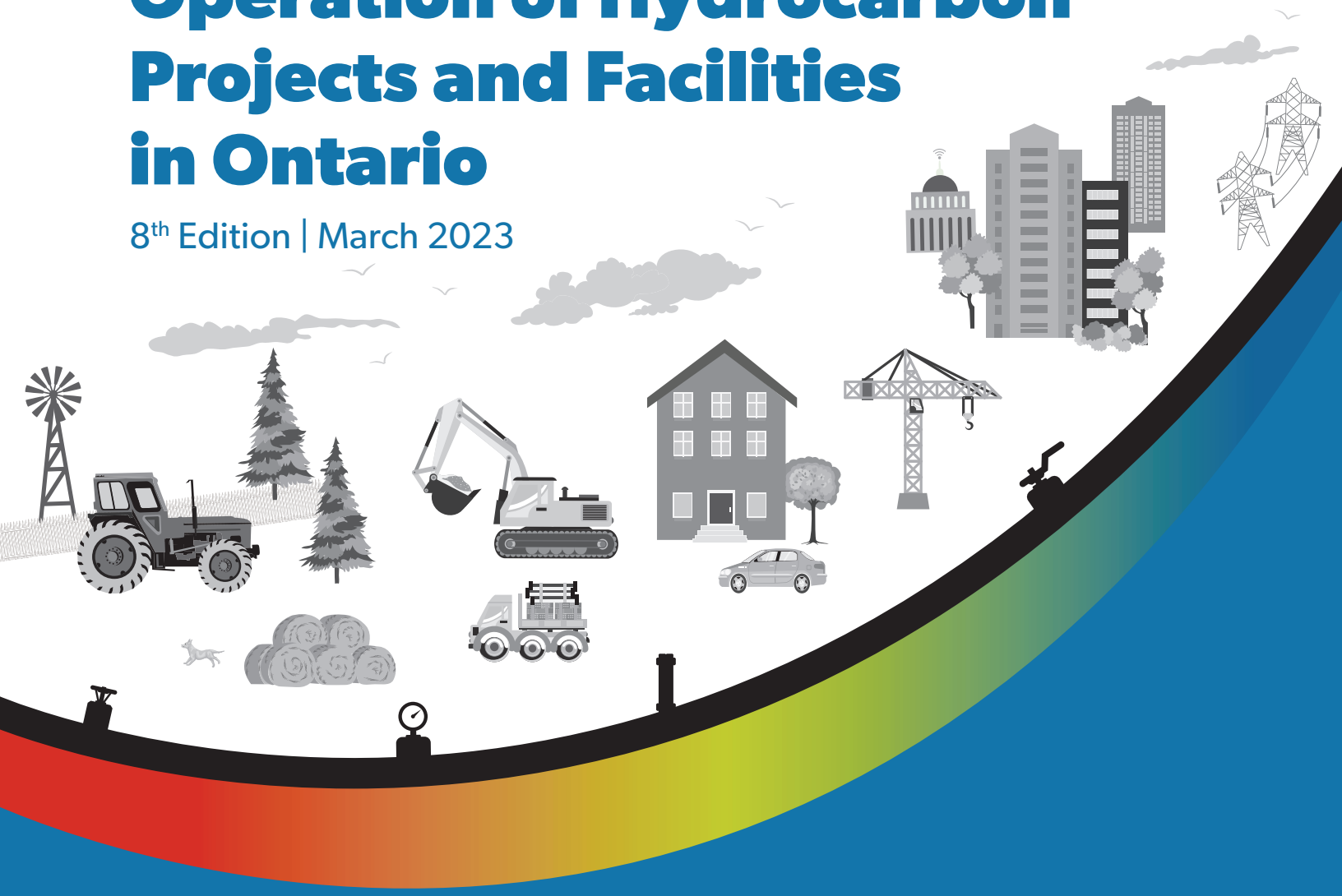
ONTARIO ENERGY BOARD

Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Projects and Facilities in Ontario

8th Edition | March 2023



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CHAPTER 1
INTRODUCTION

1.1 Overview

This is the eighth edition of the Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Projects and Facilities in Ontario (Guidelines).[1] The new edition represents the continued effort of the Ontario Energy Board (OEB) to update the planning and information requirements for hydrocarbon project applications and proceedings before the OEB.[2] These applications and proceedings are:

(a) Hydrocarbon pipeline projects for which an applicant seeks an approval from the OEB under section 90, 91, or in some cases 95 of the Ontario Energy Board Act, 1998 (OEB Act); and

(b) Gas storage development projects that require approval of the OEB under section 36.1(1), 38(1), or a proceeding under section 40(1) of the OEB Act (collectively, Hydrocarbon Projects)

The Guidelines are intended to provide direction to an applicant in preparing the Environmental Report for a proposed Hydrocarbon Project. An Environmental Report is one of several filing requirements for Hydrocarbon Project applications to the OEB. For information on the additional filing requirements for Hydrocarbon Project applications, refer to the OEB's Natural Gas Facilities Handbook. The term "environment" in the Guidelines is defined to include natural, social, economic, cultural and built components.

The Guidelines are not formal statutory requirements, nor are they a rule issued under section 44 of the OEB Act. Rather, the Guidelines represent current knowledge and practice and should be followed by applicants for Hydrocarbon Projects.[3] If an applicant cannot follow the process laid out in the Guidelines or provide the information required therein, or it believes the required process or information is not applicable, then it must provide an explanation in its Environmental Report.

[1] The seventh edition dated 2016 was titled the *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario*.

[2] The Guidelines have been developed in consultation with members of the Ontario Pipeline Coordinating Committee. Therefore, the Guidelines are consistent with the mandates of the ministries and agencies that comprise the Ontario Pipeline Coordinating Committee at the time of drafting.

[3] Hydrocarbon Projects may require Ancillary Facilities for movement, storage, metering and pressure regulating functions. Compressor or pumping stations are required to move hydrocarbons and maintain the desired operating pressure within the pipeline system. Valve stations are usually required at specific intervals for safety, operating and maintenance purposes. Metering and pressure regulating stations are required to measure and control the flow and pressure of hydrocarbons at a given location for monitoring and sales purposes (e.g., to a customer or another pipeline system). Where applicable, the Guidelines apply to Ancillary Facilities.

The OEB expects an applicant to comply with the Guidelines before, during and after construction, as applicable. Applicants are advised that the fact that construction of a Hydrocarbon Project will be located entirely on existing rights-of-way does not relieve the applicant of the requirement to comply with the Guidelines, although such projects may be suitable for an exemption application under section 95 of the OEB Act.

All the references to specific legal and regulatory requirements are current, as of the date of issuance of this edition of the Guidelines. As changes to legal and regulatory requirements occur, it is the applicant's responsibility to follow the legal and regulatory requirements in effect at the time the Environmental Report is prepared.

Any order or direction of the OEB takes precedence in the event that the Guidelines conflict or appear to be incompatible with the order or direction.

The Guidelines do not apply to projects that require only a Certificate of Public Convenience and Necessity or a Franchise Agreement in accordance with sections 8, 9 and 10 of the *Municipal Franchises Act, 1990, c. M 55* (Municipal Franchises Act). These projects shall be planned and assessed in accordance with the environmental screening principles, as directed in the OEB's E.B.O. 188 Natural Gas System Expansion Report, January 30, 1998 (E.B.O. 188), or any successor document.

1.1.1 Chapter Summaries

The Guidelines are organized in seven Chapters:

1. Introduction
2. General Planning Principles
3. Public and Indigenous Engagement and Consultation
4. Route and Site Selection
5. Impact Identification and Assessment
6. Impact Mitigation
7. Implementation and Monitoring

Chapter 1 sets out the background to the Guidelines including the jurisdictional setting and the Hydrocarbon Projects to which the Guidelines apply. This includes a description of the Ontario Pipeline Coordinating Committee (OPCC), which is comprised of provincial government ministries and agencies that may have a role in the review of Hydrocarbon Projects. The stages in the development and review of an Environmental Report are also outlined.

Chapter 2 outlines general planning principles and procedures. This chapter stresses the need for technically sound and consistently applied planning procedures, which are transparent and can be readily understood by all persons. The Environmental Report is expected to contain a clear description of the planning process and its results.

Chapter 3 addresses public and Indigenous engagement and consultation. For public and Indigenous engagement and consultation, it emphasizes the importance of identifying the persons[4] who may be affected by a project and informing them both about the project and how to become involved in the planning process. The types of information that should be conveyed and various options for obtaining public and Indigenous input are discussed, including a minimum requirement for a public engagement program. The total number and type of engagement activities should be determined on a project-by-project basis. For Indigenous consultation, it outlines the roles and responsibilities of the Crown and applicants in assessing whether a project has the potential to adversely impact an Indigenous community's Aboriginal or treaty rights, and in fulfilling any consultation requirements that may arise in respect of the Hydrocarbon Project. Chapter 3 also describes how affected persons, including Indigenous communities, can intervene at the OEB's hearing and apply for cost recovery.

Chapter 4 describes the route and site selection process. Mapping requirements are detailed, and methods of evaluating alternatives are outlined. This chapter emphasizes the need to assess all types of environmental impacts (e.g., natural, built, cultural, agricultural, social, economic) including their cumulative impact.

Chapter 5 deals with the identification and assessment of impacts for use in the comparison of alternatives, including impacts on the natural, agricultural, built, social, cultural, and economic components of the environment and the interrelationships among these components.

Chapter 6 describes mitigation measures to be applied for the reduction and management of construction impacts on the environment. This chapter calls for site specific plans and larger scale mapping for environmentally sensitive areas. It also provides the details to be included in the construction schedule and addresses safety considerations, including contingency plans in the event of accidental spills.

Chapter 7 deals with implementation and monitoring. It refers to the inspection required during construction, to ensure compliance with the commitments made to the OEB by the applicant. It makes provision for reporting any changes that are required to construction activities. Chapter 7 calls for monitoring reports to assure the implementation of the applicant's restoration and mitigation efforts. Chapter 7 specifies the content of monitoring reports, including a log of comments from affected landowners during and after construction.

[4] The term "persons" includes any person, corporation, organization, ministry, and agency.

1.2 Applications Subject to the Guidelines[5]

1.2.1 Section 90 Leave to Construct Applications

Any person planning to construct a hydrocarbon pipeline within Ontario, must apply to the OEB for authorization, pursuant to section 90(1) of the OEB Act if:

1. The proposed hydrocarbon pipeline is more than 20 kilometres in length, or
2. The proposed hydrocarbon pipeline is projected to cost more than the amount prescribed by the regulations (currently $2 million)[6], or
3. Any part of the proposed hydrocarbon line
   a) Uses pipe that has a nominal pipe size of 12 inches or more, and
   b) Has an operating pressure of 2,000 kilopascals or more

Certain hydrocarbon pipeline projects do not require approval from the OEB. These include inter-provincial hydrocarbon pipeline projects that require approval from the Canadian Energy Regulator. OEB approval is also not required for the relocation or reconstruction of a hydrocarbon pipeline, unless the size of the line is changed or additional land is required, as set out in section 90(2) of the OEB Act.

1.2.2 Section 91 Leave to Construct Applications

Pursuant to section 91 of the OEB Act, an applicant may seek OEB approval for construction of a hydrocarbon pipeline to which section 90(1) does not apply or a station. For example, applications under section 91 may be filed if an applicant may need to later apply to expropriate land rights through section 99 of the OEB Act.

1.2.3 Section 95 Leave to Construct Exemption Applications

Pursuant to section 95 of the OEB Act, the OEB may exempt a proponent, without a hearing, from the requirement to obtain a leave to construct approval under section 90, if it is of the opinion that special circumstances exist which warrant such an exemption. The applicant must submit a request for an exemption.

The level of detail in a section 95 application should be sufficient to provide adequate context for the project and an understanding of the special circumstances being relied on. This could include, as applicable, an explanation of the project route or location, need for the project, project costs, project design, project alternatives, environmental impacts, landowner impacts, and Indigenous consultation.

[5] The following links to the OEB's website provide more information on the OEB's process and how persons can participate in the proceedings: Application Process, Engage With Us and *Rules of Practice and Procedure*.

[6] Refer to section 3 of Ontario Regulation 328/03.

Applications under section 95 of the OEB Act should only be filed for projects with minor environmental impacts (e.g., a pipeline that is being installed in the road allowance or other previously disturbed areas).

1.2.4 Gas Storage Development Applications

Underground gas storage pools are often associated with areas of oil and gas production and are located primarily in southwestern Ontario. These natural geological formations provide the means of storing large inventories of gas. The development of these pools requires the drilling of storage wells that penetrate a gas-bearing geological structure. The pools are filled with natural gas during periods of low consumer demand such as in the non-heating season and the gas is withdrawn during periods and occasions of high demand, such as the winter heating period. The development of such pools may cause environmental impacts, resulting from the related surface activity such as well drilling, access road construction, pipeline construction and compressor and other station development.

Before gas can be stored in an underground reservoir, the overlaying area first must be designated as a gas storage area by the OEB, as set out in section 36.1(1) of the OEB Act.

Under section 38(1) of the OEB Act, the OEB may authorize a person to inject gas into, store gas in and remove gas from the designated storage area. The OEB may impose conditions of approval in relation to the operation of the storage reservoir. Under section 40(1) of the OEB Act, the Minister of Natural Resources is required to refer to the OEB every licence application for the drilling of a well in a designated gas storage area, and the OEB is required to report to the Minister of Natural Resources on it. In its report to the Minister of Natural Resources, the OEB may recommend conditions of licence with respect to the well licence application.

The development of a gas storage pool can require some or all of the following OEB approvals:

- An Order designating the area containing a gas reservoir as a gas storage area, pursuant to section 36.1(1) of the OEB Act.
- An Order authorizing a person to inject gas into, store gas in, and remove gas from a designated storage area, pursuant to subsection 38(1) of the OEB Act.
- A report of the OEB to the Minister of Natural Resources regarding a licence application to drill a well in the designated gas area, pursuant to subsection 40(1) of the OEB Act. The Minister of Natural Resources shall then grant or refuse the licence in accordance with the report.
- An Order granting leave to construct under section 90 or 91 of the OEB Act for any associated hydrocarbon pipelines.

1.3 Preparation and Review of the Environmental Report

The Guidelines establish the requirements for the preparation and review of an Environmental Report. The Environmental Report becomes part of the evidence that applicants file with the OEB, when applying for approval of a Hydrocarbon Project.

The preparation and review of an Environmental Report should follow a consultative process and every attempt should be made to resolve concerns with OPCC members and other stakeholders as applicable prior to the filing of the application with the OEB. OEB staff, with assistance of the OPCC Chair, will provide procedural assistance, as needed.

1.3.1 Persons that should be engaged in preparing the Environmental Report

There are many persons that should be engaged by an applicant when preparing an Environmental Report with respect to a Hydrocarbon Project, described below. In addition, general public engagement meetings should be held as described later in this section and section 3.4 of the Guidelines.

Ontario Pipeline Coordinating Committee

Applicants should engage with the Ontario Pipeline Coordinating Committee (OPCC) members with respect to a Hydrocarbon Project. The OPCC is composed of staff from provincial ministries and agencies that contribute to the review of an Environmental Report by providing comments from their mandated areas of responsibility to applicants before they submit their applications to the OEB.

