North Kent Wind and Your Well Water

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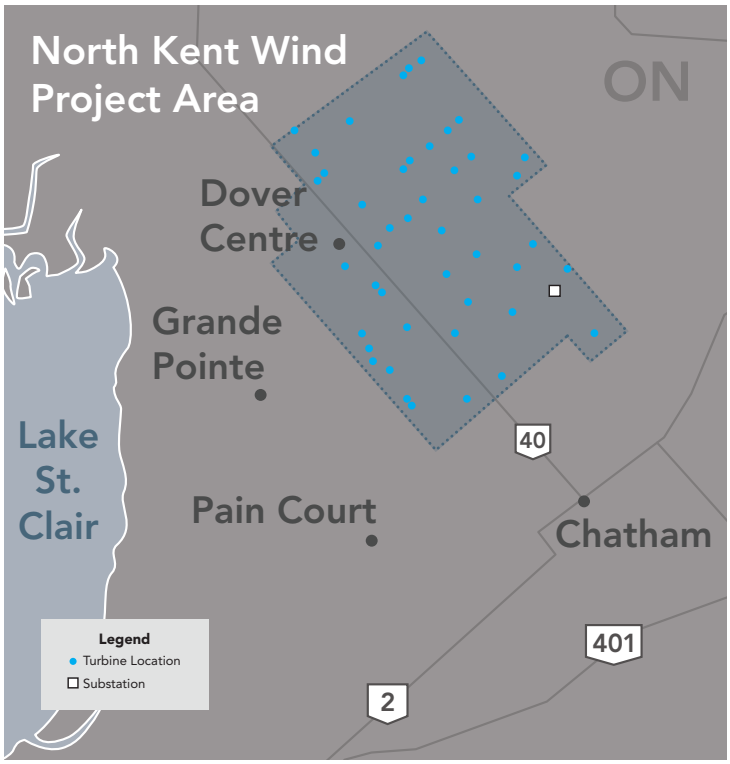
North Kent

The Area of North Kent Wind



The North Kent Wind project is expected to generate clean energy equal to the needs of 35,000 Ontario homes each year.

The project received a Renewable Energy Approval (REA) from the Ministry of Environment and Climate Change (MOECC) after **comprehensive analysis of the project area concluded that the construction and operation of wind turbines would not adversely affect domestic water wells.**

Geological and hydrogeological surveys were conducted and site-specific geotechnical investigations confirmed the soil and groundwater conditions at each turbine foundation location. Baseline water quality information in conjunction with vibration monitoring data allows the MOECC to ensure groundwater resources remain protected.

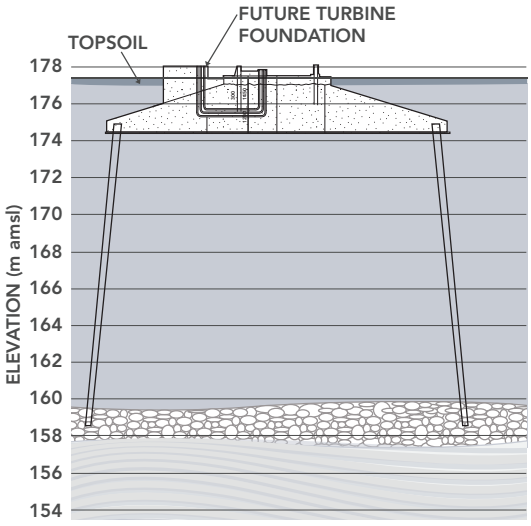
What Is Pile-Driving?

Pile-driving is a routine form of construction used throughout Chatham-Kent and around the world for supporting culverts, bridges, and buildings. Pile-driving is the act of installing steel pipes or beams, called piles, into the ground to provide a foundation for buildings and other structures.

Could North Kent Wind pile-driving affect my well water?

Research before construction began concluded that construction and operation of the wind turbines will not cause harm to groundwater quality at the wells or in the broader subsurface groundwater environment. The study states that there is no plausible mechanism by which sediment, particles, or their contaminants can be transported 100s of metres from turbine locations to water supply wells.

When piles are driven, they push aside soft or loose soil and weathered or already broken rock. Pile driving is stopped when the piles contact solid rock because firm rock is needed to support the turbine. Because of the surrounding soil and rock, there is no plausible means for small particles to be transported far away from pile locations.



