widened her experience in cultural planning to include the adaptive reuse of heritage buildings and historic main street revitalization.

She has published articles on architecture and architectural preservation for a wide range of organizations, including the Canadian Society for Industrial Heritage, the City of Toronto and the Society for the Study of Architecture in Canada. Joan is professional member of the Canadian Association of Heritage Professionals (CAHP).

Elisabeth Edwards, MA – Cultural Heritage Specialist

Elisabeth Edwards received a BA in English Literature and Media & Information Studies from Western University in 2020 before completing her MA in Public History at Western University in 2021. Elisabeth's research and career centers around Indigenous history and community engagement with focuses on Indigenous perspectives of heritage and natural conservation. As an interpreter with Parks Canada, Elisabeth developed educational programming and facilitated in ongoing Indigenous cultural engagement initiatives to build stronger relationships with local First Nations and Métis communities.

In 2021, Elisabeth worked as a Historical Researcher with Ottawa-based historical consulting firm Know History Inc. where she conducted genealogical research and Traditional Knowledge and Land Use Studies for the Métis Nation of Ontario, as well as produced public-facing digital history projects. Elisabeth joined TMHC in 2023 as a Cultural Heritage Specialist and is involved in cultural heritage evaluation, impact assessments, and community engagement. Elisabeth is a volunteer with the London chapter of the Architectural Conservancy of

Ontario where she creates built heritage reports for local homeowners and engages in local heritage policy. She also executive produces *The Digital Dust Podcast* which engages youth through topics in Public History and heritage.

STATEMENT OF QUALIFICATIONS AND LIMITATIONS

The attached Memo (the "Memo") has been prepared by Timmins Martelle Heritage Consultants Inc. (TMHC) for the benefit of the Client (the "Client") in accordance with the agreement between TMHC and the Client, including the scope of work detailed therein (the "Agreement").

The information, data, recommendations and conclusions contained in the Memo (collectively, the "Information"):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Memo (the "Limitations");
- represents TMHC's professional judgment in light of the Limitation and industry standards for the preparation of similar reports;
- may be based on information provided to TMHC which has not been independently verified;
- has not been updated since the date of issuance of the Memo and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and section thereof should not be read out of such context; and
- was prepared for the specific purposes described in the Memo and the Agreement.

TMHC shall be entitled to rely upon the accuracy and completeness of information that was provided to it and has no obligation to update such information. TMHC accepts no responsibility for any events or circumstances that may have occurred since the date on which the Memo was prepared and, in the case of subsurface, environmental or geotechnical conditions, is not responsible for any variability in such conditions, geographically or over time.

TMHC agrees that the Memo represents its professional judgement as described above and that the Information has been prepared for the specific purpose and use described in the Memo and the Agreement, but TMHC makes no other representations, or any guarantees or warranties whatsoever, whether express or implied, with respect to the Memo, the Information or any part thereof.

Except (1) as agreed to in writing by TMHC and Client; (2) as required by-law; or (3) to the extent used by governmental reviewing agencies for the purpose of obtaining permits or approvals, the Memo and the Information may be used and relied upon only by Client.

TMHC accepts no responsibility, and denies any liability whatsoever, to parties other than Client who may obtain access to the Memo or the Information for any injury, loss or damage suffered by such parties arising from their use of, reliance upon, or decisions or actions based on the Report or any of the Information ("improper use of the Memo"), except to the extent those parties have obtained the prior written consent of TMHC to use and rely upon the Memo and the Information. Any injury, loss or damages arising from improper use of the Memo shall be borne by the party making such use.

This Statement of Qualifications and Limitations is attached to and forms part of the Memo and any use of the Memo is subject to the terms hereof.

QUALITY INFORMATION

Report prepared by: _____

Elisabeth Edwards, MA

Cultural Heritage Specialist

Report reviewed by: _____

Joshua Dent, PhD, CAHP

Senior Reviewer

Report reviewed by: _____

Holly Martelle, PhD

Principal

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1 BACKGROUND AND OVERVIEW

1.1 Memo Purpose and Scope

Dillon Consulting Limited (Dillon), on behalf of Enbridge Gas Inc. (Enbridge), has engaged TMHC Inc. (TMHC) to produce a Cultural Heritage Screening (CHS) for the Mandaumin A 1 OBS Well Drilling Project (the "Project") in the Town of Plympton-Wyoming, Lambton County, Ontario. This CHS is required as partial fulfillment of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction and Operation for Hydrocarbon Pipelines and Facilities in Ontario*, 8thed. 2023.

The Project involves the establishment of a 10-meter-wide access route on the property at 3106 Churchill Line (the "Subject Property") and the preparation of a roughly 80 m by 100 m work area in the field to the north of the residential portion of the legal parcel (the "Project Area"). It should be noted these dimensions represent the areas considered for potential impact for the purpose of this study which are larger than the proposed construction footprint size.

This screening fulfills part of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction and Operation for Hydrocarbon Pipelines and Facilities in Ontario*, 8th ed. 2023 requirement for consideration of the cultural environment by:

1. Completing a cultural heritage screening of the Subject Property based on the Ministry of Citizenship and Multiculturalism (MCM) *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes*.

1.2 Historical Context

The area which became Plympton Township was part of the Huron Tract, approximately 2.76 million acres of land subject to Provisional Treaty No. 27 ½ between the local Chippewa nations and the British Crown signed on April 26, 1825.[1] An earlier 1819 agreement was never realized and for six years the territory remained in limbo. The provisional treaty was finally reached as a result of John Galt's intention to form the Canada Company which required one million acres of land to sell to prospective settlers.[2]

The Chippewa nations transferred most of the Huron Tract to the Crown but maintained their territories in four reserve lands along the St. Clair River and on the shores of Lake Huron near Kettle Point and the Ausable River (River aux Sable). These reserves would become the Aamjiwnaang First Nation and the Chippewas of Kettle and Stony Point First Nation. The agreement was formalized in 1827 through Treaty No. 29.[3]

Originally, the Aamjiwnaang First Nation comprised 10,260 acres of reserve land; however, the reserve was reduced to around 3,000 acres through a series of sales.[4] The single biggest purchase was made in 1840 by Malcom Cameron. He bought a strip a mile wide and four miles long off the east side and retained the timber rights to much of the reservation.[5] Starting in 1852, nearby Sarnia gradually bought reserve land to allow urban growth and later sales from 1890 onwards were generally to accommodate railways and industrial development.[6] In 1971, Aamjiwnaang established an economic development corporation, Chippewas Industrial Development Limited, to administer subsequent reserve lands designated for industrial projects.

Settlement in the nearby centre of Sarnia area began in earnest in the 1830s, although there was some French settlement in the area a century and a half earlier.[7] In 1826, Mahlon Burwell, Deputy Provincial Surveyor, recorded the names of several French pioneers who had settled along the St. Clair River. Ignace Cazelet, Jean Baptist Pare, and Joseph LaForge are credited with being the first permanent French settlers in Sarnia, arriving as early as 1807. These entrepreneurial individuals acted as middlemen in the fur trade and temporarily abandoned Sarnia for the American colonies during the War of 1812.[8] Some of the first English settlers arrived in Sarnia in 1831, many to offer missionary services to the local Indigenous communities. In 1832, former Royal Navy Lieutenant Vidal arrived in Sarnia and built a log house on the east side of the existing river trail that would become Front Street.[9] He was one of several ex-military men who were attracted to the port town. In the same year, Henry Jones built a store, a storehouse, and two wharves on the riverfront.[10] Industrial and residential areas soon developed along the river's edge, including Sarnia's first steam grist mill, built in 1843 by James Flintoft.[11] By 1857, the population of Sarnia numbered over 2,000.[12] By 1871, as Sarnia grew as a shipping port and lumbering centre, it had a population of 2,929.[13]

[1] Surtees 1984
[2] Surtees 1984
[3] Canadian Legal Information Institute 2000; Duern 2017
[4] Elford 1982:8-9
[5] Elford 1982:10
[6] Elford 1982:10
[7] Johnston 1925:47
[8] Elford 1967:35
[9] Lauriston 1949:91
[10] Elford 1982:142
[11] Elford 1967:94
[12] Elford 1967:96
[13] Elford 1967:42

Lambton County was established in 1849. Prior to the 1830s, the county was sparsely occupied because it was composed of forested and swampy areas that made settling and traveling difficult. A few French settlers were located along the banks of the St. Clair River and an unfortified British military reserve was established at the entrance to Lake Huron, on the eastern bank of the St. Clair River, to prevent the incursion of American invaders.[14] In the early 19th century, this reserve became the Village of Point Edward. The Baldoon Settlement along Bear Creek (the Sydenham River) was settled by Scottish immigrants who came to the area around 1804 under the direction of Lord Selkirk.[15] By the early 1830s, there was an influx of British settlers and the county population grew to 1,728 in 1834.[16] By 1835, the ten townships that would later comprise the county had been laid out and surveyed. In 1850, Lambton became a provisional county and, three years later, it became an independent municipality.[17] By 1881, nearly half the county was still in timber.[18]

The Grand Trunk Railway first opened in 1859 and provided easy passage to new immigrants and helped to increase Lambton County's shipping profile. Other means of transportation through the county were still considerably hindered by the lack of good thoroughfares and dry roads. Nonetheless, a few early major transportation routes offered some solace to travelers. These included the Egremont/London Road (now Highway 22), the Plank Road (connecting Sarnia to Petrolia) and the Fourth Line (Confederation Line).[19]

1.3 Methodology

This screening was prepared in accordance with the MCM's *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes*. The completed MCM checklist for the Project Area is attached in Appendix A of this memorandum. The Project Area is composed of an access laneway and designated work area located within a broader legal parcel known as 3106 Churchill Line (Subject Property). The Project Area is limited to the Subject Property; however adjacency (within the 50 m of the Project Area) was considered as part of this screening.

A site visit to the Project Area was not conducted as part of this work.

1.4 Client Contact Information

Anieca Lloyd
Dillon Consulting Limited
111 Farquhar Street Suite 301
Guelph, Ontario, N1H 3N4
alloyd@dillon.ca

and

Enbridge Gas Inc.
500 Consumers Road
North York, ON M2J 1P8

[14] Elford 1982: 114
[15] H. Belden & Co. 1880:4
[16] Elford 1982: 3-5
[17] Elford 1967
[18] Matthews et al. 1957:23
[19] Elford 1967:41-42

Map 1: Location of the Subject Property

Map 2: Existing Conditions within the Subject Property

2 CULTURAL HERITAGE SCREENING

The following Cultural Heritage Screening considers potential heritage concerns for the proposed access laneway and work area for the proposed Project Area and Subject Property.

2.1 Project Area Screening

The Subject Property at 3106 Churchill Line contains a vernacular farmhouse that is greater than 40 years of age. The Town of Plympton-Wyoming does not maintain a municipal heritage register. The Subject Property is also not a federally designated heritage property. No issues were identified by MCM and the Ontario Heritage Trust (OHT) has advised that there are no conservation easements or Trust-owned properties within or adjacent to the Subject Property. Additionally, there are no other historic sites, buildings or museums within 50 meters (m) of the Project Area. No cemeteries or other properties/landscapes of heritage interest were identified during this high-level review.

Table 1: Identified Heritage Properties Within 50 m of the Project Area

Heritage Property Type	Heritage Property Addresses and Names	Number of Properties
Federally Designated Heritage Properties	None	0
Town of Plympton-Wyoming Heritage Register – Designated Properties	N/A	0
Town of Plympton-Wyoming Heritage Register – Listed Properties	N/A	0

2.2 Screening Recommendations

This Cultural Heritage Screening has identified that the Project Area is part of a Subject Property containing a building over 40 years of age. Therefore, the completion of a Cultural Heritage Evaluation Report (CHER) is recommended.

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Canada

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1984 *Indian Land Surrenders in Ontario 1763-1867*. Ottawa: Indian Affairs and Northern Development, Government of Canada.

APPENDIX A: MCM SCREENING CHECKLIST

Ontario

Ministry of Tourism, Culture and Sport

Programs & Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7

Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes

A Checklist for the Non-Specialist

The **purpose of the checklist** is to determine:

- if a property(ies) or project area:
  - is a recognized heritage property
  - may be of cultural heritage value
- it includes all areas that may be impacted by project activities, including – but not limited to:
  - the main project area
  - temporary storage
  - staging and working areas
  - temporary roads and detours

Processes covered under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

Cultural Heritage Evaluation Report (CHER)

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a qualified person(s) (see page 5 for definitions) to undertake a cultural heritage evaluation report (CHER).

The CHER will help you:

- identify, evaluate and protect cultural heritage resources on your property or project area
- reduce potential delays and risks to a project

Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – separate checklist
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages for more detailed information and when completing this form.

Project or Property Name

Mandaumin AI OBS Well Drilling

Project or Property Location (upper and lower or single tier municipality)

Town of Plympton-Wyoming, Lambton County

Proponent Name

Dillon Consulting, Anieca Lloyd

Proponent Contact Information

alloyd@dillon.ca

Screening Questions

	Yes	No
1. Is there a pre-approved screening checklist, methodology or process in place?	☐	☑

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

Part A: Screening for known (or recognized) Cultural Heritage Value

	Yes	No
2. Has the property (or project area) been evaluated before and found **not** to be of cultural heritage value?	☐	☑

If Yes, do **not** complete the rest of the checklist.

The proponent, property owner and/or approval authority will:

- summarize the previous evaluation and
- add this checklist to the project file, with the appropriate documents that demonstrate a cultural heritage evaluation was undertaken

The summary and appropriate documentation may be:

- submitted as part of a report requirement
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

	Yes	No
3. Is the property (or project area):		
a. identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value?	☐	☑
b. a National Historic Site (or part of)?	☐	☑
c. designated under the *Heritage Railway Stations Protection Act*?	☐	☑
d. designated under the *Heritage Lighthouse Protection Act*?	☐	☑
e. identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office (FHBRO)?	☐	☑
f. located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?	☐	☑

If Yes to any of the above questions, you need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report, if a Statement of Cultural Heritage Value has not previously been prepared or the statement needs to be updated

If a Statement of Cultural Heritage Value has been prepared previously and if alterations or development are proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No, continue to Question 4.

Part B: Screening for Potential Cultural Heritage Value

	Yes	No
4. Does the property (or project area) contain a parcel of land that:		
a. is the subject of a municipal, provincial or federal commemorative or interpretive plaque?	☐	☑
b. has or is adjacent to a known burial site and/or cemetery?	☐	☑
c. is in a Canadian Heritage River watershed?	☐	☑
d. contains buildings or structures that are 40 or more years old?	☑	☐

Part C: Other Considerations

	Yes	No
5. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area):		
a. is considered a landmark in the local community or contains any structures or sites that are important in defining the character of the area?	☐	☑
b. has a special association with a community, person or historical event?	☐	☑
c. contains or is part of a cultural heritage landscape?	☐	☑

If Yes to one or more of the above questions (Part B and C), there is potential for cultural heritage resources on the property or within the project area.

You need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report (CHER)

If the property is determined to be of cultural heritage value and alterations or development is proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No to all of the above questions, there is low potential for built heritage or cultural heritage landscape on the property.

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g. under the *Environmental Assessment Act, Planning Act* processes
- maintained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
  - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

For more information, see the Ministry of Tourism, Culture and Sport's Ontario Heritage Toolkit or Standards and Guidelines for Conservation of Provincial Heritage Properties.

In this context, the following definitions apply:

- **qualified person(s)** means individuals – professional engineers, architects, archaeologists, etc. – having relevant, recent experience in the conservation of cultural heritage resources.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may already be in place for identifying potential cultural heritage resources, including:

- one endorsed by a municipality
- an environmental assessment process e.g. screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport (MTCS) under the Ontario government's Standards & Guidelines for Conservation of Provincial Heritage Properties [s.B.2.]

Part A: Screening for known (or recognized) Cultural Heritage Value

2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value?

Respond 'yes' to this question, if all of the following are true:

A property can be considered not to be of cultural heritage value if:

- a Cultural Heritage Evaluation Report (CHER) - or equivalent - has been prepared for the property with the advice of a qualified person and it has been determined not to be of cultural heritage value and/or
- the municipal heritage committee has evaluated the property for its cultural heritage value or interest and determined that the property is not of cultural heritage value or interest

A property may need to be re-evaluated, if:

- there is evidence that its heritage attributes may have changed
- new information is available
- the existing Statement of Cultural Heritage Value does not provide the information necessary to manage the property
- the evaluation took place after 2005 and did not use the criteria in Regulations 9/06 and 10/06

Note: Ontario government ministries and public bodies [prescribed under Regulation 157/10] may continue to use their existing evaluation processes, until the evaluation process required under section B.2 of the Standards & Guidelines for Conservation of Provincial Heritage Properties has been developed and approved by MTCS.

To determine if your property or project area has been evaluated, contact:

- the approval authority
- the proponent
- the Ministry of Tourism, Culture and Sport

3a. Is the property (or project area) identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value e.g.:

i. designated under the *Ontario Heritage Act*

- individual designation (Part IV)
- part of a heritage conservation district (Part V)

Individual Designation – Part IV

A property that is designated:

- by a municipal by-law as being of cultural heritage value or interest [s.29 of the *Ontario Heritage Act*]
- by order of the Minister of Tourism, Culture and Sport as being of cultural heritage value or interest of provincial significance [s.34.5]. **Note**: To date, no properties have been designated by the Minister.

Heritage Conservation District – Part V

A property or project area that is located within an area designated by a municipal by-law as a heritage conservation district [s. 41 of the *Ontario Heritage Act*].

For more information on Parts IV and V, contact:

- municipal clerk
- Ontario Heritage Trust
- local land registry office (for a title search)

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ii. subject of an agreement, covenant or easement entered into under Parts II or IV of the *Ontario Heritage Act*

An agreement, covenant or easement is usually between the owner of a property and a conservation body or level of government. It is usually registered on title.

The primary purpose of the agreement is to:

- preserve, conserve, and maintain a cultural heritage resource
- prevent its destruction, demolition or loss

For more information, contact:

- Ontario Heritage Trust - for an agreement, covenant or easement [clause 10 (1) (c) of the *Ontario Heritage Act*]
- municipal clerk – for a property that is the subject of an easement or a covenant [s.37 of the *Ontario Heritage Act*]
- local land registry office (for a title search)

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iii. listed on a register of heritage properties maintained by the municipality

Municipal registers are the official lists - or record - of cultural heritage properties identified as being important to the community.

Registers include:

- all properties that are designated under the *Ontario Heritage Act* (Part IV or V)
- properties that have not been formally designated, but have been identified as having cultural heritage value or interest to the community

For more information, contact:

- municipal clerk
- municipal heritage planning staff
- municipal heritage committee

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iv. subject to a notice of:

- intention to designate (under Part IV of the *Ontario Heritage Act*)
- a Heritage Conservation District study area bylaw (under Part V of the *Ontario Heritage Act*)

A property that is subject to a **notice of intention to designate** as a property of cultural heritage value or interest and the notice is in accordance with:

- section 29 of the *Ontario Heritage Act*
- section 34.6 of the *Ontario Heritage Act.* **Note**: To date, the only applicable property is Meldrum Bay Inn, Manitoulin Island. [s.34.6]

An area designated by a municipal by-law made under section 40.1 of the *Ontario Heritage Act* as a **heritage conservation district study area**.

For more information, contact:

- municipal clerk – for a property that is the subject of notice of intention [s. 29 and s. 40.1]
- Ontario Heritage Trust

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v. included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties

Provincial heritage properties are properties the Government of Ontario owns or controls that have cultural heritage value or interest.

The Ministry of Tourism, Culture and Sport (MTCS) maintains a list of all provincial heritage properties based on information provided by ministries and prescribed public bodies. As they are identified, MTCS adds properties to the list of provincial heritage properties.

For more information, contact the MTCS Registrar at registrar@ontario.ca.

3b. Is the property (or project area) a National Historic Site (or part of)?

National Historic Sites are properties or districts of national historic significance that are designated by the Federal Minister of the Environment, under the *Canada National Parks Act*, based on the advice of the Historic Sites and Monuments Board of Canada.

For more information, see the National Historic Sites website.

3c. Is the property (or project area) designated under the *Heritage Railway Stations Protection Act*?

The *Heritage Railway Stations Protection Act* protects heritage railway stations that are owned by a railway company under federal jurisdiction. Designated railway stations that pass from federal ownership may continue to have cultural heritage value.

For more information, see the Directory of Designated Heritage Railway Stations.

3d. Is the property (or project area) designated under the *Heritage Lighthouse Protection Act*?

The *Heritage Lighthouse Protection Act* helps preserve historically significant Canadian lighthouses. The Act sets up a public nomination process and includes heritage building conservation standards for lighthouses which are officially designated.

For more information, see the Heritage Lighthouses of Canada website.

3e. Is the property (or project area) identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office?

The role of the Federal Heritage Buildings Review Office (FHBRO) is to help the federal government protect the heritage buildings it owns. The policy applies to all federal government departments that administer real property, but not to federal Crown Corporations.

For more information, contact the Federal Heritage Buildings Review Office.

See a directory of all federal heritage designations.

3f. Is the property (or project area) located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?

A UNESCO World Heritage Site is a place listed by UNESCO as having outstanding universal value to humanity under the Convention Concerning the Protection of the World Cultural and Natural Heritage. In order to retain the status of a World Heritage Site, each site must maintain its character defining features.

Currently, the Rideau Canal is the only World Heritage Site in Ontario.

For more information, see Parks Canada – World Heritage Site website.

Part B: Screening for potential Cultural Heritage Value

4a. Does the property (or project area) contain a parcel of land that has a municipal, provincial or federal commemorative or interpretive plaque?

Heritage resources are often recognized with formal plaques or markers.

Plaques are prepared by:

- municipalities
- provincial ministries or agencies
- federal ministries or agencies
- local non-government or non-profit organizations

For more information, contact:

- municipal heritage committees or local heritage organizations – for information on the location of plaques in their community
- Ontario Historical Society's Heritage directory – for a list of historical societies and heritage organizations
- Ontario Heritage Trust – for a list of plaques commemorating Ontario's history
- Historic Sites and Monuments Board of Canada – for a list of plaques commemorating Canada's history

4b. Does the property (or project area) contain a parcel of land that has or is adjacent to a known burial site and/or cemetery?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulations, Ontario Ministry of Consumer Services – for a database of registered cemeteries
- Ontario Genealogical Society (OGS) – to locate records of Ontario cemeteries, both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to locate early cemeteries

In this context, adjacent means contiguous or as otherwise defined in a municipal official plan.

4c. Does the property (or project area) contain a parcel of land that is in a Canadian Heritage River watershed?

The Canadian Heritage River System is a national river conservation program that promotes, protects and enhances the best examples of Canada's river heritage.

Canadian Heritage Rivers must have, and maintain, outstanding natural, cultural and/or recreational values, and a high level of public support.

For more information, contact the Canadian Heritage River System.

If you have questions regarding the boundaries of a watershed, please contact:

- your conservation authority
- municipal staff

4d. Does the property (or project area) contain a parcel of land that contains buildings or structures that are 40 or more years old?

A 40 year 'rule of thumb' is typically used to indicate the potential of a site to be of cultural heritage value. The approximate age of buildings and/or structures may be estimated based on:

- history of the development of the area
- fire insurance maps
- architectural style
- building methods

Property owners may have information on the age of any buildings or structures on their property. The municipality, local land registry office or library may also have background information on the property.

Note: 40+ year old buildings or structure do not necessarily hold cultural heritage value or interest; their age simply indicates a higher potential.

A building or structure can include:

- residential structure
- farm building or outbuilding
- industrial, commercial, or institutional building
- remnant or ruin
- engineering work such as a bridge, canal, dams, etc.

For more information on researching the age of buildings or properties, see the Ontario Heritage Tool Kit Guide Heritage Property Evaluation.

Part C: Other Considerations

5a. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) is considered a landmark in the local community or contains any structures or sites that are important to defining the character of the area?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has potential landmarks or defining structures and sites, for instance:

- buildings or landscape features accessible to the public or readily noticeable and widely known
- complexes of buildings
- monuments
- ruins

5b. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) has a special association with a community, person or historical event?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has a special association with a community, person or event of historic interest, for instance:

- Aboriginal sacred site
- traditional-use area
- battlefield
- birthplace of an individual of importance to the community

5c. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) contains or is part of a cultural heritage landscape?

Landscapes (which may include a combination of archaeological resources, built heritage resources and landscape elements) may be of cultural heritage value or interest to a community.

For example, an Aboriginal trail, historic road or rail corridor may have been established as a key transportation or trade route and may have been important to the early settlement of an area. Parks, designed gardens or unique landforms such as waterfalls, rock faces, caverns, or mounds are areas that may have connections to a particular event, group or belief.

For more information on Questions 5.a., 5.b. and 5.c., contact:

- Elders in Aboriginal Communities or community researchers who may have information on potential cultural heritage resources. Please note that Aboriginal traditional knowledge may be considered sensitive.
- municipal heritage committees or local heritage organizations
- Ontario Historical Society's "Heritage Directory" - for a list of historical societies and heritage organizations in the province

An internet search may find helpful resources, including:

- historical maps
- historical walking tours
- municipal heritage management plans
- cultural heritage landscape studies
- municipal cultural plans

Information specific to trails may be obtained through Ontario Trails.

Cultural Heritage Screening
Bluewater OBS Well Drilling, Lambton County
City of Sarnia, Ontario

Cultural Heritage Screening – Technical Memorandum

Prepared for:

Anieca Lloyd
Dillon Consulting Limited
177 Colonnade Rd South Suite 101
Ottawa, ON K2E 7J4

and

Enbridge Gas Inc.
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London, ON N5W 3A7
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tmhc.ca

Project No: 2023-215

Revised Draft: July 14, 2023

PROJECT PERSONNEL

Principal	Matthew Beaudoin, PhD
Senior Reviewer	Joshua Dent, PhD, CAHP
Project Manager	Joan Crosbie, MA, CAHP
Cultural Heritage Specialist	Elise Geschiere, MSc, CAHP Intern
Project Administrator	Kellie Theaker, CHRP
GIS Technicians	John Moody, PhD
	Andrew Turner, BA

ACKNOWLEDGEMENTS

Ontario Heritage Trust	Samuel Bayefsky
Ministry of Citizenship and Multiculturalism	Karla Barboza & Joseph Harvey
City of Sarnia	Max Williams

ABOUT TMHC

Established in 2003 with a head office in London, Ontario, TMHC Inc. (TMHC) provides a broad range of archaeological assessment, heritage planning and interpretation, cemetery, and community consultation services throughout the Province of Ontario. We specialize in providing heritage solutions that suit the past and present for a range of clients and intended audiences, while meeting the demands of the regulatory environment. Over the past two decades, TMHC has grown to become one of the largest privately-owned heritage consulting firms in Ontario and is today the largest predominately woman-owned Cultural Resource Management (CRM) business in Canada.

Since 2004, TMHC has held retainers with Infrastructure Ontario, Hydro One, the Ministry of Transportation, Metrolinx, the City of Hamilton, City of Barrie, and Niagara Parks Commission. In 2013, TMHC earned the Ontario Archaeological Society's award for Excellence in CRM. Our seasoned expertise and practical approach have allowed us to manage a wide variety of large, complex, and highly sensitive projects to successful completion. Through this work, we have gained corporate experience in helping our clients work through difficult issues to achieve resolution.

TMHC is skilled at meeting established deadlines and budgets, maintaining a healthy and safe work environment, and carrying out quality heritage activities to ensure that all projects are completed diligently and safely. Additionally, we have developed long-standing relationships of trust with Indigenous and descendent communities across Ontario and a good understanding of community interests and concerns in heritage matters, which assists in successful project completion.

TMHC is a Living Wage certified employer with the Ontario Living Wage Network and a member of the Canadian Federation for Independent Business.