The OPCC is chaired by a member of OEB staff and currently includes representation from the following ministries and agencies (the OPCC members):[7]

- Technical Standards and Safety Authority (TSSA)
- Ministry of Energy
- Ministry of the Environment, Conservation and Parks (Ministry of Environment)
- Ministry of Agriculture, Food and Rural Affairs (Ministry of Agriculture)
- Ministry of Tourism, Culture and Sport (Ministry of Culture)
- Ministry of Citizenship and Multiculturalism (Ministry of Multiculturalism)
- Ministry of Municipal Affairs and Housing (Ministry of Municipal Affairs)

[7] The names of the ministries change from time to time and this list applies to any successor ministries. The OEB maintains a listing of OPCC members on its website.

- Ministry of Natural Resources and Forestry (Ministry of Natural Resources)
- Ministry of Transportation
- Infrastructure Ontario
- Ministry of Economic Development, Job Creation and Trade (Ministry of Economic Development)

Indigenous Communities

Applicants should consult with Indigenous communities whose Aboriginal or treaty rights may be impacted by a Hydrocarbon Project in accordance with section 3.3 of the Guidelines.

Other Interested Persons

Applicants should engage with other interested persons including federal ministries and agencies, upper, lower, and single tier municipalities (municipalities), conservation authorities (where these exist), directly affected landowners and tenants (collectively, Other Interested Persons) with respect to a Hydrocarbon Project. The onus is on the applicant to identify and contact Other Interested Persons based on whether they have jurisdiction or land rights within the Study Area (refer to section 4.2.1 of the Guidelines).

1.3.2 Stages in the Preparation and Review of the Environmental Report

Stage 1: Engagement Prior to the Formal Announcement of the Planning Process

The applicant should begin to engage, as early as possible, on the identification, assessment and delineation of alternative routes or sites for the proposed Hydrocarbon Project with OPCC members, Indigenous communities and Other Interested Persons.

Stage 2: Public Engagement

Applicants should send a notice of commencement to OPCC members, Indigenous communities and Other Interested Persons. Applicants should also publish the notice of commencement to solicit input from the general public. Applicants should hold public engagement meetings as described in section 3.4 of the Guidelines. The notice of commencement is intended to formally announce the planning process[8] and will provide information to interested persons about what is being proposed and how to become involved.

[8] While the notice of commencement will formally announce the planning process, applicants should engage with relevant OPCC members, Indigenous communities and Other Interested Persons in advance of the notice as set out in Stage 1.

Stage 3: Preparation of the Draft Environmental Report

The applicant will prepare a draft Environmental Report after the engagement activities described in Stages 1 and 2 are complete. Any issues identified during the engagement process and any issue resolutions must be documented in the draft Environmental Report. Any issues that have not been resolved prior to finalizing the draft Environmental Report must be documented in the draft report along with a brief description of the applicant's plan for resolving the issues.

Stage 4: OPCC 42-Day Review of the Draft Environmental Report

The draft Environmental Report and any other information required by the individual OPCC members should be submitted directly to the local office of the OPCC members. The applicant should consult the OEB's website for the name and email address of the local office staff who will review the material. Applicants should allow for 42 calendar days for OPCC members to conduct their review of the draft Environmental Report.

The 42-day review period takes place before an application is made to the OEB to allow for resolution of any outstanding issues prior to the start of the OEB's proceeding. By the end of the 42-day review period, each OPCC member will provide the applicant with a Review Letter informing the applicant in writing that the OPCC member has completed its review of the draft Environmental Report. Each OPCC member should also send a copy of the Review Letter to the OPCC Chair.

The draft Environmental Report and any other relevant information requested by any potentially affected Indigenous communities or Other Interested Persons should be provided to those persons at the same time that the draft Environmental Report is provided to OPCC members. Persons that are not OPCC members do not provide the applicant with a Review Letter. However, the applicant should remain in contact with those persons to try to resolve any outstanding issues.

Stage 5: Completed Environmental Report included as part of Application filed with the OEB

The completed Environmental Report, including any updates resulting from the 42-day OPCC review, is to be included as part of the application filed with the OEB for approval of a Hydrocarbon Project.

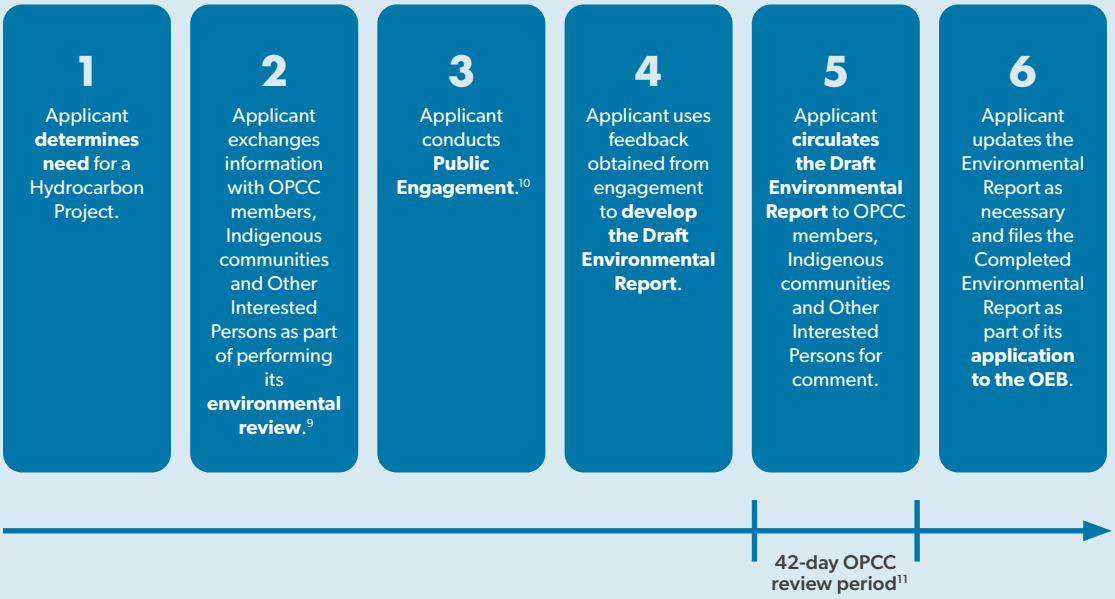
The applicant should file all correspondence received from OPCC members, Indigenous communities and Other Interested Persons as part of the application. In its application to the OEB, the applicant should also provide the OEB with a concise summary (e.g., a summary table) of any concerns raised by OPCC members, Indigenous communities and Other Interested Persons. The summary should indicate how concerns were addressed, whether or not any concerns remain, and the reasons why concerns remain.

A copy of the Review Letter received from each of the OPCC members should also be included in the application.

The position of OPCC members on a Hydrocarbon Project's environmental impacts does not preclude any intervenor, or OEB staff, from raising environmental related concerns where there is an OEB hearing. OPCC members may also seek to intervene in the OEB's process if they have concerns respecting the application that they do not believe were adequately addressed by the applicant. The OEB will take relevant OPCC and intervenor recommendations into account, in making its findings.

Figure 1 below outlines the process for the preparation and review of the Environmental Report that should be followed.

Figure 1: Process for the Preparation and Review of the Environmental Report



[9] This iterative process may take several months, and applicants should begin this stage as early as possible.

[10] Applicants should issue a notice of commencement to OPCC members, Indigenous communities and Other Interested Persons and publish the notice of commencement online and in local print media.

[11] On or before the end of the 42-day review period, each OPCC member will issue a Review Letter to the applicant with a copy to the OPCC Chair.

CHAPTER 2
GENERAL PLANNING PROCESS AND PRINCIPLES

The proper selection of a route or site for a Hydrocarbon Project is part of the public interest considerations examined when the OEB is making a determination on whether to approve a Hydrocarbon Project. The planning process and principles that an applicant uses assist the OEB in determining whether an application should be approved.

Technically sound and consistently applied process and principles, which are readily understandable to the applicant, OPCC members, Indigenous communities, Other Interested Persons, the general public and the OEB, should be the goal in the production of all Environmental Reports submitted as evidence.

Planning Process in Selecting a Preferred Route or Site

The list below outlines the major planning steps to identify alternatives and choose a preferred route or site. The Environmental Report should contain a description of the planning process that was followed, including the consultative process:

a) Describe the rationale for study area delineation
b) Within the study area, describe the existing environment and its components
c) Establish criteria for identification of alternatives on constraints map
d) Identify all reasonable alternative routes or sites based on the consistent application of the criteria with the goal of avoiding or minimizing adverse environmental impacts
e) Identify and assess potential adverse environmental impacts that may occur during construction or operation of the project, including cumulative impacts
f) Describe reasonable measures to avoid, minimize and mitigate adverse impacts and the adverse impacts which are expected to remain after those measures have been applied
g) Establish criteria for evaluation of alternatives
h) Evaluate alternatives based on the above criteria
i) Describe the results of alternatives evaluation
j) Select the preferred route or site
k) Describe the rationale in support of the preferred route or site

Planning Principles in Selecting a Preferred Route or Site

The planning principles that should be applied when selecting a preferred route or site are set out below. The Environmental Report should contain a description of how the principles were applied in the route and site selection process.

a) Consider a reasonable range of alternatives
b) Consider all aspects of the environment
c) Systematically evaluate net environmental effects
d) Engage with OPCC members, potentially affected Indigenous communities and Other Interested Persons
e) Provide transparency through clear and complete documentation

CHAPTER 3
ENGAGEMENT AND CONSULTATION

As noted previously, applicants should engage with OPCC members and Other Interested Persons including federal ministries and agencies, municipalities, conservation authorities (where these exist), directly affected landowners and tenants. The general public should also be engaged.

3.1 OPCC and Municipal Consultation

The purpose of consultation with OPCC members, non-OPCC member agencies and municipalities is to inform and receive input from the persons that have permit or approval issuing jurisdiction in the study area. The appropriate technical representative from parties that have jurisdiction in the study area should be notified in writing of the commencement of the environmental study and the consultation process being followed (e.g., by sending a notice of commencement).

On some projects, individual OPCC members, non-OPCC member agencies and municipalities may choose to review preliminary documentation of the preferred route or site before the Environmental Report is completed. Applicants should circulate preliminary documentation to the appropriate field contact for comment, prior to submitting the draft Environmental Report to the OPCC for review. This will help to minimize fundamental concerns being raised at a late stage in the process.

A record of comments received, the applicant's response, and a description of any issues which remain outstanding, should be summarized and incorporated into the Environmental Report. Wherever practical, outstanding issues should be resolved prior to finalization of the Environmental Report.

3.2 Indigenous Consultation

The OEB is committed to ensuring that Indigenous peoples (First Nations, Inuit, and Métis peoples) have an opportunity to bring their views forward and to participate in any proceedings that may impact their rights or interests. This includes potential adverse impacts on established or asserted Aboriginal or treaty rights, which triggers the constitutional duty to consult and, when required, to accommodate.

Section 35 of the Constitution Act, 1982 recognizes and affirms the existing Aboriginal and treaty rights of the Aboriginal peoples of Canada. The Crown's duty to consult and accommodate arises when the Crown contemplates an action or makes a decision that may have an appreciable adverse effect on potential or proven Aboriginal or treaty rights.

With respect to hydrocarbon pipeline facilities applications, the duty to consult most often arises in the context of applications for leave to construct natural gas facilities under section 90 or 91 of the Act. The duty to consult has substantive aspects that the Crown (which may include Crown agents) must undertake, and procedural components that the Crown may delegate to the project proponent. The substantive aspects of the duty generally include:

- The preliminary and ongoing assessment of potential adverse effects on rights
- Identification of Indigenous communities that may be affected
- Overseeing the procedural aspects of the duty
- Determining if consultation and accommodation is adequate

The procedural aspects of the duty to consult generally include:

- Meeting with Indigenous communities to share the information required for communities to understand and assess the potential impacts on Aboriginal or treaty rights
- Providing reasonable resources for Indigenous communities to participate in consultation
- Responding to questions and concerns raised by Indigenous communities and keeping the Crown apprised of rights assertions by communities
- Maintaining a complete record of all Indigenous consultation activities
- Discussing options to accommodate communities in respect of adverse effects on Aboriginal or treaty rights

In cases where the duty to consult is triggered, the OEB cannot issue a final decision approving an application unless it is satisfied, based on the evidence before it, that the duty to consult has been discharged. Impacts on Indigenous rights or interests can arise in other proceedings. Where that is the case, representatives of affected Indigenous communities are encouraged to participate in the proceeding and make their views known to the OEB. Further information regarding the OEB's role and how to participate is set out on the OEB's Consultation with Indigenous Peoples webpage.

It is important that the applicant begin consultation with potentially affected Indigenous communities at the onset of project planning so communities have sufficient time to review materials and understand how projects may affect their rights, and the applicant and the communities have sufficient time to identify options for mitigating, avoiding or accommodating these effects.

The Ministry of Energy will coordinate the Crown's duty to consult obligations that may be triggered by applications for leave-to-construct for projects covered by these Guidelines.

The following describes the process and role of the Ministry of Energy in discharging this function:

- Applicants for projects shall contact the Ministry of Energy early in the project planning process, as soon as the need, terminal points, project characteristics and the general location are determined and provide a description of the project's characteristics and location to the Ministry of Energy.
- The Ministry of Energy will determine whether the proposed project triggers a duty to consult. If so, the Ministry of Energy will identify any Indigenous communities whose rights are potentially adversely affected by the proposed project and assess the extent of necessary consultation.
- If no duty to consult is triggered by the proposed project, the Ministry of Energy will provide a letter to the applicant confirming so within 25 business days of having been informed about the project by the applicant. This confirmation letter should be included by the applicant as part of the evidence supporting its application.
- If the Ministry of Energy determines that a duty to consult is triggered, it will expressly delegate the procedural aspects of consultation to the applicant. Depending on the Crown's assessment of the planned project, the Ministry of Energy will delegate the procedural aspects of consultation to the applicant by way of a Delegation Letter, a Memorandum of Understanding (MOU), or other express delegation instrument.
- The MOU or Delegation Letter will include the list of First Nations and Métis communities whose rights are potentially adversely affected by the planned project, direction on the respective roles and responsibilities of the applicant and Crown, and the requirements the applicant must satisfy in order to assist the Ministry of Energy in addressing the Crown's duty to consult. Within 25 business days of the Ministry of Energy having been informed of the project by the applicant, the Ministry of Energy will issue the Delegation Letter or MOU or other express delegation agreement to the applicant.

The applicant will include the Delegation Letter, MOU or other express delegation agreement as part of the evidence supporting its application. This documentation, and related records, will form part of the public record and the applicant can share the Delegation Letter, MOU or other express delegation with communities at any point prior to and during the proceeding.

The applicant should file an Indigenous Consultation Report with its application to the OEB. The Indigenous Consultation Report should describe the consultation activities that were undertaken and timing, include copies of communication and summary of the rights-based concerns raised by Indigenous communities, and descriptions of what (if any) accommodations were proposed. A matrix can be used to summarize the Indigenous consultation record, documenting the date, time and place of the consultations, concerns that were raised, and how they were addressed. Prior to the leave to construct record being closed by the OEB, the Ministry of Energy will provide a letter to the applicant expressing its view on the adequacy of the Indigenous consultation based on materials provided to the Ministry of Energy. It is noted that the consultation should start in the pre-application stage and is likely to continue during OEB's review of the application and in some cases may continue through the life of the project. The applicant is expected to file with the OEB the letter from the Ministry of Energy and keep the summary of the consultation record up to date until the OEB renders its decision.

3.3 Landowner Engagement

Landowners whose property will be encroached upon by a Hydrocarbon Project are considered "directly affected landowners". Their involvement in the planning of the route or site on their property is essential.