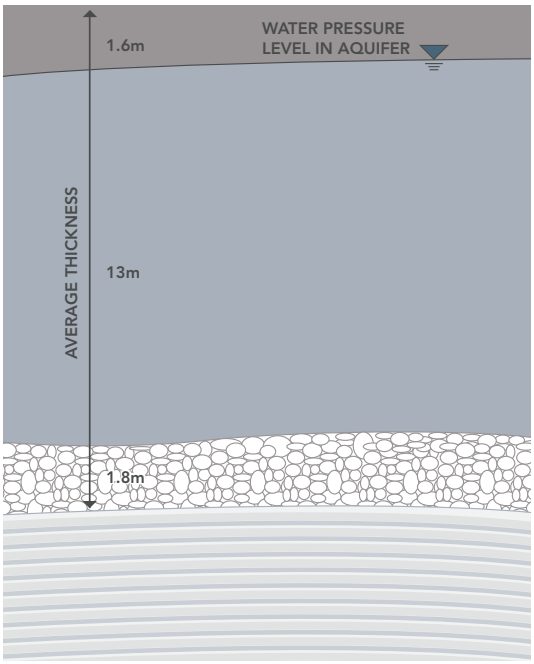
Geological Ground Conditions

1. **Sand and silt:** Where it exists, it is typically 1-2 metres thick, above the soft clay layer

2. **Soft clay:** Typically 10-15 metres thick, below the sand and silt layer and above the glacial till layer

3. **Glacial till:** 1-3 metres thick in most areas, comprised of broken bedrock, gravel, sand, silt, and clay of varying proportions. It sits above the bedrock and below the soft clay layer. This layer is sometimes referred to as an aquifer

4. **Black shale bedrock:** The Kettle Point Formation bedrock exists below the glacial till and contains trace concentrations of heavy metals. The top few metres of the bedrock can also form part of the aquifer depending on how much it has been naturally weathered or fractured



How far do vibrations move through the ground?

Research shows that vibrations from distant pile-driving are inconsequential for water wells.

Vibrations from pile-driving dissipate quickly from the source, like ripples in a pond, and weaken over a short distance. These vibrations at the separation distances for the North Kent Wind project are no greater than those caused by typical day-to-day background like nearby traffic. In fact, a well's own pump can induce well casing vibrations that exceed those associated with pile-driving.

What could be the cause of the water well issues?

Water well quality issues are likely to be affected by regional water quality characteristics and their natural variability, near-well conditions (within a few metres), well construction details, well and pump conditions, and pump operations. Water well complaint investigations have observed problems related to well construction, maintenance or existing pumping and treatment equipment. In some cases, the wrong equipment has also been installed.

Poor aquifer conditions in some areas

Some citizens receive groundwater from the aquifer below. Historically, the area has had issues with finding groundwater with adequate flow rates due to the variable aquifer conditions. In some areas, water-well drilling has been challenging due to the aquifer's low porosity. Natural water quality in the area is also known to be variable and sometimes poor.

Aging wells

The integrity of a well may pose a threat to the quality of the groundwater drawn from the well. Wells are comprised of components that are susceptible to wear, such as screens, pumps, intakes and filters. Inadequate casings and seals can result in the migration of surface water and any contaminants into wells between the casing and the ground. A well's performance depends on the initial construction of the well, age of the well, its maintenance history, and geologic and environmental factors.

Local water well concerns have been investigated by qualified experts who have concluded in every case to date that pile driving is not impacting water well quality or function.

When a complaint is received, the following actions take place:

- MOECC is notified within 1 business day of receiving the notice.
- A qualified expert is retained to conduct an investigation and strives to visit the property owner within 2 business days of receiving the notice.
- The qualified expert will interview the property owner and collect a raw (untreated) groundwater sample for the laboratory.
- The water sample is delivered immediately to a laboratory accredited by the Standards Council of Canada and the Canadian Association of Laboratory Accreditation. The laboratory analysis requires 3 business days to complete.
- The lab results are compared against baseline water quality data from the same well, where available.
- Vibration monitoring results are interpreted by scientific and engineering specialists. This analysis takes time due to the large amount of minute vibration data collected, including vibrations from ***North Kent Wind believes in green energy and safe water.*** The two go hand in hand. Extensive scientific research establishes that the construction and operation of wind turbines will not cause harm to groundwater quality at the wells or in the broader subsurface groundwater environment. The scientific research also shows that there is no plausible mechanism by which fine rock particles can be transported 100s of metres from turbine locations to water supply wells.

We take the safety of local water wells very seriously. When a water well complaint is received, we quickly mobilize third-party experts to investigate and prepare a comprehensive assessment. Analysis involves collecting well-water samples at the residence of the complainant by a qualified, licensed expert in assessing wells and groundwater, reviewing vibration monitoring data, and comparing water samples from the well to baseline water samples taken prior to construction when available. The results are shared with the well owner, MOECC, Municipality, and posted on our website. Through this process, third-party experts have investigated a number of complaints and in each instance the experts determined that any issues experienced have not been caused by North Kent Wind's construction activities.

—North Kent Wind Team

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