KEY STAFF BIOS

Matthew Beaudoin, PhD – Principal

Matthew received a PhD in Anthropology from Western University in 2013 and has a professional archaeological license with the Province of Ontario (P324). During his archaeological career, Matthew has conducted extensive field research and artifact analysis in Labrador and Ontario, and has taught the Field Methods Course and Principals of archaeology courses as a part-time faculty member at Western University. Matthew has also conducted ethnographic projects in Labrador, and has volunteered with the OAS to provide archaeological training to several Indigenous communities throughout the province.

Over the course of his career, Matthew has supervised over 600 archaeological assessments in Ontario, including Stages 1-4, under a variety of regulatory triggers including provincial and municipal Environmental Assessments, Green Energy projects, development projects under the *Planning Act*, and as due diligence process. Matthew has extensive experience managing large and complex archaeological projects in conjunction with other disciplines, specialists, and Indigenous communities including Enbridge Line 10 Westover Segment, Imperial Oil from Waterdown to Finch, and Highway 3 Widening in Kingsville. Since joining TMHC in 2008, Matthew has also been involved with several notable projects, such as the archaeological assessment of Stoney Point/Camp Ipperwash. For these and other projects, Matthew works closely with heritage staff at TMHC and with heritage staff employed by clients and stakeholder communities.

Matthew is an active member of the Canadian Archaeological Association, the Ontario Archaeological Society, the Society for American Archaeology, and the Society for Historical Archaeology.

Joshua Dent, PhD, CAHP – Manager – Community Engagement & Heritage Division

Joshua (Josh) has worked extensively on cultural heritage and archaeological assessments in Ontario and Western Canada. Josh's role at TMHC has involved background research, community consultation, report production, and project management. Josh specializes in multi-faceted heritage studies including large-scale inventories, environmental assessments, and complex institutional assessments. In his role at TMHC, he regularly communicates with Indigenous communities and a variety of heritage stakeholders. These efforts were recently recognized as part of the Oakville Harbour Cultural Heritage Landscape Strategy Implementation which received the Canadian Association of Heritage Professionals' 2021 Award of Merit for Documentation & Planning. He has volunteered extensively with the heritage community in London, Ontario, in both municipal and not-for-profit roles. Josh is professional member of the Canadian Association of Heritage Professionals (CAHP).

Joan Crosbie, MA, CAHP – Manager – Cultural Heritage

Joan has extensive cultural heritage management experience in both the private and public sectors with a strong background in preservation services, built and landscape heritage assessment, archival/historical research, and Museums services. She earned her MA in Architectural History from York University. In her role in Preservation Services with the Toronto Historical Board (City of Toronto), Joan was part of a small team of professionals who advised City Council on a broad range of heritage preservation and planning matters. Later, as Curator of Casa Loma, she gained extensive experience as part of the Senior Management team and honed her skills in cultural and community engagement and was a key staff liaison with the restoration architects and skilled trades as the Casa Loma Estate underwent a major exterior restoration program. More recently, as Manager of Culture and Community Services, Town of Whitchurch-Stouffville, Joan managed the Heritage and Museums services portfolios and has widened her experience in cultural planning to include the adaptive reuse of heritage buildings and historic main street revitalization.

She has published articles on architecture and architectural preservation for a wide range of organizations, including the Canadian Society for Industrial Heritage, the City of Toronto and the Society for the Study of Architecture in Canada. Joan is professional member of the Canadian Association of Heritage Professionals (CAHP).

Elise Geschiere, MSc, **CAHP Intern** – Cultural Heritage Specialist

Elise Geschiere received a BA in Sociology with a minor in Public History from Western University in 2019 and went on to complete an MSc in Planning and Development with a concentration in Indigenous Community Planning at the University of Guelph in 2021. Elise's research background is multidisciplinary and involves projects related to affordable housing and social development, the role of planning in the historical production of underserved communities, and municipal capacity to support rural industries. Recently, Elise's research interests have focused on Indigenous perspectives of cultural heritage and opportunities for decolonization and empowering Indigenous voices in the heritage sector.

Elise also worked as the heritage research and planning student for the Corporation of the Town of Essex for four consecutive summer terms and gained experience in archival and community-based research, public engagement, and policy development and review. Elise joined TMHC in 2021 as a Cultural Heritage Specialist

and is involved in heritage evaluation, impact assessment, background research, community consultation, and report production. She is an Intern member with CAHP and a volunteer on ACO's provincial policy committee. Elise is also pursuing her RPP designation with OPPI.

STATEMENT OF QUALIFICATIONS AND LIMITATIONS

The attached Memo (the "Memo") has been prepared by Timmins Martelle Heritage Consultants Inc. (TMHC) for the benefit of the Client (the "Client") in accordance with the agreement between TMHC and the Client, including the scope of work detailed therein (the "Agreement").

The information, data, recommendations and conclusions contained in the Memo (collectively, the "Information"):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Memo (the "Limitations");
- represents TMHC's professional judgment in light of the Limitation and industry standards for the preparation of similar reports;
- may be based on information provided to TMHC which has not been independently verified;
- has not been updated since the date of issuance of the Memo and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and section thereof should not be read out of such context; and
- was prepared for the specific purposes described in the Memo and the Agreement.

TMHC shall be entitled to rely upon the accuracy and completeness of information that was provided to it and has no obligation to update such information. TMHC accepts no responsibility for any events or circumstances that may have occurred since the date on which the Memo was prepared and, in the case of subsurface, environmental or geotechnical conditions, is not responsible for any variability in such conditions, geographically or over time.

TMHC agrees that the Memo represents its professional judgement as described above and that the Information has been prepared for the specific purpose and use described in the Memo and the Agreement, but TMHC makes no other representations, or any guarantees or warranties whatsoever, whether express or implied, with respect to the Memo, the Information or any part thereof.

Except (1) as agreed to in writing by TMHC and Client; (2) as required by-law; or (3) to the extent used by governmental reviewing agencies for the purpose of obtaining permits or approvals, the Memo and the Information may be used and relied upon only by Client.

TMHC accepts no responsibility, and denies any liability whatsoever, to parties other than Client who may obtain access to the Memo or the Information for any injury, loss or damage suffered by such parties arising from their use of, reliance upon, or decisions or actions based on the Report or any of the Information ("improper use of the Memo"), except to the extent those parties have obtained the prior written consent of TMHC to use and rely upon the Memo and the Information. Any injury, loss or damages arising from improper use of the Memo shall be borne by the party making such use.

This Statement of Qualifications and Limitations is attached to and forms part of the Memo and any use of the Memo is subject to the terms hereof.

QUALITY INFORMATION

Report prepared by: _____

Elise Geschiere, MSc, CAHP Intern

Cultural Heritage Specialist

Report reviewed by: _____

Joshua Dent, PhD, CAHP

Senior Reviewer

Report reviewed by: _____

Matthew Beaudoin, PhD

Principal

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LIST OF MAPS

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1 BACKGROUND AND OVERVIEW

1.1 Memo Purpose and Scope

Dillon Consulting Limited (Dillon), on behalf of Enbridge Gas Inc. (Enbridge), has engaged TMHC Inc. (TMHC) to produce a Cultural Heritage Screening (CHS) for the Bluewater OBS Well Drilling Project (the "Project"), near the City of Sarnia, Lambton County, Ontario. This CHS is required as partial fulfillment of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction and Operation for Hydrocarbon Pipelines and Facilities in Ontario*, 8th ed. 2023.

The Project involves the establishment of a 10-meter-wide access route on the property at 2821 Churchill Line (the "Subject Property") and the preparation of a roughly 120 m by 150 m work area in the field to the south of the residential portion of the legal parcel (the "Project Area"). It should be noted these dimensions represent the areas considered for potential impact for the purpose of this study which are larger than the proposed construction footprint size.

This screening fulfills part of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction and Operation for Hydrocarbon Pipelines and Facilities in Ontario*, 8th ed. 2023 requirement for consideration of the cultural environment by:

1. Completing a cultural heritage screening of the Subject Property based on the Ministry of Citizenship and Multiculturalism (MCM) *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes*.

1.2 Historical Context

The area which became Sarnia Township was part of the Huron Tract, approximately 2.76 million acres of land subject to Provisional Treaty No. 27 ½ between the local Chippewa nations and the British Crown signed on April 26, 1825.[1] An earlier 1819 agreement was never realized and for six years the territory remained in limbo. The provisional treaty was finally reached as a result of John Galt's intention to form the Canada Company which required one million acres of land to sell to prospective settlers.[2]

The Chippewa nations transferred most of the Huron Tract to the Crown but maintained their territories in four reserve lands along the St. Clair River and on the shores of Lake Huron near Kettle Point and the Ausable River (River aux Sable). These reserves would become the Aamjiwnaang First Nation and the Chippewas of Kettle and Stony Point First Nation. The agreement was formalized in 1827 through Treaty No. 29.[3]

Originally, the Aamjiwnaang First Nation comprised 10,260 acres of reserve land; however, the reserve was reduced to around 3,000 acres through a series of sales.[4] The single biggest purchase was made in 1840 by Malcom Cameron. He bought a strip a mile wide and four miles long off the east side and retained the timber rights to much of the reservation.[5] Starting in 1852, Sarnia gradually bought reserve land to allow urban growth and later sales from 1890 onwards were generally to accommodate railways and industrial development.[6] In 1971, Aamjiwnaang established an economic development corporation, Chippewas Industrial Development Limited, to administer subsequent reserve lands designated for industrial projects.

Settlement in the City of Sarnia area began in earnest in the 1830s, although there was some French settlement in the area a century and a half earlier.[7] In 1826, Mahlon Burwell, Deputy Provincial Surveyor, recorded the names of several French pioneers who had settled along the St. Clair River. Ignace Cazelet, Jean Baptist Pare, and Joseph LaForge are credited with being the first permanent French settlers in Sarnia, arriving as early as 1807. These entrepreneurial individuals acted as middlemen in the fur trade and temporarily abandoned Sarnia for the American colonies during the War of 1812.[8] Some of the first English settlers arrived in Sarnia in 1831, many to offer missionary services to the local Indigenous communities. In 1832, former Royal Navy Lieutenant Vidal arrived in Sarnia and built a log house on the east side of the existing river trail that would become Front Street.[9] He was one of several ex-military men who were attracted to the port town. In the same year, Henry Jones built a store, a storehouse, and two wharves on the riverfront.[10] Industrial and residential areas soon developed along the river's edge, including Sarnia's first steam grist mill, built in 1843 by James Flintoft.[11] By 1857, the population of Sarnia numbered over 2,000.[12] By 1871, as Sarnia grew as a shipping port and lumbering centre, it had a population of 2,929.[13]

[1] Surtees 1984
[2] Surtees 1984
[3] Canadian Legal Information Institute 2000; Duern 2017
[4] Elford 1982:8-9
[5] Elford 1982:10
[6] Elford 1982:10
[7] Johnston 1925:47
[8] Elford 1967:35
[9] Lauriston 1949:91
[10] Elford 1982:142
[11] Elford 1967:94
[12] Elford 1967:96
[13] Elford 1967:42

Lambton County was established in 1849. Prior to the 1830s, the county was sparsely occupied because it was composed of forested and swampy areas that made settling and traveling difficult. A few French settlers were located along the banks of the St. Clair River and an unfortified British military reserve was established at the entrance to Lake Huron, on the eastern bank of the St. Clair River, to prevent the incursion of American invaders.[14] In the early 19th century, this reserve became the Village of Point Edward. The Baldoon Settlement along Bear Creek (the Sydenham River) was settled by Scottish immigrants who came to the area around 1804 under the direction of Lord Selkirk.[15] By the early 1830s, there was an influx of British settlers and the county population grew to 1,728 in 1834.[16] By 1835, the ten townships that would later comprise the county had been laid out and surveyed. In 1850, Lambton became a provisional county and, three years later, it became an independent municipality.[17] By 1881, nearly half the county was still in timber.[18]

The Grand Trunk Railway first opened in 1859 and provided easy passage to new immigrants and helped to increase Lambton County's shipping profile. Other means of transportation through the county were still considerably hindered by the lack of good thoroughfares and dry roads. Nonetheless, a few early major transportation routes offered some solace to travelers. These included the Egremont/London Road (now Highway 22), the Plank Road (connecting Sarnia to Petrolia) and the Fourth Line (Confederation Line).[19]

1.3 Methodology

This screening was prepared in accordance with the MCM's *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes*. The completed MCM checklist for the Project Area is attached in Appendix A of this memorandum. The Project Area is composed of an access laneway and designated work area located within a broader legal parcel known as 2821 Churchill Line. As the Project Area is encompassed by this parcel, a buffer zone was not established.

A site visit to the Project Area was not conducted as part of this work.

1.4 Client Contact Information

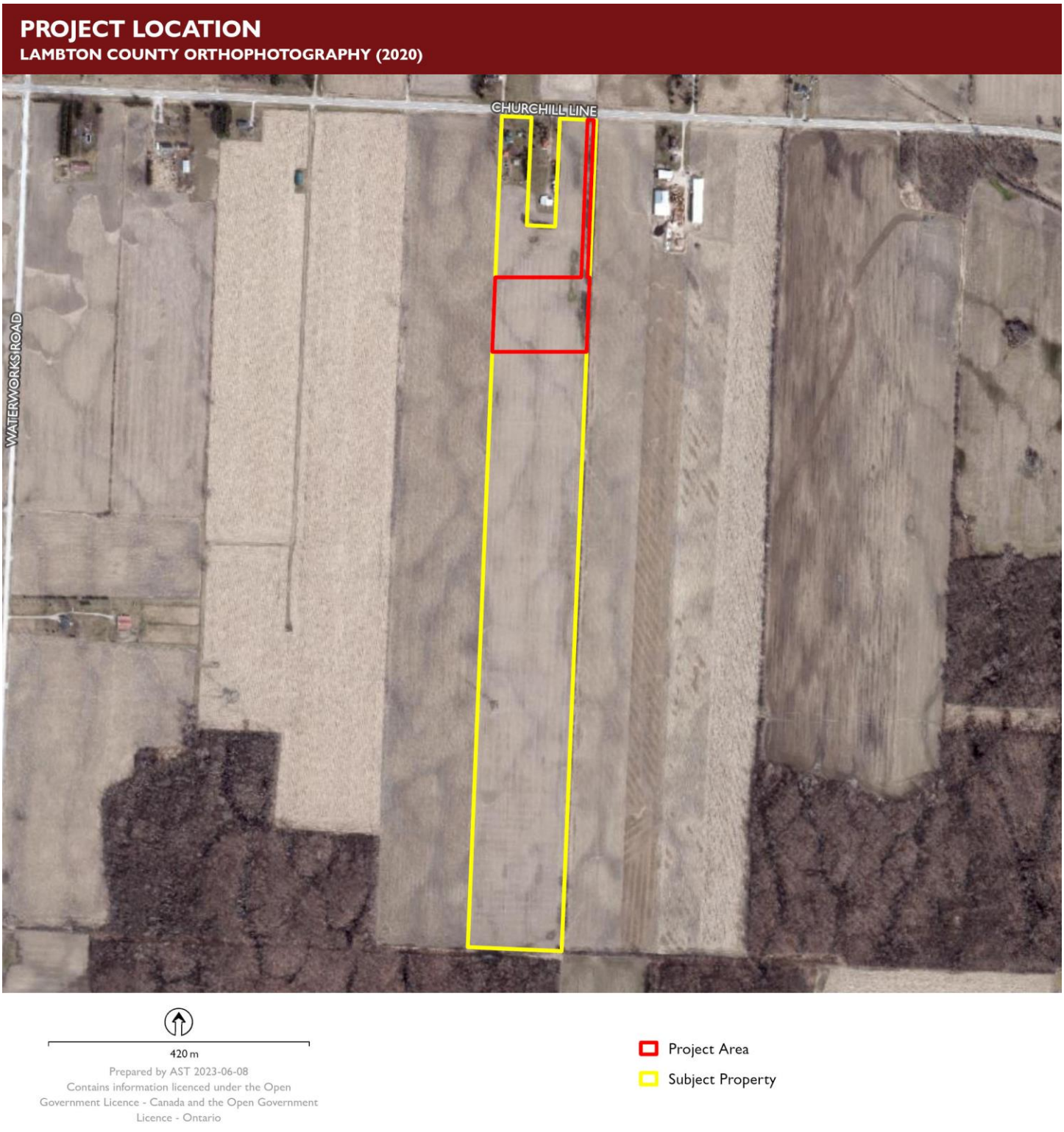
Anieca Lloyd
Dillon Consulting Limited
111 Farquhar Street Suite 301
Guelph, Ontario, N1H 3N4
alloyd@dillon.ca

and

Enbridge Gas Inc.
500 Consumers Road
North York, ON M2J 1P8

[14] Elford 1982: 114
[15] H. Belden & Co. 1880:4
[16] Elford 1982: 3-5
[17] Elford 1967
[18] Matthews et al. 1957:23
[19] Elford 1967:41-42

Map 1: Location of the Subject Property



Map 2: Existing Conditions within the Subject Property

2 CULTURAL HERITAGE SCREENING

The following Cultural Heritage Screening considers potential heritage concerns for the proposed access laneway and work area proposed for the Project Area and Subject Property.

2.1 Project Area Screening

The Subject Property at 2821 Churchill Line contains a vernacular farmhouse that is more than 40 years of age. The house is not included on the City of Sarnia's Register of Cultural Heritage Resources. The Subject Property is also not a federally designated heritage property. No issues were identified by MCM and the Ontario Heritage Trust (OHT) has advised that there are no conservation easements or Trust-owned properties within or adjacent to the Subject Property. Additionally, there are no other historic sites, buildings or museums within 50 meters (m) of the Project Area and no cemeteries or other properties/landscapes of heritage interest were identified during this high-level review.

Table 1: Identified Heritage Properties Within 50 m of the Project Area

Heritage Property Type	Heritage Property Addresses and Names	Number of Properties
Federally Designated Heritage Properties	None	0
City of Sarnia Heritage Register – Designated Properties	None	0
City of Sarnia Heritage Register – Listed Properties	None	0

2.2 Screening Recommendations

This Cultural Heritage Screening has identified that the Project Area is part of a Subject Property containing a building over 40 years of age. Therefore, the completion of a Cultural Heritage Evaluation Report (CHER) is recommended.

3 BIBLIOGRAPHY

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APPENDIX A: MCM SCREENING CHECKLISTS

Ontario

Ministry of Tourism, Culture and Sport

Programs & Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7

Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes

A Checklist for the Non-Specialist

The **purpose of the checklist** is to determine:

- if a property(ies) or project area:
  - is a recognized heritage property
  - may be of cultural heritage value
- it includes all areas that may be impacted by project activities, including – but not limited to:
  - the main project area
  - temporary storage
  - staging and working areas
  - temporary roads and detours

Processes covered under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

Cultural Heritage Evaluation Report (CHER)

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a qualified person(s) (see page 5 for definitions) to undertake a cultural heritage evaluation report (CHER).

The CHER will help you:

- identify, evaluate and protect cultural heritage resources on your property or project area
- reduce potential delays and risks to a project

Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – separate checklist
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages for more detailed information and when completing this form.

Project or Property Name

Bluewater A1 OBS Well Drilling Project

Project or Property Location (upper and lower or single tier municipality)

South of Churchill Line, City of Sarnia, Lambton County

Proponent Name

Dillon Consulting Limited on behalf of Enbridge Gas Inc.

Proponent Contact Information

Anieca Lloyd - alloyd@dillon.ca

Screening Questions

	Yes	No
1. Is there a pre-approved screening checklist, methodology or process in place?	☐	☑

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

Part A: Screening for known (or recognized) Cultural Heritage Value

	Yes	No
2. Has the property (or project area) been evaluated before and found **not** to be of cultural heritage value?	☐	☑

If Yes, do **not** complete the rest of the checklist.

The proponent, property owner and/or approval authority will:

- summarize the previous evaluation and
- add this checklist to the project file, with the appropriate documents that demonstrate a cultural heritage evaluation was undertaken

The summary and appropriate documentation may be:

- submitted as part of a report requirement
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

	Yes	No
3. Is the property (or project area):		
a. identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value?	☐	☑
b. a National Historic Site (or part of)?	☐	☑
c. designated under the *Heritage Railway Stations Protection Act*?	☐	☑
d. designated under the *Heritage Lighthouse Protection Act*?	☐	☑
e. identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office (FHBRO)?	☐	☑
f. located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?	☐	☑

If Yes to any of the above questions, you need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report, if a Statement of Cultural Heritage Value has not previously been prepared or the statement needs to be updated

If a Statement of Cultural Heritage Value has been prepared previously and if alterations or development are proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No, continue to Question 4.

Part B: Screening for Potential Cultural Heritage Value

	Yes	No
4. Does the property (or project area) contain a parcel of land that:		
a. is the subject of a municipal, provincial or federal commemorative or interpretive plaque?	☐	☑
b. has or is adjacent to a known burial site and/or cemetery?	☐	☑
c. is in a Canadian Heritage River watershed?	☐	☑
d. contains buildings or structures that are 40 or more years old?	☑	☐

Part C: Other Considerations

	Yes	No
5. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area):		
a. is considered a landmark in the local community or contains any structures or sites that are important in defining the character of the area?	☐	☑
b. has a special association with a community, person or historical event?	☐	☑
c. contains or is part of a cultural heritage landscape?	☐	☑

If Yes to one or more of the above questions (Part B and C), there is potential for cultural heritage resources on the property or within the project area.

You need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report (CHER)

If the property is determined to be of cultural heritage value and alterations or development is proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No to all of the above questions, there is low potential for built heritage or cultural heritage landscape on the property.

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g. under the *Environmental Assessment Act, Planning Act* processes
- maintained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
  - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

For more information, see the Ministry of Tourism, Culture and Sport's Ontario Heritage Toolkit or Standards and Guidelines for Conservation of Provincial Heritage Properties.

In this context, the following definitions apply:

- **qualified person(s)** means individuals – professional engineers, architects, archaeologists, etc. – having relevant, recent experience in the conservation of cultural heritage resources.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may already be in place for identifying potential cultural heritage resources, including:

- one endorsed by a municipality
- an environmental assessment process e.g. screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport (MTCS) under the Ontario government's Standards & Guidelines for Conservation of Provincial Heritage Properties [s.B.2.]

Part A: Screening for known (or recognized) Cultural Heritage Value

2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value?

Respond 'yes' to this question, if all of the following are true:

A property can be considered not to be of cultural heritage value if:

- a Cultural Heritage Evaluation Report (CHER) - or equivalent - has been prepared for the property with the advice of a qualified person and it has been determined not to be of cultural heritage value and/or
- the municipal heritage committee has evaluated the property for its cultural heritage value or interest and determined that the property is not of cultural heritage value or interest

A property may need to be re-evaluated, if:

- there is evidence that its heritage attributes may have changed
- new information is available
- the existing Statement of Cultural Heritage Value does not provide the information necessary to manage the property
- the evaluation took place after 2005 and did not use the criteria in Regulations 9/06 and 10/06

Note: Ontario government ministries and public bodies [prescribed under Regulation 157/10] may continue to use their existing evaluation processes, until the evaluation process required under section B.2 of the Standards & Guidelines for Conservation of Provincial Heritage Properties has been developed and approved by MTCS.

To determine if your property or project area has been evaluated, contact:

- the approval authority
- the proponent
- the Ministry of Tourism, Culture and Sport

3a. Is the property (or project area) identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value e.g.:

i. designated under the *Ontario Heritage Act*

- individual designation (Part IV)
- part of a heritage conservation district (Part V)

Individual Designation – Part IV

A property that is designated:

- by a municipal by-law as being of cultural heritage value or interest [s.29 of the *Ontario Heritage Act*]
- by order of the Minister of Tourism, Culture and Sport as being of cultural heritage value or interest of provincial significance [s.34.5]. **Note**: To date, no properties have been designated by the Minister.

Heritage Conservation District – Part V

A property or project area that is located within an area designated by a municipal by-law as a heritage conservation district [s. 41 of the *Ontario Heritage Act*].

For more information on Parts IV and V, contact:

- municipal clerk
- Ontario Heritage Trust
- local land registry office (for a title search)

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ii. subject of an agreement, covenant or easement entered into under Parts II or IV of the *Ontario Heritage Act*

An agreement, covenant or easement is usually between the owner of a property and a conservation body or level of government. It is usually registered on title.

The primary purpose of the agreement is to:

- preserve, conserve, and maintain a cultural heritage resource
- prevent its destruction, demolition or loss

For more information, contact:

- Ontario Heritage Trust - for an agreement, covenant or easement [clause 10 (1) (c) of the *Ontario Heritage Act*]
- municipal clerk – for a property that is the subject of an easement or a covenant [s.37 of the *Ontario Heritage Act*]
- local land registry office (for a title search)

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iii. listed on a register of heritage properties maintained by the municipality

Municipal registers are the official lists - or record - of cultural heritage properties identified as being important to the community.

Registers include:

- all properties that are designated under the *Ontario Heritage Act* (Part IV or V)
- properties that have not been formally designated, but have been identified as having cultural heritage value or interest to the community

For more information, contact:

- municipal clerk
- municipal heritage planning staff
- municipal heritage committee

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iv. subject to a notice of:

- intention to designate (under Part IV of the *Ontario Heritage Act*)
- a Heritage Conservation District study area bylaw (under Part V of the *Ontario Heritage Act*)

A property that is subject to a **notice of intention to designate** as a property of cultural heritage value or interest and the notice is in accordance with:

- section 29 of the *Ontario Heritage Act*
- section 34.6 of the *Ontario Heritage Act.* **Note**: To date, the only applicable property is Meldrum Bay Inn, Manitoulin Island. [s.34.6]

An area designated by a municipal by-law made under section 40.1 of the *Ontario Heritage Act* as a **heritage conservation district study area**.

For more information, contact:

- municipal clerk – for a property that is the subject of notice of intention [s. 29 and s. 40.1]
- Ontario Heritage Trust

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v. included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties

Provincial heritage properties are properties the Government of Ontario owns or controls that have cultural heritage value or interest.

The Ministry of Tourism, Culture and Sport (MTCS) maintains a list of all provincial heritage properties based on information provided by ministries and prescribed public bodies. As they are identified, MTCS adds properties to the list of provincial heritage properties.

For more information, contact the MTCS Registrar at registrar@ontario.ca.

3b. Is the property (or project area) a National Historic Site (or part of)?

National Historic Sites are properties or districts of national historic significance that are designated by the Federal Minister of the Environment, under the *Canada National Parks Act*, based on the advice of the Historic Sites and Monuments Board of Canada.

For more information, see the National Historic Sites website.

3c. Is the property (or project area) designated under the *Heritage Railway Stations Protection Act*?

The *Heritage Railway Stations Protection Act* protects heritage railway stations that are owned by a railway company under federal jurisdiction. Designated railway stations that pass from federal ownership may continue to have cultural heritage value.

For more information, see the Directory of Designated Heritage Railway Stations.

3d. Is the property (or project area) designated under the *Heritage Lighthouse Protection Act*?

The *Heritage Lighthouse Protection Act* helps preserve historically significant Canadian lighthouses. The Act sets up a public nomination process and includes heritage building conservation standards for lighthouses which are officially designated.

For more information, see the Heritage Lighthouses of Canada website.

3e. Is the property (or project area) identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office?

The role of the Federal Heritage Buildings Review Office (FHBRO) is to help the federal government protect the heritage buildings it owns. The policy applies to all federal government departments that administer real property, but not to federal Crown Corporations.

For more information, contact the Federal Heritage Buildings Review Office.

See a directory of all federal heritage designations.

3f. Is the property (or project area) located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?