Other landowners whose property lies adjacent to, or close to a proposed Hydrocarbon Project, may be affected by proposed construction activities due to noise, dust, and impediment to traffic flows, or the operation of a nearby facility such as a compressor station. In addition, there may be landowners who are restricted from building structures in proximity to certain facilities. These landowners should also be involved in the planning of the route or site adjacent to their property. These landowners are referred to as "indirectly affected landowners".

Where possible, tenants should be identified and treated in the same manner as either directly affected or indirectly affected landowners, depending upon the location of the property they rent. This should include proprietors of commercial properties and residents in home rental units in areas that may experience construction disturbance.

In areas involving Crown Land, forms of tenure such as trapline licences, Sustainable Forestry Licenses, and permits or leases for commercial uses should be ascertained and the relevant tenure holders contacted.

3.3.1 Landowner Interviews

Landowner interviews are another recommended method of public consultation. Interviews with landowners are a source of information that should be used to "fine-tune" the preferred route or site selection. At the interview, the landowner is shown a map of the proposed route or site on the property and a proposed construction schedule. Directly affected landowners should have an opportunity to discuss route or site alternatives on their property. Existing features of the environment or planned modifications to their property may warrant adjustment from the originally identified preferred route or site. Any changes in the preferred location resulting from landowner interviews, as well as the rationale for the changes, should be described in the Environmental Report.

Landowner interviews should address:

- Existing and planned features (e.g., wells, buildings, subsurface drainage tiles, cropping systems, irrigation systems, special agricultural enterprises, woodlot management plans)
- Environmental features, including known or potential cultural heritage resources
- Siting or routing preference, including mitigation and monitoring measures
- Potential temporary or permanent access to the easement
- Concerns regarding previous pipeline or station construction
- Current farm or business operations, including conservation practices
- The number of occupants and any particular sensitivities those occupants may have to construction impacts, such as noise and dust
- Any potential restrictions on the location of planned buildings or structures

It is not expected that a proponent will conduct interviews with all indirectly affected landowners, but once identified, they should be invited to all public meetings and otherwise be involved in the preparation of the Environmental Report to a similar extent, as directly affected landowners.

If the application is approved by the OEB, a construction schedule should be given to all the directly affected landowners, before the commencement of construction on their property.

3.4 General Public Engagement

Soliciting input from the general public is an important component of the route or site selection process. It provides the opportunity for people to become involved in a meaningful way, informing decisions on matters that affect them. The applicant should consult with interested persons during all development stages of the Environmental Report, where practical, in order to obtain input before decisions are made.

The goal of the public consultation process should be to solicit input from the public, to help the applicant improve public understanding, identify and address issues and provide the public an opportunity to provide meaningful input into the planning process. The applicant's public consultation program should:

a) Identify those who may be directly or indirectly affected and inform those persons of the nature of the Hydrocarbon Project and how they may be affected

b) Allow the public to know where, when and how they can comment on the proposed Hydrocarbon Project

c) Identify how public input is to be taken into account in the planning process and in any decisions made in the course of the process

The applicant should carry out local public consultation regarding routing and siting decisions, as well as mitigation and monitoring measures for the preferred route or site, once it is chosen.

3.4.1 Public Meetings

Public meetings (e.g., seminars, workshops or "open houses") should be held for proposed Hydrocarbon Projects.[12] Efforts should be made after each meeting to resolve outstanding issues by holding individual or group meetings as required. The number and frequency of meetings depends on the environmental issues or concerns encountered on the Hydrocarbon Project.[13]

The initial public meeting should take place before choosing the preferred alternative, to present a map showing preliminary location alternatives, and to discuss and explain the applicant's planning and approval processes and the role of the public. The meeting should be designed to obtain input on:

- The study area, including relevant information on the communities and a baseline of the existing environmental features within them (see section 4.2.1 of the Guidelines)
- The proposed preliminary route or site alternatives

[12] Meetings may be held in person, virtually online, or a combination of both.

[13] For example, Hydrocarbon Projects with no alternative routes (e.g., a pipeline installed to connect an underground natural gas storage well to a nearby existing gathering system) may only require one public meeting.

- Other potential alternatives
- Proposed constraints and other criteria to be used to evaluate alternative route or sites, their rationale and the relative importance that should be attached to them
- The evaluation of the net impacts of the preliminary alternatives
- Additional consultation planned and required

A second public meeting should be held after the preferred route or site has been chosen, to discuss the evaluation of the alternatives and to explain how public input was used in the planning process to influence decisions.

The meeting should include discussion on:

1. Public consultation to date
2. The criteria and the method(s) used to evaluate the alternatives and select the preferred one(s)
3. Potential impacts of the preferred alternative(s), suggested mitigation measures and the resultant net effects
4. The need for additional consultation

Depending on the level of interest, the scope for the second public meeting may be narrowed or expanded. However, regardless of the scope of the second meeting, prior to the finalization of the Environmental Report, consultation regarding the proposed mitigation and monitoring plans should take place.

General notices in local newspapers, community bulletins, social media, online platforms and other such communication and outreach tools may be used to inform the public of each of the public meetings. Landowners, whose property may be encroached upon in one or more of the identified alternatives, should receive direct notice of all meetings. Direct notification should also be provided to any indirectly affected landowners, whose property has been identified as being potentially impacted by the Hydrocarbon Project construction or operation.

An appendix of the Environmental Report should summarize the concerns of all interested persons received through the public meetings. The appendix should document the date, time and place of each meeting, the concerns that were raised, how they were addressed, why that approach was taken, and a description of any concerns that remain unresolved. A matrix summarizing this information should also be provided. Individual persons should be advised directly of how their comments were addressed and documentation of this consultation should be provided in the Environmental Report.

CHAPTER 4
ROUTE OR SITE SELECTION

4.1 Project Description

In order to properly identify and assess the impacts resulting from a proposed Hydrocarbon Project, a complete description is required. The Environmental Report should include a description of:

- The nature, location, size and length of the proposed facilities and any ancillary facilities such as access roads, sewer, power and water lines
- The nature, location and duration of all related construction activities, including typical equipment used and noise ratings
- All related land requirements, whether public or private
- The best available estimate of the construction schedule and the required construction and operational workforce
- An indication of the facility appearance and typical operating noise ratings

4.2 Mapping and Description of Environment

4.2.1 Study Area

The Environmental Report must include a written description of environmental features within the study area that may be directly or indirectly affected by the Hydrocarbon Project and its alternatives. General background information, which is not relevant to the alternative evaluation, should not be included in this description. The constraints and alternatives should be described and mapped to a scale of 1:25,000, except for Northern Ontario[14], where the standard mapping scale of 1:50,000 would be appropriate.

It is important to clearly describe how and why the boundaries of the overall study area were chosen. The study area boundaries should be established to ensure that all reasonable alternatives and their impacts can be evaluated. In setting the boundaries, it is important to consider the impact type and the zone of impact. Applicants may need to conduct studies and research to provide a final description of the environment within the study area. The description of the study area must address all components of the environment (natural, social, economic, cultural, built).

[14] As defined by the part of Ontario that includes all points north of the districts of Parry Sound and Nipissing.

The level of detail of the information will vary with the study area, its sensitivity, and the type of features found within it. For example, when it is possible to generate an acceptable range of alternatives to be constructed entirely within a road allowance, the description of features may be limited to features which are affected by the proposed route.

In determining the environment to be described, and in identifying and assessing impacts, it should be recognized that the study area used to identify and assess impacts on the natural environment, may not always coincide with the study area applicable to the social components of the environment. Social impacts may affect people beyond the immediate area of a pipeline easement. For example, traffic disruptions during construction may affect many travelers or commuters through the affected area; or the economic benefits associated with a project may be felt throughout an entire region, depending upon where the workforce lives. There may also be impacts to natural features that are outside the area being examined for social impacts. For example, a stream crossing may have an effect downstream of the immediate construction or on other watercourses within the watershed.[15]

In general, a social profile of the study area should include an inventory of the existing and historical land uses, a characterization of relevant demographics, a description of the economic base and key commercial activities, and community and social services which may be affected by the project.

The Environmental Report should include a list and explanation of the tools (for example, studies, tests, surveys, mapping) used to provide the description of the environment.

4.2.2 Alternatives Evaluation

A wide range of evaluation methods can be used to evaluate a set of alternatives. Evaluation methods with explicit decision rules are expected. Whatever method is used, the Environmental Report should explain the rationale for the method chosen, how it was applied, the assumptions made, the uncertainty surrounding the conclusions reached, and the steps taken to minimize and understand that uncertainty. The evaluation method and its application should be transparent and readily understood by the reader.

The evaluation of alternatives should involve a discussion of the relative advantages and disadvantages of each alternative. It should explain the trade-offs that were made and provide the reasons why the preferred alternative was chosen over the other alternatives. The rationale provided in the Environmental Report for the routing or siting should be evident.

Where construction of a section of pipeline or station may determine the location of future facilities, an evaluation of the system should be undertaken, before the location of a single facility is determined. The information required and its level of detail should be determined on a case-by-case basis.

[15] Applicants should contact the applicable conservation authority for information on watersheds (e.g., watershed maps).

4.2.3 Route or Site Description

The Environmental Report must include maps or recent air photo mosaics, which illustrate in greater detail the environmental setting of the preferred pipeline route or facility sites. Large-diameter, high-pressure pipelines crossing private lands, should be shown at a scale of 1:10,000 or larger. A larger scale map, photo mosaic or site construction plan in environmentally sensitive areas, should also be prepared.

In some cases, a description of certain environmental features may be unnecessary. For example, a detailed soil survey data may not be required if the site is in a road allowance and has been previously disturbed. However, a detailed soil survey may be required if the land is to be returned to an agricultural condition post construction.

In addition to the proposed general route or site location and alternatives considered, the list below provides those features and resources which may need to be identified on the maps or photo mosaics, if they are traversed by, or are adjacent to, the preferred route or site:

- Existing and proposed compressor, pump, valve and metering stations
- Prime agricultural areas designated in the approved municipal official plan and agricultural land use such as croplands (e.g., corn, soybeans, hay), specialty crops (e.g., orchards, vineyards, vegetables), pasture, grazing land, sugar bushes, tile drained land, irrigation systems or other agricultural ventures
- Farm enterprises and buildings (e.g., greenhouses, livestock facilities such as beef feedlots, dairy farms, poultry barns) and elements of the agri-food supply chain such as grain elevators, cold storage facilities or farm markets
- Sensitive landforms and geological features including any mineral deposits, mines and mining claims, identified aggregate resources, oil and gas pools and wells or fields, underground storage facilities, abandoned oil and gas wells and current or abandoned mining dumpsites
- Reservoirs, watercourses, (permanent and intermittent streams and rivers) water bodies (ponds, lakes), direction of flow, recharge areas, wetlands, water table (identify sections that may be affected by groundwater seeps), intake and discharge points of water for municipal and private water supplies, vulnerable areas for the protection of drinking water sources as defined under the *Clean Water Act, 2006, S. O. 2006, c. 22* (Clean Water Act), location of water crossings, water wells, storm drainage, subsurface tile and municipal drains
- Cultural heritage resources, which include archaeological resources, built heritage resources and cultural heritage landscapes (refer to section 5.4 of the Guidelines)
- Topographic information outlining surface contours, geographical distribution of wetland resources, floodplains, organic soils and areas known to be subject to natural hazards such as landslides, mudflows, areas of erosion and slope instability

- Forest resources such as woodlots, sugar bushes, shelter and other protection belts, seed production stands either publicly or privately managed
- Habitat of rare, threatened or endangered plant, fish, wildlife and other species as listed on the Species at Risk in Ontario list
- Nationally, provincially, regionally or locally significant floral and faunal areas and other significant wildlife habitat, such as areas inhabited by special concern species under the Endangered Species Act, 2007 (refer to the Significant Wildlife Habitat Technical Guide for more information)
- Proposed, operating and non-operating landfills
- Potential blasting areas, including water crossings
- Occupied and vacant buildings adjacent to the right-of-way, which may be affected by construction activities
- Industries (existing or historic) which may have caused contaminated soils along the right-of-way or contaminated sediments at water crossings
- For large stream crossings, by other than horizontal directional drilling method, the contour of stream bed and channel (for recreation of configuration during restoration)
- Existing and planned linear facilities such as roads, rights-of-way and blind lines
- Existing land uses and land use designations, as set out in current municipal official plans and zoning bylaws
- Fish habitat, as defined by the Federal *Fisheries Act RSC 1985 c. F-14* (Fisheries Act), including spawning grounds and nursery, rearing, food supply and migration areas
- Provincial parks, conservation reserves and Ontario Natural Heritage areas
- Crown Land existing land use designations (i.e., based on "Crown Land Use Policy Atlas" maintained by the Ministry of Natural Resources)

The decision on the type of background information to collect should be based on the biophysical characteristics, as well as the socio-economic make-up of the area likely to be affected. The description of the socio-economic environment should include the existing and expected social conditions and any anticipated changes in the area likely to be affected by the alternative route or site.

CHAPTER 5
IMPACT IDENTIFICATION AND ASSESSMENT

5.1 Introduction

The impacts to be assessed for each comparison of alternatives include impacts on the natural, agricultural, built, social, cultural, and economic components of the environment. There are also interrelationships among these components, which should be considered. For example, where an impact on the natural environment in a recreational area is identified, the effect on the people who use that recreational area should also be identified and addressed. Also, cumulative effects that may result from the interaction between the effects of the proposed project and the effects of other developments already in place or planned within or near the study area, should be addressed.

Both positive and negative potential impacts of each alternative must be identified and analyzed, based on an assessment of impacts during construction and the operation of the facilities. Then, all reasonable mitigation and enhancement measures to avoid, minimize and mitigate each adverse impact should be described. The analysis concludes with an assessment of the net impacts that remain after the measures have been applied. The level of detail in the information on impacts will likely be lower than the level recommended in Chapter 6 of the Guidelines for the impact management plans but should be sufficient to provide a consistent basis for comparison and evaluation.

Impact prediction is a two-stage process: predicting the effect and then predicting the resultant impact. For example, a high noise level near a pipeline construction site is an effect of construction, while the impact of that noise may be the discomfort of nearby residents. All reasonable efforts should be extended to carry out both stages of impact predictions. When it is not possible to carry out the second, an explanation should be provided.

All reasonable efforts should be made to quantify effects and impacts (e.g., distances, number and duration of occurrences, noise levels, traffic volumes, dust concentrations). At minimum, effects and impacts which can be readily measured should be quantified. Where direct measurement is not reasonable, indicators such as high, medium and low should be used.

Where indicators are inappropriate, the analysis should be qualitative and based on consistent descriptions of the expected effects and impacts. The Environmental Report should describe how effects and impacts were quantified and the rationale for any indicators and qualitative descriptions used.

All relevant environmental impacts resulting from the construction and operation of the Hydrocarbon Project should be described. Relevance may be determined by the significance of the impact, as well as its likelihood. Criteria for determining significance may include magnitude, geographical extent, duration and frequency, reversibility, level of public concern and ecological context. Criteria for determining likelihood may include the probability of occurrence and the uncertainty in the prediction.

The scope of the analysis should become more refined and site specific, as the planning process proceeds. Initially, the data may be based primarily on secondary sources. Once the alternatives have been identified, more detailed field studies and analyses allow for a more thorough comparison of impacts. The greatest level of detail is expected for the analysis of impacts on the preferred route or site. The data should be mapped to the extent possible.

