

Municipal Planning: Petroleum and Salt Resources Operations

Introduction

Since 1858, when the first commercial oil well began operating in Southwestern Ontario, tens of thousands of wells have been drilled in this region. Numerous wells were drilled without record or regulation. Many may pose a hazard to people or the environment if undetected or disturbed by development.

Today, these operations are governed by the Oil, Gas and Salt Resources Act (OGSRA) framework, which provides oversight for the exploration, development and decommissioning of oil, gas and solution-mined salt resource-related activities.

This document provides guidance to Southwestern Ontario municipalities on legacy and currently active petroleum operations to support municipal planning decisions and development of official plans.

The information provided supports the Provincial Policy Statement (PPS), which requires that:

- known petroleum resources and petroleum resource operations be identified and protected from incompatible development, and
- hazards associated with current or previous petroleum resource operations be mitigated or rehabilitated, and any contaminants be remediated, before development can take place on, abutting or adjacent to lands affected by such hazards.

Prior to making site-specific planning application decisions and in developing official plans and zoning bylaws, municipalities in Southwestern Ontario should ensure that the following steps have been taken:

- 1) Determine the location of any active or previously-operated wells, solution-mined salt caverns and related pipelines and equipment in their municipality.
- 2) Identify and understand the hazards associated with them.
- 3) Ensure any hazards are mitigated.
- 4) Report any incidents.

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Considerations for Petroleum Resources and Operations

As per sections 2.4.2 and 3.2 of the PPS, known petroleum resources and operations must be identified and protected from development or activities that would preclude or hinder access to them.

Appropriate Official Plan and zoning by-law content can help ensure petroleum resource extraction is not impacted by development, and that the public and environment are not adversely impacted by hazards.

In municipalities with petroleum resources, it is recommended that the Official Plan provide direction on minimizing the impact of incompatible development on known petroleum resources and the mitigation of associated human-made hazards on adjacent development. This often includes direction on the:

- Type of municipal approvals required (e.g. Planning Act applications such as Official Plan Amendment or a Zoning By-law Amendment).
- Basis upon which an application will be assessed.
- The kind of additional information that will be required in support of an application.

In developing these policies, a municipality should consider the type of information provided by an applicant that would help them to identify:

- The nature of petroleum resources and related existing and potential activities that may occur.
- The potential negative impacts of the proposal on the ability of the petroleum resource industry to operate in this area.
- The presence of wells and any pipelines or other structures or equipment that is used in association with a well, including caverns/reservoirs and designated natural gas storage areas, and their status.
- Planning, design and construction techniques that may be required to minimize any land use conflict.
- The presence and nature of hazards that may make development on adjacent lands incompatible.

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Step 1: Locate Petroleum Wells and Facilities, and Solution-Mined Salt Caverns

There are several means to determine if petroleum wells or facilities or solution-mined salt caverns are in the area of a proposed development.

Oil, Gas and Salt Resources (OGSR) Library

The OGSR Library houses information on known active and abandoned wells – those that are decommissioned or plugged – as well as solution-mined salt caverns. The Library's website provides a searchable interactive map identifying well locations and well records

The Library also provides advanced search services for a fee. It may not have records of some wells, including orphan wells predating record collection or unlicensed wells, and does not have records for petroleum facilities, resource collection systems (gathering pipelines) and distribution pipelines.

www.ogsrlibrary.com Tel: 519-686-2772

Physical inspection

As oil and gas exploration has taken place extensively throughout southwestern Ontario, municipalities should consider requiring development proponents to conduct a physical site inspection prior to any development or change in land use.

- To identify petroleum facilities and distribution pipelines, a physical site inspection or use of other techniques, such as metal detectors should be considered. If no wells were identified using other resources, such as the Library, proponents should look for evidence of wellheads or well casing visible at surface, leaking fluids, gas odor, dead vegetation, etc.
- For areas that cannot be accessed (e.g. private property adjacent to subject property or project site), consider alternate investigation procedures such as analysis of ortho-rectified aerial photographs verified with observations from the possible development site, and fence line or roadside checks.
- Development proponents are encouraged to contact local petroleum operators (names available via the OGSR Library) and the landowners of adjacent properties to determine if wells or abandoned works are present in the area of proposed development.

Ontario One Call

This potential source of information for distribution pipelines and other utility infrastructure may promote safe excavation practices and help reduce potential damage to underground infrastructure. Note that not all utilities are members of Ontario One Call and petroleum-gathering pipelines are rarely included in their inventories. **www.on1call.com Tel: 1-800-400-2255**

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Ministry of Natural Resources and Forestry (MNRF)

Planning matters such as Official Plan reviews are processed through the Provincial One Window Planning Service led by the Ministry of Municipal Affairs and Housing. MNRF district offices participate in the One Window process and can be contacted for planning matters in relation to oil, gas and salt resources and operations. For inquiries unrelated to planning, such as technical advice or inquiries about oil, gas or salt resources or operations, municipalities are encouraged to contact MNRF's Petroleum Operations Section.

www.ontario.ca/page/oil-and-gas Tel: 519-873-4634 Email: POSrecords@ontario.ca

Step 2: Understand the Hazards

It is important to recognize potential hazards associated with petroleum resources and operations and solution-mined salt caverns, and it is recommended that municipalities implement appropriate land use policies that consider these conditions prior to development.