A UNESCO World Heritage Site is a place listed by UNESCO as having outstanding universal value to humanity under the Convention Concerning the Protection of the World Cultural and Natural Heritage. In order to retain the status of a World Heritage Site, each site must maintain its character defining features.

Currently, the Rideau Canal is the only World Heritage Site in Ontario.

For more information, see Parks Canada – World Heritage Site website.

Part B: Screening for potential Cultural Heritage Value

4a. Does the property (or project area) contain a parcel of land that has a municipal, provincial or federal commemorative or interpretive plaque?

Heritage resources are often recognized with formal plaques or markers.

Plaques are prepared by:

- municipalities
- provincial ministries or agencies
- federal ministries or agencies
- local non-government or non-profit organizations

For more information, contact:

- municipal heritage committees or local heritage organizations – for information on the location of plaques in their community
- Ontario Historical Society's Heritage directory – for a list of historical societies and heritage organizations
- Ontario Heritage Trust – for a list of plaques commemorating Ontario's history
- Historic Sites and Monuments Board of Canada – for a list of plaques commemorating Canada's history

4b. Does the property (or project area) contain a parcel of land that has or is adjacent to a known burial site and/or cemetery?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulations, Ontario Ministry of Consumer Services – for a database of registered cemeteries
- Ontario Genealogical Society (OGS) – to locate records of Ontario cemeteries, both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to locate early cemeteries

In this context, adjacent means contiguous or as otherwise defined in a municipal official plan.

4c. Does the property (or project area) contain a parcel of land that is in a Canadian Heritage River watershed?

The Canadian Heritage River System is a national river conservation program that promotes, protects and enhances the best examples of Canada's river heritage.

Canadian Heritage Rivers must have, and maintain, outstanding natural, cultural and/or recreational values, and a high level of public support.

For more information, contact the Canadian Heritage River System.

If you have questions regarding the boundaries of a watershed, please contact:

- your conservation authority
- municipal staff

4d. Does the property (or project area) contain a parcel of land that contains buildings or structures that are 40 or more years old?

A 40 year 'rule of thumb' is typically used to indicate the potential of a site to be of cultural heritage value. The approximate age of buildings and/or structures may be estimated based on:

- history of the development of the area
- fire insurance maps
- architectural style
- building methods

Property owners may have information on the age of any buildings or structures on their property. The municipality, local land registry office or library may also have background information on the property.

Note: 40+ year old buildings or structure do not necessarily hold cultural heritage value or interest; their age simply indicates a higher potential.

A building or structure can include:

- residential structure
- farm building or outbuilding
- industrial, commercial, or institutional building
- remnant or ruin
- engineering work such as a bridge, canal, dams, etc.

For more information on researching the age of buildings or properties, see the Ontario Heritage Tool Kit Guide Heritage Property Evaluation.

Part C: Other Considerations

5a. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) is considered a landmark in the local community or contains any structures or sites that are important to defining the character of the area?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has potential landmarks or defining structures and sites, for instance:

- buildings or landscape features accessible to the public or readily noticeable and widely known
- complexes of buildings
- monuments
- ruins

5b. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) has a special association with a community, person or historical event?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has a special association with a community, person or event of historic interest, for instance:

- Aboriginal sacred site
- traditional-use area
- battlefield
- birthplace of an individual of importance to the community

5c. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) contains or is part of a cultural heritage landscape?

Landscapes (which may include a combination of archaeological resources, built heritage resources and landscape elements) may be of cultural heritage value or interest to a community.

For example, an Aboriginal trail, historic road or rail corridor may have been established as a key transportation or trade route and may have been important to the early settlement of an area. Parks, designed gardens or unique landforms such as waterfalls, rock faces, caverns, or mounds are areas that may have connections to a particular event, group or belief.

For more information on Questions 5.a., 5.b. and 5.c., contact:

- Elders in Aboriginal Communities or community researchers who may have information on potential cultural heritage resources. Please note that Aboriginal traditional knowledge may be considered sensitive.
- municipal heritage committees or local heritage organizations
- Ontario Historical Society's "Heritage Directory" - for a list of historical societies and heritage organizations in the province

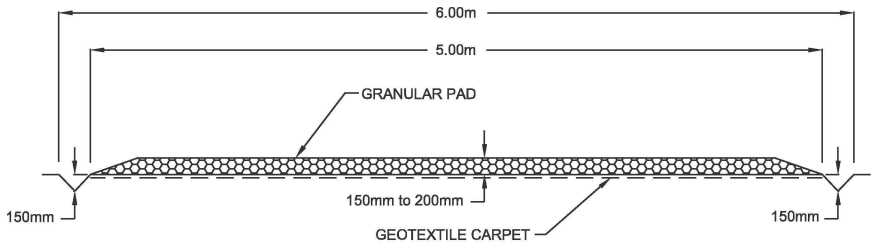
An internet search may find helpful resources, including:

- historical maps
- historical walking tours
- municipal heritage management plans
- cultural heritage landscape studies
- municipal cultural plans

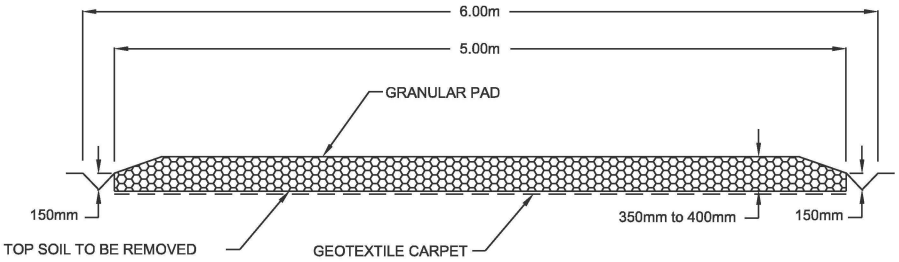
Information specific to trails may be obtained through Ontario Trails.

Appendix C

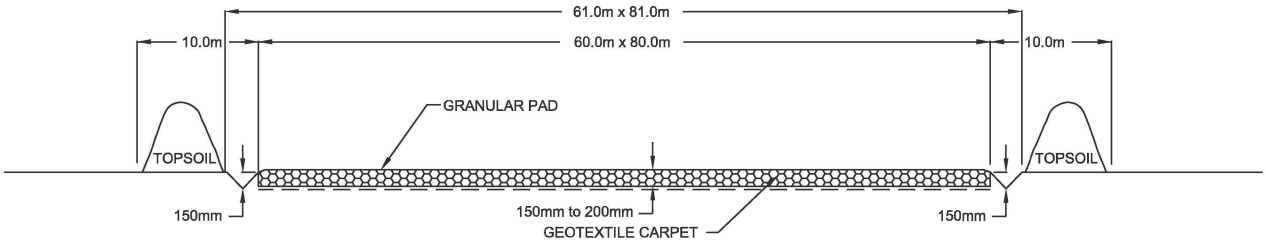
Typical Access Road and Work Area Detail



TYPICAL TEMPORARY ACCESS ROAD



TYPICAL PERMANENT ACCESS ROAD



TYPICAL WELL DRILLING WORK AREA

ENBRIDGE®
Life Takes Energy®

TYPICAL ACCESS ROAD
AND WORK AREA DETAIL

No.	DATE	BY	APP'D	REMARKS
01	2020/04/01	MP	GA	REVISION 1

REVISIONS

DRAWN BY GARY HANUSZAK	DATE 2013-03-23	FILE REVISION DATE 2020-04-01	
CHECKED BY	DATE	DRAWING No. PL-30-05	
APPROVED BY GEORGE ADAMS	DATE 2013-03-23		

Appendix D

Project Contact List

Surname	First Name	Organization	Department	Title/Role	Address	City/Town, Province	Postal Code	Telephone	E-Mail
Federal Elected Officials									
Rood	Lianne	Government of Canada	Lambton-Kent-Middlesex	Member of Parliament	65 Front Street West	Strathroy, ON	N7G 1X6	519-245-6561	Lianne.Rood@parl.gc.ca
Provincial Elected Officials									
McNaughton	Monte	Government of Ontario	Lambton-Kent-Middlesex	Member of Provincial Parliament	81 Front Street West	Strathroy, ON	N7G 1X5	519-245-8696	Monte.McNaughtonco@pc.ola.org
Provincial Agencies									
		Hydro One Networks Inc. (HONI)	Secondary Land Use, Environmental Assessment Distribution						SecondaryLandUse@HydroOne.com
Greene	Robert	Ministry of the Solicitor General		Director	25 Grosvenor Street, 13th Floor	Toronto, ON	M7A 1Y6	416-277-2370	robert.greene@ontario.ca
Wittenbrinck	Joerg	Ministry of Energy (MOE)	Strategic Policy and Analytics Branch, Strategic Network and Agency Policy Division	Manager	77 Grenville Street, 6th Floor	Toronto, ON	M7A 1B3	289-980-8124	joerg.wittenbrinck@ontario.ca
Cook	Karen	Ministry of Natural Resources and Forestry (MNRF)	Land Use Planning and Strategic Issues Section - Southern Region	Regional Planner				705-772-3096	karen.cook2@ontario.ca
Lindblad	Deanna	Ministry of Natural Resources and Forestry (MNRF)	Alymer District	District Supervisor (Acting)	615 Joh Street North	Alymer, ON	N5H 2S8	289-407-4178	deanna.lindblad@ontario.ca
Morrison	Sean	Ministry of the Environment, Conservation and Parks (MECP)	Sarnia District Office	Manager	1094 London Road	Sarnia, ON	N7S 1P1	519-381-5536	sean.morrison@ontario.ca
Ecclestone	Susan	Ministry of the Environment, Conservation and Parks (MECP)	Species at Risk Branch	Director	Foster Bldg 14th Flr, 40 Street Clair Avenue West	Toronto, ON	M4V 1M2	416-274-8864	susan.ecclestone@ontario.ca
		Infrastructure Ontario	Notice Review						noticereview@infrastructureontario.ca
		Ministry of the Environment, Conservation and Parks (MECP)	Endangered Species						sarontario@ontario.ca
Deisley	Melissa	St. Clair Region Conservation Authority (SCRCA)	Planning and Regulations	Director of Planning and Regulations	205 Mill Pond Cresent	Strathroy, ON	N7G 3P9	519-245-3710 ext. 251	mdeisley@scrca.on.ca
Ontario Pipeline Coordinating Committee (OPCC)									
Crnojacki	Zora	Ontario Pipeline Coordinating Committee	Ontario Energy Board (OEB)	Senior Advisor, Natural Gas Applications	P.O. Box 2319, 2300 Yonge Street	Toronto, ON	M4P 1E4	416-440-8104	OPCC.Chair@oeb.ca
Geerts	Helma	Ontario Pipeline Coordinating Committee	Ministry of Agriculture and Food, Ministry of Rural Affairs (OMAFRA)	Land Use Policy & Stewardship, Policy Advisor	1 Stone Road West, 3rd Floor SE	Guelph, ON	N1G 4Y2	519-546-7423	Helma.Geerts@ontario.ca cc: omafra.eanotices@ontario.ca
Barboza	Karla	Ontario Pipeline Coordinating Committee	Ministry of Citizenship and Multiculturalism (MCM)	Team Lead, Heritage Planning Unit, Programs and Services Branch	400 University Avenue, 5th Floor	Toronto, ON	M7A 2R9	416-660-1027	karla.barboza@ontario.ca cc: heritage@ontario.ca, james.hamilton@ontario.ca
Ali-Khan	Farrah	Ontario Pipeline Coordinating Committee	Ministry of Energy (MOE)	Senior Advisor, Indigenous Energy Policy Unit	77 Grenville Street, 6th Floor	Toronto, ON	M7A 2C1	416-526-2963	farrah.ali-khan@ontario.ca cc: shannon.mccabe@ontario.ca

Surname	First Name	Organization	Department	Title/Role	Address	City/Town, Province	Postal Code	Telephone	E-Mail
Difabio	Tony	Ontario Pipeline Coordinating Committee	Ministry of Transportation (MTO)	Team Lead, Operations Division, Corridor Management	301 St. Paul Street West	St Catharines	L2R 7R4	365-336-2136	Tony.DiFabio@ontario.ca
Highfield	Gary	Ontario Pipeline Coordinating Committee	Technical Standards and Safety Authority (TSSA)	Engineering Manager, Fuels					ghighfield@tssa.org cc: ryu@tssa.org
Johnston	Keith	Ontario Pipeline Coordinating Committee	Ministry of Natural Resources and Forestry (MNRF)	Environmental Planning Team Lead, Strategic and Indigenous Policy Branch	99 Wellesley Street West	Toronto, ON	M7A 1W3	705-313-6960	keith.johnston@ontario.ca
Harris	Maya	Ontario Pipeline Coordinating Committee	Ministry of Municipal Affairs and Housing (MMAH) - Central Municipal Services Office	Manager, Community Planning/Development - East	777 Bay Street, 13th Floor	Toronto, ON	M5G 2E5	416-585-6063	maya.harris@ontario.ca
Boyd	Erick	Ontario Pipeline Coordinating Committee	Ministry of Municipal Affairs and Housing (MMAH) - Western Municipal Services Office	Manager, Community Planning and Development	659 Exeter Road, 2nd Floor	London, ON	N6E 1L3	519-873-4025	erick.boyd@ontario.ca
Elms	Michael	Ontario Pipeline Coordinating Committee	Ministry of Municipal Affairs and Housing (MMAH) - Eastern Municipal Services Office	Manager, Community Planning and Development	8 Estate Lane, Rockwood House	Kingston, ON	K7M 9A8	613-545-2132	michael.elms@ontario.ca
Evers	Andrew	Ontario Pipeline Coordinating Committee	Ministry of the Environment, Conservation and Parks (MECP)	Manager, Environmental Assessment Services, Environmental Assessment Branch	135 St Clair Avenue West, 1st Floor	Toronto, ON	M4V 1P5	647-961-4850	andrew.evers@ontario.ca cc: sourceprotectionscreening@ontario.ca, eanotification.swregion@ontario.ca
Ostrowka	Cory	Ontario Pipeline Coordinating Committee	Infrastructure Ontario	Environmental Specialist	1 Dundas Street West, Suite 2000	Toronto, ON	M5G 1Z3	416-212-6976	cory.ostrowka@infrastructureontario.ca
Municipal Elected Officials and Municipal Agencies									
		City of Sarnia	City Clerk Office	Clerk	255 Christina Street North	Sarnia, ON	N7T 7N2	519-332-0330	clerks@sarnia.ca
Bradley	Mike	City of Sarnia	Council	Mayor	255 N. Christina Street, Box 3018	Sarnia, ON	N7T 7N2	519-332-0330 ext. 3312	mayor@sarnia.ca
		City of Sarnia	Planning Department		255 Christina Street North	Sarnia, ON	N7T 7N2	519-332-0330 ext. 3301	planning@sarnia.ca
		City of Sarnia		Fire Administration	255 Christina Street North	Sarnia, ON	N7T 7N2	519-332-1122	firerescue@sarnia.ca
Tripp	Carolyn	Town of Plympton-Wyoming		Chief Administrative Officer	546 Niagara Street, PO Box 250	Wyoming, ON	N0N 1T0	519-845-3939	ctripp@plympton-wyoming.ca
Kwarciak	Erin	Town of Plympton-Wyoming	Corporate Services	Clerk	546 Niagara Street, PO Box 250	Wyoming, ON	N0N 1T0	519-845-3939	ekwarciak@plympton-wyoming.ca
Sobanski	Adam	Town of Plympton-Wyoming	Operations Department	Public Works Director	546 Niagara Street, PO Box 250	Wyoming, ON	N0N 1T0	519-845-3939	asobanski@plympton-wyoming.ca
Cummings	Elizabeth	Town of Plympton-Wyoming	Operations Department	Drainage and Engineering Coordinator	546 Niagara Street, PO Box 250	Wyoming, ON	N0N 1T0	519-845-3939	ecummings@plympton-wyoming.ca

Surname	First Name	Organization	Department	Title/Role	Address	City/Town, Province	Postal Code	Telephone	E-Mail
Thompson	Darryl	Town of Plympton-Wyoming	Fire and Emergency Services	Director of Fire and Emergency Services/Fire Chief	546 Niagara Street, PO Box 250	Wyoming, ON	N0N 1T0	519-845-3939	dthompson@plympton-wyoming.ca
Atkinson	Gary	Town of Plympton-Wyoming	Council	Mayor	771 Broadway Street	Wyoming, ON	N0N 1T0	519-384-0295	gatkinson@plympton-wyoming.ca
McEwen	Netty	Town of Plympton-Wyoming	Council	Deputy Mayor	3859 Egremont Road	Camlachie, ON	N0N 1E0	519-899-4030	nmcewen@plympton-wyoming.ca
Marriott	Kevin	County of Lambton	County Council	Warden	789 Broadway Street	Wyoming, ON	N0N 1T0	519-882-2490	kevinmarriott@brktel.on.ca
White	Brian	County of Lambton	County Council	Deputy Warden	789 Broadway Street	Wyoming, ON	N0N 1T0	519-332-0330	brian.white@sarnia.ca
Thiffeault	Stephane	County of Lambton		Chief Adminstartive Officer (CAO)	789 Broadway Street	Wyoming, ON	N0N 1T0	519-845-0801	stephane.thiffeault@county-lambton.on.ca
Melanson	Ken	County of Lambton	Planning and Development Services	Manager	790 Broadway Street	Wyoming, ON	N0N 1T0	519-845-0801, ext. 5342	ken.melanson@county-lambton.on.ca
Cole	Jason	County of Lambton	Infrastructure and Development Services	General Manager	789 Broadway Street	Wyoming, ON	N0N 1T0	519-845-5413	jason.cole@county-lambton.on.ca
Deline	Matt	County of Lambton	Public Works	Manager	789 Broadway Street	Wyoming, ON	N0N 1T0	519-845-0801, ext. 5370	matt.deline@county-lambton.on.ca
Interest Groups									
[redacted]	[redacted]	Ontario Federation of Agriculture		Policy Analyst	[redacted]	Guelph, ON	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	Lambton Federation of Agriculture		Office Administrator	[redacted]	Brigden, ON	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	Sarnia-Lambton Economic Partnership		CEO	[redacted]	Sarnia, ON	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	Sarnia-Lambton Economic Partnership		Senior Economic Development Officer	[redacted]	Sarnia, ON	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	Sarnia-Lambton Economic Partnership		Economic Development Officer	[redacted]	Sarnia, ON	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	Sarnia Lambton Chamber of Commerce		CEO	[redacted]	Sarnia, ON	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	Sarnia-Lambton Environmental Association		Communications and Engagement Coordinator	[redacted]	Sarnia, ON	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	Source Protection Committee in the Thames-Sydenham and Region		Source Protection Coordinator	[redacted]	London, ON	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	Source Protection Committee in the Thames-Sydenham and Region		Manager of Water Resources	[redacted]	Strathroy, ON	[redacted]	[redacted]	[redacted]

Mandaumun Pool Mailing List 2023

Name	Address	City	Province	Postal Code
[redacted]	[redacted]	Petrolia	ON	[redacted]
[redacted]	[redacted]	Petrolia	ON	[redacted]
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Sarnia	ON	[redacted]
Lambton Wildlife Incorporated	PO Box 681 Stn. Main	Sarnia	ON	N7T 7J7
Corporation City Of Sarnia	255 N. Christina St. PO Box 3018	Sarnia	ON	N7T 7N2
[redacted]	[redacted]	Petrolia	ON	[redacted]
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Petrolia	ON	[redacted]
County of Lambton	Box 3000, 789 Broadway St.	Wyoming	ON	N0N 1T0
[redacted]	[redacted]	Sarnia	ON	[redacted]

Bluewater Pool Mailing List 2023

Name	Address	City	Province	Postal Code
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Petrolia	ON	[redacted]
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Petrolia	ON	[redacted]
[redacted]	[redacted]	Petrolia	ON	[redacted]
[redacted]	[redacted]	Brigden	ON	[redacted]
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Petrolia	ON	[redacted]
The Corporation of the County of Lambton	Box 3000, 789 Broadway St.	Wyoming	ON	N0N 1T0
The Corporation of the Township of St. Clair	1155 Emily Street	Mooretown	ON	N0N 1M0
Corporation City Of Sarnia	255 N. Christina St. PO Box 3018	Sarnia	ON	N7T 7N2

Adjacent Landowners

Name	Address	City	Province	Postal Code
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Sarnia	ON	[redacted]
[redacted]	[redacted]	Petrolia	ON	[redacted]
[redacted]	[redacted]	Petrolia	ON	[redacted]
[redacted]	[redacted]	Petrolia	ON	[redacted]
[redacted]	[redacted]	Petrolia	ON	[redacted]
[redacted]	[redacted]	Petrolia	ON	[redacted]

Appendix E

Project Notices

Enbridge Gas
50 Keil Drive North
Chatham, Ontario N7M 5M1
Canada

May 1, 2023

Dear Recipient,

Enbridge Gas – Notice of Upcoming Project for the 2024 Bluewater and Mandaumin Well Drilling Project

This letter is to notify you of a planned upcoming project in your area.

To ensure the continued safe and reliable delivery of natural gas to existing and future Enbridge Gas customers, Enbridge Gas is proposing to drill two new observation wells; one in the Bluewater Designated Storage Area (DSA) and one in the Mandaumin DSA. The DSAs are located in the County of Lambton within the City of Sarnia and Town of Plympton-Wyoming respectively, near the intersection of Mandaumin Road and Churchilll Line. A map of the proposed well locations and DSAs is attached.

Observation wells are used to monitor the gas content and pressure in underground storage formations, and help us ensure the continued safe and reliable operation of Enbridge Gas storage facilities.

The 2024 Bluewater and Mandaumin Well Drilling Project is proposed to be undertaken pending a positive recommendation from the Ontario Energy Board (OEB) to the Minister of Natural Resources for the issuance of well drilling licences under section 40 of the OEB Act.

In support of this upcoming OEB application, Enbridge Gas will be undertaking environmental studies in 2023 to review the proposed construction and operation of the project. The environmental studies will include a consultation program, impact assessment, and a cumulative effects assessment.

Enbridge Gas is committed to undertaking consultation with local stakeholders as an integral component of the planning process. Additional details regarding the project and how to become involved during public consultation will be provided in future correspondence. If you have any questions or comments during the development stages of this project, please contact the undersigned.

Sincerely,

Jackie Metcalfe
Environmental Advisor
Enbridge Gas
Jackie.Metcalfe@enbridge.com
437-234-4296

Proposed 2024 Bluewater and Mandaumin Well Drilling Project

Notice of Study Commencement and Virtual Public Information Session

City of Sarnia And Town of Plympton-Wyoming (Lambton County), Ontario

Enbridge Gas Inc.

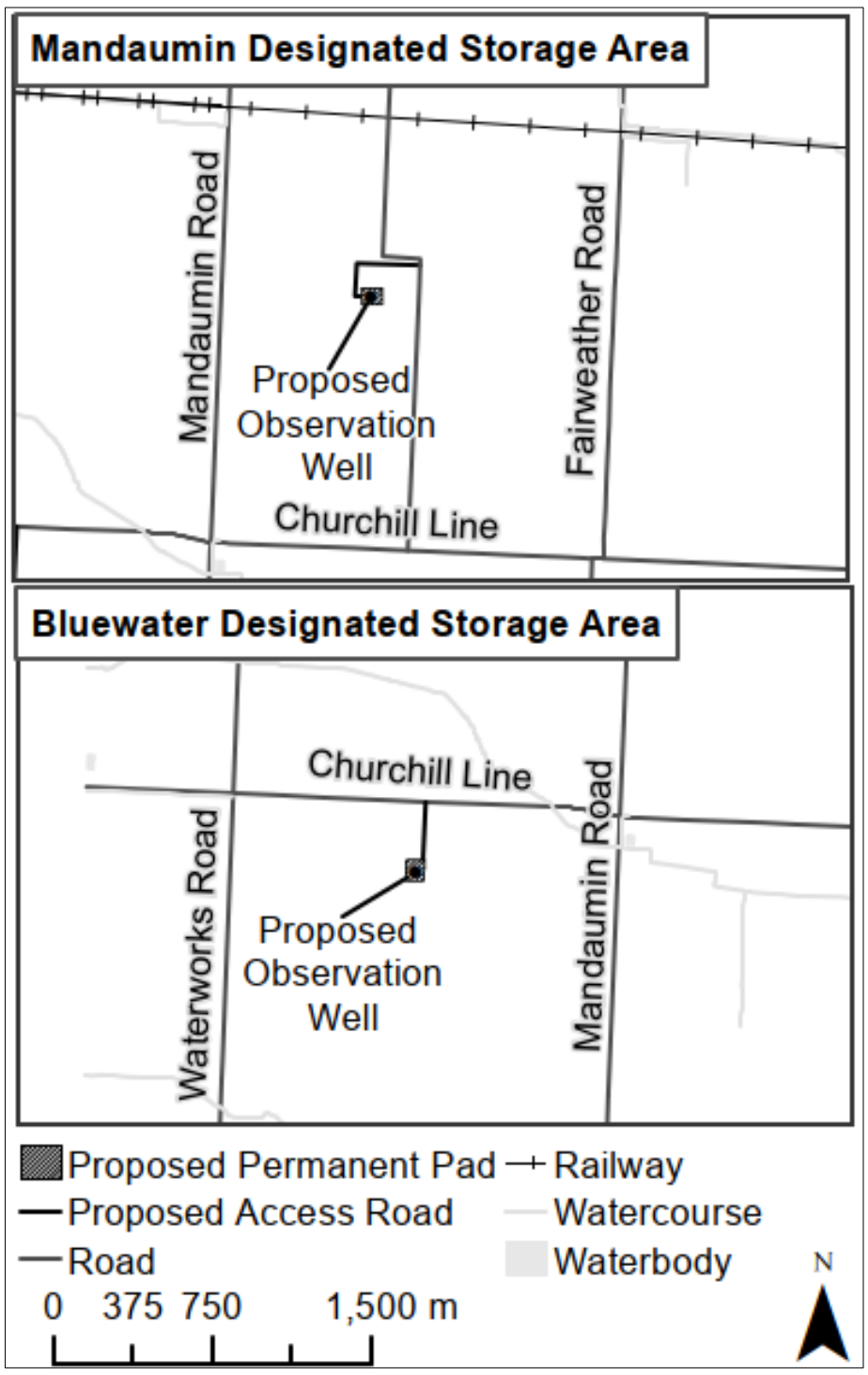
The Study

Enbridge Gas has retained Dillon Consulting to undertake an environmental study for the proposed 2024 Bluewater and Mandaumin Well Drilling Project in Lambton County, Ontario.

The proposed project will involve the drilling of two new observation wells. One well is to be located in the Bluewater Designated Storage Area (DSA) and the other in the Mandaumin DSA. DSAs are areas of land designated by the Ontario Energy Board (OEB) under section 36.1(1)(a) of the *OEB Act*, which contain geological formations suitable for the storage of natural gas underground. The observation wells constructed for this project will be used to monitor the gas content and pressure in these underground storage formations and help ensure the continued safe and reliable operation of Enbridge Gas storage facilities.

The Bluewater and Mandaumin well drilling sites are located within 2 kilometres of one another. The Bluewater site is approximately 900 metres west of the intersection of Mandaumin Road and Churchill Line in the City of Sarnia and the Mandaumin site is approximately 1,300 metres northeast of the intersection of Mandaumin Road and Churchill Line in the Town of Plympton-Wyoming.

Project activities at the Bluewater and Mandaumin drilling sites will commence with the construction of a temporary gravel drilling pad measuring up to 80 metres by 100 metres. Upon completion of drilling activities, a permanent gravel pad measuring 8 metres by 8 metres will be installed around the wells. Access to the Bluewater site will require a new permanent access road that will be 5 metres wide by roughly 300 metres long and access to the Mandaumin site will also require a new permanent access road, measuring 5 metres wide and approximately 500 metres long.