5.2 Land Use Planning And Policies

The Environmental Report should describe the impacts of alternatives on land use planning. To identify provincial and municipal land use planning concerns and longer-term issues, the applicant should contact the Ministry of Transportation, Ministry of Natural Resources, Ministry of Environment, and Ministry of Municipal Affairs representatives on the OPCC, as well as municipalities and conservation authorities. In this way, provincial and municipal land use planning concerns and longer-term land use issues which may affect routing will be identified.

Examples of existing land use which may constrain route or site selection include: agricultural uses, utilities, waste disposal sites, transportation facilities, recreation areas, outdoor education areas, wildlife management areas, fish sanctuaries, provincial parks and conservation reserve areas, special protected areas such as prime agricultural lands, wetlands, designated Areas of Natural and Scientific Interest (ANSI), cemeteries, burial grounds, heritage sites, locally or provincially designated Environmentally Sensitive Areas (ESA), reserve areas such as the Oak Ridges Moraine or Niagara Escarpment, occupied and vacant buildings, land tenure, ownership and unregistered forms of tenure (e.g., land use permits).

Examples of proposed land uses to be identified include undertakings that are exempt or authorized to proceed under the Impact Assessment Act, S.C. 2019, C.28 (Impact Assessment Act), provincial plans for new or upgraded transportation facilities, national parks, military lands, railways, Aboriginal reserves, Traditional Harvesting Territories of Métis Nation of Ontario, correctional facilities, landfills, utility corridors and special proposed areas in the Niagara Escarpment Plan or Parkway Belt Plan.

The Ministry of Transportation should be contacted as early as possible to identify any transportation policies or project plans that may restrict Hydrocarbon Projects from using road allowance along certain classes of highways, bridges and other structures. This information should be considered in the constraints mapping.

As with all corridor applications that involve encroachment or alteration of Ministry of Transportation land not proposed by Ministry of Transportation, the applicant is required to meet the environmental assessment requirements of Ministry of Transportation. This may include completing either the Ministry of Transportation Class Environmental Assessment process or another approved environmental assessment process to Ministry of Transportation's satisfaction. This requirement must be met to gain a Ministry of Transportation Highway Corridor Management permit. The onus is on the applicant to contact the Ministry of Transportation and get the direction on how to fulfil these requirements.

The *Planning Act, R.S.O. 1990* (Planning Act) defines general areas of provincial interest, which are the responsibility of the Minister of Municipal Affairs. The Minister, either alone or with another Minister(s), can issue specific policy statements that have been approved by Cabinet, on matters of provincial interest. The Provincial Policy Statement was issued under Section 3 of the Planning Act and came into effect in 2020. The Provincial Policy Statement provides general principles for coordinated land use planning in Ontario.

The OEB, as part of its approval process, is required to be consistent with the Provincial Policy Statement. Applicants should include in the Environmental Report, a discussion of the relevance to the Hydrocarbon Project of particular provincial policies, such as those on infrastructure, agriculture, mineral resources, natural and cultural heritage, and archaeology. The Ministry of Municipal Affairs should be contacted as early as possible for advice on the statements that have been issued. The appropriate Ministry responsible for the technical substance of each statement can be contacted for assistance on the application of the statement to the Hydrocarbon Project.

The relevant municipal official plan(s) should be reviewed with municipal planning and engineering authorities for proper interpretation of these documents. Areas approved for future development or other uses by the plan(s), may eliminate some alternatives. In Northern Ontario, a planning board may have been established which includes areas without municipal organization (unincorporated territory), or more than one municipality. A planning board may have an area wide official plan, or an official plan for each of its municipalities and for the unincorporated areas. The planning board acts as a municipal council for land use planning purposes for the unincorporated areas within its jurisdiction.

Where pipeline facilities affect land in unorganized territory, which is part of a planning area, the planning board should be contacted for advice and assistance. In unorganized territory that is not within a planning board, the Ministry of Municipal Affairs should be contacted. The Ministry of Natural Resources should also be contacted in unorganized territories and areas involving Crown Land.

Municipal zoning bylaws should be reviewed to identify those land uses which may have an impact on route or site selection. Also, the Planning Act gives the Minister of Municipal Affairs the authority to impose zoning orders which are similar to zoning bylaws passed by municipal councils. Where there is an order in effect, applicants should give it the same consideration as a zoning bylaw in the route or site selection process. The applicant should contact the local planning authority or the Ministry of Municipal Affairs for information on the Minister's zoning orders.

The selection of alternatives may be limited by a plan of subdivision. Applicants should find out if alternatives are affected by a plan of subdivision, which has been submitted for approval. The Ministry of Municipal Affairs has delegated subdivision plans approval authority to most regional and district municipalities, to some counties in southern Ontario, and to towns and cities that are not an administrative part of a county. The applicant should contact the Ministry of Municipal Affairs to identify the subdivision approval authority within a study area.

A further limitation in route or site selection may be that the municipality is conducting a study to amend the official plan in the area of alternatives, the outcome of which, may affect one or more alternatives. Therefore, applicants should contact municipalities as early as possible.

5.3 Urban Siting Considerations

In urban areas, Hydrocarbon Projects present a different set of issues, concerns and problems to be managed.

Impact of Hydrocarbon Project construction and operation on the different land uses found in the urban environment should be fully considered. All reasonable efforts should be made to locate proposed Hydrocarbon Projects adjacent to or on existing utility or transportation corridors. The location requirements of the Fuel Safety Division, Technical Standards and Safety Authority, as presented in its Guidelines for Locating New Oil and Gas Pipeline Facilities and other current safety requirements should be respected.

Relevant municipal departments and agencies such as engineering, public works departments and local electricity distribution companies, should be contacted for the precise location of all existing underground utility and service networks and corridors. Consideration should also be given to planned future capital works that may be affected by the proposed Hydrocarbon Project, so that development plans can be coordinated with the host municipality and through the local utility coordinating committee or similar body.

Each municipality should be contacted for advice on the location of construction activities, such as road resurfacing plans and coordination with them, as well as for their preference for a proposed location and timing of construction.

A detailed land use analysis will provide the applicant with an accurate description of the historic, current and proposed land use, in order to determine possible high impact areas that should be avoided, such as abandoned industrial sites or landfills that may be exposed during the construction process. In urban settings, the protection of trees and other vegetation is of special importance. Vegetation and landscape plans should be developed with the cooperation and consent of municipal authorities. All reasonable efforts should be made, to protect existing trees within technical and practical limits. In both rural and urban settings, where a municipality has bylaws concerning landscape restoration, or the protection and replacement of trees, or erecting buildings or station structures, the applicant should adhere to the spirit and intent of such bylaws and to document that adherence in the Environmental Report. When a decision has been made to cut trees, the rationale for the decision should be clearly explained in the Environmental Report.

In urban settings, issues such as traffic safety, commercial business disruption, proximity to institutions such as schools and hospitals and the impacts on local residents may require increased attention during the routing and site selection stage. Such information should be gathered as part of public consultation and incorporated into the social impact assessment, so that it can be used as part of the routing and siting process.

Where there is a history of industrial land use and evidence of intensive industrial use or environmental concern, the applicant should consider potentially hazardous materials or landfills that may create handling and disposal problems. Contaminated sites should be avoided where practical. If contaminated sites are encountered, Ministry of Environment District Offices must be contacted by the landowner whose property is contaminated. Procedures for proper soil testing and disposal should be established with the concurrence of the Ministry of Environment. If proposed Hydrocarbon Projects are located adjacent to contaminated land, the risk is associated with the following:

- The possibility of encountering plumes of contaminated groundwater, which may have migrated some distance away from the original site of contamination
- The possibility that the granular medium surrounding the Hydrocarbon Project could provide a pathway for plume migration at increased rates and to areas that would not otherwise have been affected

5.4 Cultural Heritage Resources

The *Ontario Heritage Act, R.S.O. 1990, c. O. 18* (Heritage Act) provides the primary statutory framework for the conservation of cultural heritage resources in Ontario, including their identification, protection and wise management. The conservation of cultural heritage resources is also a matter of provincial interest as reflected in federal and provincial legislation such as the Planning Act and the Impact Assessment Act, among others. The Ministry of Multiculturalism is responsible for the administration of the Heritage Act and is responsible for determining policies and programs for the conservation of the cultural heritage of Ontario.

Assessment of the impact of a proposed project on known or potential cultural heritage resources should inform decisions in the Hydrocarbon Project development planning stage. While some cultural heritage resources may have already been formally identified, others may be identified through assessment.

With regard to cultural heritage resources, applicants must self-assess and demonstrate appropriate due diligence by:

- Identifying and describing existing components of the environment (baseline environmental conditions) by recognizing all known and potential cultural heritage resources in the study area
- Identifying preliminary potential Hydrocarbon Project-specific impacts on the known and potential cultural heritage resources that have been identified
- Recommending measures to avoid or mitigate potential negative impacts to known or potential cultural heritage resources

Community input should be sought to identify locally recognized and potential cultural heritage resources. Sources include, but are not limited to, municipal heritage committees, historical societies, and other local heritage organizations.

Cultural heritage resources are often of critical importance to Indigenous communities. Indigenous communities may have knowledge that can contribute to the identification of cultural heritage resources, and engagement with Indigenous communities should include a discussion about known or potential cultural heritage resources that are of value to them.

The first step is to determine whether there are cultural heritage resources that could be impacted. The most accurate means for making this determination is by retaining qualified persons to research the potential presence of cultural heritage resources.

If there is potential for impacts to archaeological resources, a licensed consultant archaeologist should be retained to undertake an archaeological assessment prior to commencing any ground disturbance. Knowing from an early stage that archaeological resources (and other types of cultural heritage resources) exist allows applicants to plan and implement work in a way that avoids or mitigates impacts to these resources.

Alternatively, someone who is not a qualified person (e.g., a project engineer) can determine whether or not there may be the potential for an area to contain cultural heritage resources.

The following documents have been developed by the Ministry of Multiculturalism to assist non-specialists:

- Criteria for Evaluating Archaeological Potential
- Criteria for Evaluating Marine Archaeological Potential
- Criteria for Evaluating Potential for Built Heritage and Cultural Heritage Landscapes

Archaeological Resources – Land and Marine

If there is potential for archaeological resources in the study area, a combined Stage 1 and Stage 2 archaeological assessment[16] should be completed for the study area during the planning phase. If this is not feasible, at a minimum, a Stage 1 archaeological assessment should be undertaken for the study area during the planning phase. The results of the Stage 1 archaeological assessment should be summarized in the Environmental Report. If the Stage 1 archaeological assessment recommends further archaeological assessment(s), then further stages of archaeological assessment should be completed as early as possible.

Archaeological assessments are required to be undertaken by an archaeologist, licenced under the Heritage Act, who is responsible for submitting the report directly to the Ministry of Multiculturalism for review. All reports must be in compliance with the Standards and Guidelines for Consultant Archaeologists and the terms and conditions of the archaeological license. Refer to the Ministry of Multiculturalism's website for a list of licensed professional archaeologists.

The Environmental Report should include specific information from the archaeological assessment report(s) including a brief summary of the work completed and the recommendations for next steps (i.e., that further archaeological assessment, including a map that identifies the areas, is needed or that no further assessment is required). The Environmental Report should also include clear commitments to undertake any further archaeological assessment stages recommended, and a timeline for their completion.

Indigenous communities may be interested in the archaeological activities described above, particularly if those activities involve removing artifacts. Applicants should share information about archaeological plans and activities with Indigenous communities identified by the Ministry of Energy as having potentially affected rights. This may include arrangements for Indigenous community representatives to monitor or participate in archaeological activities. It is recommended that applicants and their consultants refer to the technical bulletin on *Engaging Aboriginal Communities in Archaeology* for guidance in this matter.

[16] The stages of archaeological assessment are described in further detail later in this section of the Guidelines.

Built Heritage Resources and Cultural Heritage Landscapes

The applicant should make every attempt to complete an Existing Conditions and Preliminary Impact Assessment for the study area during the planning phase and provide a summary in the Environmental Report. If the assessment cannot be completed prior to the completion of the Environmental Report, a summary of the steps taken and the steps to be taken to complete and finalize the assessment should be summarized in the Environmental Report. The Ministry of Multiculturalism has developed screening criteria to assist with this exercise titled, Criteria for Evaluating for Potential Built Heritage Resources and Cultural Heritage Landscapes. This evaluation process involves the following steps:

Step 1 Identify existing baseline cultural heritage conditions within the study area.

Step 2 Define a study area and explain the rationale for it. The common practice has been to define a study area as including the right-of-way and a 50-metre buffer (construction zone) on either side of the right-of-way.

Step 3 Provide a historical summary of the study area identifiying all known or potential built heritage resources and cultural heritage landscapes. Preliminary potential Hydrocarbon Project-specific impacts on the known and potential built heritage resources and cultural heritage landscapes should be identified. The report should include a description of the anticipated impact to both.

Step 4 Recommend measures to avoid or mitigate potential negative impacts to known or potential built heritage resources and cultural heritage landscapes. The proposed mitigation measures are to inform the next steps of Hydrocarbon Project planning and design.

Subsequently, a Cultural Heritage Report should be prepared by a qualified person who has expertise, recent experience, and knowledge relevant to the type of cultural heritage resources being considered and the nature of the activity being proposed. Given that a Hydrocarbon Project may cover a large study area, the process for preparing a Cultural Heritage Report should be carried out in a manner that allows step 1 described above to be undertaken early in the planning process. Steps 2 and 3 can be undertaken once the preferred alternatives have been selected.

If the project only impacts one property and the property includes potential built heritage resources or cultural heritage landscapes, then a Cultural Heritage Evaluation Report may be more appropriate than a Cultural Heritage Report.

The possible effects or impacts resulting from the development of a Hydrocarbon Project that could affect cultural heritage resources include:

1. Destruction or removal of any – or any part of – significant heritage attributes or features
2. Alteration that is not sympathetic, or is not compatible, with heritage character or appearance
3. Isolation of heritage attributes or features from their surrounding environment, context or a significant relationship
4. Visual intrusions, direct or indirect obstruction of significant views or vistas from, within, or to a built or natural feature
5. Shadows created by new development that alter the appearance or character of a heritage resource
6. A change in physical character, such as when development fills in formerly open spaces, or when significant vegetation is removed
7. Ground disturbances or land alterations, such as a change in grade, alteration of soil composition or drainage patterns that could adversely affect a cultural heritage resource

Archaeological Assessments

For every Hydrocarbon Project, an archeological assessment must be conducted by a licenced archaeology consultant and filed with the Ministry of Multiculturalism.

An archeological assessment may involve up to four stages of activity as determined by the Ministry of Multiculturalism:

(a) **Stage 1** involves a background study and property inspection to review geographic, land use and historical information for the property and the relevant surrounding area, visiting the property to inspect its current condition, and contacting the Ministry of Multiculturalism to determine if there are any known archaeological sites on or near the property.

A Stage 2 assessment is required if the Stage 1 assessment identifies areas of archaeological potential.

(b) **Stage 2** involves a property assessment to survey the land and identify any archaeological resources on the property.

A Stage 3 assessment is required if the Stage 2 assessment identifies any archaeological resources that are of sufficient cultural heritage value or interest.

(c) **Stage 3** involves a site-specific assessment to acquire further information about the site's characteristics by excavating one-metre by one-metre square test units across the site.

A Stage 4 assessment is required if the Stage 3 assessment identifies sufficient cultural heritage value or interest.

(d) **Stage 4** involves developing and implementing conservation strategies (e.g., avoidance, protection).

Additional information on the stages of archaeological assessments is available on the Ministry of Multiculturalism's website.