Current and former petroleum operations and wells

Risks include:

- Fluid escape and/or fluid migration into surrounding soils and surface waters creating a contamination problem, or similarly migration of surface fluids and contaminants into subsurface aquifers.
- Flammable, explosive or toxic gases emanating from improperly decommissioned or non-decommissioned wells.
- Areas of contaminated soils associated with sites of former petroleum works, old battery tanks, separators or gathering lines that were left in place.

Currently regulated operating wells, storage and facilities

The province's regulatory framework provides for the licensing of petroleum resource operations to address potential impacts associated with their operation. There remains, however, potential hazards inherent to the development of these resources:

- Hazards associated with below-ground storage reservoirs and with producing oil or gas wells and facilities that stem primarily from the flammable and explosive nature of the hydrocarbons that they extract and contain.
- Natural gas containing hydrogen sulphide impurities and liquid petroleum gases, such as propane, may be found at some sites. These substances are toxic and volatile, respectively, and represent risks to workers, people and adjacent structures if not handled properly.
- Blowouts (i.e., uncontrolled release) while drilling.
- Surface contamination from leaking wellheads.
- Groundwater contamination by escaping fluids.

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Former solution-mined salt caverns

The hazards associated with former solution-mined salt operations could include:

- Unknown structural integrity of the cavern(s).
- Subsidence – the sinking of the ground surface due to the weight of the overburden and rock overlying these caverns. Most subsidence is minor (e.g. five centimetres or less). It typically occurs during and immediately after salt extraction and usually ceases once active solution mining is terminated.

Step 3: Mitigate the hazards

Where hazards have been identified municipalities should ensure they are addressed prior to development.

To help mitigate identified hazards, municipalities may wish to:

- Undertake background research on known former solution-mined salt operations when developing land use policies and zoning by-laws. Use of holding provisions on zoning could be warranted in some circumstances.
- Identify if future development patterns would conflict with petroleum resource operations or future access to known resources. Municipalities may also want to apply zoning that restricts development to existing uses and to those uses that will not preclude or hinder the expansion or continued use or access to the resource.
- Adopt in their Official Plan and zoning by-laws setback provisions that mirror requirements for new well locations as identified in the Oil, Gas and Salt Resources of Ontario, Provincial Operating Standards under the OGSRA. Specifically:
 - a setback of 75 metres between wells and residential, agricultural, commercial or industrial buildings, schools, churches or places of public assembly,
 - a setback of 50 metres between wells and road allowances, utility corridors, electrical transmission lines or railways, and
 - setbacks from well-related equipment like flares, tanks and vessels that are described in Part 5 of the Oil, Gas and Salt Resources of Ontario Provincial Operating Standards.
- Require development proponents to conduct field verification of well sites to determine whether wells are flowing to surface, regardless of whether records indicate the well was plugged (e.g. the quality of well construction and decommissioning should be assessed in addition to the well's potential to conduct fluids to the surface).

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- Require development proponents to consult with operators to understand their operational needs and the potential risks their facilities and operations may pose to future development.⁵
- Require development proponents to properly plug any improperly plugged wells at former resource operation sites prior to development.
- Require development proponents to determine the size and extent of any former below-ground solution-mined salt caverns through geotechnical examination prior to allowing development on land above the cavern or on adjacent lands. An engineering analysis is also recommended to confirm whether or not the land surface can support the weight of the proposed development.

Note: Petroleum resource operations include depleted reservoirs that are used for the underground storage of natural gas and are designated by the Ontario Energy Board. Most storage reservoirs are in the Chatham and Sarnia area.

Identified hazards will not always impede development but may require adjustments to development plans, such as proper abandonment (plugging) of an orphaned well, and changes to the location of a proposed building or other infrastructure. For example, even though a well is plugged according to the Oil, Gas and Salt Resources of Ontario, Provincial Operating Standards, municipalities should avoid building foundations on top of or close to it.

If hazard locations are known in advance, mitigation measures should be undertaken prior to site development, where appropriate. If an unknown well is discovered during site preparation or development work, adjustments may need to be made.

Step 4: Report any incidents

If there is an incident involving a petroleum well or facility, the operator of the well or facility should be contacted immediately. Contact information should be readily visible at the site. If it is not, and the incident does not constitute an emergency, contact **MNR's Petroleum Operations Section: 519-873-4634**.

Any releases to the natural environment should be reported to the Ministry of Environment, Conservation and Parks' **Spills Action Centre: 1-800-268-6060**.

In cases of emergency, such as an uncontrolled release or spill of oil, natural gas or brine, or a fire or explosion, contact **911**.

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For more information about petroleum resource development and regulation in Ontario, contact:

Petroleum Operations Section
Ministry of Natural Resources and Forestry
659 Exeter Road, London
Tel: 519-873-4634
Email: POSRecords@ontario.ca
www.ontario.ca/petroleum

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