The Process

The study is being conducted in accordance with the OEB's Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th edition (2023). The study will review the need and justification for the project, describe the existing natural, cultural and socio-economic environment, evaluate the project from a natural, cultural, and socio-economic perspective, outline safety measures, and provide appropriate measures for impact mitigation and monitoring. Pending a positive recommendation from the OEB to the Minister of Natural Resources for the issuance of well drilling licences under section 40 of the *OEB Act*, construction is planned to begin in spring 2024.

Invitation to the Community

Stakeholder and Indigenous consultation is a key component of this study. Members of the general public, landowners, government agencies, Indigenous communities, and other interested parties are invited to participate in the study. We are hosting a Virtual Public Information Session to provide you with an opportunity to review the project and provide input.

Website: www.BluewaterMandauminWellDrilling.ca

Active Dates: Monday June 12, 2023 to Sunday June 18, 2023

If you are interested in participating or would like to provide comments, please visit the Virtual Public Information Session or contact one of the individuals listed below through the project email. The last day to submit comments for consideration in the draft environmental study is **Monday June 26, 2023**. You can also visit the **Enbridge Gas Project Website** at www.enbridgegas.com/2024WellProject.

Project Contacts	**Avid Banihashemi** Project Manager Dillon Consulting Limited	**Jackie Metcalfe** Environmental Advisor Enbridge Gas Inc.	**Project Email:** BluewaterMandauminWellDrilling@dillon.ca **Telephone:** 416-229-4646, ext. 2048

This notice was first published on June 1, 2023.

DILLON CONSULTING

Appendix F

Stakeholder Engagement Logs

DILLON CONSULTING

Enbridge Gas Inc.

2024 Bluewater and Mandaumin Well Drilling Project

Appendix F: Stakeholder Engagement Logs

October 2023, Rev. 01 – 23-6171

Table of Contents

1.0 Agency Correspondence

1.1 Federal Agencies and Elected Officials

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
1	June 1, 2023	Member of Parliament (MP), Lambton-Kent-Middlesex, Government of Canada Contact: Lianne Rood	Dillon Consulting representative provided the Notice of Commencement and Virtual Public Information Session (Notice of Commencement) for the 2024 Bluewater and Mandaumin Well Drilling Project (the Project) via email.	Not Applicable (N/A)	N/A
2	July 18, 2023	MP, Lambton-Kent-Middlesex, Government of Canada Contact: Lianne Rood	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	July 18, 2023	Automatic reply acknowledging receipt of email.

1.2 Provincial Agencies and Elected Officials

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
1	May 1, 2023	St. Clair Region Conservation Authority (SCRCA), Planning and Regulations, Director of Planning and Regulations Contact: Melissa Deisley	Prior to the commencement of environmental study for the Project (the Study), Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A
2	June 1, 2023	Member of Provincial Parliament, Lambton-Kent-Middlesex (MPP), Government of Ontario Contact: Monte McNaughton	Dillon Consulting representative provided the Notice of Commencement via email.	June 2, 2023	Constituency Assistant to the MPP noted receipt of email and stated that if there are comments or concerns, the MPP will provide feedback by June 26, 2023.

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
3	June 1, 2023	Secondary Land Use, Hydro One General Email	Dillon Consulting representative provided the Notice of Commencement via email.	June 5, 2023	Contact provided a response to the Notice of Commencement to confirm that, based on their initial review, no existing Hydro One Transmission assets are located within the subject area.
4	June 1, 2023	Ministry of the Solicitor General, Director Contact: Robert Greene	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
5	June 1, 2023	Ministry of Energy (MOE), Strategic Policy and Analytics Branch, Strategic Network and Agency Policy Division, Manager Contact: Joerg Wittenbrinck	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
6	June 1, 2023	Ministry of the Environment, Conservation and Parks (MECP), Sarnia District Office, Manager Contact: Sean Morrison	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
7.1	June 1, 2023	MECP, Species at Risk (SAR) Branch, Director Contact: Susan Ecclestone	Dillon Consulting representative provided the Notice of Commencement via email.	June 2, 2023	Contact emailed Dillon Consulting representative to note that should any questions on requirements related to Endangered Species Act (ESA) arise, those are to be forwarded to sarontario@ontario.ca.
7.2	June 2, 2023	MECP, SAR Branch, Director Contact: Susan Ecclestone	Dillon Consulting representative thanked the representative for providing the contact details for sarontario@ontario.ca. The Dillon Consulting representative noted that the Project is still in the early stages but that should any questions arise on the requirements of the ESA, the team would reach out to the designated contact.	N/A	N/A
8	June 1, 2023	Infrastructure Ontario Notice Review	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
9	June 1, 2023	Ministry of Natural Resources and Forestry (MNRF), Land Use Planning and Strategic Issues Section - Southern Region, Regional Planner Contact: Karen Cook	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
10	June 1, 2023	MNRF, Alymer District, District Supervisor (Acting) Contact: Deanna Lindblad	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
11	June 1, 2023	SCRCA, Planning and Regulations, Director of Planning and Regulations Contact: Melissa Deisley	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
12	June 12, 2023	MNRF, Land Use Planning and Strategic Issues Section, Southern Region, Regional Planner Contact: Jody Marks	Contact emailed Dillon Consulting representative in response to the Notice of Commencement to provide information to guide in identification and assessment of natural features and resources as required by applicable policies and legislation.	June 28, 2023	Dillon Consulting representative emailed contact to confirm that the team has noted the resources provided and listed regulatory/permitting requirements, and will reach out if any questions arise. Dillon Consulting representative thanked the contact for the information they provided.
13	July 18, 2023	MPP, Lambton-Kent-Middlesex, Government of Ontario Contact: Monte McNaughton	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	July 18, 2023	Automatic reply acknowledging receipt of email.
13.1	July 19, 2023	MPP, Lambton-Kent-Middlesex, Government of Ontario Contact: Monte McNaughton	Constituency Assistant representative thanked Dillon Consulting representative for sharing a link to the Environmental Report and noted that the office would be in touch should any questions or concerns arise.	N/A	N/A
14	July 18, 2023	Secondary Land Use, Hydro One General Email	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
15	July 18, 2023	Ministry of the Solicitor General, Director Contact: Robert Greene	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023.	N/A	N/A
16	July 18, 2023	MOE, Strategic Policy and Analytics Branch, Strategic Network and Agency Policy Division, Manager Contact: Joerg Wittenbrinck	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023.	N/A	N/A
17	July 18, 2023	MNRF, Land Use Planning and Strategic Issues Section - Southern Region, Regional Planner Contact: Karen Cook	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023.	August 23, 2023	MNRF representative Jody Marks confirmed their review of the draft Environmental Report and have no comments.
18	July 18, 2023	MNRF, Alymer District, District Supervisor (Acting) Contact: Deanna Lindblad	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023.	July 18, 2023	Automatic out of office notification, noting absence until July 24.
19	July 18, 2023	MECP, Sarnia District Office, Manager Contact: Sean Morrison	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023.	N/A	N/A
20.1	July 18, 2023	MECP, Species at Risk Branch, Director Contact: Susan Ecclestone	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023.	July 18, 2023	Contact thanked Dillon Consulting representative for their email and noted if they require information about the Endangered Species Act or applicable office to contact sarontario@ontario.ca.

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
20.2	August 22, 2023	MECP, SAR Branch, Director Contact: Catherine Stewart	MECP SAR representative confirmed the Ministry has reviewed sections of the draft Environmental Report specific to SAR. Based on the information provided in the report (e.g., Table 6-9 – Assessment of Potential Effects of the Project on SAR), the representative noted not enough details have been provided on the potential effects to SAR species and habitat or details of the proposed SAR-specific mitigation measures for MECP to review and comment on. Representative requested that the Project team submit to SAROntario@ontario.ca an updated draft Environmental Report or an Information Gathering Form to request further review of this project by MECP's SAR Branch.	August 28, 2023	Dillon Consulting representative requested to have a meeting with the MECP to better understand what details the ministry is looking for to ensure all comments/concerns are properly addressed.
20.3	September 7, 2023	MECP, SAR Branch, Director Contact: Catherine Stewart	MECP confirmed they are not able to meet the request to discuss comments. MECP clarified that Section 6.2.7 of the draft Environmental Report and Table 6-9 only provide a high-level summary of the potential effects and proposed mitigation measures specific to endangered and threatened SAR. MECP has advised that these details should be provided in full in Section 6.2.7 and that specific mitigation measures are required for endangered and threatened SAR. Section 6.2.7 should include, at a minimum, a description and assessment of the amount of "alteration of SAR habitat" (preferably including mapping), as well as providing mitigation measures specific to American Badger, and specifying which regulatory authorities will be notified in which circumstance.	October 4, 2023	Dillon Consulting reviewed MECP's comments in regards to the draft Environmental Report. Dillon Consulting provided a formal response to MECP to acknowledge MECP's considerations, where comments were considered, and brought forward into the final Environmental Report. Dillon Consulting representative confirmed that MECP will receive the final Environmental Report version for their records and that a copy of the final Environmental Report will be made available on the Enbridge Gas Project website after October 6.

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
21	July 18, 2023	Infrastructure Ontario, Notice Review	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023.	N/A	N/A
22	July 18, 2023	MECP, Endangered Species	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023.	N/A	N/A
23	July 18, 2023	SCRCA, Planning and Regulations, Director of Planning and Regulations Contact: Melissa Deisley	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023.	N/A	N/A

1.3 Ontario Pipeline Coordinating Committee (OPCC)

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
1	May 1, 2023	OPCC, Ontario Energy Board (OEB), Senior Advisor, Natural Gas Applications Contact: Zora Crnojacki	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
2	May 1, 2023	OPCC, Ministry of Agriculture and Food, Ministry of Rural Affairs (OMAFRA), Land Use Policy & Stewardship, Policy Advisor Contact: Helma Geerts	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A
3	May 1, 2023	OPCC, Ministry of Citizenship and Multiculturalism (MCM), Team Lead, Heritage Planning Unit, Programs and Services Branch Contact: Karla Barboza cc' James Hamilton and heritage@ontario.ca	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A
4	May 1, 2023	OPCC, MOE, Manager, Indigenous Energy Policy Unit Contact: Amy Gibson	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
5	May 1, 2023	OPCC, MECP, Manager, Environmental Assessment Services, Environmental Assessment Branch Contact: Andrew Evers, cc' sourceprotectionscreening@ontario.ca eanotification.swregion@ontario.ca	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A
6	May 1, 2023	OPCC, Ministry of Municipal Affairs and Housing (MMAH) - Western Municipal Services Office, Manager, Community Planning and Development Contact: Erick Boyd	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A
7	May 1, 2023	OPCC, MNRF, Environmental Planning Team Lead, Strategic and Indigenous Policy Branch Contact: Keith Johnston	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
8	May 1, 2023	OPCC, Technical Standards and Safety Authority (TSSA), Engineering Manager, Fuels Contact: Gary Highfield cc' Robin Yu	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A
9	May 1, 2023	OPCC, Ministry of Transportation (MTO), Team Lead, Operations Division, Corridor Management Contact: Tony Difabio	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A
10	June 1, 2023	OPCC, OEB, Senior Advisor, Natural Gas Applications Contact: Zora Crnojacki	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
11	June 1, 2023	OPCC, OMAFRA, Land Use Policy & Stewardship, Policy Advisor Contact: Helma Geerts	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
12.1	June 1, 2023	OPCC, MCM, Team Lead, Heritage Planning Unit, Programs and Services Branch Contact: Karla Barboza cc' James Hamilton and heritage@ontario.ca	Dillon Consulting representative provided the Notice of Commencement via email.	June 14, 2023	In response to the Notice of Commencement, Joseph Harvey, Heritage Planner at the MCM, emailed Dillon Consulting representative to provide a letter of advice on how to incorporate consideration of cultural heritage in the Environmental Report and the cultural heritage requirements of leave-to-construct applications.

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
12.2	June 28, 2023	MCM, Citizenship, Inclusion and Heritage Division, Heritage Planner Contact: Joseph Harvey	Dillon Consulting representative emailed contact to thank them for their comments and listed requirements. The Dillon Consulting representative clarified that MCM's initial statement in their response to the Notice of Commencement that "a leave to construction under the Ontario Energy Board Act" will be completed for the Project. The study is being conducted in accordance with the OEB's Environmental Guidelines but no leave-to-construct application will be filed. Instead, pending a positive recommendation from the OEB to the Minister of Natural Resources Enbridge Gas hopes to obtain well drilling licences under section 40 of the OEB Act. The Dillon Consulting representative also confirmed that a combined Stage 1 and Stage 2 archaeology assessment is currently being completed for the Project. Enbridge Gas will not begin construction until the Stage 1 and 2 is completed and approved and entered into the provincial register by the MCM. Dillon Consulting representative noted that a Cultural Heritage Screening Report for both sites has been completed and additional cultural heritage work is underway. The Cultural Heritage Screening Reports will be included in the draft Environmental Report.	N/A	N/A
13	June 1, 2023	OPCC, MOE, Senior Advisor, Indigenous Energy Policy Unit Contact: Farrah Ali-Khan cc' Shannon McCabe	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
14	June 1, 2023	OPCC, MTO, Team Lead, Operations Division, Corridor Management Contact: Tony Difabio	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
15.1	June 1, 2023	OPCC, TSSA, Engineering Manager, Fuels Contact: Gary Highfield cc' Robin Yu	Dillon Consulting representative provided the Notice of Commencement via email.	June 1, 2023	Contact asked if the Notice of Study Commencement was related to the Sarnia Industrial Line Reinforcement Pipeline Project.
15.2	June 2, 2023	OPCC, TSSA, Engineering Manager, Fuels Contact: Gary Highfield and Robin Yu	Dillon Consulting representative clarified that this notice is for a different project, unrelated to the Sarnia Industrial Line Reinforcement Pipeline Project. The representative confirmed that the Notice of Commencement provided by Dillon Consulting on June 1, 2023 pertains to the 2024 Bluewater and Mandaumin Well Drilling Project – which will involve the drilling of two observation wells.	N/A	N/A
16	June 1, 2023	OPCC, MNRF, Environmental Planning Team Lead, Strategic and Indigenous Policy Branch Contact: Keith Johnston	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
17	June 1, 2023	OPCC, MMAH - Central Municipal Services Office, Manager, Community Planning/Development – East Contact: Maya Harris	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
18	June 1, 2023	OPCC, MMAH - Western Municipal Services Office, Manager, Community Planning and Development Contact: Erick Boyd	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
19	June 1, 2023	OPCC, MMAH - Eastern Municipal Services Office, Manager, Community Planning and Development Contact: Michael Elms	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
20	June 1, 2023	OPCC, MECP, Manager, Environmental Assessment Services, Environmental Assessment Branch Contact: Andrew Evers cc' sourceprotectionscreening@ontario.ca eanotification.swregion@ontario.ca	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
21	June 1, 2023	OPCC, Infrastructure Ontario, Environmental Specialist Contact: Cory Ostrowka	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
22.1	June 1, 2023	MECP, Source Protection Branch, Program Analyst Contact: Laura Collings cc' Jenifer McKay	Dillon Consulting representative provided the Notice of Commencement via email.	June 16, 2023	Contact emailed Dillon Consulting representative to provide a memo in response to the Notice of Commencement. Among other details, the memo confirmed that "a rudimentary review of the two proposed observation well locations in St. Clair Region Source Protection Area indicates that neither of the proposed observation wells or access roads intersect with any identified vulnerable areas specifically." The memo also noted that "natural gas infrastructure projects may include activities during the construction or maintenance phases that, if located in a vulnerable area, may pose a risk to sources of drinking water and could be subject to policies in a source protection plan. Where an activity poses a risk to drinking water, policies in the local source protection plan may impact how or where that activity is undertaken."
22.2	June 28, 2023	MECP, Source Protection Branch, Program Analyst Contact: Laura Collings cc' Jenifer McKay	Dillon Consulting representative emailed contact to thank them for the details outlined in the memo. The representative confirmed that the Project team has noted their MECP's rudimentary review of the Project, initial findings, and resources provided and will reach out if any concerns/questions arise.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
23	July 18, 2023	OPCC, OEB, Senior Advisor, Natural Gas Applications Contact: Zora Crnojacki	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023 (end of the 42-day OPCC review period).	N/A	N/A
24	July 18, 2023	OPCC, OMAFRA, Land Use Policy & Stewardship, Policy Advisor Contact: Helma Geerts, cc' omafra.eanotices@ontario.ca	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023 (end of the 42-day OPCC review period).	N/A	N/A
25.1	July 18, 2023	OPCC, MCM, Team Lead, Heritage Planning Unit, Programs and Services Branch Contact: Karla Barboza, cc' heritage@ontario.ca james.hamilton@ontario.ca	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023 (end of the 42-day OPCC review period).	August 11, 2023	MCM representative Joseph Harvey noted the Ministry is currently reviewing the Environmental Report. To assist in their review, MCM requested the Project team forward the reference information and or Project Information Form (PIF) number(s) for any Archaeological Assessment reports completed in support of the environmental study.
25.2	August 16, 2023	OPCC, MCM, Team Lead, Heritage Planning Unit, Programs and Services Branch Contact: Joseph Harvey	Dillon Consulting confirmed that a combined Stage 1 and Stage 2 Report was completed for the Bluewater site, and the report was accepted by the Ministry and entered into the register without technical review. A copy of the report and letter of acceptable was provided. Once fieldwork at the Manadumin is cleared to proceed, the Project team would provide a copy of the Manadumin site combined Stage 1 and Stage 2 Report at that time.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
26	July 18, 2023	OPCC, MOE, Senior Advisor, Indigenous Energy Policy Unit Contact: Farrah Ali-Khan, cc' Shannon McCabe	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023 (end of the 42-day OPCC review period).	August 1, 2023	MOE Indigenous Energy Policy unit representative Gillian Brown confirmed their division has completed its review of the section(s) pertaining to Indigenous consultation in the draft Environmental Report. Representative confirmed MOE has no questions or concerns at this time.
27	July 18, 2023	OPCC, MTO, Senior Project Manager, Corridor Management Office Contact: Daniel Prelipcean	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023 (end of the 42-day OPCC review period).	N/A	N/A
28	July 18, 2023	OPCC, TSSA, Engineering Manager, Fuels Contact: Gary Highfield, cc' Robin Yu	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023 (end of the 42-day OPCC review period).	N/A	N/A
29	July 18, 2023	OPCC, MNRF, Environmental Planning Team Lead, Strategic and Indigenous Policy Branch Contact: Keith Johnston	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023 (end of the 42-day OPCC review period).	N/A	N/A
30	July 18, 2023	OPCC, MMAH - Central Municipal Services Office, Manager, Community Planning/Development – East Contact: Maya Harris	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023 (end of the 42-day OPCC review period).	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
31	July 18, 2023	OPCC, MMAH - Western Municipal Services Office, Manager, Community Planning and Development Contact: Erick Boyd	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023 (end of the 42-day OPCC review period).	N/A	N/A
32	July 18, 2023	OPCC, MMAH- Eastern Municipal Services Office, Manager, Community Planning and Development Contact: Michael Elms	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023 (end of the 42-day OPCC review period).	N/A	N/A
33	July 18, 2023	OPCC, MMAH-Municipal Services Office Northern (Sudbury), Manager, Community Planning and Development Contact: Anna Little	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023 (end of the 42-day OPCC review period).	N/A	N/A
34	July 18, 2023	OPCC, MMAH-Municipal Services Office – Central (GTA West), Manager, Community Planning and Development Contact: Heather Watt	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023 (end of the 42-day OPCC review period).	N/A	N/A
35	July 18, 2023	OPCC, MMAH -Municipal Services Office – Northern (Thunder Bay), Manager, Community Planning and Development Contact: Victoria Kosny	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023 (end of the 42-day OPCC review period).	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
36.1	July 18, 2023	OPCC, MECP- Environmental Assessment Services, Environmental Assessment Branch, Manager Contact: Andrew Evers, cc' sourceprotectionscreening@ontario.ca, eanotification.swregion@ontario.ca	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023 (end of the 42-day OPCC review period).	July 25, 2023	Conservation and Source Protection Branch (CSPB) representative emailed Dillon Consulting representative in response to the draft Environmental Report. CSPB representative noted a spelling error on Page 38.
36.2	July 25, 2023	MECP, CSPB, Program Analyst, Contact: Laura Collings	Dillon Consulting representative thanked CSPB representative for their review of the draft Environmental Report and advised that the spelling error on Page 38 has been revised.	N/A	N/A
37	July 18, 2023	OPCC, Infrastructure Ontario, Environmental Specialist Contact: Cory Ostrowka	Dillon Consulting representative emailed a notification that the draft Environmental Report is available for review. Dillon Consulting representative provided information on how to access the draft Environmental Report and requested feedback by August 29, 2023 (end of the 42-day OPCC review period).	N/A	N/A
38	August 16, 2023	OPCC, OEB, Senior Advisor, Natural Gas Applications Contact: Zora Crnojacki	Dillon Consulting representative sent reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A
39	August 16, 2023	OPCC, MCM, Team Lead, Heritage Planning Unit, Programs and Services Branch Contact: Karla Barboza, cc' heritage@ontario.ca james.hamilton@ontario.ca	Dillon Consulting representative sent reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A
40	August 16, 2023	OPCC, MCM, Team Lead, Heritage Planning Unit, Programs and Services Branch Contact: Joseph Harvey	Dillon Consulting representative sent reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
41	August 16, 2023	OPCC, MTO, Senior Project Manager, Corridor Management Office Contact: Daniel Prelipcean	Dillon Consulting representative sent reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	August 17, 2023	MTO representative Alicia Edwards confirmed that the report has been reviewed and MTO has no confirms regarding the proposed work. Representative indicated the work is located well beyond MTO's permit control area, and MTO authorization/permits will not be required.
42	August 16, 2023	OPCC, MNRF, Environmental Planning Team Lead, Strategic and Indigenous Policy Branch Contact: Keith Johnston	Dillon Consulting representative sent reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A
43	August 16, 2023	OPCC, MMAH - Central Municipal Services Office, Manager, Community Planning/Development – East Contact: Maya Harris	Dillon Consulting representative sent reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A
44	August 16, 2023	OPCC, MMAH - Western Municipal Services Office, Manager, Community Planning and Development Contact: Erick Boyd	Dillon Consulting representative sent reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A
45	August 16, 2023	OPCC, MMAH- Eastern Municipal Services Office, Manager, Community Planning and Development Contact: Michael Elms	Dillon Consulting representative sent reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A
46	August 16, 2023	OPCC, MMAH-Municipal Services Office Northern (Sudbury), Manager, Community Planning and Development Contact: Anna Little	Dillon Consulting representative sent reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A
47	August 16, 2023	OPCC, MMAH-Municipal Services Office – Central (GTA West), Manager, Community Planning and Development Contact: Heather Watt	Dillon Consulting representative sent reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
48	August 16, 2023	OPCC, MMAH -Municipal Services Office – Northern (Thunder Bay), Manager, Community Planning and Development Contact: Victoria Kosny	Dillon Consulting representative sent reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A
49	August 16, 2023	OPCC, Infrastructure Ontario, Environmental Specialist Contact: Cory Ostrowka	Dillon Consulting representative sent reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A
50.1	August 16, 2023	OPCC, TSSA, Engineering Manager, Fuels Contact: Gary Highfield and Robin Yu	Dillon Consulting representative sent reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	August 21, 2023	TSSA representative Robin Yu confirmed that the TSSA has reviewed the draft Environmental Report and have no comments at this stage. The representatives noted that along with submission of Leave-to-Construct (LTC) to OEB, Enbridge Gas is required to submit an Application for Review of Pipeline Project to the TSSA.
50.2	August 24, 2023	OPCC, TSSA, Engineering Manager, Fuels Contact: Gary Highfield and Robin Yu	Dillon Consulting representative clarified that Enbridge Gas will not be submitting a LTC application and that the final Environmental Report will be filed with the OEB who will review the final Environmental Report as part of the proceeding to obtain well drilling licences under section 40(1) of the OEB Act. Dillon Consulting representative requested clarification on the need to submit an Application for Review of Pipeline Project as no pipeline will be constructed for this Project.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
51	August 16, 2023	OPCC, OMAFRA, Land Use Policy & Stewardship, Policy Advisor Contact: Helma Geerts, cc' omafra.eanotices@ontario.ca	Dillon Consulting representative sent reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	August 18, 2023	OMAFRA provided a letter containing the ministry's comments on the Project. In the letter, OMAFRA: • commended the Project team for working with landowners on the design of the Project; • recommended the Project team describe more fully the alternative well pad site locations and road configurations considered as alternatives; and • indicated that for any required work associated with the construction and operation of the access roads and well pads, it is recommended that the Project team determine if any adverse impacts to agricultural fields or the transportation of agricultural goods or workers may occur and how these impacts can be further avoided, minimized and/or mitigated; and provided a link to Agricultural Areas and Specialty Crop Area online mapping.

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
51.1	September 13, 2023	OPCC, OMAFRA, Land Use Policy & Stewardship, Policy Advisor Contact: Ken Mott, on behalf of Helma Geerts, cc' omafra.eanotices@ontario.ca	Dillon Consulting representative thanked OMAFRA for their comments and confirmed that the Project team has added additional details on the alternative locations for Project components to Section 5.0 (Site Selection Progress) of the revised ER. The revised Section 5.0 more fully describes the site selection process of Project components alongside an explanation on why certain alternatives were or were not selected. Dillon Consulting representative also confirmed that information on potential impacts to agricultural fields and mitigations was previous included and discussed in Section 6.1.1, Section 6.1.2, Section 6.1.3 of the draft Environmental Report. Additionally, information on residual impacts to agricultural fields identified in Section 6 (for example, loss of soil productivity) was included and discussed in Section 7.4.1 of the draft Environmental Report. Therefore, no additional information was added to the Environmental Report.	N/A	N/A
52	August 24, 2023	OPCC, OEB, Senior Advisor, Natural Gas Applications Contact: Zora Crnojacki	Dillon Consulting representative sent a second reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A
53	August 24, 2023	OPCC, MCM, Team Lead, Heritage Planning Unit, Programs and Services Branch Contact: Karla Barboza, cc' heritage@ontario.ca james.hamilton@ontario.ca	Dillon Consulting representative sent a second reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
54	August 24, 2023	OPCC, MCM, Team Lead, Heritage Planning Unit, Programs and Services Branch Contact: Joseph Harvey	Dillon Consulting representative sent a second reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	August 30, 2023	MCM provided a letter containing the ministry's comments on the Project: • MCM recommended that the forthcoming Cultural Heritage Evaluation Report (CHER) for the Bluewater Project location be undertaken as part of the Environmental Report. • If a property is found to be of cultural heritage value or interest (CHVI), then a Heritage Impact Assessment (HIA) shall be undertaken to assess potential project impacts. • All recommended/required cultural heritage assessments should be completed prior to ground disturbance and no construction shall being prior to MCM acceptance. Additional comments on revising sections of the report pertaining to cultural heritage resources were provided.
55	August 24, 2023	OPCC, MNRF, Environmental Planning Team Lead, Strategic and Indigenous Policy Branch Contact: Keith Johnston	Dillon Consulting representative sent a second reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A
56	August 24, 2023	OPCC, MMAH - Central Municipal Services Office, Manager, Community Planning/Development – East Contact: Maya Harris	Dillon Consulting representative sent a second reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A
57	August 24, 2023	OPCC, MMAH - Western Municipal Services Office, Manager, Community Planning and Development Contact: Erick Boyd	Dillon Consulting representative sent a second reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	August 25, 2023	MMAH confirmed they have no provincial land use planning concerns with the Project at this time.