5.5 Agriculture

Provincial policy prioritizes the protection of prime agricultural areas including specialty crop areas. Municipal official plan land use schedules typically show where prime agricultural areas are located. The Ministry of Agriculture must be notified, as early as possible, of proposals for Hydrocarbon Projects in or adjacent to prime agricultural areas including specialty crop areas, or potentially impacting elements of the agri-food network.

The Provincial Policy Statement prescribes protection of prime agricultural areas and identifies permitted land uses in these areas. The Provincial Policy Statement notes that:

(a) Non-agricultural uses in prime agricultural areas and specialty crop areas are to be avoided when possible

(b) Where avoidance is not possible, non-agricultural uses should be located on lower priority agricultural lands

(c) Impacts from new or expanding non-agricultural uses on surrounding agricultural operations and lands in prime agricultural areas are to be mitigated to the extent feasible

The following are examples of the factors to be considered when identifying potential impacts on agriculture:

1) Current land use designation and zoning (i.e., approved municipal official plans and zoning bylaws)
2) Soil quality based on Canada Land Inventory (AgMaps)
3) Crop and livestock production (AAFC Annual Crop Inventory, aerial imagery) and agri-food network (Agricultural System mapping portal)
4) Traffic patterns and volume by agricultural vehicles, access points to farms (municipal staff, municipal Agricultural Advisory Committees where they exist or local Federation of Agriculture)
5) Capital investments into perennial crops such as vineyards, fruit trees or some vegetable crops (AAFC Annual Crop Inventory), farm buildings and structures (aerial imagery, wind shield survey), and drainage systems (AgMaps)

Potential short-term and long-term impacts from Hydrocarbon Project construction should be assessed and strategies identified to avoid, minimize and mitigate adverse impacts. Potential impacts may include:

- Loss or deterioration of agricultural land (e.g., displaced farmland, increased soil erosion or compaction)
- Interruption of crop planting or harvesting and disruption to livestock facilities and pasturelands
- Traffic, access, and safety issues
- Nuisance impacts (e.g., noise, light, dust)
- Changes to ground or surface water quality or quantity relied on by farms
- Impacts to drainage or irrigation systems, or elements of the agri-food network

Applicants' Hydrocarbon Projects start by confirming the provincial policy that applies. Policy may apply province-wide or to specific areas such as the Greater Golden Horseshoe, Greenbelt, Oak Ridges Moraine or Niagara Escarpment. Provincial policy may specify when and how agricultural impacts are to be assessed.

Applicants should consider agricultural impacts broadly in terms of the agricultural system (considering both the agricultural land base and the agri-food network), focus on a hierarchy of approaches to address adverse impacts (from impact avoidance, to minimization, to mitigation), and to complete an agricultural impact assessment or equivalent analysis.

5.6 Vegetation and Wildlife Habitat

The Ministry of Natural Resources considers a Natural Area to be any designated area with natural heritage values. Ontario Natural Areas include Areas of Natural and Scientific Interest (ANSI), proposed Conservation Reserves, Enhanced Management Area-Intensive Forestry, proposed Provincial Parks (various categories), and Ontario Living Legacy Sites. Information on these resources is available from Ministry of Natural Resources Regional, District or Area offices and from Natural Heritage Information Centre (NHIC). The NHIC maintains natural heritage information for many different Natural Areas. If a Natural Area is identified in the study area, the local offices of Ministry of Natural Resources must be consulted as early as possible to discuss routing or siting alternatives to avoid impacts on these sensitive resources. As a rule, routing and siting in Natural Areas should be avoided.

Forest resources, such as stands of commercial or recreational value, should be identified and assessed. The effects of altering wildlife corridors and habitat fragmentation should be considered. Seed production stands of trees should be avoided. Where this is not possible, applicants should contact the local Ministry of Natural Resources office as early as possible.

Early consultation with the specific Area Foresters, who are aware of the local situation, will minimize impacts on these areas. To avoid clear cutting, the route or site should follow the interface between woodlands and cleared lands.

The route or site should avoid existing deer winter concentration areas (deer yards), moose late winter habitat, provincially and locally significant wetland areas, traditional plant use areas, critical habitat for fur-bearing animals (e.g., dens), moose aquatic feeding areas, known raptor nesting sites, habitat of locally and regionally rare and valuable species (e.g., trumpeter swans, great grey owls) and habitat of threatened and endangered species listed under the Endangered Species Act. Route or sites on Crown Game Preserves, require approval by Ministry of Natural Resources. Special attention should be paid to assessing impacts on sensitive wildlife and herbaceous species.

Areas of important recreational and tourism potential should be avoided, including all known areas used for the purpose of organized outdoor education. Local naturalist clubs and conservation groups are an important information source for locating these areas.

5.7 Lake and Watercourse Crossings

The impacts of Hydrocarbon Project construction on water bodies are significant considerations in selecting a preferred route or site. A number of characteristics related to watercourses will determine the preferred alternative. To document and justify the preferred crossing locations, the applicant is expected to outline the routing criteria, their relative importance, how the criteria were applied, the net impacts that were predicted, and the rationale used to choose the final crossing location. Consideration should be given to watershed or sub-watershed plans where they exist or are being developed. Early contact with Conservation Authorities, where present within a study area, is essential.

The sensitivity of a watercourse must be determined in early consultation with Conservation Authorities, where they exist, and private fish hatchery or put-and-take operators upstream and downstream of the crossing site. Wherever practical, sensitive crossings should be examined on site, with the relevant agencies. Conservation authorities regulate development and activities in or adjacent to rivers or stream valleys, Great Lakes and inland lakes' shorelines, watercourses, hazardous lands and wetlands; only if species at risk are identified, is the Ministry of Environment to be directly involved. In addition, if there is a disturbance of the waterbed by open cut crossing method, the federal Department of Fisheries and Oceans has the authority over the crossings and the associated impacts on aquatic habitats. A permit may be required from a Conservation Authority under each Authority's "Development and Interference with Wetlands and Alterations to Shorelines and Watercourses" regulation, if a proposed route crosses a watercourse, wetland or floodplain.

The number of water crossings should be minimized in selecting the preferred route or site. The headwaters of the watershed should be avoided, as well as groundwater recharge areas and spring sources. Trout lakes, nutrient sensitive lakes and cold water streams and water crossings involving contaminated sediments should also be avoided.

Water intakes and discharge points for municipal and private water supplies, which may be affected by watercourse crossing activities, should be identified on the photo mosaics. In portions of the province covered by source protection plans under the Clean Water Act, vulnerable areas for the protection of drinking water sources have been identified. For more information, refer to section 5.15 of the Guidelines.

The Ministry of Environment should be contacted to ensure that section 33(1) of the *Ontario Water Resources Act, R.S.O. 1990*, does not apply.

Crossing locations should be chosen to minimize the amount of blasting. Local water well records and geophysical survey data can often provide useful information on subsurface conditions. As well, the sinking of bed cores to the proposed trench depth will provide habitat assessment information, a thorough knowledge of substrate conditions and will ensure that in- stream work is well planned and rapidly executed.

The crossing locations also should be chosen to minimize any impacts on downstream uses, such as water supply intakes, and should avoid fish habitat, such as spawning beds, migration route, nursery and feeding areas. Any Harmful Alteration, Disruption or Destruction of fish habitat as defined by the Fisheries Act would require authorization from the federal Department of Fisheries and Oceans. The applicant should consult the Ministry of Natural Resources local offices to obtain and follow current requirements of the Fisheries Act and the Department of Fisheries and Oceans.

In order to minimize bank disturbance, crossing locations that naturally provide a suitable staging area for equipment and materials are desirable to minimize grading and vegetation removal. The composition and contour of the stream bed and channel in terms of their erosion and deposition equilibrium, and their potential for restoration to original equilibrium, should also be considered when selecting an appropriate crossing location.

For liquid-hydrocarbon pipelines, the Ministry of Natural Resources should be consulted regarding buffer strips between the pipeline right-of-way and watercourses.

5.8 Crown Land

Where a pipeline is to pass through Crown Land, including the beds of waterways, the applicant must contact the Ministry of Natural Resource's local office. After a preferred route or site is selected, the applicant must apply for a work permit for the use of Crown Land for pipeline installation and operation purposes.

5.9 Provincial Parks and Conservation Reserves

The *Provincial Parks and Conservation Reserves Act, 2006* (Provincial Parks and Conservation Reserves Act) and its associated regulations and policies govern activities that may occur in provincial parks and conservation reserves. The Ministry of Environment is responsible for the Provincial Parks and Conservation Reserves Act and its associated policies.

The purpose of the Provincial Parks and Conservation Reserves Act is to permanently protect a system of provincial parks and conservation reserves that includes ecosystems representing all of Ontario's natural regions. This includes protecting provincially significant elements of Ontario's natural and cultural heritage, maintaining biodiversity and providing opportunities for compatible, ecologically sustainable recreation. A key legislated objective of provincial parks and conservation reserves is to manage these areas to ensure that ecological integrity is maintained.

Ontario Parks policy establishes that Hydrocarbon Projects should avoid provincial park and conservation reserve lands wherever possible.

If a Hydrocarbon Project is proposed to pass through a provincial park or conservation reserve, it must meet environmental assessment requirements and the applicant must obtain Ministry of Environment written approval under the Provincial Parks and Conservation Reserves Act. Sections 20 and 21 of the Provincial Parks and Conservation Reserves Act set out provisions and conditions for the consideration of utility corridors. Ontario Parks must be consulted to determine site-specific routing and mitigation requirements. The appropriate Ontario Parks zone office should be contacted for more information.

5.10 Air Emissions and Noise

Air emissions and their environmental impacts should be compared to all local, provincial and federal regulations, policies and guidelines. In order to assess compliance with *Environmental Protection Act, R.S.O. 1990*, (Environmental Protection Act), the Environmental Report for a compressor station should follow Ontario Regulation 419/05 and include estimates of air emissions and maximum off-site point of impingement concentrations, for any contaminant emitted to the atmosphere from these facilities.

With regard to noise and other air emissions associated with compressor stations, a description of impacts should be provided (with and without mitigation) on adjacent sensitive land uses, during the construction and operation of the facility. This information should be used as a siting constraint or for comparative purposes with alternative sites. A description of expected impacts during the construction and operation of the facility on adjacent land uses should be provided.

5.11 Geological Features and Mineral Resources

Existing and planned pits, quarries, aggregate deposits, well sites, mines and mineral deposits (including peat deposits) should be avoided, as well as sites of unusual or significant geological features, such as unique landforms, geological type sections or paleontological or fossil localities. Information and maps concerning mineral resources are available from the Ministry of Natural Resources, the Ministry of Northern Development and the Ministry of Mines.

5.12 Water Wells and Hydrology

A survey of water wells along, and adjacent to, the preferred route or site must be conducted. The Ministry of Environment's water well records are available online.[17] Groundwater hydrology may prove to be sensitive to pipeline excavation and should be described in relation to the wells. Areas where sandpointing may be required should be identified.

Minimum setback requirements for the project and activities, such as drilling, blasting, and excavation should be considered.

Monitoring of the water wells should be carried out where blasting, dewatering or work below the water table is required. If claims of water supply interference arise as a result of construction activity, it is necessary to obtain data on historical and pre-construction water quality and quantity.

Static water levels and depths for wells that are accessible for measurement should be recorded. Well construction details should also be recorded.

Water samples should be collected from the wells after a suitable period of flow. The water should be analyzed for parameters agreed upon with the Ministry of Environment District Office.

Statements should be obtained from landowners on the adequacy of their supply. The accessibility of the well is the responsibility of the landowner. If the landowner does not agree to the testing and interviewing, the landowner's refusal should be recorded.

De-watering is the removal of impounded water or groundwater from the construction area and can create hydrology concerns. As a result of exposure to various soils and construction materials, such impounded water may have high concentrations of suspended sediment or may be contaminated with high nutrient content or toxic substances. If toxic substances are involved, the Ministry of Environment District Office should be contacted and provided with information on the contaminants, concentrations and the proposed method of handling these materials.

[17] Individual well records are available online or by submitting a well record request form.

Measures should be taken to prevent such water from affecting the water quality of adjacent watercourses.

If the water removed during a dewatering operation is greater than 50,000 litres/day from any groundwater source, a permit to take water must be obtained by submitting an application to the Ministry of the Environment Client Services and Permissions Branch in Environmental Assessment and Permissions Division[18] or through a My Ontario Account to access the ministry's online services for environmental permissions. Certain low-risk water taking activities have been prescribed by the Water Taking Environmental Activity and Sector Registry (EASR) Regulation (Ontario Regulation 63/16, under the Environmental Protection Act) as requiring self-registration in the EASR instead of obtaining a PTTW. This includes construction site dewatering that meet the EASR criteria. For more information visit the Water Taking User Guide for EASR.

In portions of the province covered by source protection plans under the Clean Water Act, vulnerable areas for the protection of drinking water sources have been identified. For more information, refer to section 5.15 of the Guidelines.

5.13 Safety Considerations

Maps or drawings showing the Hydrocarbon Project's relative position with respect to main buildings intended for human occupancy or assembly should be filed with the application to the OEB.

New pipelines intended to operate at hoop stress of above 40% of the specified minimum yield strength (SMYS), will have to meet minimum set-back requirements of 20 metres from dwellings intended for human occupancy, and 200 metres from institutions where rapid evacuation is not possible. If this is not practical, a minimum of 5 metres and 90 metres should be maintained, respectively. These guidelines for pipelines above 40% hoop stress are set in the TSSA Guidelines For Locating New Oil and Gas Pipeline Facilities (Guidelines for Pipelines).

There are no minimum setbacks for new buildings to be developed in the vicinity of existing pipelines operating below 40% SMYS. As for the development in the vicinity of the existing pipelines operating above 40% SMYS, the same recommendations apply as for new pipelines above 40% SMYS. This is set out in the TSSA Guidelines for Pipelines.

Where the proposed Hydrocarbon Project passes through areas where it may pose a threat to local residents or livestock, consideration should be given to fencing of the right-of-way during construction activities. All such pipelines will require clear, prominent signs so that residents, construction personnel and others working in the area are aware of them.

When constructing in a road allowance or where construction will affect road traffic, site specific traffic safety considerations may be required.

[18] PTTW.Submission@ontario.ca

5.14 Social Impacts

Social Impact Assessment (SIA) is an integral component of environmental analysis. The role of SIA is to ensure that the extent and the distribution of a Hydrocarbon Project's social impacts are considered in an explicit and systematic way.

The SIA should be coordinated effectively with the biophysical assessment of impacts. This is to ensure that all impacts are assessed and trade-offs made in an integrated manner. This is particularly important, when the same potential physical change may cause both a biophysical and a social impact. For example, the biophysical assessment may reveal that the removal of a certain number of hectares of vegetation is insignificant from an environmental point of view, while the SIA may reveal that this removal would cause major disruption to the community. Effective coordination will help to ensure the proper description and inclusion of these impacts in the overall impact assessment.

The SIA process involves describing the existing social conditions, predicting the changes that are likely to occur because of the proposed Hydrocarbon Project, determining measures to mitigate or enhance the expected changes, and evaluating the net social impacts, together with the other net environmental impacts, to select the preferred alternative.

The SIA focuses on the problems and needs of the individuals and communities who are faced with change. Applicants should consider societal impacts associated with any construction-related noise, dust, traffic disruptions and general disturbance of people's home and business lives during the construction process. This includes impairment of the use and enjoyment of property, the interference with the flow of customer traffic to commercial establishments and with farm-related machinery movement. Noise effects may disturb some livestock operations' productivity or disrupt business operations in the area of construction. Applicants should also consider whether the Hydrocarbon Project will create other social stressors for communities during the construction phase, for example, the social impacts that may result in a small community because of the temporary influx of the project workforce.