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
58	August 24, 2023	OPCC, MMAH- Eastern Municipal Services Office, Manager, Community Planning and Development Contact: Michael Elms	Dillon Consulting representative sent a second reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A
59	August 24, 2023	OPCC, MMAH-Municipal Services Office Northern (Sudbury), Manager, Community Planning and Development Contact: Anna Little	Dillon Consulting representative sent a second reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A
60	August 24, 2023	OPCC, MMAH-Municipal Services Office – Central (GTA West), Manager, Community Planning and Development Contact: Heather Watt	Dillon Consulting representative sent a second reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A
61	August 24, 2023	OPCC, MMAH -Municipal Services Office – Northern (Thunder Bay), Manager, Community Planning and Development Contact: Victoria Kosny	Dillon Consulting representative sent a second reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A
62	August 24, 2023	OPCC, Infrastructure Ontario, Environmental Specialist Contact: Cory Ostrowka	Dillon Consulting representative sent a second reminder email to OPCC members to submit a review letter or summary of review for the 2024 Bluewater and Mandaumin Well Drilling Project by August 29, 2023.	N/A	N/A

1.4 Municipal Agencies and Elected Officials

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
1	May 1, 2023	Town of Plympton-Wyoming, Chief Administrative Officer Contact: Carolyn Tripp	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A
2	May 1, 2023	Town of Plympton-Wyoming, Operation Department, Public Works Director Contact: Adam Sobanski	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A
3	May 1, 2023	Town of Plympton-Wyoming, Corporate Services, Clerk Contact: Erin Kwarciak	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
4	May 1, 2023	City of Sarnia, City Administration Division, Chief Administrative Officer (CAO) Contact: Chris Crater	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A
5	May 1, 2023	City of Sarnia, City Clerk Contact: Amy Burkhart	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A
6	May 1, 2023	City of Sarnia, General Manager of Engineering and Operations Contact: David Jackson	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
7	May 1, 2023	County of Lambton, CAO Contact: Stephane Thiffeault	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A
8	May 1, 2023	County of Lambton, Infrastructure and Development Services, General Manager Contact: Jason Cole	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A
9	May 1, 2023	County of Lambton, Public Works, Manager Contact: Matt Deline	Prior to the commencement of environmental study for the Project, Enbridge Gas emailed a Notice of Upcoming Project. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A
10	June 1, 2023	City of Sarnia City Clerk Office, Clerk	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
11	June 1, 2023	City of Sarnia, Council, Mayor Contact: Mike Bradley	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
12	June 1, 2023	City of Sarnia, Planning Department	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
13	June 1, 2023	City of Sarnia, Public Works	Dillon Consulting representative provided the Notice of Commencement via email.	June 1, 2023	Automatic reply, email address no longer valid.
14	June 1, 2023	City of Sarnia, Fire Administration	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
15	June 1, 2023	Town of Plympton-Wyoming, Chief Administrative Officer Contact: Carolyn Tripp	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
16	June 1, 2023	Town of Plympton-Wyoming, Corporate Services, Clerk Contact: Erin Kwarciak	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
17	June 1, 2023	Town of Plympton-Wyoming, Operation Department, Public Works Director Contact: Adam Sobanski	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
18	June 1, 2023	Town of Plympton-Wyoming, Operations Department, Drainage and Engineering Coordinator Contact: Elizabeth Cummings	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
19	June 1, 2023	Town of Plympton-Wyoming, Fire and Emergency Services, Director of Fire and Emergency Services/Fire Chief Contact: Darryl Thompson	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
20	June 1, 2023	Town of Plympton-Wyoming, Council, Mayor Contact: Gary Atkinson	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
21	June 1, 2023	Town of Plympton-Wyoming, Council, Deputy Mayor Contact: Netty McEwen	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
22	June 1, 2023	County of Lambton, County Council, Warden Contact: Kevin Marriott	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
23	June 1, 2023	County of Lambton, County Council, Deputy Warden Contact: Brian White	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
24	June 1, 2023	County of Lambton, Chief Administrative Officer (CAO) Contact: Stephane Thiffeault	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
25	June 1, 2023	County of Lambton, Planning and Development Services, Manager Contact: Ken Melanson	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
26	June 1, 2023	County of Lambton, Infrastructure and Development Services, General Manager Contact: Jason Cole	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
27	June 1, 2023	County of Lambton, Public Works, Manager Contact: Matt Deline	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
28	June 2, 2023	City of Sarnia, Fire Chief Contact: Bryan Van Gaver	Contact requested the link for the Virtual Information Session.	June 2, 2023	Dillon Consulting representative provided the link for the Virtual Information Session and noted that it will be live from June 12 to 18, 2023.
29	July 18, 2023	City of Sarnia, City Clerk Office, Clerk	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
30	July 18, 2023	City of Sarnia, Council, Mayor Contact: Mike Bradley	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
31	July 18, 2023	City of Sarnia, Planning and Development	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	July 18, 2023	Automatic reply acknowledging receipt of email.

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
32	July 18, 2023	City of Sarnia, Fire Administration	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
33	July 18, 2023	Township of Plympton-Wyoming, Chief Administrative Officer Contact: Carolyn Tripp	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
34	July 18, 2023	Township of Plympton-Wyoming, Corporate Services, Clerk Contact: Erin Kwarciak	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
35	July 18, 2023	Township of Plympton-Wyoming, Operations Department, Public Works Director Contact: Adam Sobanski	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
36	July 18, 2023	Township of Plympton-Wyoming, Operations Department, Drainage and Engineering Coordinator Contact: Elizabeth Cummings	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
37	July 18, 2023	Township of Plympton-Wyoming, Fire and Emergency Services, Director of Fire and Emergency Services/Fire Chief Contact: Darryl Thompson	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
38	July 18, 2023	Township of Plympton-Wyoming, Council, Mayor Contact: Gary Atkinson	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
39	July 18, 2023	Township of Plympton-Wyoming, Council, Deputy Mayor Contact: Netty McEwen	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
40	July 18, 2023	County of Lambton, County Council, Warden Contact: Kevin Marriott	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
41	July 18, 2023	County of Lambton, County Council, Deputy Warden Contact: Brian White	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
42	July 18, 2023	County of Lambton, CAO Contact: Stephane Thiffeault	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
43	July 18, 2023	County of Lambton, Planning and Design Services Contact: Ken Melanson	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
44	July 18, 2023	County of Lambton, Infrastructure and Development Services, General Manager Contact: Jason Cole	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	July 18, 2023	Automatic out of office notification, noting absence until July 24.
45	July 18, 2023	County of Lambton, Public Works, Manager Contact: Matt Deline	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A

2.0 Interest Group Correspondence

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
1	June 1, 2023	Ontario Federation of Agriculture, Policy Analysist Contact: [redacted]	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
2	June 1, 2023	Lambton Federation of Agriculture, Office Administrator Contact:[redacted]	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
3	June 1, 2023	Sarnia-Lambton Economic Partnership, Chief Executive Officer (CEO) Contact:[redacted]	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
4	June 1, 2023	Sarnia-Lambton Economic Partnership, Senior Economic Development Officer Contact: [redacted]	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
5	June 1, 2023	Sarnia-Lambton Economic Partnership, Economic Development Officer Contact: [redacted]	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
6	June 1, 2023	Sarnia Lambton Chamber of Commerce, CEO Contact: [redacted]	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
7	June 1, 2023	Sarnia-Lambton Environmental Association, Communications and Engagement Coordinator Contact: [redacted]	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
8	June 1, 2023	Source Protection Committee in the Thames-Sydenham and Region, Source Protection Coordinator Contact: [redacted]	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
9	June 1, 2023	Source Protection Committee in the Thames-Sydenham and Region, Manager of Water Resources Contact: [redacted]	Dillon Consulting representative provided the Notice of Commencement via email.	N/A	N/A
10	July 18, 2023	Ontario Federation of Agriculture, Policy Analyst Contact: [redacted]	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	July 18, 2023	Automatic out of office notification, noting absence until July 31.
11	July 18, 2023	Office Administrator, Lambton Federation of Agriculture Contact: [redacted]	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
12	July 18, 2023	Sarnia-Lambton Economic Partnership, CEO Contact: [redacted]	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
13	July 18, 2023	Sarnia-Lambton Economic Partnership, Senior Economic Development Officer Contact: [redacted]	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
14	July 18, 2023	Sarnia-Lambton Economic Partnership, Economic Development Officer Contact: [redacted]	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
15	July 18, 2023	Sarnia Lambton Chamber of Commerce, CEO Contact: [redacted]	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A
16	July 18, 2023	Source Protection Committee in the Thames-Sydenham and Region, Source Protection Coordinator Contact: [redacted]	Dillon Consulting representative provided the link to the draft Environmental Report. Dillon Consulting representative requested that comment submission be provided by August 29, 2023.	N/A	N/A

3.0 Public Correspondence

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
1	May 1, 2023	All landowners and surrounding landowners within the Bluewater and Mandaumin Mailing Pool	Prior to the commencement of the Study, Enbridge Gas mailed a Notice of Upcoming Project to select landowners. The intent of the Notice of Upcoming Project was to begin engagement as early as possible, information recipients of the upcoming project, and gather initial comments/questions on the Project. It provided a high-level summary of the Bluewater and Mandaumin well drilling activities and the regulatory review process.	N/A	N/A
2.1	June 13, 2023	[redacted] Phone: [redacted]	Contact called and left a voicemail for the Project team. On the voicemail, the contact noted they had received the Notice of Study Commencement and wanted to confirm if the landowners at and surrounding the Bluewater site had also been provided a copy of the Notice. Contact provided the addresses and phone numbers of the landowner and surrounding landowner at the Bluewater site, who they know personally.	June 19, 2023	Dillon Consulting representative returned the contacts call. The main theme of the comments received from the contact were related to impacts on below-ground mineral rights and ensuring landowners at and surrounding the Bluewater site had also been provided a copy of the Notice. The contact also had general questions on Designated Storage Areas (DSAs), the type of wells being installed, the proposed depth of the wells, and the Project scope. The Dillon Consulting representative confirmed that all landowners within and adjacent to the Mandaumin site and Bluewater site had been notified of the Project. The Dillon Consulting representative explained what a DSA is and confirmed that the proposed wells will be observation wells which are used to monitor the operational integrity and conditions and any changes in a gas storage reservoir. The Dillon Consulting representative clarified that these wells will not be used for the purpose of input or withdrawal of natural gas. On the call with the contact, Dillon Consulting representative noted that they were not able to confirm the target depth of the wells but that they could get back to the contact with an answer.

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (If Applicable)
2.2	June 28, 2023	[redacted] Phone: [redacted]	The Dillon Consulting representative called the landowner and noted that, after speaking with the Enbridge Gas project team, they could confirm that the target depth of the wells is 750 metres. The contact thanked the Dillon Consulting representative for returning their call and following up on this question.	N/A	N/A
3	July 4, 2023	[redacted] Email: [redacted] Phone: [redacted]	Request to change address on file for [redacted] to: [redacted] [redacted] Sarnia, Ontario [redacted] Landowner noted that [redacted] is no longer the owner of the residence of [redacted]. [redacted] is still the owner of [redacted].	September 1, 2023	Dillon Consulting representative thanked contact for providing the updated information.

Appendix G

Notice of Commencement Letters

June 1, 2023

DILLON CONSULTING

51 Breithaupt Street
Suite 200
Kitchener, Ontario
N2H 5G5

Telephone
519-571-9833
Fax
519-571-7424

Re: Enbridge Gas
Proposed 2024 Bluewater and Mandaumin Well Drilling Project
City of Sarnia and Town of Plympton-Wyoming
(Lambton County), Ontario
Notice of Study Commencement and Virtual Public Information Session

To whom it may concern,

Enbridge Gas Inc. (Enbridge Gas) has retained Dillon Consulting Limited to undertake an environmental study for the proposed 2024 Bluewater and Mandaumin Well Drilling Project in Lambton County, Ontario.

The proposed project will involve the drilling of two new observation wells. One well is to be located in the Bluewater Designated Storage Area (DSA) and the other in Mandaumin DSA. DSAs are areas of land designated by the Ontario Energy Board (OEB) under section 36.1(1)(a) of the *OEB Act*, which contain geological formations suitable for the storage of natural gas underground. The observation wells constructed for this project will be used to monitor the gas content and pressure in these underground storage formations and help ensure the continued safe and reliable operation of Enbridge Gas storage facilities.

The Bluewater and Mandaumin well drilling sites are located within two kilometres of one another. The Bluewater site is approximately 900 metres west of the intersection of Mandaumin Road and Churchill Line in the City of Sarnia and the Mandaumin site is approximately 1,300 metres northeast of the intersection of Mandaumin Road and Churchill Line in the Town of Plympton-Wyoming.

Project activities at the Bluewater and Mandaumin drilling sites will commence with the construction of a temporary gravel drilling pad measuring up to 80 metres by 100 metres. Upon completion of drilling activities, a permanent gravel pad measuring 8 metres by 8 metres will be installed around the wells. Access to the Bluewater site will require a

new permanent access road that will be 5 metres wide by roughly 300 metres long, and access to the Mandaumin site will also require a new permanent access road, measuring 5 metres wide and approximately 500 metres long.

The study is being conducted in accordance with the OEB's Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th edition (2023). The study will review the need and justification for the project, describe the existing natural, cultural, and socio-economic environment, evaluate the project from a natural, cultural and socio-economic environmental perspective, outline safety measures and provide appropriate measures for impact mitigation and monitoring. Pending a positive recommendation from the OEB to the Minister of Natural Resources for the issuance of well drilling licences under section 40 of the *OEB Act*, construction is planned to begin in spring 2024.

Stakeholder involvement will play a key role in the project. In order to undertake a successful consultation program, we have developed a mailing list of government agencies (federal, provincial, and municipal), Indigenous communities, and other groups that may have an interest in the study. Enbridge Gas will also be hosting a Virtual Public Information Session as part of the study. Details about the session are provided in the attached Notice of Study Commencement and Virtual Public Information Session.

As part of the initial phase of the study, we are collecting information on the cultural, socio-economic, and natural environment, at the proposed well sites. Examples of data being collected include information on archaeological and heritage resources, terrestrial and aquatic vegetation and wildlife, groundwater, surface water, soils, geology, existing infrastructure, and human occupancy and resource use in the area.

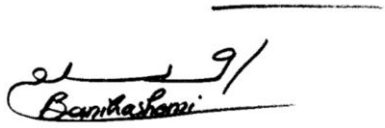
We are interested in hearing from you with any comments that you or your organization may have regarding this project. We are also requesting any information relating to natural and/or human environments at the proposed well sites that may fall within your mandate.

Please send this information to my attention at the above address or by email to BluewaterMandauminWellDrilling@dillon.ca by **Monday June 26, 2023**. If you require any further information, please do not hesitate to contact me using the information below.

If there is a more appropriate contact at your organization who should receive this letter, please kindly forward the letter at your discretion and notify us as we will update our project consultation list.

Sincerely,

Avid Banihashemi



Avid Banihashemi, Ph.D.
Project Manager
Tel: 519-571-9833, ext. 3136

Attachment: Notice of Study Commencement and Virtual Public Information Session

Proposed 2024 Bluewater and Mandaumin Well Drilling Project

Notice of Study Commencement and Virtual Public Information Session

City of Sarnia And Town of Plympton-Wyoming (Lambton County), Ontario

Enbridge Gas Inc.

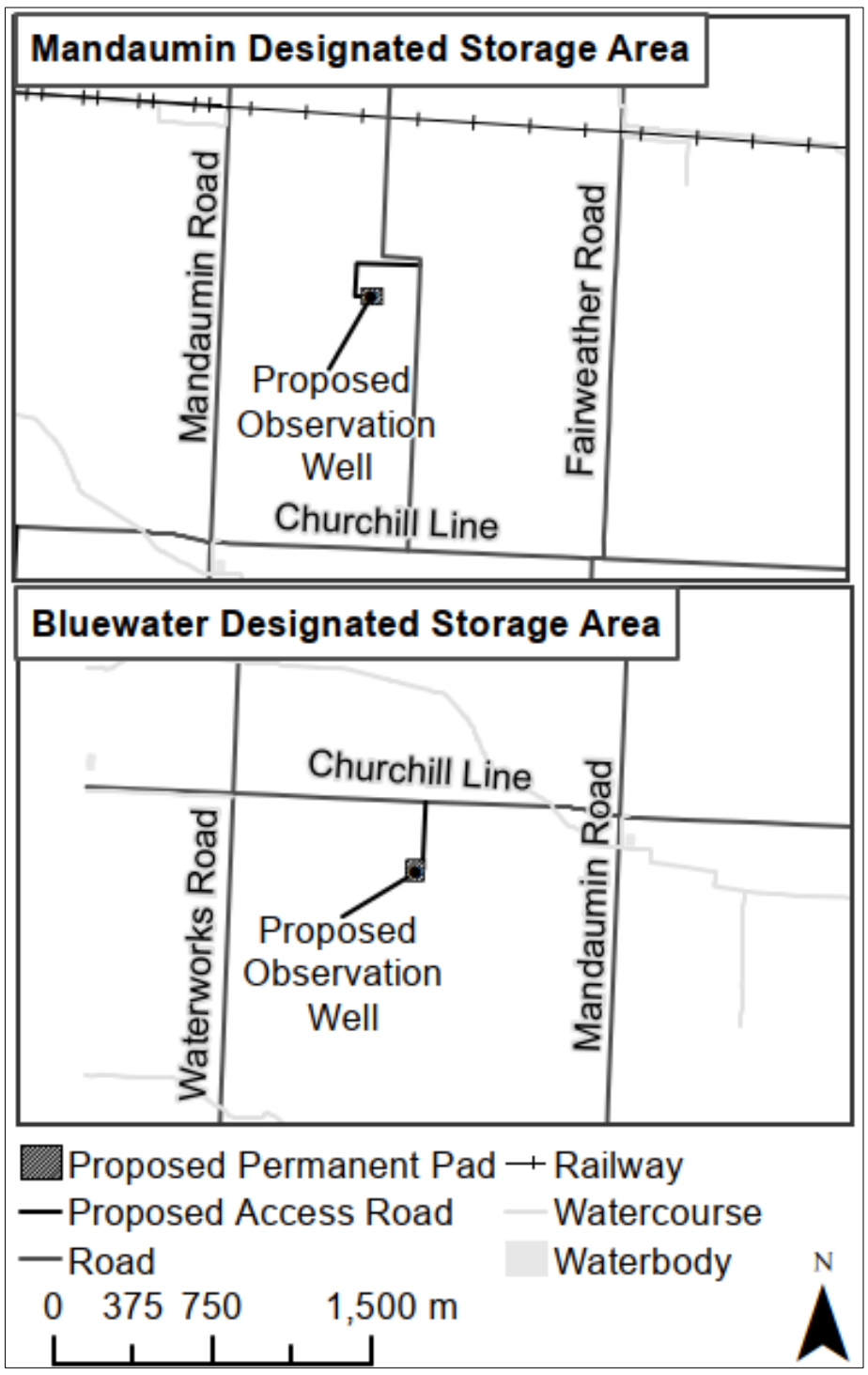
The Study

Enbridge Gas has retained Dillon Consulting to undertake an environmental study for the proposed 2024 Bluewater and Mandaumin Well Drilling Project in Lambton County, Ontario.

The proposed project will involve the drilling of two new observation wells. One well is to be located in the Bluewater Designated Storage Area (DSA) and the other in the Mandaumin DSA. DSAs are areas of land designated by the Ontario Energy Board (OEB) under section 36.1(1)(a) of the *OEB Act*, which contain geological formations suitable for the storage of natural gas underground. The observation wells constructed for this project will be used to monitor the gas content and pressure in these underground storage formations and help ensure the continued safe and reliable operation of Enbridge Gas storage facilities.

The Bluewater and Mandaumin well drilling sites are located within 2 kilometres of one another. The Bluewater site is approximately 900 metres west of the intersection of Mandaumin Road and Churchill Line in the City of Sarnia and the Mandaumin site is approximately 1,300 metres northeast of the intersection of Mandaumin Road and Churchill Line in the Town of Plympton-Wyoming.

Project activities at the Bluewater and Mandaumin drilling sites will commence with the construction of a temporary gravel drilling pad measuring up to 80 metres by 100 metres. Upon completion of drilling activities, a permanent gravel pad measuring 8 metres by 8 metres will be installed around the wells. Access to the Bluewater site will require a new permanent access road that will be 5 metres wide by roughly 300 metres long and access to the Mandaumin site will also require a new permanent access road, measuring 5 metres wide and approximately 500 metres long.



The Process

The study is being conducted in accordance with the OEB's Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th edition (2023). The study will review the need and justification for the project, describe the existing natural, cultural and socio-economic environment, evaluate the project from a natural, cultural, and socio-economic perspective, outline safety measures, and provide appropriate measures for impact mitigation and monitoring. Pending a positive recommendation from the OEB to the Minister of Natural Resources for the issuance of well drilling licences under section 40 of the *OEB Act*, construction is planned to begin in spring 2024.

Invitation to the Community

Stakeholder and Indigenous consultation is a key component of this study. Members of the general public, landowners, government agencies, Indigenous communities, and other interested parties are invited to participate in the study. We are hosting a Virtual Public Information Session to provide you with an opportunity to review the project and provide input.

Website: www.BluewaterMandauminWellDrilling.ca

Active Dates: Monday June 12, 2023 to Sunday June 18, 2023

If you are interested in participating or would like to provide comments, please visit the Virtual Public Information Session or contact one of the individuals listed below through the project email. The last day to submit comments for consideration in the draft environmental study is **Monday June 26, 2023**. You can also visit the **Enbridge Gas Project Website** at www.enbridgegas.com/2024WellProject.

Project Contacts	**Avid Banihashemi** Project Manager Dillon Consulting Limited	**Jackie Metcalfe** Environmental Advisor Enbridge Gas Inc.	**Project Email:** BluewaterMandauminWellDrilling@dillon.ca **Telephone:** 416-229-4646, ext. 2048

This notice was first published on June 1, 2023.

DILLON CONSULTING

June 1, 2023

51 Breithaupt Street
Suite 200
Kitchener, Ontario
N2H 5G5

Telephone
519-571-9833
Fax
519-571-7424

To: Melissa Deisley, Director of Planning and Regulations
St. Clair Region Conservation Authority

Re: Enbridge Gas
Proposed 2024 Bluewater and Mandaumin Well Drilling Project
City of Sarnia and Town of Plympton-Wyoming
(Lambton County), Ontario
Notice of Study Commencement and Virtual Public Information Session

Dear Ms. Deisley,

Enbridge Gas has retained Dillon Consulting to undertake an environmental study for the proposed 2024 Bluewater and Mandaumin Well Drilling Project in Lambton County, Ontario.

The proposed project will involve the drilling of two new observation wells. One well is to be located in the Bluewater Designated Storage Area (DSA) and the other in Mandaumin DSA. DSAs are areas of land designated by the Ontario Energy Board (OEB) under section 36.1(1)(a) of the *OEB Act*, which contain geological formations suitable for the storage of natural gas underground. The observation wells constructed for this project will be used to monitor the gas content and pressure in these underground storage formations and help ensure the continued safe and reliable operation of Enbridge Gas storage facilities.

The Bluewater and Mandaumin well drilling sites are located within two kilometres of one another. The Bluewater site is approximately 900 metres west of the intersection of Mandaumin Road and Churchill Line in the City of Sarnia and the Mandaumin site is approximately 1,300 metres northeast of the intersection of Mandaumin Road and Churchill Line in the Town of Plympton-Wyoming.

Project activities at the Bluewater and Mandaumin drilling sites will commence with the construction of a temporary gravel drilling pad

measuring up to 80 metres by 100 metres. Upon completion of drilling activities, a permanent gravel pad measuring 8 metres by 8 metres will be installed around the wells. Access to the Bluewater site will require a new permanent access road that will be 5 metres wide by roughly 300 metres long, and access to the Mandaumin site will also require a new permanent access road, measuring 5 metres wide and approximately 500 metres long.

The study is being conducted in accordance with the OEB's Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th edition (2023). The study will review the need and justification for the project, describe the existing natural, cultural, and socio-economic environment, evaluate the project from a natural, cultural and socio-economic environmental perspective, outline safety measures and provide appropriate measures for impact mitigation and monitoring. Pending a positive recommendation from the OEB to the Minister of Natural Resources for the issuance of well drilling licences under section 40 of the *OEB Act*, construction is planned to begin in spring 2024.

Stakeholder involvement will play a key role in the project. In order to undertake a successful consultation program, we have developed a mailing list of government agencies (federal, provincial, and municipal), Indigenous communities, and other groups that may have an interest in the study. Enbridge Gas will also be hosting a Virtual Public Information Session as part of the study. Details about the session are provided in the attached Notice of Study Commencement and Virtual Public Information Session.

As part of the initial phase of the study, we are collecting information on the cultural, socio-economic, and natural environment, at the proposed well sites. Examples of data being collected include information on archaeological and heritage resources, terrestrial and aquatic vegetation and wildlife, groundwater, surface water, soils, geology, existing infrastructure, and human occupancy and resource use in the area.

We are interested in hearing from you with any comments that you or your organization may have regarding this project. We are also requesting any information relating to natural and/or human environments along the potential routes that may fall within your mandate and, in particular, whether the following are within, or in the vicinity of, the potential routes:

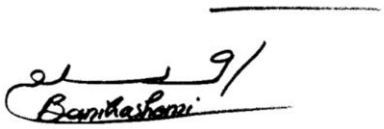
- environmentally sensitive areas;
- floodplains; and,
- distinctive natural features that would warrant protection.

Please send this information to my attention at the above address or by email to BluewaterMandauminWellDrilling@dillon.ca by **Monday June 26, 2023**. If you require any further information, please do not hesitate to contact me using the information below.

If there is a more appropriate contact at your organization who should receive this letter, please kindly forward the letter at your discretion and notify us as we will update our project consultation list.

Sincerely,

Avid Banihashemi



Avid Banihashemi, Ph.D.
Project Manager
Tel: 519-571-9833, ext. 3136

Attachment: Notice of Study Commencement and Virtual Public Information Session

Proposed 2024 Bluewater and Mandaumin Well Drilling Project

Notice of Study Commencement and Virtual Public Information Session

City of Sarnia And Town of Plympton-Wyoming (Lambton County), Ontario

Enbridge Gas Inc.

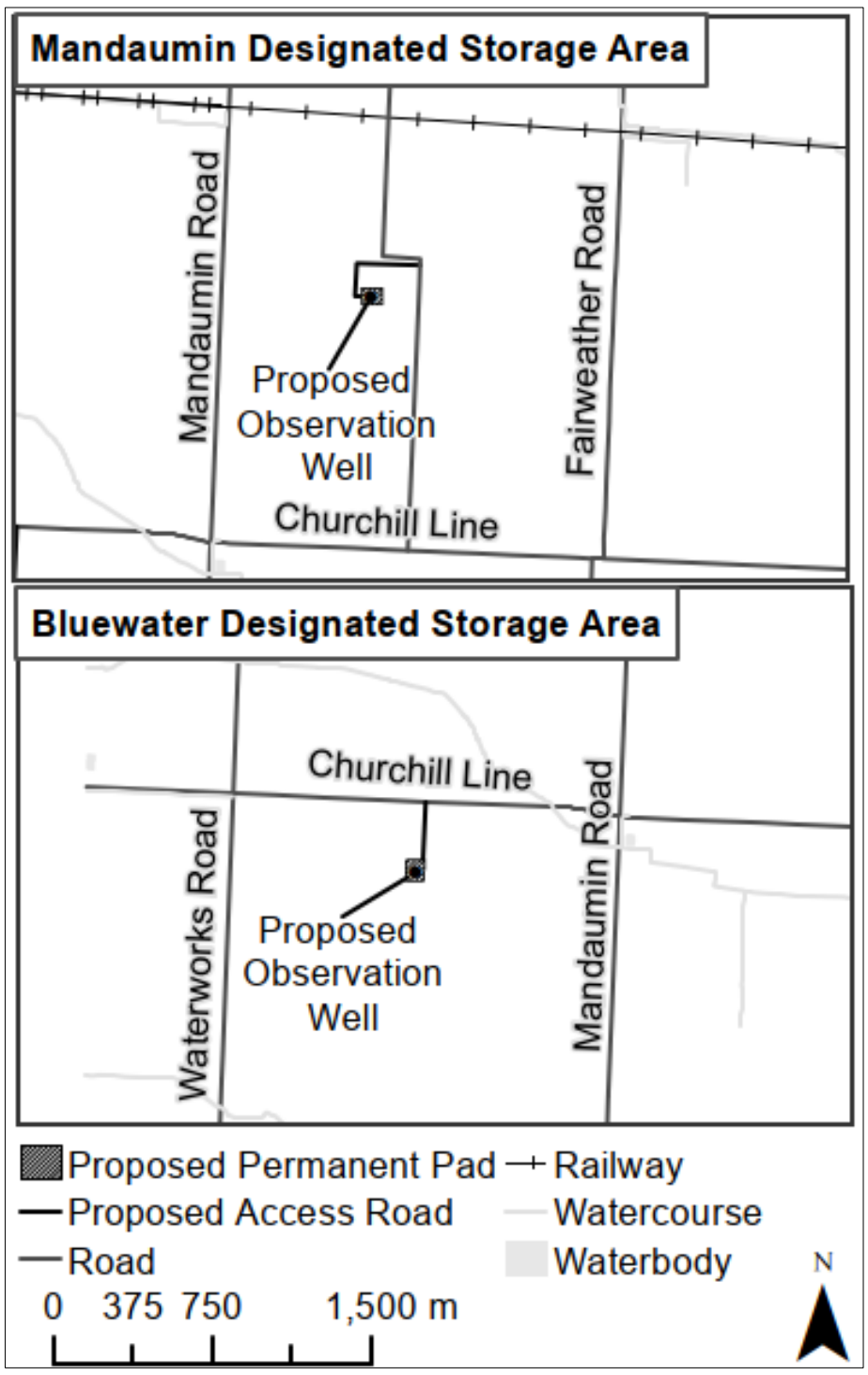
The Study

Enbridge Gas has retained Dillon Consulting to undertake an environmental study for the proposed 2024 Bluewater and Mandaumin Well Drilling Project in Lambton County, Ontario.

The proposed project will involve the drilling of two new observation wells. One well is to be located in the Bluewater Designated Storage Area (DSA) and the other in the Mandaumin DSA. DSAs are areas of land designated by the Ontario Energy Board (OEB) under section 36.1(1)(a) of the *OEB Act*, which contain geological formations suitable for the storage of natural gas underground. The observation wells constructed for this project will be used to monitor the gas content and pressure in these underground storage formations and help ensure the continued safe and reliable operation of Enbridge Gas storage facilities.

The Bluewater and Mandaumin well drilling sites are located within 2 kilometres of one another. The Bluewater site is approximately 900 metres west of the intersection of Mandaumin Road and Churchill Line in the City of Sarnia and the Mandaumin site is approximately 1,300 metres northeast of the intersection of Mandaumin Road and Churchill Line in the Town of Plympton-Wyoming.

Project activities at the Bluewater and Mandaumin drilling sites will commence with the construction of a temporary gravel drilling pad measuring up to 80 metres by 100 metres. Upon completion of drilling activities, a permanent gravel pad measuring 8 metres by 8 metres will be installed around the wells. Access to the Bluewater site will require a new permanent access road that will be 5 metres wide by roughly 300 metres long and access to the Mandaumin site will also require a new permanent access road, measuring 5 metres wide and approximately 500 metres long.



The Process

The study is being conducted in accordance with the OEB's Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th edition (2023). The study will review the need and justification for the project, describe the existing natural, cultural and socio-economic environment, evaluate the project from a natural, cultural, and socio-economic perspective, outline safety measures, and provide appropriate measures for impact mitigation and monitoring. Pending a positive recommendation from the OEB to the Minister of Natural Resources for the issuance of well drilling licences under section 40 of the *OEB Act*, construction is planned to begin in spring 2024.

Invitation to the Community

Stakeholder and Indigenous consultation is a key component of this study. Members of the general public, landowners, government agencies, Indigenous communities, and other interested parties are invited to participate in the study. We are hosting a Virtual Public Information Session to provide you with an opportunity to review the project and provide input.

Website: www.BluewaterMandauminWellDrilling.ca

Active Dates: Monday June 12, 2023 to Sunday June 18, 2023

If you are interested in participating or would like to provide comments, please visit the Virtual Public Information Session or contact one of the individuals listed below through the project email. The last day to submit comments for consideration in the draft environmental study is **Monday June 26, 2023**. You can also visit the **Enbridge Gas Project Website** at www.enbridgegas.com/2024WellProject.

Project Contacts	**Avid Banihashemi** Project Manager Dillon Consulting Limited	**Jackie Metcalfe** Environmental Advisor Enbridge Gas Inc.	**Project Email:** BluewaterMandauminWellDrilling@dillon.ca **Telephone:** 416-229-4646, ext. 2048

This notice was first published on June 1, 2023.

DILLON CONSULTING

June 1, 2023

DILLON CONSULTING

51 Breithaupt Street
Suite 200
Kitchener, Ontario
N2H 5G5

Telephone
519-571-9833
Fax
519-571-7424

To: Deanna Lindblad, Supervisor, Aylmer District
Ministry of Natural Resources and Forestry

Re: Enbridge Gas
Proposed 2024 Bluewater and Mandaumin Well Drilling Project
City of Sarnia and Town of Plympton-Wyoming
(Lambton County), Ontario
Notice of Study Commencement and Virtual Public Information Session

Dear Ms. Lindblad,

Enbridge Gas has retained Dillon Consulting to undertake an environmental study for the proposed 2024 Bluewater and Mandaumin Well Drilling Project in Lambton County, Ontario.

The proposed project will involve the drilling of two new observation wells. One well is to be located in the Bluewater Designated Storage Area (DSA) and the other in the Mandaumin DSA. DSAs are areas of land designated by the Ontario Energy Board (OEB) under section 36.1(1)(a) of the *OEB Act*, which contain geological formations suitable for storage of natural gas underground. The observation wells constructed for this project will be used to monitor the gas content and pressure in these underground storage formations and help ensure the continued safe and reliable operation of Enbridge Gas storage facilities.

The Bluewater and Mandaumin well drilling sites are located within two kilometres of one another. The Bluewater site is approximately 900 metres west of the intersection of Mandaumin Road and Churchill Line in the City of Sarnia, and the Mandaumin site is approximately 1,300 metres northeast of the intersection of Mandaumin Road and Churchill Line in the Town of Plympton-Wyoming.

Project activities at the Bluewater and Mandaumin drilling sites will commence with the construction of a temporary gravel drilling pad

measuring up to 80 metres by 100 metres. Upon completion of drilling activities, a permanent gravel pad measuring 8 metres by 8 metres will be installed around the wells. Access to the Bluewater site will require a new permanent access road that will be 5 metres wide by roughly 300 metres long, and access to the Mandaumin site will also require a new permanent access road, measuring 5 metres wide and approximately 500 metres long.

The study is being conducted in accordance with the OEB's Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th edition (2023). The study will review the need and justification for the project, describe the existing natural, cultural, and socio-economic environment, evaluate the project from a natural, cultural and socio-economic environmental perspective, outline safety measures and provide appropriate measures for impact mitigation and monitoring. Pending a positive recommendation from the OEB to the Minister of Natural Resources for the issuance of well drilling licences under section 40 of the *OEB Act*, construction is planned to begin in spring 2024.

Stakeholder involvement will play a key role in the project. In order to undertake a successful consultation program, we have developed a mailing list of government agencies (federal, provincial, and municipal), Indigenous communities, and other groups that may have an interest in the study. Enbridge Gas will also be hosting a Virtual Public Information Session as part of the study. Details about the session are provided in the attached Notice of Study Commencement and Virtual Public Information Session.

As part of the initial phase of the study, we are collecting information on the cultural, socio-economic, and natural environment, at the proposed well sites. Examples of data being collected include information on archaeological and heritage resources, terrestrial and aquatic vegetation and wildlife, groundwater, surface water, soils, geology, existing infrastructure, and human occupancy and resource use in the area.

We are interested in hearing from you with any comments that you or your organization may have regarding this project. We are also requesting any information relating to natural and/or human environments along the potential routes that may fall within your mandate and, in particular, whether any of the following are within, or in the vicinity of, the potential routes:

- wetlands;
- woodlands;
- environmentally sensitive areas;
- rare (S1-S3) species occurrences;
- designated areas of wildlife habitat;
- areas of natural and scientific interest; and,
- any distinctive natural features that would warrant protection.

Please send this information to my attention at the above address or by email to BluewaterMandauminWellDrilling@dillon.ca by **Monday June 26, 2023**. If you require any further information, please do not hesitate to contact me using the information below.

If there is a more appropriate contact at your organization who should receive this letter, please kindly forward the letter at your discretion and notify us as we will update our project consultation list.

Sincerely,

Avid Banihashemi

Avid Banihashemi, Ph.D.
Project Manager
Tel: 519-571-9833, ext. 3136

Attachment: Notice of Study Commencement and Virtual Public Information Session

Proposed 2024 Bluewater and Mandaumin Well Drilling Project

Notice of Study Commencement and Virtual Public Information Session

City of Sarnia And Town of Plympton-Wyoming (Lambton County), Ontario

Enbridge Gas Inc.

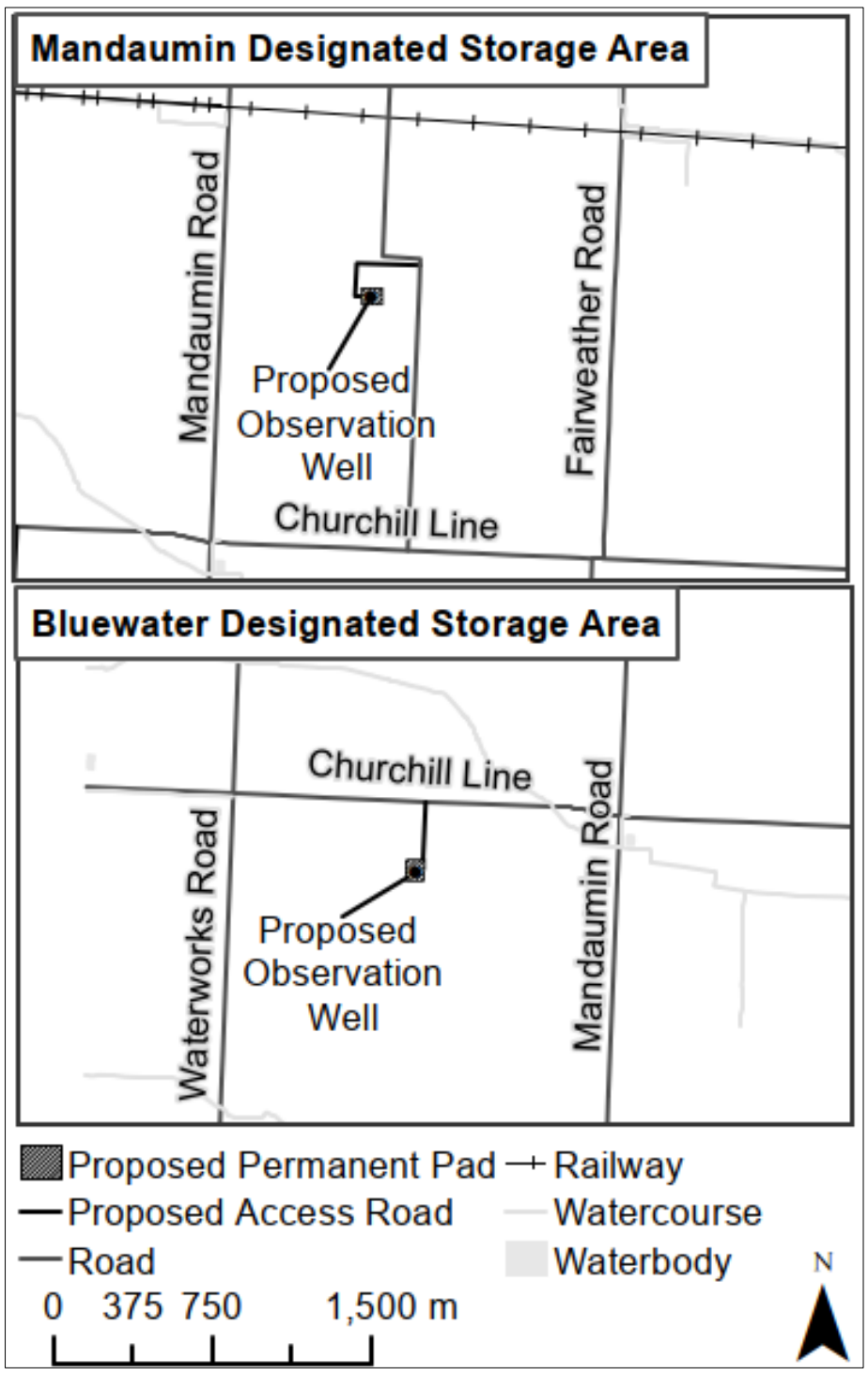
The Study

Enbridge Gas has retained Dillon Consulting to undertake an environmental study for the proposed 2024 Bluewater and Mandaumin Well Drilling Project in Lambton County, Ontario.

The proposed project will involve the drilling of two new observation wells. One well is to be located in the Bluewater Designated Storage Area (DSA) and the other in the Mandaumin DSA. DSAs are areas of land designated by the Ontario Energy Board (OEB) under section 36.1(1)(a) of the *OEB Act*, which contain geological formations suitable for the storage of natural gas underground. The observation wells constructed for this project will be used to monitor the gas content and pressure in these underground storage formations and help ensure the continued safe and reliable operation of Enbridge Gas storage facilities.

The Bluewater and Mandaumin well drilling sites are located within 2 kilometres of one another. The Bluewater site is approximately 900 metres west of the intersection of Mandaumin Road and Churchill Line in the City of Sarnia and the Mandaumin site is approximately 1,300 metres northeast of the intersection of Mandaumin Road and Churchill Line in the Town of Plympton-Wyoming.

Project activities at the Bluewater and Mandaumin drilling sites will commence with the construction of a temporary gravel drilling pad measuring up to 80 metres by 100 metres. Upon completion of drilling activities, a permanent gravel pad measuring 8 metres by 8 metres will be installed around the wells. Access to the Bluewater site will require a new permanent access road that will be 5 metres wide by roughly 300 metres long and access to the Mandaumin site will also require a new permanent access road, measuring 5 metres wide and approximately 500 metres long.



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Invitation to the Community

Stakeholder and Indigenous consultation is a key component of this study. Members of the general public, landowners, government agencies, Indigenous communities, and other interested parties are invited to participate in the study. We are hosting a Virtual Public Information Session to provide you with an opportunity to review the project and provide input.

Website: www.BluewaterMandauminWellDrilling.ca

Active Dates: Monday June 12, 2023 to Sunday June 18, 2023

If you are interested in participating or would like to provide comments, please visit the Virtual Public Information Session or contact one of the individuals listed below through the project email. The last day to submit comments for consideration in the draft environmental study is **Monday June 26, 2023**. You can also visit the **Enbridge Gas Project Website** at www.enbridgegas.com/2024WellProject.

Project Contacts	**Avid Banihashemi** Project Manager Dillon Consulting Limited	**Jackie Metcalfe** Environmental Advisor Enbridge Gas Inc.	**Project Email:** BluewaterMandauminWellDrilling@dillon.ca **Telephone:** 416-229-4646, ext. 2048

This notice was first published on June 1, 2023.

DILLON CONSULTING

Enbridge Gas
50 Keil Drive North
Chatham, Ontario N7M 5M1
Canada

June 1, 2023

To: Cathleen O'Brien
Aamjiwnaang First Nation

Re: Enbridge Gas Inc.
Proposed 2024 Bluewater and Mandaumin Well Drilling Project
City of Sarnia and Town of Plympton-Wyoming (Lambton County), Ontario
Notice of Study Commencement and Virtual Public Information Session

Dear Cathleen,

I am reaching out to provide your community with the attached Notice of Study Commencement and Virtual Public Information Session for the proposed 2024 Bluewater and Mandaumin Well Drilling Project in Lambton County.

Enbridge Gas Inc. (Enbridge Gas) has retained Dillon Consulting Limited to undertake an environmental study for the project. The project will involve the drilling of two new observation wells; one in the Bluewater Designated Storage Area (DSA) and one in the Mandaumin DSA. DSAs are areas of land designated by the Ontario Energy Board (OEB) under section 36.1(1)(a) of the *OEB Act* that contain geological formations used for subsurface storage of natural gas. Observation wells are used to monitor the gas content and pressure in underground storage formations and help ensure the continued safe and reliable operation of Enbridge Gas storage facilities.

The Bluewater and Mandaumin well drilling sites are located within 2 kilometres of one another. The Bluewater site is approximately 900 metres west of the intersection of Mandaumin Road and Churchill Line in the City of Sarnia and the Mandaumin site is approximately 1,300 metres northeast of the intersection of Mandaumin Road and Churchill Line in the Town of Plympton-Wyoming.

Project activities at the Bluewater and Mandaumin drilling sites will commence with the construction of a temporary gravel drilling pad that will be up to 80 metres by 100 metres. Upon completion of drilling activities, a permanent gravel pad of 8 metres by 8 metres will be installed around the wells. Access to the Bluewater site will require a new permanent access road that will be 5 metres wide and approximately 300 metres long. Access to the Mandaumin site will also require a new permanent access road that will be 5 metres wide and approximately 500 metres long.

The study is being conducted in accordance with the OEB's Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th edition (2023). The study will review the need and justification for the project, describe the existing natural, cultural, and socio-economic environment, evaluate the project from a natural, cultural, and social environmental perspective, outline safety measures, and provide appropriate measures for potential impact mitigation and monitoring. Pending a positive recommendation from the OEB to the Minister of Natural Resources for the issuance of well drilling licences under section 40 of the *OEB Act*, construction is planned to begin in spring 2024.

As part of the initial phase of the study, we are collecting information on cultural, socio-economic, natural environment, at the proposed well sites. Examples of data being collected include information on archaeological and heritage resources, terrestrial and aquatic vegetation and wildlife, groundwater, surface water, soils, geology, existing infrastructure, and human occupancy and resource use in the area.

Indigenous engagement will play a key role in the project. As noted in the attached Notice of Study Commencement and Virtual Public Information Session, the project team is hosting a Virtual Public Information Session at www.BluewaterMandauminWellDrilling.ca from **Monday, June 12 to Sunday, June 18, 2023**. Enbridge Gas looks forward to engaging with your community to ensure your community's interests are being properly understood and considered. The project team would like to invite your community to participate in the upcoming Virtual Public Information Session and provide comments regarding the proposed project. Specifically, Enbridge Gas would appreciate your input on any potential impacts that the project may have on Aamjiwnaang First Nation, including any Aboriginal and Treaty Rights, and any measures to mitigate those potential adverse impacts.

Kindly indicate whether your community is interested in participating in the engagement activities on or before **Monday, June 26, 2023.** If you are unable to respond by the above date and are intending to do so, please provide an alternative date for when the project team may expect a response.

Enbridge Gas acknowledges that capacity support may be required to enable you to engage in timely technical reviews of documents, participation in field work associated with the project, and to allow for meaningful engagement. Consistent with our approach on all projects, we are prepared to provide capacity funding to support your community's engagement in relation to this project.

Enbridge Gas would be interested in meeting with Aamjiwnaang First Nation to share project-related information and discuss any comments or concerns you may have. If you wish to meet, please provide potential dates and times that would work best for a meeting with your community representatives. Alternatively, please advise if you do not wish to meet but would prefer to be kept informed of the project.

On behalf of the project team, thank you in advance for your consideration regarding the initial phases of the project. Please do not hesitate to contact me with any questions you may have.

Sincerely,

Lauren Whitwham

Senior Advisor, Community & Indigenous Engagement, Eastern Region
Enbridge Gas Inc.
Office: 519-667-4100, ext. 5153545
Cell: 519-852-3471
Lauren.Whitwham@enbridge.com

Attachment: Notice of Study Commencement and Virtual Public Information Session

Proposed 2024 Bluewater and Mandaumin Well Drilling Project

Notice of Study Commencement and Virtual Public Information Session

City of Sarnia And Town of Plympton-Wyoming (Lambton County), Ontario

Enbridge Gas Inc.

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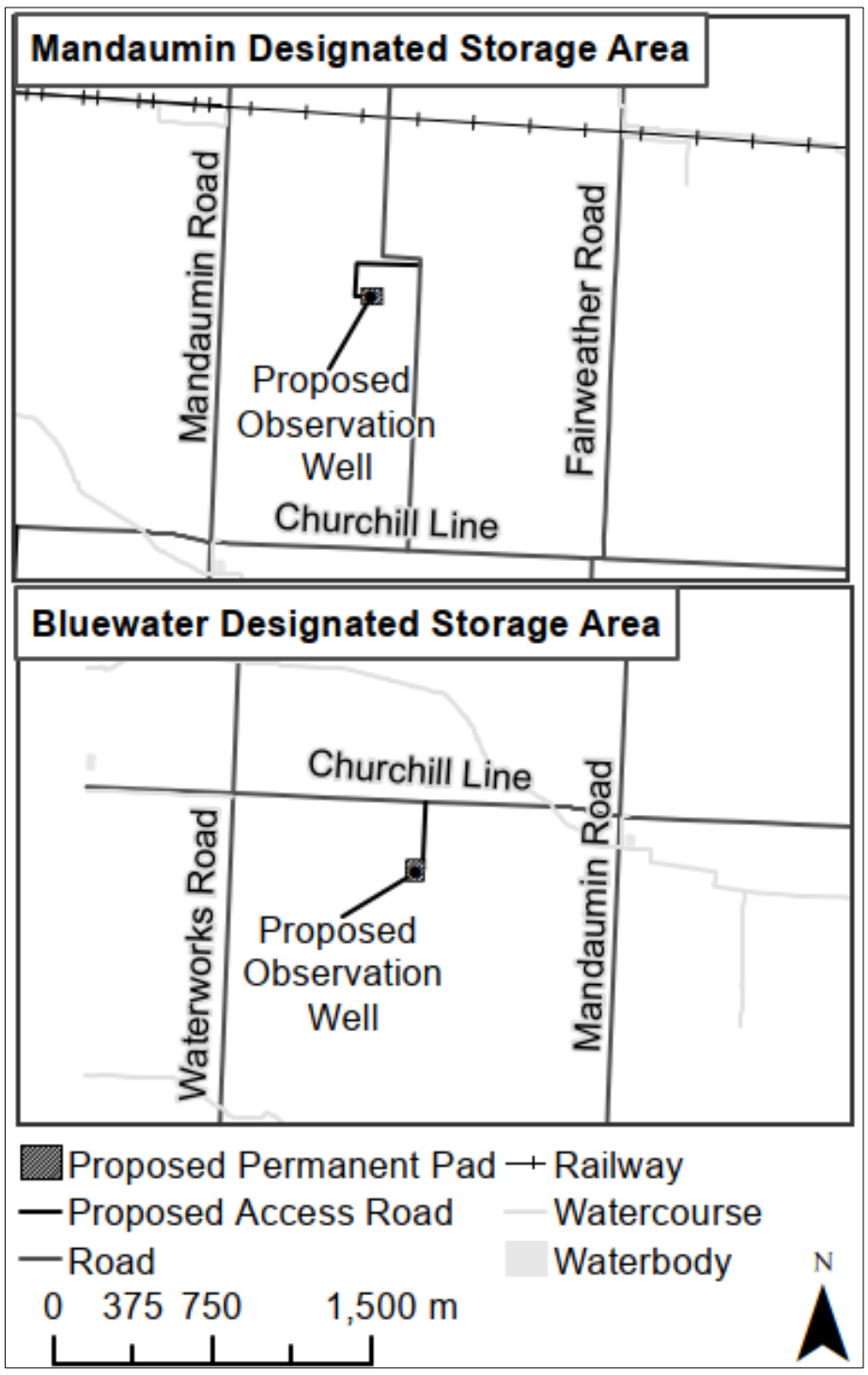

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Active Dates: Monday June 12, 2023 to Sunday June 18, 2023

If you are interested in participating or would like to provide comments, please visit the Virtual Public Information Session or contact one of the individuals listed below through the project email. The last day to submit comments for consideration in the draft environmental study is **Monday June 26, 2023**. You can also visit the **Enbridge Gas Project Website** at www.enbridgegas.com/2024WellProject.

Project Contacts	**Avid Banihashemi** Project Manager Dillon Consulting Limited	**Jackie Metcalfe** Environmental Advisor Enbridge Gas Inc.	**Project Email:** BluewaterMandauminWellDrilling@dillon.ca **Telephone:** 416-229-4646, ext. 2048

This notice was first published on June 1, 2023.

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Appendix H

Virtual Public Information Session Presentation, Video Transcript, and Comment Form

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Proposed 2024 Bluewater and Mandaumin Well Drilling Project

Virtual Public Information Session

June 12, 2023 to June 18, 2023

ENBRIDGE®

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Welcome

This Virtual Public Information Session will be live for one week from **Monday, June 12, 2023 to Sunday, June 18, 2023.**

- You can provide your input on the 2024 Bluewater and Mandaumin Well Drilling Project by completing the comment form available on the Virtual Public Information Session website at www.BluewaterMandauminWellDrilling.ca. Please submit your comments by **Monday, June 26, 2023**.
- After Sunday, June 18, 2023, this presentation, accompanying video transcript, and the comment form will be available for download on the Enbridge Gas website at www.enbridgegas.com/2024WellProject.

Enbridge Gas' Commitment

Enbridge Gas provides safe and reliable delivery of natural gas to more than 3.8 million residential, commercial, and industrial customers across Ontario.

Enbridge Gas will carefully consider all input.

It is committed to involving community members and will provide up-to-date information in an open, honest, and respectful manner.

Enbridge Gas is committed to environmental stewardship and conducts all of its operations in an environmentally responsible manner.

Enbridge Gas' Environment, Health and Safety Policies

Enbridge Gas is committed to protecting the health and safety of all individuals affected by its activities.

Enbridge Gas will provide a safe and healthy working environment and will not compromise the health and safety of any individual.

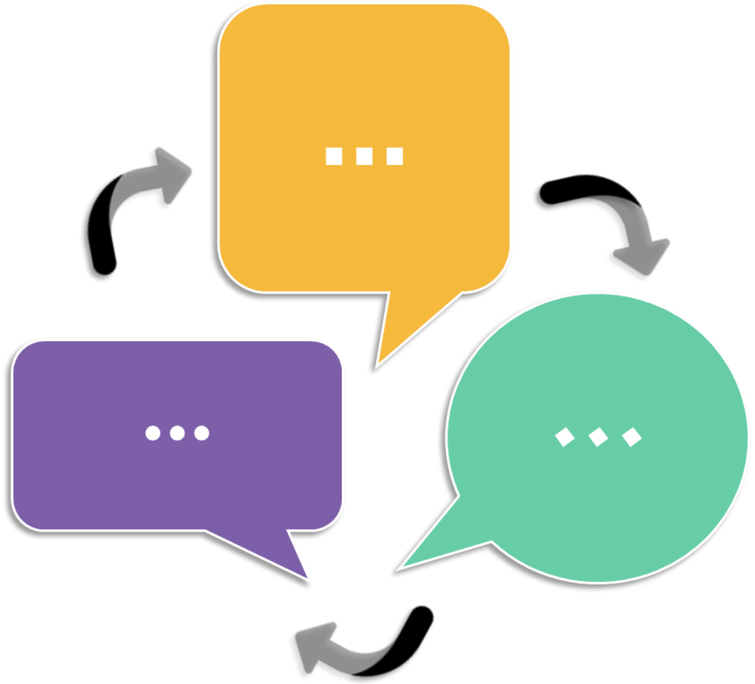
Its goal is to have no workplace incidents and to mitigate, to the extent feasible, its impacts on the environment. To achieve this goal, Enbridge Gas will work with its consultants and contractors, stakeholders, peers, and others to promote responsible environmental practices and continuous improvement.