The social impact consequences of implementing each alternative, including the preferred project should be anticipated. This includes determining who will be affected, in what way, for how long, the relative importance of the impact and what can be done to reduce the impact.

Public consultation and education are critical to try to identify, understand and mitigate the expected impacts. It is important that an effective dialogue between the applicant and affected persons be maintained throughout the entire planning process, to ensure that decisions are both responsive and responsible.

The level of detail for the SIA will depend on the extent and significance of the expected impacts which either are known or are indicated through public consultation.

5.15 Cumulative Effects

Cumulative effects are the combination and interaction of environmental effects over time and space. In many situations, individual Hydrocarbon Projects produce impacts that are insignificant. However, when these are combined with the impacts of other existing or approved projects, they may become important. Such cumulative effects may include both biophysical and societal effects and should be identified and discussed in the Environmental Report as an integral part of the environmental review.

For example, cumulative impacts may result from pipeline projects that loop existing systems and these cumulative impacts should be addressed. This may include an examination of areas of known soil erosion, soil compaction or soil productivity problems. It may mean the examination of impacts associated with continued loss of hedgerows and woodlots in the same area. As well, it could mean the increased loss of enjoyment of property because of disruptions caused by the construction of successive pipelines on a landowner's property. There may also be heightened sensitivities as a result of improper or ineffective practices and mitigation measures in the past.

Positive as well as negative cumulative impacts should be identified. For example, non-productive land can sometimes be used for agricultural purposes with additional tile drainage. Cumulative effects, when identified as part of the assessment process, should be integrated in the appropriate section of the Environmental Report (e.g., soil impacts).

Particular attention should be paid to environments of known sensitivity and high value (as defined by provincial policies and public input), to situations where opportunities exist to remedy past negative impacts, and to situations in which a combination of actions may result in identifiable environmental impacts that are different from the impacts of the actions by themselves. Where quantitative assessment of cumulative effects is impossible because of a lack of data or understanding of the ecosystem interactions, a qualitative characterization of the effects should be carried out.

Approach to Cumulative Effects Assessment

The first step in assessing cumulative effects is to define appropriate study area boundaries. It is critical not to restrict the study area to a proposed Hydrocarbon Project easement and temporary work areas.

Delineating the Study Area

The applicant is required to consider four distinctive cumulative effects pathways when delineating the study area and assessing the cumulative effects:

1. Additive effects of Hydrocarbon Project construction occurring slowly over time (e.g., erosion of the easement due to inadequate grading)
2. Interactive or magnifying effects from Hydrocarbon Project construction (e.g., soil fertility loss and soil drainage degradation due to compaction during construction)
3. Additive effects of Hydrocarbon Project construction and other existing and future projects in the area (e.g., additive forest cover losses due to tree clearing for pipeline construction and subdivision development)
4. Interaction of Hydrocarbon Project construction with other existing and future projects in the area (e.g., cold stream fish habitat degradation, as an interactive effect of increased erosion and sedimentation due to pipeline stream crossing and floodplain development downstream)

Assessment, Mitigation and Monitoring

Once the study area is delineated, the information on the current and planned projects in the study area is gathered and analyzed. This information may be obtained from the municipal planning and development departments, official plans, local businesses and other appropriate sources.

Once the potential cumulative effects are predicted and mitigation and restoration measures identified, the applicant should describe any residual effects that cannot be fully mitigated. A residual effect is an environmental effect that is present after mitigation measures have been implemented. If residual effects are predicted, the applicant should identify whether the residual effects could aggregate with the effects of other projects.

For the residual effects, a separate strategy needs to be developed to compensate affected persons (e.g., crop loss compensation) or minimize the magnitude of residual effects.

The following is a list that encompasses some of the cumulative effects of Hydrocarbon Project construction where residual impacts should be identified and assessed:

- Increase of easement width when adding new parallel pipelines to reinforce the systems
- Additive effects of vegetation removal including riparian vegetation, forest cover, agricultural crops
- Repetitive disturbance of soils including soil compaction, drainage systems damages, loss of soil fertility, crop yield reduction

- Streams and groundwater degradation and effects on water wells
- Removal of forest edge and interior, such as reduced species diversity and other habitat alterations

The Environmental Report should include a tabular summary of causes of cumulative effects, a cumulative effects description (e.g., duration, spatial extent), recommended mitigation measures, all residual effects and approaches to deal with residual effects. The locations of the cumulative and residual effects are to be mapped on an appropriate base map.

5.16 Vulnerable Areas for the Protection of Drinking Water Sources

The purpose of the Clean Water Act is to protect existing and future sources of municipal drinking water. Four types of vulnerable areas have been delineated in source protection areas:

- Wellhead protection areas
- Surface water intake protection zones
- Highly vulnerable aquifers
- Significant groundwater recharge areas

The Source Protection Information Atlas (Atlas) is a public facing mapping tool that can be used to determine whether a Hydrocarbon Project would be in a source protection area and whether it would be located in one of the four types of vulnerable areas. Source protection plans set out the local approach to protecting sources of drinking water in a source protection area. The Atlas also includes links to the applicable source protection plans and their associated policies which apply to the types of vulnerable areas. The establishment and operation of a liquid hydrocarbon pipeline is listed as an activity that may be a threat to drinking water.[19] Where a liquid hydrocarbon pipeline would pose a risk to drinking water, policies in the local source protection plan may apply.

As part of the Environmental Report, applicants should identify and document whether the project would be occurring in a source protection area(s), which source protection area, whether the Hydrocarbon Project would intersect with a vulnerable area and whether any policies set out in a Source Protection Plan may apply to the Hydrocarbon Project during the construction or operation phase. When Hydrocarbon Projects are proposed within a vulnerable area, the protection of drinking water sources should be considered in the evaluation of alternatives, the identification of impacts, and mitigation measures.

[19] Section 1.1 paragraph 22, Ontario Regulation 287/07 under the Clean Water Act

CHAPTER 6
IMPACT MITIGATION

6.1 General Mitigation Techniques

The first and most important mitigation technique to be employed is avoidance of areas of concern by route or site adjustment.

If avoidance is not feasible, areas of concern that remain along the preferred route or on the preferred site should be listed and described in detail in the Environmental Report. It may be necessary to collect detailed information on these areas of concern, in order to show that they can be protected during the construction and operation of the Hydrocarbon Project. A number of general minimization and mitigation techniques are available. These could include scheduling of construction (winter, biological windows, wet soils shutdown), modified construction techniques, the use of specialized equipment, temporary or permanent relocation of the feature or extensive restoration following construction. Appropriate specific techniques should be addressed in the Environmental Report.

Aerial photo mosaics at a scale of 1:10,000 or larger should be used in conjunction with field surveys to collect environmental data. For environmentally sensitive watercourses, wetlands, significant wildlife habitat and specialty crop lands, more detailed site plans at a scale of at least 1:2,000 should be considered. These site plans should outline workspace requirements, staging areas, methods of erosion control, method of construction, rehabilitation requirements, notification requirements and timing, storm and sanitary water management, landscaping and screening.

The construction techniques, procedures, and contract provisions for the contractor that is hired and that will be applied during construction to mitigate negative impacts should be included in the Environmental Report. Agency notification requirements and monitoring program descriptions, including sampling should be cited in the Environmental Report. Permits required or received for the construction phase of the Hydrocarbon Project must also be described in the Environmental Report.

The following sections outline specific mitigation techniques that can be employed during construction to deal with different environmental and social concerns.

6.2 Social Impact Management

Once the net impacts have been identified and assessed for all the alternatives and the preferred alternative has been selected, the Environmental Report should describe the social impacts of the preferred alternative in more detail and prescribe specific measures to mitigate any negative impacts.

This is consistent with the increased level of detail expected for the examination of other environmental impacts and proposed mitigation measures for the preferred alternative.

Effective public consultation is essential to develop appropriate measures for the mitigation of social impacts. Various mechanisms, such as complaint tracking systems, landowner agreements that set out environmental management commitments by the applicant, and on-site training can be used to manage these impacts. In addition, a compensation framework, a decision-making process to resolve issues as they arise, and the applicant's commitments to undertake specific mitigation and monitoring measures in the Environmental Report, can help address many of the social impacts.

The Environmental Report should document the detailed examination of social impacts for the preferred route or site, the mitigation measures that are proposed and the net impacts which are expected to remain after these measures are applied. Compensation for specific negative impacts should only be discussed after a thorough attempt has been made to mitigate them.

6.3 Cultural Heritage Resources - Mitigation

Mitigation of impacts on cultural heritage resources, such as archaeological resources, built heritage resources and cultural heritage landscapes, is best accomplished through avoidance when selecting a preferred route or site.

In cases where it is not feasible to avoid an adverse impact on the archaeological resources identified during Stage 2 Archaeological Assessment (see section 5.4 of the Guidelines), it will be necessary to carry out a salvage excavation. Stage 3 archaeological field work must be carried out prior to the commencement of construction on the section of the Hydrocarbon Project in question. Consideration should be given to avoiding inclement weather conditions to allow for effective field work.

An archaeological salvage excavation involves the systematic retrieval of artifacts which would otherwise be destroyed, the analysis and curation of those artifacts and the production of a report according to the requirements of the Ontario Heritage Act. The report should thoroughly document any artifacts that have been removed due to construction.

Any above-ground features that must be removed or destroyed, such as standing structures, should be dealt with by carrying out a detailed recording exercise, which documents the characteristics of the structure prior to removal or destruction. The rationale for removal should be provided.

6.4 Easement Preparation

Activities associated with preparation of a permanent or temporary easement (easement) may include the planning of access, fence bracing, clearing of vegetation, grading and blasting.

During landowner interviews, the applicant should determine whether access to the easement across individual properties is available and whether the landowner is agreeable to the use of such areas during construction. In addition, if the landowner requires access across the easement for farm equipment or livestock during construction, this should be provided and noted in the Environmental Report and contract documents.

Plans for clearing and rough grading of the easement must accommodate the reasonable requests of the landowner and the procedures of the Ministry of Natural Resources for Crown Land as prescribed in the approval or permit.

Blasting must be controlled and timed by licensed blasting personnel, to minimize adverse effects on local water wells, buildings, soils, livestock and wildlife. Where there is potential for damage to nearby wells, the applicant should consider retaining a hydrogeologist and blasting specialist, to conduct an evaluation designed to minimize adverse impacts on potentially affected wells. Generally, all water wells within 100 metres of proposed blasting locations should be monitored for quality and quantity prior to construction. The Ministry of Environment Spills Action Centre and the local Ministry of Environment District Office should be advised of all complaints regarding adverse effects on water wells from blasting and the resolution of such complaints, upon their resolution. Should blasting or construction disrupt water supplies, the applicant should provide an equivalent alternative supply. Blasting in a watercourse requires Federal Department of Fisheries and Oceans authorization.

The occupants of all buildings which may be subject to noise or vibration due to blasting should be informed by the contractor, or an agent on behalf of the contractor, prior to the start of the blasting operations, preferably 48 hours in advance. In addition, the contractor, or an agent on behalf of the contractor, should conduct a pre-blast survey and monitor blasting operations for noise and vibration at all buildings, where the noise and vibration levels are expected to exceed the limits prescribed by applicable municipal bylaws and provincial standards. The Ministry of Environment and affected municipalities should be contacted to acquire current regulations regarding noise control.

All work should be confined to the easement. If it is necessary to work off the easement, temporary working space must be acquired through discussions with the landowner. Traffic on and adjacent to the right-of-way should be minimized during wet soil conditions. The applicant is required to shut down during and after wet weather to avoid damage to soils (see section 6.5.1 of the Guidelines).

In Fire Districts designated in the *Forest Fires Prevention Act, R.S.O. 1990*, the construction of all permanent and temporary roads located off the right-of-way must be authorized, up to Latitude 54 N, by approval or permit under the *Forest Fires Protection Act* or under the *Public Lands Act, R.S.O. 1990*. Any construction road not required after construction is to be closed by the applicant and left in a condition acceptable to the Ministry of Natural Resources or landowner. The applicant must maintain any access roads necessary for the security of the Hydrocarbon Project.

6.5 Agricultural Land

6.5.1 Soils

Stockpiled soil should be located at least 30 metres away from watercourses and protected from erosion. If that distance is not possible, silt fences, earthen berms and plastic sheets should be used to contain and stabilize these soils to prevent loss of soil and the siltation of the watercourse in accordance with Ontario Regulation 406/19.

To minimize the adverse effect of construction on the agricultural productivity of the land, the applicant, prior to trenching, should remove topsoil along the trench area and under the subsoil storage area, stockpile it separately from subsoil and replace it upon completion of construction. In areas of highly contrasting soil textures, such as sand overburdens on clay, three soil piles should be considered, one for topsoil and two for subsoil. The topsoil depth and method of stripping should be determined after consultation with the landowner prior to construction.

On well-drained mineral soil, topsoil may be stripped by colour or to a predetermined depth, depending on the wishes of the landowner, to ensure minimal mixing of subsoil and topsoil. However, on some poorly drained soils which contain a high percentage of organic matter, and on organic soils, it may be necessary to strip to a predetermined depth.

All fine stripping of topsoil should be completed within two working days after completing the bulk of the topsoil stripping. This will reduce the chances of exposing the soil to wet weather, which can result in contamination. Inspection is also necessary during excavation and backfilling, to avoid topsoil/subsoil mixing. Upon the request of the landowner, the applicant will remove excess subsoil resulting from construction.

It is the responsibility of the applicant to acquire baseline data (i.e., soil-mapping units and their properties such as horizon depths, organic-matter content, etc.) for the route or site chosen and to propose suitable construction procedures to minimize soil damage. Procedures such as chisel ploughing, para ploughing, sub soiling, stone picking, fertilization, heavy mulching and the use of soil building cover crops, must be carried out wherever needed.

Comprehensive pre-construction investigations are necessary in areas where sensitive materials such as Leda clay are likely to be encountered. Construction techniques and schedules must be modified according to the nature of the sensitive materials found.

The worst impacts of construction occur at high soil moisture levels. Consequently, construction during the driest period of the year is desirable. The applicant is required to establish and implement a wet-weather shutdown policy to minimize adverse impacts of construction on soil productivity. During wet weather conditions, contact with topsoil should be avoided and a total restriction placed on all rubber-tired vehicles and equipment traveling on the right-of-way. If, due to delays, construction must continue under wet soil conditions to meet an in-service date, terms and conditions must be discussed with the landowner. The wet-weather shutdown policy or decision-making process must take into account the nature of the impacts, the concerns of the landowner, agricultural interest groups, the contractor and the applicant, when determining the need to continue construction under adverse weather conditions.

Upon agreement with the landowner, distribution of the topsoil over the trench may be delayed until the following summer, after all subsidence or settling of the subsoil has taken place and has been leveled down.

6.5.2 Agricultural Drains

If agricultural land that is extensively tile drained cannot be avoided, mitigation plans must be developed and implemented prior to construction. The plans should be designed to maintain proper subsurface drainage during and after pipeline construction.

Consultation with the landowner prior to construction is necessary to determine the location of existing and planned tile drains. If a landowner is not aware of the location or existence of tile drains, the Ministry of Agriculture may be contacted or a knowledgeable local tile contractor should be consulted, in order to verify the depth and frequency of any installed tiles. The depth of the proposed pipeline should be compatible with existing and planned drainage systems.