Enbridge Gas is committed to environmental protection and stewardship, and recognizes that pollution prevention, biodiversity, and resource conservation are key to a sustainable environment.

All employees are responsible and accountable for contributing to a safe working environment, for fostering safe working attitudes, and for operating in an environmentally responsible manner.

Purpose of the Public Information Session

- Provide information on the purpose of the project and illustrate the proposed construction activities that will occur at the Bluewater and Mandaumin well drilling sites
- Inform landowners, Indigenous communities, municipalities, stakeholders, regulatory authorities, and the public about the project and gather feedback about the project activities
- Give everyone the opportunity to participate during the process of completing the Environmental Report, which will be included in the application to the Ontario Energy Board
- Provide the opportunity to identify any unknown constraints and review proposed plans to mitigate impacts to the local community and the environment
- Create a space for you to ask questions and/or provide comments to Enbridge Gas or Dillon Consulting



Consultation Approach

We are committed to a comprehensive consultation process and want to hear from you about this project.

Our consultation approach is:

- **Inclusive:** reaching out to all who may be interested or affected and providing opportunities to become informed and get involved.
- **Transparent:** providing access to information and clear explanations for decisions.
- **Accountable:** explaining how your input will be used in the decision-making process.

An important part of the consultation process is working with Indigenous communities, stakeholders, and interested parties to identify and resolve potential project-related issues and concerns.

Enbridge Indigenous Peoples Policy: Introduction

- Enbridge Gas follows the Enbridge Inc. (Enbridge) Indigenous Peoples Policy.
- Enbridge recognizes the diversity of Indigenous Peoples who live where the company works and operates. They understand from history the destructive impacts on the social and economic wellbeing of Indigenous Peoples. Enbridge recognizes and realizes the importance of reconciliation between Indigenous communities and the broader society. Positive relationships with Indigenous Peoples, based on mutual respect and focused on achieving common goals, will create positive outcomes from Indigenous communities.
- Enbridge commits to pursue sustainable relationships with Indigenous Nations and groups in proximity to where Enbridge conducts business. To achieve this, Enbridge governs itself by the principles listed on the next slide.

Enbridge Indigenous Peoples Policy: Principles

Recognize	Enbridge **recognizes** the legal and constitutional rights of Indigenous Peoples, and the importance of the relationships between Indigenous Peoples and their traditional lands and resources. They commit to working with Indigenous communities in a manner that recognizes and respects those legal and constitutional rights and the traditional lands and resources to which they apply. Enbridge commits to ensuring that Enbridge projects and operations are carried out in an environmentally responsible manner.
Understand	Enbridge **understands** the importance of the United Nations Declaration of the Rights of Indigenous Peoples in the context of existing Canadian law and the commitments that the government has made to protecting the rights of Indigenous Peoples.
Engage	Enbridge **engages** in forthright and sincere consultation with Indigenous Peoples about their projects and operations through processes that seek to achieve early and meaningful engagement. Indigenous engagement helps define projects that may occur on lands traditionally occupied by Indigenous Peoples.
Commit	Enbridge **commits** to working with Indigenous Peoples to achieve benefits for them resulting from Enbridge's projects and operations, including opportunities in training and education, employment, procurement, business development, and community development.
Foster	Enbridge **fosters** an understanding of the history and culture of Indigenous Peoples among their employees and contractors, in order to create better relationships between Enbridge and Indigenous communities.

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Enbridge Indigenous Peoples Policy: Commitment

The commitment is a shared responsibility involving Enbridge and its affiliates, employees and contractors. They will conduct business in a manner that reflects the principles listed on the previous slide. Enbridge will provide ongoing leadership and resources to effectively implement the principles, including the development of implementation strategies and specific action plans. Enbridge commits to periodically review this policy so that it remains relevant and respects Indigenous culture and varied traditions.

Regulatory Framework

For the project to proceed, a favourable report from the Ontario Energy Board (OEB) to the Minister of Natural Resources and Forestry is required, pursuant to section 40(1) of the *Ontario Energy Board Act*. The OEB requires that Enbridge Gas complete an Environmental Report, which includes an environmental assessment of the proposed works.

ONTARIO ENERGY BOARD

Role of the Ontario Energy Board

- As requested by the Minister of Natural Resources and Forestry, provide a report on the well drilling application submitted to the Ministry as per section 40(1) of the OEB Act.
- Once the application is submitted to the OEB, any party with an interest in the project may apply to the OEB to become intervenors or interested parties.
- Provides a public forum during the review of the application for people to participate in the decision-making process.
- Determines whether a proposed project is in the public interest.

ENBRIDGE DILLON CONSULTING

Environmental Study Process

As part of the planning process, Enbridge Gas has retained Dillon Consulting to undertake an Environmental Study for the project. The Study will fulfill the requirements of the Ontario Energy Board's *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition* (2023).

The Study will be conducted during the earliest phase of the planning process. As part of the Study, Enbridge Gas and Dillon Consulting will:

- Undertake engagement to understand the views of interested and potentially affected parties
- Consult and engage with Indigenous communities to understand interests and potential impacts
- Identify potential impacts of the project
- Develop environmental mitigation and protective measures to avoid or reduce potential impacts
- Develop an appropriate environmental inspection, monitoring, and follow-up program
- Submit the draft Environmental Report to the Ontario Pipeline Coordinating Committee
- Submit the final Environmental Report to the Ontario Energy Board

ENBRIDGE DILLON CONSULTING

Project Overview

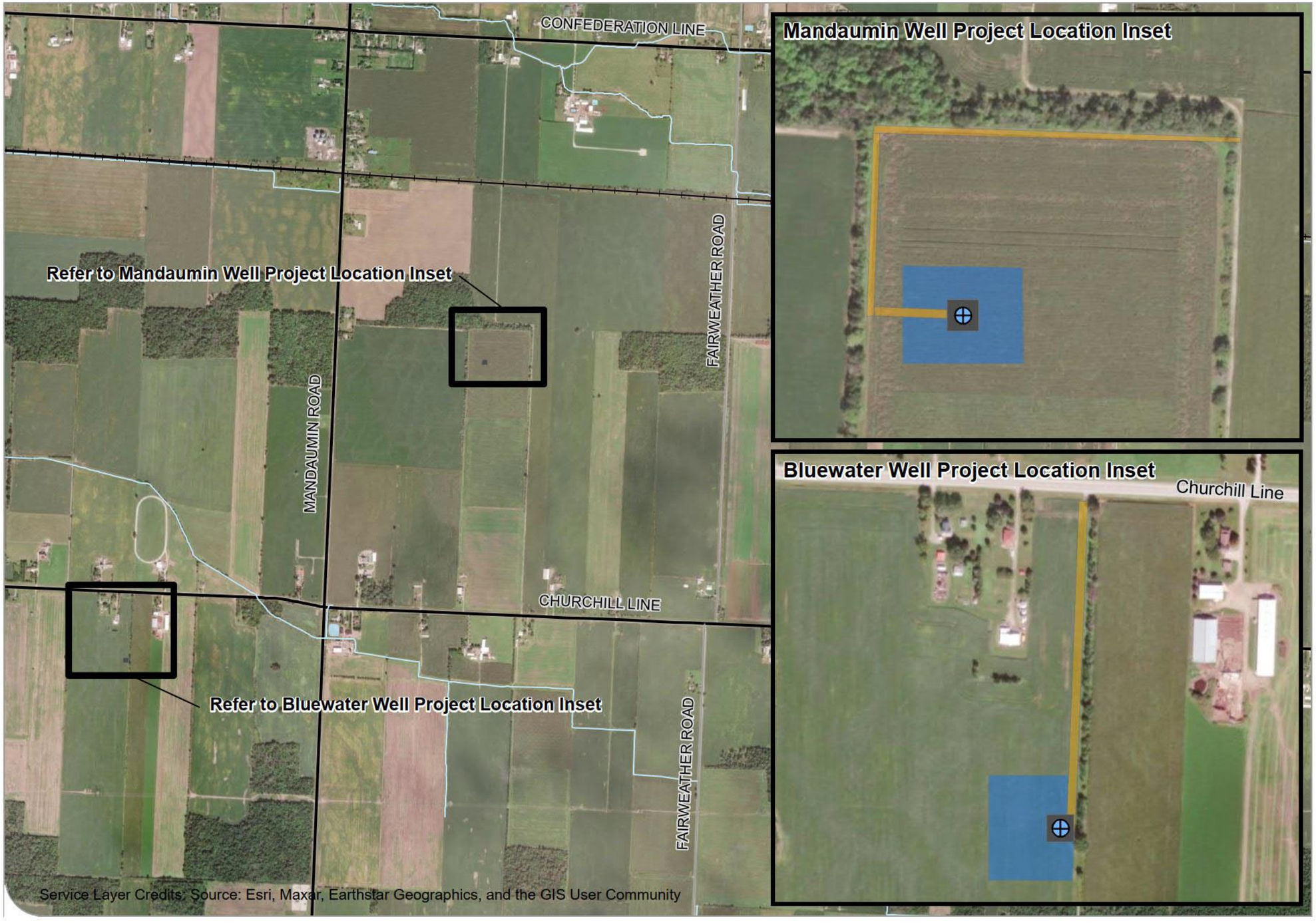
The project will involve the drilling of two new observation wells in Lambton County. One well will be located in the Bluewater Designated Storage Area (DSA) in the City of Sarnia and the other in the Mandaumin DSA in the Town of Plympton-Wyoming. The observation wells constructed for this project will be used to monitor the gas content and pressure in these underground storage formations and help ensure the continued safe and reliable operation of Enbridge Gas storage facilities.

Project activities at the Bluewater and Mandaumin drilling sites will commence with the construction of a temporary gravel drilling pad measuring up to 80 metres by 100 metres. Upon completion of drilling activities, a permanent gravel pad measuring 8 metres by 8 metres will be installed around the wells. Access to the Bluewater site will require a new permanent access road that will be 5 metres wide by roughly 300 metres long and access to the Mandaumin site will also require a new permanent access road, measuring 5 metres wide and approximately 500 metres long.

What is a Designated Storage Area?

DSAs are areas of land designated by the Ontario Energy Board (OEB) under section 36.1(1)(a) of the OEB Act, which contain geological formations suitable for the storage of natural gas underground.

ENBRIDGE DILLON CONSULTING



2024 BLUEWATER AND MANDAUMIN WELL DRILLING PROJECT

ENBRIDGE GAS

SITE LOCATIONS

FIGURE 1

- Proposed Observation Well
- Proposed Temporary Pad (approx. 80m by 100m)
- Proposed Permanent Access Road (approx. 5m wide)
- Proposed Permanent Pad (approx. 8m by 8m)
- Waterbody
- Watercourse
- Major Road
- Minor Road
- Railway

SCALE 1:20,000

0 250 500 1,000 m

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

DILLON CONSULTING

Natural Environment: Overview

A preliminary field investigation, including preliminary Ecological Land Classification (ELC), was conducted by a Dillon biologist to identify and assess existing natural features, including potential terrestrial and aquatic habitat, within the Bluewater and Mandaumin Study Areas in May 2023.

The results of the preliminary ELC survey determined lands in the Bluewater Study Area and Mandaumin Study Area are primarily classified as ‘cultural’ communities with some natural communities occurring at the boundary of the Mandaumin Study Area.

The project footprint of each site is mainly within active agricultural fields (annual row crops). Other cultural communities most common within the wider Study Areas include residential properties, fencerows, and hedgerows.

Natural communities encountered within the Mandaumin Study Area consisted of a deciduous forest dominated by Sugar Maple on the northern and western boundaries of the Study Area.

Natural Environment: Species at Risk

Based on a review of existing records, 22 Species at Risk (SAR) have the potential to occur within the project Study Area. Consideration of potential SAR/SAR habitat that may be present in the Study Area was determined based on the general habitat requirements of the species and the Ecological Land Classification communities identified during the preliminary field investigation conducted in May 2023.

Blanding's Turtle

Mottled Duskywing

Eastern Foxsnake

Bobolink

Eastern Flowering Dogwood

Eastern Hognose Snake

Five-lined Skink

The Ministry of the Environment, Conservation and Parks will be consulted during project planning to determine whether species-specific surveys are required to support potential permitting and/or approvals under the Endangered Species Act, 2007.

Natural Environment: Potential Effects and Mitigation Measures

Examples of Potential Effects

- Temporary loss or alteration of vegetation during construction.
- Temporary alteration of wildlife habitat and/or disruption of wildlife movement during construction.
- Temporary alteration of Species at Risk (SAR) habitat and/or disruption of SAR movement during construction.

Examples of Mitigation Measures

- Minimize the width of the construction area to reduce the amount of vegetation affected.
- Flag or fence off environmentally sensitive areas prior to construction.
- Document wildlife and SAR encounters and notify appropriate regulatory authorities, where required.
- Provide SAR identification sheets to workers that outline habitat, identifying characteristics and mitigation measures.

Socio-Economic Environment: Overview

The project occurs in the City of Sarnia and Town of Plympton-Wyoming (Lambton County). The project Study Areas are largely agricultural and rural residential in nature.

Statistics shared by the Sarnia-Lambton Economic Partnership indicate that, in 2022, the leading industries in Lambton County were healthcare and social assistance, manufacturing, retail trade, and construction.

The leading industries in the City of Sarnia in 2022 were healthcare and social assistance, retail trade, and manufacturing.

The leading industries in the Town of Plympton-Wyoming in 2022 were healthcare and social assistance, manufacturing, and construction.

Socio-Economic Environment: Potential Effects and Mitigation Measures

Examples of Potential Effects

- Temporary increase in nuisance noise during construction.
- Temporary traffic disruptions during construction.
- Temporary increase in wastes during construction.

Examples of Mitigation Measures

- Construction activities will be carried out in compliance with municipal noise by-laws with respect to noise and construction equipment usage. Applicable noise by-law exemptions will be sought if construction activities cannot be avoided on statutory holidays, Sundays, or at night.
- Traffic access will be maintained, where possible, during construction. Good management and best practices will be implemented during construction to minimize traffic disruption. If required, temporary detour routes will be provided to reduce potential impacts to commuters.
- Solid waste will be collected and disposed of appropriately in accordance with applicable regulations at a licensed waste facility.

ENBRIDGE DILLON CONSULTING

Cultural Heritage Resources: Archaeology

- Combined Stage 1 and Stage 2 Archaeological Assessments are currently being completed for each project site.
- Few previous archaeological assessments have occurred in the project area.
- The desktop review has not identified any registered archaeological sites in the immediate vicinity of the project lands. In the general area of Wyoming, Indigenous archaeological sites ranging from the Late Paleo (8400 to 8000 BCE) to Late Woodland (900 to 1650 CE) and 19th century Settler sites have been identified.
- A desktop review of the project will be presented in the combined Stage 1 and Stage 2 Archeological Assessment Reports that will be appended to the Environmental Report.

Cultural Heritage Resources: Built Heritage and Cultural Heritage Landscapes

A Cultural Heritage Screening conducted for the project identified properties of possible Cultural Heritage Value or Interest (CHVI) at both project sites.

A Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment will be completed for each property to determine if CHVI is present. These reports may include the assessment of any potential impacts to heritage attributes and recommend appropriate mitigation measures.

The results of the high-level Cultural Heritage Screening found the following:

- Late 19th to early 20th century rural residential/agricultural properties with structures over 40 years old
- No other notable features or landscapes
- No adjacent cemeteries
- Neither property is a known municipal, provincial, or federally-listed or designated heritage property

Wellhead Design, Construction and Safety

Design and Safety

Enbridge Gas takes many steps to safely and reliably operate their network of natural gas systems and storage facilities, such as:

- Designing, constructing, and testing systems and facilities to meet or exceed requirements set by industry standards and regulatory authorities;
- Ensuring that any work is respectful of community activities, regulations and bylaws;
- Continuously monitoring their network and facilities; and
- Performing field surveys to detect potential issues and confirm the integrity of the storage facilities.

Construction

The construction work is temporary. Once the well drilling activities are complete, the project areas will be restored to as close to pre-construction condition as possible.

General Construction Overview

Typical observation well drilling activities involve drilling with a rotary rig then running casing, and cementing the hole in place from larger to smaller diameters:

1. Surface casing (set into bedrock to protect drinking water)
2. Intermediate casing (isolates storage gas zones)
3. Production casing (isolates storage gas zones)

The final activity is the installation of a wellhead which meets industry standards.

Photo 1. Photo of typical well drilling equipment

Photo 2. Photo of a typical wellhead configuration for an observation well

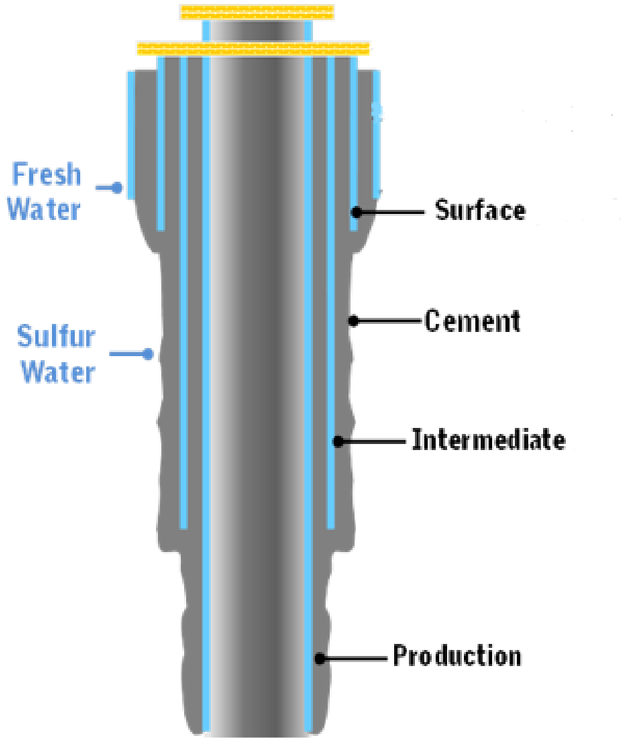


Figure 1. Typical cross-section of an observation well configuration

ENBRIDGE
DILLON CONSULTING

Mitigation and Monitoring

Enbridge Gas is committed to working with the community on construction planning, mitigation, and post-construction monitoring. Post-construction monitoring will be conducted so that impacted areas are restored to as close to pre-construction conditions as possible.

Enbridge Gas recognizes that the construction of the observation wells may result in short-term adverse impacts and they commit to applying mitigation measures to reduce these impacts and work with affected municipalities and landowners so that issues are resolved in a timely manner.

Environmental Assessment Process and Project Schedule

Date	Activity
Early May 2023	Notice of Upcoming Project
Late May to Early July 2023	Baseline Data Collection and Desktop Review
June 1, 2023	Notice of Study Commencement
June 12 to June 18, 2023	Virtual Public Information Session (We are here)
June 26, 2023	Last Day for Public Comments for Inclusion in the Draft Environmental Report
Late May to Early July 2023	Identify Potential Effects and Mitigation Measures for Well Drilling Activities
Late May to Early July 2023	Effects Assessment and Cumulative Effects Assessment
July 17 to August 28, 2023	Environmental Report submitted to Ontario Pipeline Coordinating Committee for 42-day Review Period
August 2023	Anticipated date for submission of the Well Drilling License Applications to the Ministry of Natural Resources and Forestry
Fall 2023	Potential Construction Start – Early Activities (access roads and pads)
Spring 2024	Tentative Well Drilling Start Date (pending receipt of all permits and approvals)
Summer 2024	Potential Construction Completion Date

Following the Virtual Public Information Session, the most up-to-date project schedule can be found on the Enbridge Gas website: www.enbridgegas.com/2024WellProject

ENBRIDGE DILLON CONSULTING

Continuous Stakeholder Engagement

Enbridge Gas is committed to open dialogue throughout the environmental assessment and the OEB application process. Stakeholders will have the opportunity to remain engaged in the process after the environmental assessment is completed, through:

- Contacting project team members (project contact information provided on next slide)
- Visiting the Enbridge Gas project website at **www.enbridgegas.com/2024WellProject**

Thank you for participating in our Virtual Public Information Session!

- We want to hear from you! Please complete the project comment form on the Virtual Public Information Session website at www.BluewaterMandauminWellDrilling.ca.
- After Sunday, June 18, 2023, this presentation, accompanying video transcript, and the comment form will be available for download on the Enbridge Gas website at **www.enbridgegas.com/2024WellProject**.
- Please submit your feedback by **Monday, June 26, 2023** so it can be considered in the draft Environmental Report.

Project Contact Information:

Email: BluewaterMandauminWellDrilling@dillon.ca

Phone: 416-229-4646, ext. 2048

Stay Informed

2024 Bluewater and Mandaumin Well Drilling Project – Virtual Public Information Session Presentation Transcript

Slide No.	Slide Title	Transcript
1	Title Slide	Hello and welcome to the Virtual Public Information Session for the Enbridge Gas 2024 Bluewater and Mandaumin Well Drilling Project! At any time, you can press pause or stop this presentation. You will also have the opportunity to download the transcript to this video on the Virtual Public Information Session website, or on the Enbridge Gas website. Links are provided on the next slide and at the end of the presentation.
2	Welcome	This Virtual Public Information Session will be live for one week, beginning Monday, June 12th and ending Sunday, June 18th, 2023. Dillon Consulting has been retained to conduct an environmental study to assess the potential environmental and socio-economic effects that may result from the proposed 2024 Bluewater and Mandaumin Well Drilling Project. This presentation will provide you with information about the proposed project, the Ontario Energy Board filing process, and will outline how you can stay informed and participate. You can provide your input on the project by completing the comment form available on the Virtual Public Information Session website at www.BluewaterMandauminWellDrilling.ca. Please submit your comments by Monday, June 26, 2023. After Sunday, June 18, 2023, this presentation, accompanying video transcript, and the comment form will be available for download on the Enbridge Gas website at www.enbridgegas.com/2024WellProject.
3	Enbridge Gas Commitment	Enbridge Gas provides safe and reliable delivery of natural gas to more than 3.8 million residential, commercial, and industrial customers across Ontario. Enbridge Gas will carefully consider all input on the project and is committed to involving local communities and affected stakeholders throughout the regulatory process. Enbridge Gas commits to providing up-to-date information in an open, honest, and respectful manner. Enbridge Gas is committed to environmental stewardship and conducts all of its operations in an environmentally responsible manner.
4	Enbridge Gas Environment, Health and Safety Policies	Enbridge Gas is committed to protecting the health and safety of all individuals affected by its activities. Enbridge Gas will provide a safe and healthy working environment and will not compromise the health and safety of any individual. Its goal is to have no workplace incidents and to mitigate, to the extent feasible, its impacts on the environment. To achieve this goal, Enbridge Gas will work with our stakeholders, peers, and others to promote responsible environmental practices and continuous improvement. Enbridge Gas is committed to environmental protection and stewardship, and recognizes that pollution prevention, biodiversity, and resource conservation are key to a sustainable environment. All employees are responsible and accountable for contributing to a safe working environment, for fostering safe working attitudes, and for operating in an environmentally responsible manner.

Slide No.	Slide Title	Transcript
5	Purpose of the Public Information Session	The purpose of this Public Information Session is to: • Provide information on the purpose of the project and illustrate the proposed construction activities that will occur at the Bluewater and Mandaumin well drilling sites; • Inform landowners, Indigenous communities, municipalities, stakeholders, regulatory authorities, and the public about the project and gather feedback about the project activities; • Give everyone the opportunity to participate during the process of completing the Environmental Report, which will be included in the application to the Ontario Energy Board; • Provide the opportunity to identify any unknown constraints and review proposed plans to mitigate impacts to the local community and the environment; and • Create a space for you to ask questions and/or provide comments to Enbridge Gas or Dillon Consulting.
6	Consultation Approach	We are committed to a comprehensive consultation process and want to hear from you. Our consultation approach is: • Inclusive – by reaching out to all who may be interested or affected and providing opportunities to become informed and get involved. • Transparent – by providing access to information and clear explanations for decisions. • Accountable –explaining how your input will be used in the decision-making process. An important part of the consultation process is working with all Indigenous communities, stakeholders, and interested parties to identify and resolve potential project-related issues and concerns.
7	Enbridge Indigenous Peoples Policy – Introduction	Enbridge recognizes the diversity of Indigenous Peoples who live where the company works and operates. They understand from history the destructive impacts on the social and economic wellbeing of Indigenous Peoples. Enbridge recognizes and realizes the importance of reconciliation between Indigenous communities and the broader society. Positive relationships with Indigenous Peoples, based on mutual respect and focused on achieving common goals, will create positive outcomes from Indigenous communities. Enbridge commits to pursue sustainable relationships with Indigenous Nations and groups in proximity to where Enbridge conducts business. To achieve this, Enbridge will govern itself by the principles presented on the next slide.
8	Enbridge Indigenous Peoples Policy – Principles	Enbridge governs itself by the principles listed on this slide. You may pause this video if you wish to review this slide further.

Slide No.	Slide Title	Transcript
9	Enbridge Indigenous Peoples Policy – Commitment	The principles outlined on the previous slide are a commitment and a shared responsibility involving Enbridge and its affiliates, employees, and contractors. They will conduct business in a manner that reflects the principles of the policy. Enbridge will provide ongoing leadership and resources to effectively implement the principles, including the development of implementation strategies and specific action plans. Enbridge commits to periodically review this policy so that it remains relevant and respects Indigenous culture and varied traditions.
10	Regulatory Framework	For the project to proceed, a favourable report from the Ontario Energy Board to the Minister of Natural Resources and Forestry is required, pursuant to section 40(1) of the *Ontario Energy Board Act*. The Ontario Energy Board's *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition* (2023) requires that Enbridge Gas complete an Environmental Report, which includes an environmental assessment of the proposed works. Prior to filing the Environmental Report with the Ontario Energy Board, a draft copy of the report will be submitted to the Ontario Pipeline Coordinating Committee for review and comment. The Ontario Energy Board will review the Environmental Report for the project (including details of consultation) as part of the proceeding to obtain well drilling licences under section 40(1) of the Ontario Energy Board Act. Once the Ministry of Natural Resources and Forestry refers the well drilling license applications to the Ontario Energy Board for a report, any party with an interest in the project may apply to the Board to become intervenors or interested parties in order to participate in the decision-making process. Following their review of the application, the Ontario Energy Board will determine whether the proposed project is in the public interest.
11	Environmental Study Process	As part of the planning process, Enbridge Gas has retained Dillon Consulting to undertake an Environmental Study for the project. The Study will fulfill the requirements of the Ontario Energy Board's *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition* (2023). The Study will be conducted during the earliest phase of the planning process. As part of the Study, Enbridge Gas and Dillon Consulting will: • Undertake engagement to understand the views of interested and potentially affected parties; • Consult and engage with Indigenous communities to understand interests and potential impacts; • Identify potential impacts of the project; • Develop environmental mitigation and protective measures to avoid or reduce potential impacts; • Develop an appropriate environmental inspection, monitoring, and follow-up program; • Submit the draft Environmental Report to the Ontario Pipeline Coordinating Committee; and • Submit the final Environmental Report to the Ontario Energy Board.