Tile drains that are cut during the trenching operation must be flagged and suitably plugged to prevent the entry of foreign material into the drainage system. Plans for maintaining proper surface and subsurface drainage during the construction which are acceptable to the landowner are required.

Following construction, the applicant must repair or replace any damaged or disrupted tiles. It is recommended that qualified tile drainage consultants and licensed tiling contractors be used for this work. Where the number of tile drains crossing the pipeline trench or their angle of crossing makes individual repair difficult, the installation of headers (sub-mains) should be considered. All open drainage ditches should be restored, utilizing appropriate soil stabilization procedures including, but not limited to, the use of geo-fabrics, wood or straw mulch, hydro seeding and rock or gravel blankets.

6.6 Vegetation and Wildlife Habitat

On the right-of-way at locations designated by local Ministry of Natural Resources staff, areas of grasses, ferns, shrubs and other herbaceous species should be maintained for wildlife management purposes, as well as for screening at the banks and edges of watercourses. If vegetation associated with the edge of streams (i.e., riparian vegetation) must be removed, it should be replaced as soon as it is practical, in consultation with Ministry of Natural Resources and the local Conservation Authority. Where applicable, a compensation plan under the Fisheries Act, must be prepared before construction begins. The federal Department of Fisheries and Oceans may also require a compensation plan if the riparian vegetation disturbance, results in the harmful alteration of fish habitat.

Spraying herbicides over designated nesting sites, headwaters and watercourses is not permitted. The use of herbicides at other locations should be avoided when possible and only undertaken by a licensed applicator. Ecologically sound alternatives to herbicide use should be considered.

Hydrocarbon Project construction should avoid interference with traditional plant use areas, wildlife corridors, and areas of high scenic value. Construction must not interfere with avian nesting periods or rare, threatened or endangered species.

A screening program should be undertaken prior to construction to determine where precautionary measures (e.g., equipment washing before site access) may be necessary to mitigate for the potential spread of non-native species.

Wetlands must be avoided where possible. Wetland as defined in the Policy Statement, means lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. In either case, the presence of abundant water has caused the formation of hydric soils (soils in which there is an abundance of moisture) and has favoured the dominance of either hydrophytic or water tolerant plants. The four major categories of wetlands are swamps, marshes, bogs and fens. For the purposes of the Policy Statement, lands being used for agricultural purposes, that are periodically "soaked" or "wet", are not considered to be Wetland. Where a Hydrocarbon Project is constructed in forested wetlands, access and drainage across the trench must be maintained.

Vegetation including trees and shrubs should be protected, especially when requested by landowners or tenants. Every effort should be made to bore under specimen trees where practical. Suitable measures, such as protection of tree roots within the dripline, pruning any damaged branches or roots, protection of trees with earth, gravel fill or fencing, transplanting of vegetation and boring under specimen trees should be used.

A designated maximum slash width through woodlots or forests should be established in consultation with the landowner or Ministry of Natural Resources prior to clearing. Restricting the width of the working area is often a feasible alternative when passing through valuable woodlots.

Merchantable wood must be offered to the landowner, or where possible, used in construction. The applicant is referred to the *Crown Forest Sustainability Act, S.O. 1994*. Merchantable timber cut during clearing operations, must be cut in standard lengths and piled in locations from which it can be hauled readily, unless other arrangements are made with the landowner.

Slash must be chipped or disposed of to the satisfaction of the Ministry of Natural Resources or landowner. If chipping cannot be used, and disposal is not possible, the slash should be piled for burning at least 10 metres from the edge of any standing timber. In the Ministry of Natural Resources designated Fire Districts, no burning may take place from April 1 to October 31, except under authority of a burning permit obtained from the Ministry of Natural Resources or the local municipality[20], in accordance with the *Forest Fires Prevention Act, R.S.O. 1990*.

On Crown or private land, no disposal of materials (e.g., pushouts) adjacent to the pipeline easement will be permitted, unless approved by the Ministry of Natural Resources or the landowner.

6.7 Watercourse Crossings

6.7.1 Planning and Preparation

Crossings of lakes and watercourses can cause serious problems of bank erosion, disturbance of cultural heritage resources, siltation, interference with fish and wildlife and impairment of downstream water quality, if not properly planned and executed. Water crossings must be conducted in a manner that minimizes any increase in downstream siltation and other negative effects on fish and wildlife habitat, water quality or water quantity for downstream uses.

[20] See outdoor fire rules and permits.

River crossings may be done by either "wet" or "dry" procedures depending on the sensitivity of the water body, its size and flow, and the stability of the bank. All factors should be reviewed and the rationale for selection of a wet or dry crossing must be explained. For sensitive crossings, where topography and soil conditions are suitable, a bored or directionally drilled crossing is the preferred technique. The applicant is required to file a post construction report to demonstrate that the selected technique and site-specific monitoring program minimized adverse impacts (see section 7.2 of the Guidelines).

If required, the Ministry of Natural Resources' Environmental Guidelines for Access Roads and Water Crossings should be adhered to.

A site-specific construction plan should be prepared for sensitive water crossings. A scale of 1:5,000 or larger may be necessary for the plan. The site plan should outline:

- Alternative crossing procedures where applicable
- Special mitigation techniques
- Time duration of each activity
- Temporary workspace requirements
- Location and size of staging areas
- Method of erosion control
- The location of any diversions, sediment traps and flumes
- Rehabilitation requirements
- Agency notification requirements
- Storm and sanitary water management
- Spoil disposal locations
- Backfill requirements, landscaping and screening plans
- The management of equipment exposure to the stream
- The monitoring program to be implemented before, during and after construction
- Contingency plans

Wherever applicable, local Ministry of Environment and Ministry of Natural Resources representatives must be notified in advance of all watercourse crossings. Verbal confirmation should be given one day in advance of the scheduled crossing. If there are changes to the originally proposed method of crossing, local Ministry of Environment and Ministry of Natural Resources offices should be contacted.

Stream diversions should only be used when no feasible alternatives exist. The Ministry of Natural Resources, Ministry of Environment, local Conservation Authorities and the federal Department of Fisheries and Oceans approval may be required for any planned diversions. Final stream channel clean-up must include removal of any temporary structures, reshaping of the stream to the original or an approved configuration and removal of all construction material and debris.

Construction must be timed to avoid interference with fish migration, spawning or egg incubation. Blasting in or adjacent to watercourse beds must also be restricted during these times. Devices which prevent fish from entering the area of blasting in water bodies can be used at other times. The time sequence of activities from clearing of banks to final restoration must be noted on site plans. Construction operations should avoid recreational lakes or rivers during peak-use periods. If this is not possible, proper warning and lighting must be in place for crossing on recreational watercourses. It is recommended that operators of recreational activities be notified in advance of construction start. The Ministry of Natural Resources Regional Office should be contacted regarding peak-use periods.

Before any construction at a watercourse crossing begins, all equipment and materials to be used must be on-site and ready for use, to ensure that the crossing time will be minimized. Environment Canada weather reports are to be obtained to avoid unexpected high-water flows resulting from regional weather disturbances.

6.7.2 Water crossing Impact Minimization Measures

To minimize siltation of the water body, earth plugs should be left in the banks until in-stream excavation is to begin. The clearing of vegetation on slopes and banks of the watercourse should be delayed, until just prior to the arrival of pipe and equipment for the crossing.

The bank trench should be excavated and the spoil placed safely away from the bank and protected to avoid unnecessary siltation. A vegetative buffer zone, 3 metres from the water's edge, should be left in place until immediately prior to in-stream excavation. For most inland watercourses, all trench spoils must be placed onshore, unless the appropriate agency (i.e., Ministry of Natural Resources, Ministry of Environment) approves in-stream disposal. Highly organic stream bed material should not be returned to the stream; it should be replaced by granular material which should be on-site prior to trenching, in order to cover the pipe as soon as it is laid across the watercourse. Gravel backfill should be restricted to the area of stream bed excavation, to avoid creation of an artificial drain from the onshore trench to the watercourse trench. The applicant should consult with the Ministry of Natural Resources Regional Office for locations that require granular backfill. Where it has been identified that the native material is not suitable for backfill, then clean backfill material should be stockpiled on-site in advance of crossing construction, to eliminate delays which would lead to longer in-stream construction time and thereby increase the risk of sedimentation. Aquatic plants uprooted or cut prior to or during trenching operations should be contained and deposited on land to avoid adverse downstream effects.

In-stream construction time should be kept to a minimum. Well-placed sediment and erosion control devices along the banks must be used, to intercept any contaminated surface run-off. All sediment and erosion control devices should be inspected daily, to ensure that they are functioning as designed and they should remain in place until all rehabilitation techniques have been established.

Wherever temporary weirs, coffer dams or diversions are used at water crossings to form settling basins or to facilitate trenching, adequate stream flow must be maintained for downstream water uses. The materials, design and location of these modifications are to be indicated on-site plans and approved by the Ministry of Natural Resources Regional Office. If more than 50,000 litres of water per day are being diverted or stored, then a permit to take water is required from the Ministry of Environment Regional Office.

To avoid disruption of the bed and the deposition of grease or oil in water, vehicles must not travel along the bed of a watercourse. All in-stream construction activity must be kept to a minimum and specified on the site plan. Fording of any stream cannot take place without permission from the local Ministry of Natural Resources and Conservation Authority offices.

Mitigation procedures to stabilize the banks, even if temporary, must be instituted within ten days of stream bed back-filling, to protect the banks against surface run-off. The banks should be re-contoured to their original shape, unless otherwise approved. Riparian vegetation should be re-established as soon as possible, after the banks have been stabilized, in accordance with Ministry of Natural Resources requirements.

6.8 Mitigation of Construction and Operation Impacts

A variety of activities associated with Hydrocarbon Project construction may have an impact on the surrounding environment. These include such effects as fuel handling, noise, dust, construction waste and general disturbance. The applicant, as part of its efforts to address these impacts, must assign an inspector for major construction projects.

6.8.1 Materials Storage and Waste Disposal

Fueling and maintenance must be carried out in such a manner and with such precautions, as to avoid contamination of the water table, soil and watercourses. For any areas on the right-of-way to be used for long term fuel and chemical storage, it is necessary that they be dyked with impermeable material, with sufficient enclosed volume, to hold the tank contents plus 20 percent and located and sloped away from waterways. At the discretion of a qualified inspector, fueling may be allowed within 30 metres of a waterway, at the discretion of the applicant's inspector, when hoses are equipped with an acceptable non-spilling attachment. Appropriate spill contingency plans should be developed and implemented for fuel and chemical storage.

The applicant's project manager[21] and environmental inspector,[22] if applicable, should plan and review fueling sites with the contractor, including procedures for the notification of the appropriate authorities and the interception and clean-up of spills as guided by the spills provisions in the Environmental Protection Act. Disposal of such wastes should be in accordance with the requirements of the Ministry of Environment and Ministry of Natural Resources.

Waste, including excavated soil and excess soil, must be managed in accordance with Ministry of Environment standards. The Environmental Protection Act and Regulation 347 require waste to be classified and disposed of appropriately, while the management of excavated soil and excess soil is governed by Ontario Regulation 406/19. Unless otherwise exempt, waste is to be transported by haulers who have an Environmental Compliance Approval – Waste Management System or a valid registration on the Environmental Activity Sector Registry for a waste management system, as applicable. Where waste is subject waste as defined in Regulation 347, the generator requires a "Generator Registration Number" from the Hazardous Waste Program Registry. When determining the waste category, the proponent must ensure compliance with the definitions of "subject waste," "liquid industrial waste" and "hazardous waste" set out in Regulation 347. Ontario Regulation 153/04 which was amended by Ontario Regulation 511/09 and the accompanying *Soil, Ground Water and Sediment Standards for Use Under Part XV.1* of the Environmental Protection Act, provide direction on assessment, restoration and Ministry of Environment soil criteria. Questions about this legislation may be directed to the local Ministry of Environment District office.

The cleaning of equipment in streams and lakes and the emptying of fuel, lubricants and pesticides into watercourses is prohibited under the Environmental Protection Act.

6.8.2 Dust Control

Procedures for controlling the impacts of dust and for minimizing wind erosion should be developed and implemented by the applicant. The value of some specialty crops is reduced when dust is deposited on them. The local roads department often has standard specifications for dust control and the appropriate authorities should be consulted to determine application amounts and types of dust retardant. The Ministry of Environment should be contacted prior to the application of any dust suppressant as an approval may be required prior to application. In addition, consideration should be given to the use of water sprayers on bedrock drilling equipment, to minimize dust from these activities.

[21] The OEB's Standard Conditions of Approval No. 8 requires the applicant to designate an employee as the project manager who will be responsible for ensuring construction is in accordance with the conditions of the OEB order.

[22] An environmental inspector should be appointed by the applicant for major construction projects. This inspector should be well acquainted with the environmental material filed in support of any project, the notification requirements for various activities and conditions of the OEB order.

6.8.3 Noise Control

Noise, resulting from construction and the operation of equipment and motorized vehicles, including stations and storage pool sites, should be controlled in accordance with the current provincial and municipal criteria and regulations. All measurements of the noise levels generated during the construction and operation of the pipeline and of the adjustments to these levels, if required, should follow the D-Series guidelines and NPC-300 Stationary and Transportation Sources – Approval and Planning.

For noise generated during the operation of compressor and pumping stations, when operated beyond normal working hours, the applicant should ensure that it is within the limits prescribed by the Ministry of Environment for the type of area where the facilities are located (e.g., rural or urban).

Some mitigating measures to reduce the noise resulting from the construction and operation of Hydrocarbon Projects, include the following:

1. Distance separation between the facility and adjacent noise sensitive land uses
2. Favourable topographical features such as berms or other intervening structures
3. Devices such as noise barriers, enclosures, silencers and mufflers
4. Acoustical treatment of the structural components of the facility
5. Modifications to the operation of the facility
6. Selection of access route or sites to the construction site in a manner to minimize the noise impacts due to truck traffic
7. Restrictions on the hours of construction and the scheduling of noisier operations for less sensitive times of the day

6.8.4 Construction Contract Provisions

In addition to filing the standard construction techniques and procedures that will be used, an outline should be provided, describing how construction crews will be informed, and comply with, recommendations made in the Environmental Report. Accordingly, the following provisions, as applicable, should be included in the contract:

1. The method for restoring vegetation along the right-of-way, seeding mixes, application rates and areas to be revegetated
2. Site-specific plans of each sensitive watercourse and wetland crossing
3. Plans indicating the vegetation to be removed along watercourses, the crossing method and the restoration procedure, locations where fording will be allowed, the sources of water for hydrostatic-testing and the area for discharge of test water
4. A description of all slope-stabilization procedures, including temporary stabilization as required and riverbanks which will be rip-rapped or hydro seeded

5. Design drawings, restoration plans or other information, as required, where provincial highways are affected (specific references are available from the Ministry of Transportation)
6. A list of the specialized equipment required for specific areas, such as a brush blade or subsoiler
7. Any special techniques to be used in the handling and restoration of agricultural soils
8. The methods of handling spills or discharges of pollutants that cause or are likely to cause adverse effects
9. The Ministry of Environment District Office and Spills Action Centre phone numbers
10. Any methods to be used that are a function of the season, such as minimum frost penetration depth before commencement of winter construction, and wet soils shutdown policies
11. The required approval in writing (permit) by the Ministry of Environment, Ministry of Natural Resources and local Conservation Authority

A proposed construction schedule is required as part of the Environmental Report. This should include items such as:

1) The project time schedule (season of construction) with reference to periods of fish spawning, avian nesting and fire season
2) A daily time schedule, where noise may be a nuisance to local residents or a specialized land use such as a hospital, school, retirement home or special agricultural operations (e.g., poultry production)
3) A daily time schedule, when construction may create any parking, access or traffic problems, as well as mitigation measures to be applied to minimize these disturbances
4) Project time schedules, with reference to the duration of activities such as topsoil stripping, pipe stringing, in-stream activity, the length of trench to be left open, backfilling and restoration
5) The scheduling of any heritage resource assessment, mitigation and monitoring

6.9 Safety Considerations

6.9.1 Licensing

Natural gas transmission lines, distribution systems and oil pipeline systems are subject to the *Technical Standards and Safety Authority Act, S.O. 2000*, and a licence to operate these systems is required from the Fuels Safety Division of the Technical Standards and Safety Authority.

The applicant should specify to the Technical Standards and Safety Authority the type of hydrocarbon to be carried by the pipeline and the procedures that will be implemented to ensure that the public and the appropriate local authorities, including police and fire departments, are aware of any special hazards. It should be noted that high-vapour pressure pipelines, which transport liquid products such as propane, butane or similar volatile products, may require the special training of local fire fighters.

Technical information related to class location, design factor, maximum allowable operating pressure, test medium and pressure and specifications for pipes, valves and flanges must be filed with the application to the OEB, but is not required as part of the Environmental Report. The stress level at which the pipeline will operate should be established and documented in the Environmental Report.

6.9.2 Spills

Pipelines are not subject to Ontario Regulation 224/07 Spill Prevention and Contingency Plans. However, the Ministry of Environment may require persons not subject to the regulation to develop or update a Spill Prevention and Contingency Plan through a preventive measures order under the Environmental Protection Act.

The OEB considers spill prevention and contingency planning to be a best practice. Therefore, the OEB expects an applicant to address spill prevention and contingency planning in the Environmental Report for its Hydrocarbon Project.

The spill prevention and contingency plan should consider pipeline design, maintenance and controls in place for preventing spills and a state of readiness to fully respond if a spill is to occur. In addition, the plan should identify high risk areas based on potential impacts, location and type of spill response equipment, expected timelines for responding and notification procedures. The contingency plan should include reporting to the Ministry of Environment's Spills Action Centre, local fire and police departments, municipalities and residents potentially affected by the spill.

Plans for the disposal of all waste materials such as lubricating oils, product spills, urethane breakers and paints or additives used in pipeline systems should be outlined in the Environmental Report. The chemical composition and toxicity of all such materials must be identified. A plan for special signing and posting of the easement and, if fencing of the right-of-way is planned, a map indicating the proposed locations of the fences should be filed.

In addition to the plans described above, the applicant should develop an emergency and crisis response plan that addresses, among other matters, security threats which could result in physical damage or disruption of the pipeline system. This plan is developed at the corporate level and should not be included in the Environmental Report.

6.9.3 Water-Taking for Hydrostatic Testing

A water-taking permit is required from the Ministry of Environment in advance of any hydrostatic test, for the taking of water from surface or ground sources in excess of 50,000 litres/day. The applicant for a permit must ensure that the rate of filling the pipeline from surface sources does not interfere with downstream uses or with the natural functions of the stream. A permit may be refused, delayed or proportionately reduced during low-flow stages.

Discharging of water from the pipeline should be done at a rate not exceeding the rate of withdrawal from the source. In addition, an energy dissipator must be installed, to minimize any erosion during discharge. The Ministry of Environment may require that discharge water be sampled, to ensure that it is substantially the same as the water withdrawn. Other special measures may be required to dispose of poor-quality discharge water, such as the first and last slug of the discharge.

Pumps and heaters should not be located directly adjacent to a watercourse. To prevent soil or water contamination, a retaining berm should be constructed around the equipment and a suitable sized polyethylene sheet installed under the equipment to collect any spills or leaks.

6.10 Station Site Development

Pipelines may require the development of stations, designed for specific functions. Impacts on the surrounding area of these facilities should be addressed in the design of the facilities. The design should also include the protection and security of the site.

Every reasonable effort should be made to screen or soften the visual presence of the above ground station in urban areas, and in high visibility rural areas such as those adjacent to main transportation corridors. The landscaping site plan should include the use of plantings and earthen berms, to make the facility compatible with the surrounding landscape.

Compressor and pumping stations can be a source of noise throughout their operation. It is unavoidable and necessary that natural gas compressors and pipelines are "blown down", i.e., the controlled release of pressure through a venting of gas, to allow access to the facility equipment or pipeline for replacement and maintenance purposes. Every practical effort should be made to reduce the noise impact created by this procedure, in order to meet the requirements of the municipal noise bylaws.

Site drainage and erosion must be controlled. It is recommended that drainage plans incorporate the use of existing municipal drains, where practical. Drainage should not be

allowed directly into a natural watercourse, without flowing through a retention pond in order to reduce sediment discharge during wet weather. Drainage outlets to cultivated or landscaped land are discouraged. Any exposed soil and slopes resulting from construction and subsequent grading and landscaping must be protected with erosion prevention material, such as fabrics or hydro seeding, as soon as possible in order to eliminate or reduce soil erosion.

Stations require lighting so that operation and maintenance can take place and to ensure security and public safety. Efforts should be made to reduce unnecessary lighting which may bother surrounding residents.

6.11 Storage Pool Development

The ideal geological site for proposed storage wells development may conflict with other land uses. Therefore, detailed planning must be carried out to ensure that any negative impacts are minimized.

In agricultural areas, a thorough survey of such factors as the drainage pattern, existence of field tile and cropping pattern, should be incorporated into the development process. This requires that the site be properly drained and subsurface drainage maintained throughout the drilling process. In addition, all topsoil must be stripped and stockpiled when requested by the landowner. It should be stockpiled far enough away from drilling equipment, to minimize any contamination. Surface inlets to existing field tile around the well drilling site will maximize drainage potential. Where the landowner is in agreement, a temporary gravel pad or equivalent should be installed before the drilling rigs enter the proposed well site.

Two types of drilling rigs are used, a cable tool rig and a rotary drilling rig. The cable tool rig is the more conventional of the two; it requires a smaller area but takes longer to drill a well than the rotary drilling rig. Regardless of the method used, in-ground pits must not be used for the deposition of drilling fluids and cuttings. The preferred technique is the use of flat surface tanks that can be pumped and the fluid disposed of in a proper fashion. If surface tanks are not available, lined pits may be used to minimize the risk of contamination to soil and groundwater.

All additional support equipment must have minimal movement in and out of the well drilling area during wet weather conditions and must follow designated access roads.

There should be either permanent or temporary access roads to proposed well sites in order to withstand the loads of drilling support equipment and avoid damaging the surrounding agricultural or natural environment. In addition, subsurface and surface drainage must be maintained by the use of side ditches, header tile or other appropriate temporary drainage methods, as recommended by a tile drainage expert in areas where numerous field tiles are encountered. Such mitigation measures must be installed, prior to any drilling equipment entering the project site. The alignment of the access roads should be designed to minimize

their impact on the tilling and cropping practice in any cultivated field. For example, roads should be located to follow the usual lines of farm equipment travel, or headlands in cultivated fields.

Due to geological tolerance and formation location, it may be impossible to avoid negative impact on farmsteads and residences. In these instances, every effort must be made to minimize the impact through proper planning and consultation with the directly affected landowners.

Landowners, particularly those in close proximity, should be properly notified of all activities and of any restricted hours of construction.

6.12 Restoration Plans

The land must be rehabilitated to the reasonable satisfaction of the landowner and the relevant agencies concerned. Restoration procedures should be implemented promptly during and following construction to limit damage.

To achieve this, it is essential that a restoration plan be developed to rehabilitate the land. This plan should be included in the Environmental Report and put into effect immediately after construction is completed in a particular area. Inclement weather or an approaching wet season may indicate a need for temporary action. A contingency restoration plan should be developed, to mitigate environmental problems during bad weather. For example, it may be advisable to rip-rap riverbanks and firmly place straw bale barriers in areas where surface run-off could enter the watercourse.

There are well known procedures to alleviate negative construction impacts; these have been proven by experience and documented in standard plans for typical river crossings, highway crossings and other sensitive areas. Standard procedures include, use of hydro-seeding, diversion berms, contouring of slopes, mulching and suitable fertilizer applications. In developing a restoration plan, where there is potential for a major construction problem or where standard construction procedures may not be sufficient, a site-specific program should be developed and included for review in the Environmental Report.

The landowner must be consulted and any reasonable request regarding rehabilitation of the land complied with. Planting of soil-building cover crops should be considered. It is possible that arrangements requested by the landowner can result in poor quality restoration and problems in subsequent years and may not be the preferred approach. On the other hand, the contractor may not be as familiar with the specific limitations associated with the soil type or specified equipment for restoration. It is recommended that a professional agronomist or agrologist be retained to review the proposed restoration technique and its application with the contractor and the landowner, to ensure that optimal results are achieved.

Permanent water service must be restored to landowners who experience any interference or interruption of water supply due to Hydrocarbon Project construction.

CHAPTER 7
MITIGATION IMPLEMENTATION AND MONITORING

7.1 Implementation

The applicant shall construct the facilities and restore the land in accordance with the OEB's decision and order, including the conditions of approval. Unless otherwise specified by the OEB, an applicant will adhere to the commitments made in its evidence and submissions filed with the OEB and to the recommendations made in the Environmental Report. When issuing an order granting leave to construct, the OEB normally imposes standard conditions of approval. These conditions include the requirements to notify the OEB of any material changes in construction or restoration procedures, to notify the OEB of commencement and completion of construction and the facilities in-service date, to file post-construction and final monitoring reports with the OEB and to apply a landowner complaint tracking system.

7.2 Monitoring

To ensure that the construction site is returned to pre-construction conditions as soon as possible, monitoring reports are to be prepared following construction, to determine the success of the restoration effort. The monitoring reports are required to be filed with the OEB as part of standard conditions of approval. The reports are placed on the public record and may be reviewed by any interested person. The reports are designed to provide information on actual impacts related to construction and operation and on the success of the mitigation measures applied. The monitoring results provide a useful basis for impact prediction and mitigation in future projects.

7.2.1 Monitoring Programs

In some situations, monitoring programs may be required to determine adverse impacts; for example, on sensitive water crossings, soil productivity, directly affected individuals and the community. The objective of a monitoring program is to establish quantitative data for the assessment of impacts, and to recommend methods of mitigating similar impacts on future projects. The onus is on the applicant to establish monitoring programs that will meet the above objectives to the satisfaction of the relevant governing authority. Consequently, a monitoring program outline should be included with the Environmental Report.

7.2.2 Monitoring Reports

For Hydrocarbon Projects, a Post-Construction Report and a Final Monitoring Report are normally established as conditions that are included in the OEB's order approving the Hydrocarbon Project. The Post-Construction Report is normally required within three months of the in-service date, while the Final Monitoring Report is required no later than fifteen months after the in-service date, or, where the deadline falls between December 1 and May 31, the following June 1. The applicant should also provide copies of post-construction reports to the OPCC members.

The Post-Construction Report should:

1. Provide a certification, by a senior executive of the company, that the applicant constructed the facilities and restored the land in accordance with the OEB's Decision and Order
2. Describe any impacts and outstanding concerns identified during construction
3. Describe the actions taken or planned to be taken to prevent or mitigate any identified impacts of construction
4. Include a log of all complaints received by the applicant, including the date and time the complaint was received, a description of the complaint, any actions taken to address the complaint, and the rationale for taking such actions
5. Provide a certification, by a senior executive of the company, that the company has obtained all other approvals, permits, licenses, and certificates required to construct, operate, and maintain the proposed project

The Final Monitoring Report should:

1. Provide a certification, by a senior executive of the company, that the applicant implemented all the recommendations of the Environmental Report filed in the proceeding, and all the recommendations and directives identified by the Ontario Pipeline Coordinating Committee review
2. Describe the condition of any rehabilitated land
3. Describe the effectiveness of any actions taken to prevent or mitigate any identified impacts of construction
4. Include the results of analyses and monitoring programs and any recommendations arising therefrom
5. Include a log of all complaints received by the applicant, including the date and time the complaint was received; a description of the complaint; any actions taken to address the complaint; and the rationale for taking such actions

The Final Monitoring Report should address any potential cumulative effects which may arise, these may include for example, reduced soil productivity over easements which overlap, land-use restrictions due to increased easement widths or additional above ground facilities or the repeated construction through sensitive areas.

Before, during and after construction, a water quantity and quality survey of wells near the pipeline should be conducted. A procedure must be developed to restore permanent water service to landowners experiencing interference or interruption of water supply.

Upon completion of pipeline construction, As Constructed (also called As-built) plans must be submitted to Ministry of Transportation for highway crossings. These plans must be developed in accordance with the CSA S250 Mapping of Underground Utilities.

The longer-term impacts of construction are assessed through the review of monitoring reports as required in the OEB orders. The monitoring reports form part of the record of the OEB's proceeding and are available to the public for review. To view these reports, go to the OEB's Advanced Regulatory Document Search (RDS) and enter the case number for the proceeding.

APPENDIX A: LEGISLATION THAT MAY BE APPLICABLE TO HYDROCARBON PROJECTS IN ONTARIO

Aggregate Resources Act, R.S.O. 1990, c. A. 8
Canada Water Act R.S.C.1985, C-11
Canadian Energy Regulator Act, S.C. 2019, c. 28
Canadian Navigable Waters Act, R.S.C. 1985, c. N-22
Clean Water Act, 2006 S.O. 2006, c. 22
Conservation Authorities Act R.S.O. 1990, c. C. 27
Construction Lien Act, R.S.O. 1990, c. C. 30
Crown Forest Sustainability Act, 1994 S.O. 1994 c. 25
Drainage Act, R.S.O. 1990, c. D. 17
Employment Standards Act, 2000 S.O. 2000 c. 41
Endangered Species Act, R.S.O. 1990, c. E. 15
Environmental Protection Act, R.S.O. 1990, c. E. 19
Environmental Protection Act Regulation 347
Environmental Protection Act Regulation 419/05
Expropriations Act, R.S.O. 1990, c. E. 26
Fisheries Act, R.S.C.1985, c. F- 14
Forest Fires Prevention Act, R.S.O. 1990, c. F. 24
Human Rights Code R.S.O.1990, c. H. 19
Impact Assessment Act, S.C. 2019, C.28, s. 1
Labour Relations Act, 1995 S.O. 1990, c. 1 Sch A
Lakes and Rivers Improvement Act R.S.O. 1990, c. L. 3
Mining Act R.S.O. 1990, c. M. 14
Municipal Act R.S.O. 1990, c. M. 45
Occupational Health and Safety Act R.S.O. 1990, c. O. 1
Oil, Gas and Salt Resources Act, R.S.O. 1990 c. P. 12
Ontario Energy Board Act, 1998 S.O. 1998 c. 15 Sch. B
Ontario Heritage Act R.S.O. 1990, c. O. 18
Ontario Water Resources Act, R.S.O. 1990, c. O. 40
Pesticides Act, R.S.O. 1990, c. P. 11
Planning Act, R.S.O. 1990, c. P. 13
Public Lands Act R.S.O. 1990, c. P. 43
Public Service Works on Highways Act, R.S.O. 1990, c. P.49
Public Utilities Act R.S.O. 1990, c. P. 52
Weed Control Act R.S.O. 1990, c. W.5