Slide No.	Slide Title	Transcript
12	Project Overview	The project will involve the drilling of two new observation wells in Lambton County. One well will be located in the Bluewater Designated Storage Area in the City of Sarnia and the other in the Mandaumin Designated Storage Area in the Town of Plympton-Wyoming. Designated Storage Areas are areas of land designated by the Ontario Energy Board under section 36.1(1)(a) of the *Ontario Energy Board Act*, which contain geological formations suitable for the storage of natural gas underground. The observation wells constructed for this project will be used to monitor the gas content and pressure in these underground storage formations and help ensure the continued safe and reliable operation of Enbridge Gas storage facilities. Project activities at the Bluewater and Mandaumin drilling sites will commence with the construction of a temporary gravel drilling pad measuring up to 80 metres by 100 metres. Upon completion of drilling activities, a permanent gravel pad measuring 8 metres by 8 metres will be installed around the wells. Access to the Bluewater site will require a new permanent access road that will be 5 metres wide by roughly 300 metres long and access to the Mandaumin site will also require a new permanent access road, measuring 5 metres wide and approximately 500 metres long, connecting from an existing laneway on an adjacent property.
13	No title – Project Overview Map	This map provides an overview of the project components. You may pause this video if you need additional time to review the map. An interactive version is also available on the Virtual Public Information Session website.
14	Natural Environment – Overview	A preliminary field investigation, including preliminary Ecological Land Classification, was conducted by a Dillon biologist to identify and assess existing natural features, including potential terrestrial and aquatic habitat, within the Bluewater and Mandaumin Study Areas in May 2023. The results of the preliminary Ecological Land Classification survey determined lands in the Bluewater Study Area and Mandaumin Study Area are primarily classified as 'cultural' communities with some natural communities occurring at the boundary of the Mandaumin Study Area. The project footprint of each site is mainly within active agricultural fields (annual row crops). Other cultural communities most common within the Study Areas include residential properties, fencerows, and hedgerows. Natural communities encountered within the Mandaumin Study Area consisted of a deciduous forest dominated by Sugar Maple on the northern western boundary of the Study Area.
15	Natural Environment – Species at Risk	Based on a review of existing records, 22 Species at Risk have the potential to occur within the project Study Area. Consideration of potential Species at Risk or Species at Risk habitat that may be present in the Study Area was determined based on the general habitat requirements of the species and the Ecological Land Classification communities identified during the preliminary field investigation conducted in May 2023. This slide shows some examples of Species at Risk that have the potential to occur in the Study Area. The Ministry of the Environment, Conservation and Parks will be consulted during project planning to determine whether species-specific surveys are required to support potential permitting and/or approvals under the *Endangered Species Act, 2007*.

Slide No.	Slide Title	Transcript
16	Natural Environment – Potential Effects and Mitigation Measures	This slide lists examples of potential effects on the natural environment and the types of mitigation measures that may be considered in the environmental assessment. Temporary workspace, where required, will be sited to avoid sensitive environmental features. You may pause the video if you need additional time to review this slide.
17	Socio-Economic Environment – Overview	The project Study Areas are largely agricultural and rural residential in nature. Statistics shared by the Sarnia-Lambton Economic Partnership indicate that, in 2022, the leading industries in Lambton County were health care and social assistance, manufacturing, retail trade, and construction. The leading industries in the City of Sarnia in 2022 were health care and social assistance, retail trade, and manufacturing. The leading industries in the Town of Plympton-Wyoming in 2022 were health care and social assistance, manufacturing, and construction.
18	Socio-Economic Environment – Potential Effects and Mitigation Measures	This slide lists examples of potential effects on the socio-economic environment and the types of mitigation measures that may be considered in the environmental assessment. You may pause this video if you need additional time to review this slide.
19	Cultural Heritage Resources – Archaeology	Combined Stage 1 and Stage 2 Archaeological Assessments are currently being completed for each project site. Few previous archaeological assessments have occurred in the project area. The desktop review has not identified any registered archaeological sites in the immediate vicinity of the project lands. In the general area of Wyoming, Indigenous archaeological sites ranging from the Late Paleo (8400 to 8000 BCE) to Late Woodland (900 to 1650 CE) and 19th century Settler sites have been identified. A desktop review of the project lands will be presented in the combined Stage 1 and Stage 2 Archeological Assessment Reports that will be appended to the Environmental Report.

Slide No.	Slide Title	Transcript
20	Cultural Heritage Resources – Built Heritage and Cultural Heritage Landscapes	A Cultural Heritage Screening conducted for the project identified properties of possible Cultural Heritage Value or Interest at both the Bluewater and Mandaumin well drilling sites. A Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment will be completed for each property to determine if Cultural Heritage Value or Interest is present. These reports may include the assessment of any potential impacts to heritage attributes and recommend appropriate mitigations. The results of the high-level Cultural Heritage Screening found the following: • Late 19th to early 20th century rural residential/agricultural properties with structures over 40 years old; • No other notable features or landscapes; • No adjacent cemeteries; and • Neither property is a known municipal, provincial, or federally-listed or designated heritage property.
21	Wellhead Design, Construction, and Safety	Design and Safety Enbridge Gas takes many steps to safely and reliably operate their network of natural gas systems and storage facilities, such as: • Designing, constructing, and testing systems and facilities to meet or exceed requirements set by industry standards and regulatory authorities; • Ensuring that any work is respectful of community activities, regulations, and bylaws; • Continuously monitoring their network and facilities; and • Performing field surveys to detect potential issues and confirm the integrity of the storage facilities. Construction The construction work is temporary. Once the well drilling activities are complete, the project areas will be restored to as close to pre-construction condition as possible.
22	General Construction Overview	This slide shows the sequence of drilling operations for the planned observation wells. The wells will be drilled with a rotary rig from surface to the planned total depth. It is a sequential operation that involves drilling holes, running casing, and cementing the hole in place from larger to smaller diameters. The casing set depth selection process is designed to protect the environment. The surface casing sections protect the water bearing zones and the intermediate and production casings isolates the gas zones. Considering these wells are observation wells, an American Petroleum Institute pressure rated wellhead is installed along with telemetry to monitor the gas pressure in the underground storage formations, which will assist in the continued safe and reliable operation of Enbridge Gas storage facilities. Photo 1 on the slide shows typical well drilling equipment. Photo 2 shows a typical wellhead configuration for an observation well. Figure 1 is a typical cross-section of an observation well configuration.

Slide No.	Slide Title	Transcript
23	Mitigation and Monitoring	Enbridge Gas is committed to working with the community on construction planning, mitigation, and post-construction monitoring. Post-construction monitoring will be conducted so that impacted areas are restored to as close to pre-construction conditions as possible. Enbridge Gas recognizes that the construction of the observation wells may result in short-term adverse impacts and commits to applying mitigation measures to reduce these impacts and work with affected municipalities and landowners so that issues are resolved in a timely manner.
24	Environmental Assessment Process and Project Schedule	This slide outlines the general timeline and environmental assessment process for the project, beginning with the collection of baseline data, through to submission of the Well Drilling Licence applications to the Ministry of Natural Resources and Forestry, and anticipated construction commencement and completion.
25	Continuous Stakeholder Engagement	Enbridge Gas is committed to open dialogue throughout the environmental assessment and the Ontario Energy Board application process. Stakeholders will have the opportunity to remain engaged in the process after the environmental assessment is completed through: • Contacting Enbridge Gas or Dillon Consulting project team members via the contact information provided at the end of this presentation; or • Visiting the Enbridge Gas project website at www.enbridgegas.com/2024WellProject.
26	Stay Informed	Thank you for participating in our Virtual Public Information Session! We want to hear from you! Please complete the comment form on the Virtual Public Information Session website at www.BluewaterMandauminWellDrilling.ca to provide your input and opinion of the project. If you would prefer, you can also download the comment form and submit your feedback by email at BluewaterMandauminWellDrilling@dillon.ca. After Sunday, June 18th, 2023, this presentation, the accompanying video transcript, and comment form will be available for download on the Enbridge Gas website at www.enbridgegas.com/2024WellProject. Please submit your feedback by Monday, June 26th, 2023 so it can be considered in the draft Environmental Report that will be submitted to the Ontario Pipeline Coordinating Committee. For more information, or to submit comments or questions, please use the contact information provided on this slide to contact a member of the project team.

Virtual Public Information Session – Comment Form

Thank you for attending the Virtual Public Information Session for the 2024 Bluewater and Mandaumin Well Drilling Project (the Project). **We want to hear from you!** We encourage you to review the Virtual Public Information Session material and then fill out and submit this comment form online by **Monday, June 26, 2023**. Your input is welcomed and appreciated. You may also provide your input by email at BluewaterMandauminWellDrilling@dillon.ca.

After Sunday, June 18, 2023, this comment form will be available for download from the Enbridge Gas website at www.enbridgegas.com/2024WellProject. You can complete the downloadable comment form digitally in your preferred PDF reader and then submit it via the Project email or you can print off a hard copy, complete it, scan it, and submit it to the Project email. If you have any questions or are unsure of how to submit your comments, reach out to a member of the Project team via the contact information at the end of this comment form.

Contact Information and General Questions

If you would like to be added to the Project's mailing list, please provide your contact information.

Q 1. Name / Email Address

Name: _____ Email Address: _____

Q 2. How did you hear about the Project? (Select all that apply)

- ☐ Received notice via email
- ☐ Received notice via Canada Post
- ☐ Newspaper
- ☐ From a friend or neighbour
- ☐ Other, please specify: _____

Q 3. Do you own property, live, or work near the Bluewater or Mandaumin Well Project Locations?

- ○ Yes, Bluewater Well Project Location
- ○ Yes, Mandaumin Well Project Location
- ○ No, but I am interested in the Project

Q 4. Please explain your interest in the Project.

Q 5. Which group represents you best? (Please choose one answer)

- ○ I am a member of an Indigenous community
- ○ I am a landowner or resident near one of the project locations
- ○ I am a member of a community interest group
- ○ I am a government employee or official
- ○ Other, please specify:

Q 6. What is your view of the proposed project?

- ○ I am supportive
- ○ I am not supportive
- ○ No opinion at this time

Q 7. Please explain your view of the Project (supportive or not supportive)

Q 8. Are there any environmental, socio-economic, or cultural heritage features within the project locations you would like to identify? Please indicate which project location you are referring to (the Bluewater Well Project Location or Mandaumin Well Project Location).

Q 9. Are there any potential effects (e.g., to you, your property, business, or otherwise) and any mitigation measures that you think Enbridge Gas should consider?

Q 10. Please provide any additional comments, questions, or feedback that you have with regards to the Project.

Feedback on the Virtual Public Information Session

Q 11. Was sufficient information about the Project provided on the Virtual Public Information Session website and in the presentation slides?

- ○ Yes (Go to Q 13)
- ○ No (Go to Q 12)

Q 12. Please describe what other information you would have liked to see.

Q 13. Was sufficient information provided on the Ontario Energy Board and Environmental Assessment process?

- ○ Yes
- ○ No
- ○ Partly

Q 14. Please tell us what else you would like to know about the Ontario Energy Board and Environmental Assessment process.

Thank you for participating in the Virtual Public Information Session for the 2024 Bluewater and Mandaumin Well Drilling Project!

Thank you for completing this comment form. If you require further information about the Project, please contact one of the following individuals:

Jackie Metcalfe

Environmental Advisor

Enbridge Gas Inc.

101 Honda Boulevard

Markham, ON L6C 0M6

Avid Banihashemi

Project Manager

Dillon Consulting Limited

51 Breithaupt Street, Suite 200

Kitchener, ON N2H 5G5

Project Email: BluewaterMandauminWellDrilling@dillon.ca

Telephone: 416-229-4646, ext. 2048

You can also stay up-to-date on the Project by visiting the Enbridge Gas website at: www.enbridgegas.com/2024WellProject.

Collection and Use of Personal Information:

Any personal information (PI), such as names and addresses, collected by Enbridge Gas Inc. (EGI) on this comment form (or through the Virtual Public Information Session process) for this project will be used for the purpose of conducting an environmental assessment and related activities, such as creating an environmental assessment report. EGI may also share PI with its consultant(s) for this purpose and will share PI with the Ontario Energy Board (OEB) and other government agencies as required for the project. In accordance with the Ontario Freedom of Information and Protection of Privacy Act, PI provided to the OEB will not be disclosed on the public record or to any third parties. However, comments, questions, and other information collected may be disclosed on the public record provided that any PI will be redacted.

Appendix I

Indigenous Consultation Logs

Table I-1: Enbridge Gas Inc. Indigenous Consultation Log
Prepared by Enbridge Gas Inc. (Enbridge Gas)
Last Updated: July 10, 2023

Line Item	Date	Method	Summary of Enbridge Gas Engagement Activity with Aamjiwnaang First Nation	Summary of Community Engagement Activity	Issues or Concerns Raised and Enbridge Gas Responses
1.0	May 1, 2023	Email	An Enbridge Gas representative emailed Aamjiwnaang First Nation ("AFN") representatives providing early notification of the Bluewater Mandaumin Well Drilling Project "Project". The notification email provided an overview of the proposed Project and noted that the Project does not trigger a Leave to Construct.		
1.1	June 2, 2023	Email	An Enbridge Gas representative emailed an AFN representative providing a Project notice of study commencement. The notice of commencement letter provided an overview of the Environmental Study requirements and advised the information sessions would be held from June 12 to June 18, 2023. The letter requested community feedback by June 26, 2023. The Enbridge Gas representative noted capacity funding was available.		
1.2	July 6, 2023	Email	An Enbridge Gas representative emailed an AFN/Tri-Tribal Monitoring Service "TTMS" representative inviting them to participate in the Stage 2 fieldwork.		

Line Item	Date	Method	Summary of Enbridge Gas Engagement Activity with Aamjiwnaang First Nation	Summary of Community Engagement Activity	Issues or Concerns Raised and Enbridge Gas Responses
1.3	July 6, 2023	Email		A TTMS representative emailed the Enbridge Gas representative to advise they were interested in participating.	
1.4	July 7, 2023	Email	A Timmins Martelle Heritage Consultant “TMHC” representative, on behalf of Enbridge Gas, sent an email to TTMS to provide details on the location and time to meet for the Stage 2 fieldwork that was occurring on July 10, 2023.		

Appendix J

Wildlife Species Records

Notes:

- Federal SARA (END = Endangered, THR = Threatened, SC = Special Concern)
- Provincial ESA (END = Endangered, THR = Threatened, SC = Special Concern)
- Ontario S-Rank (S5= widespread in Ontario; S4 = apparently secure; S3 = vulnerable; S2 = imperilled; S1 = extremely rare in Ontario; ? = inexact or uncertain; B = breeding status; N = non-breeding status; SH = considered to be possibly extirpated (historical); SNA = not applicable/non-native
- *Botanical species identified during records review

Table J-1: Background data review: Bird Species with Known Occurrences within the General Area

Scientific Name	Common Name	SARA	ESA	SRank
Ammodramus henslowii	Henslow's Sparrow	END	END	SHB
Ammodramus savannarum	Grasshopper Sparrow	SC	SC	S4B
Cardinalis cardinalis	Northern Cardinal			S5
Carduelis tristis	American Goldfinch			S5B
Charadrius vociferus	Killdeer			S5B,S5N
Chordeiles minor	Common Nighthawk	THR	SC	S4B
Colaptes auratus	Northern Flicker			S4B
Contopus virens	Eastern Wood-pewee	SC	SC	S4B
Corvus brachyrhynchos	American Crow			S5B
Cyanocitta cristata	Blue Jay			S5
Dolichonyx oryzivorus	Bobolink	THR	THR	S4B
Dumetella carolinensis	Gray Catbird			S4B
Hirundo rustica	Barn Swallow	SC	SC	S4B
Hylocichla mustelina	Wood Thrush	THR	SC	S4B
Melospiza melodia	Song Sparrow			S5B
Quiscalus quiscula	Common Grackle			S5B

Scientific Name	Common Name	SARA	ESA	SRank
Riparia riparia	Bank Swallow	THR	THR	S4B
Sturnella magna	Eastern Meadowlark	THR	SC	S4B
Sturnus vulgaris	European Starling			SNA
Turdus migratorius	American Robin			S5B

Table J-2: Background data review: Fish Species with Known Occurrences within the General Area

Scientific Name	Common Name	SARA	ESA	SRank
Ammocrypta pellucida	Eastern Sand Darter (Ontario populations)	THR	END	S2

Table J-3: Background data review: Mollusc Species with Known Occurrences within the General Area

Scientific Name	Common Name	SARA	ESA	SRank
Lampsilis fasciola	Wavy-rayed Lampmussel	SC	THR	S1

Table J-4: Background data review: Mammal Species with Known Occurrences within the General Area

Scientific Name	Common Name	SARA	ESA	SRank
Blarina brevicauda	Northern Short-tailed Shrew			S5
Canis latrans	Coyote			S5
Castor canadensis	Beaver			S5
Clethrionomys gapperi	Southern Red-backed Vole			S5
Condylura cristata	Star-nosed Mole			S5
Cryptotis parva	Least Shrew			SH
Didelphis virginiana	Virginia Opossum			S4
Eptesicus fuscus	Big Brown Bat			S5
Glaucomys volans	Southern Flying Squirrel			S4

Scientific Name	Common Name	SARA	ESA	SRank
Lasionycteris noctivagans	Silver-haired Bat			S4
Lasiurus borealis	Eastern Red Bat			S4
Lasiurus cinereus	Hoary Bat			S4
Lontra canadensis	North American River Otter			S5
Marmota monax	Woodchuck			S5
Mephitis mephitis	Striped Skunk			S5
Microtus pennsylvanicus	Meadow Vole			S5
Microtus pinetorum	Woodland Vole	SC	SC	S3?
Mustela erminea	Ermine			S5
Mustela frenata	Long-tailed Weasel			S4
Mustela nivalis	Least Weasel			SU
Mustela vison	American Mink			S4
Myotis leibii	Eastern Small-footed Myotis		END	S2S3
Myotis lucifugus	Little Brown Myotis	END	END	S4
Myotis septentrionalis	Northern Myotis	END	END	S3
Napaeozapus insignis	Woodland Jumping Mouse			S5
Odocoileus virginianus	White-tailed Deer			S5
Ondatra zibethicus	Muskrat			S5
Peromyscus leucopus	White-footed Mouse			S5
Peromyscus maniculatus	Deer Mouse			S5
Pipistrellus subflavus	Tri-colored Bat	END	END	S3?
Procyon lotor	Northern Raccoon			S5
Scalopus aquaticus	Eastern Mole	SC	SC	S2
Sciurus carolinensis	Eastern Gray Squirrel			S5
Sorex cinereus	Masked Shrew			S5

Scientific Name	Common Name	SARA	ESA	SRank
Sorex fumeus	Smoky Shrew			S5
Sylvilagus floridanus	Eastern Cottontail			S5
Tamias striatus	Eastern Chipmunk			S5
Tamiasciurus hudsonicus	Red Squirrel			S5
Taxidea taxus jacksoni	American Badger (Southwestern Ontario population)	END	END	
Urocyon cinereoargenteus	Gray Fox	THR	THR	S1
Vulpes vulpes	Red Fox			S5
Zapus hudsonius	Meadow Jumping Mouse			S5

Table J-5: Background data review: Herpetozoa Species with Known Occurrences within the General Area

Scientific Name	Common Name	SARA	ESA	SRank
Chelydra serpentina	Snapping Turtle	SC	SC	S3
Emydoidea blandingii	Blanding's Turtle	THR	THR	S3
Graptemys geographica	Northern Map Turtle	SC	SC	S3
Heterodon platirhinos	Eastern Hog-nosed Snake	THR	THR	S3
Pantherophis gloydi pop. 2	Eastern Foxsnake (Carolinian population)	END	END	S2
Pantherophis spiloides pop. 2	Gray Ratsnake (Carolinian population)	END	END	S1
Plestiodon fasciatus pop. 1	Common Five-lined Skink (Carolinian population)	END	END	S2
Pseudacris triseriata pop. 2	Western Chorus Frog (Carolinian Population)			S4
Regina septemvittata	Queensnake	END	END	S2

Scientific Name	Common Name	SARA	ESA	SRank
Sternotherus odoratus	Eastern Musk Turtle	SC	SC	S3
Thamnophis butleri	Butler's Gartersnake	END	END	S2
Thamnophis butleri	Butler's Gartersnake	END	END	S2
Thamnophis sauritus	Eastern Ribbonsnake (Great Lakes population)	SC	SC	S3

Table J-6: Background data review: Carabidae Species with Known Occurrences within the General Area

Scientific Name	Common Name	SARA	ESA	SRank
Cicindela patruela	Northern Barrens Tiger Beetle	END	END	S1

Table J-7: Background data review: Lepidotera Species with Known Occurrences within the General Area.

Scientific Name	Common Name	SARA	ESA	SRank
Antheraea polyphemus	Polyphemus Moth			S5
Catocala cerogama	Yellow-banded Underwing			S5
Cisseps fulvicollis	Yellow-collared Scape Moth			SNR
Ctenucha virginica	Virginia Ctenucha			S5
Danaus plexippus	Monarch	SC	SC	S2N,S4B
Erynnis martialis	Mottled Duskywing		END	S2
Euchaetes egle	Milkweed Tussock Moth			S4?
Hyalophora cecropia	Cecropia Moth			S5
Lophocampa caryae	Hickory Tussock Moth			SNR
Lophocampa maculata	Spotted Tussock Moth			S4
Pyrrharctia isabella	Isabella Tiger Moth			S5

Table J-8: Background data review: Botanical Species with Known Occurrences within the General Area.

Scientific Name	Common Name	SARA	ESA	SRank
*Aplectrum hyemale**	Puttyroot			S2
*Cirsium pitcher**	Pitcher's Thistle	SC	THR	S5
*Cornus florida**	Eastern Flowering Dogwood	END	END	S2?
*Platanthera leucophaea**	Eastern Prairie Fringed-orchid	END	END	S2

Appendix K

Incidental Wildlife Observations

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Notes:

- Federal SARA (END = Endangered, THR = Threatened, SC = Special Concern)
- Provincial ESA (END = Endangered, THR = Threatened, SC = Special Concern)
- Ontario S-Rank (S5= widespread in Ontario; S4 = apparently secure; S3 = vulnerable; S2 = imperilled; S1 = extremely rare in Ontario; ? = inexact or uncertain; B = breeding status; N = non-breeding status; SH = considered to be possibly extirpated (historical); SNA = not applicable/non-native

Table K-1: Bird Species Observed During the Preliminary Field Investigation within the Bluewater Study Area

Scientific Name	Common Name	SARA	ESA	SRank
Cardinalis cardinalis	Northern Cardinal			S5
Carduelis tristis	American Goldfinch			S5B
Charadrius vociferus	Killdeer			S5B,S5N
Corvus brachyrhynchos	American Crow			S5B
Hirundo rustica	Barn Swallow	SC	SC	S4B
Melospiza melodia	Song Sparrow			S5B
Quiscalus quiscula	Common Grackle			S5B
Sturnus vulgaris	European Starling			SNA
Turdus migratorius	American Robin			S5B

Table K-2: Mammal Species Observed During the Preliminary Field Investigation within the Bluewater Study Area

Scientific Name	Common Name	SARA	ESA	SRank
Sciurus carolinensis	Eastern Gray Squirrel			S5

Table K-3: Botanical Species Observed During the Preliminary Field Investigation within the Bluewater Study Area

Scientific Name	Common Name	SARA	ESA	SRank
Acer negundo	Manitoba Maple			S5
Alliaria petiolata	Garlic Mustard			SNA

Scientific Name	Common Name	SARA	ESA	SRank
Arctium minus	Common Burdock			SNA
Bromus inermis	Awnless Brome			SNA
Carya ovata	Shagbark Hickory			S5
Cirsium arvense	Canada Thistle			SNA
Cirsium arvense	Canada Thistle			SNA
Cornus racemosa	Gray Dogwood			S5
Dactylis glomerata	Orchard Grass			SNA
Daucus carota	Wild Carrot			SNA
Fragaria virginiana	Wild Strawberry			S5
Galium odoratum	Sweet Bedstraw			SNA
Lonicera tatarica	Tartarian Honeysuckle			SNA
Malus pumila	Common Apple			SNA
Medicago lupulina	Black Medic			SNA
Melilotus albus	White Sweet-clover			SNA
Parthenocissus inserta	Thicket Creeper			S5
Pinus strobus	Eastern White Pine			S5
Plantago major	Common Plantain			S5
Prunus serotina	Wild Black Cherry			S5
Prunus virginiana	Choke Cherry			S5
Rhamnus cathartica	Common Buckthorn			SNA
Rhus hirta	Staghorn Sumac			S5
Rosa multiflora	Multiflora Rose			SNA
Rubus idaeus ssp. idaeus	Common Red Raspberry			SNA
Thuja occidentalis	Eastern White Cedar			S5
Tilia americana	American Basswood			S5
Trifolium pratense	Red Clover			SNA

Scientific Name	Common Name	SARA	ESA	SRank
Vitis riparia	Riverbank Grape			S5

Table K-4: Bird Species Observed During the Preliminary Field Investigation within the Mandaumin Study Area

Scientific Name	Common Name	SARA	ESA	SRank
Cardinalis cardinalis	Northern Cardinal			S5
Carduelis tristis	American Goldfinch			S5B
Colaptes auratus	Northern Flicker			S4B
Corvus brachyrhynchos	American Crow			S5B
Cyanocitta cristata	Blue Jay			S5
Dumetella carolinensis	Gray Catbird			S4B
Melospiza melodia	Song Sparrow			S5B
Quiscalus quiscula	Common Grackle			S5B
Turdus migratorius	American Robin			S5B

Table K-5: Botanical Species Observed During the Preliminary Field Investigation within the Mandaumin Study Area

Scientific Name	Common Name	SARA	ESA	SRank
Acer negundo	Manitoba Maple			S5
Acer rubrum	Red Maple			S5
Acer saccharum	Sugar Maple			S5
Alliaria petiolata	Garlic Mustard			SNA
Arctium minus	Common Burdock			SNA
Bromus inermis	Awnless Brome			SNA
Carya ovata	Shagbark Hickory			S5
Cirsium arvense	Canada Thistle			SNA
Cirsium arvense	Canada Thistle			SNA
Cornus racemosa	Gray Dogwood			S5

Scientific Name	Common Name	SARA	ESA	SRank
Dactylis glomerata	Orchard Grass			SNA
Daucus carota	Wild Carrot			SNA
Erythronium americanum	Yellow Trout-lily			S5
Fragaria virginiana	Wild Strawberry			S5
Fraxinus americana	White Ash			S4
Geranium maculatum	Spotted Geranium			S5
Lonicera tatarica	Tartarian Honeysuckle			SNA
Malus pumila	Common Apple			SNA
Medicago lupulina	Black Medic			SNA
Melilotus albus	White Sweet-clover			SNA
Parthenocissus inserta	Thicket Creeper			S5
Pinus strobus	Eastern White Pine			S5
Plantago major	Common Plantain			S5
Poa annua	Annual Bluegrass			SNA
Populus deltoides ssp. deltoides	Eastern Cottonwood			S5
Prunus serotina	Wild Black Cherry			S5
Prunus virginiana	Choke Cherry			S5
Quercus macrocarpa	Bur Oak			S5
Quercus rubra	Northern Red Oak			S5
Rhamnus cathartica	Common Buckthorn			SNA
Rhus hirta	Staghorn Sumac			S5
Rubus allegheniensis	Alleghany Blackberry or Common Blackberry			S5
Rubus idaeus ssp. idaeus	Common Red Raspberry			SNA
Sambucus canadensis	Common Elderberry			S5

Scientific Name	Common Name	SARA	ESA	SRank
Tilia americana	American Basswood			S5
Trifolium pratense	Red Clover			SNA
Ulmus americana	American Elm			S5
Viburnum lentago	Nannyberry			S5
Vitis riparia	Riverbank Grape			S5