

Ernestown Wind Park
Visual Impact Assessment Report



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Ernestown Wind Park - Visual Impact Assessment Report

OVERVIEW

The goal of the project was to simulate, from selected vantage points, the visual impact of the installation of wind turbines within the area surrounding Ernestown, Ontario.

The visual simulations in this report are composed of photographs of the project area taken with a digital camera merged with rendered images from a 3D AutoCAD model. The panorama imagery was created by merging the original adjacent digital photos from each vantage point, with approximately 50% overlap, to form a photo that represents a viewing angle of approximately 90 degrees. A virtual camera was placed in the 3D AutoCAD model at all vantage points using the same coordinates from which the photographs were taken. From each vantage point, an image was rendered of the proposed turbines and surrounding topography and features. This rendered image was positioned and aligned with corresponding features and topography in the photographs to create the simulated images in this report.

METHODOLOGY

Vantage Points and Viewshed Map

An onsite visit was made by the client to determine appropriate locations for vantage points. A viewshed map (Zone of Visual Influence Map) was generated using ESRI Arcmap 3D Analyst to confirm the validity of the selected vantage points.

Photography

The photographs were taken in September of 2010. The focal length of the camera was set to mimic, as closely as possible, the view seen with the human eye. A series of photographs with 50% overlap were taken from each vantage point. These images were merged together in Photoshop to form the panoramic images used in the report. The GPS coordinates of each photo location was recorded and used to position the cameras in the model.

Computer Model

3D Surface Model: A Digital Elevation Model (DEM) with cell size 10x10 was acquired from the Ontario Ministry of Natural Resources data library through contract with the Land Information Distribution System (LIDS). ESRI's ArcMap 10 was used to generate contours from this DEM at a 2 m frequency and to generate a Triangulated Irregular Network (TIN) of the surface. The contours and TIN were imported into AutoCAD to form the ground surface. Relevant topographic features (e.g. water towers, radio towers, woodlots, roads, buildings and other topological features) were added to the model as 3D objects if required to aid in scaling and aligning the rendered images over the photographs.

Turbine model: An accurate 3D model of a Vestas V100 wind turbine was built in AutoCAD with blade length of 50 m and hub height of 95 m. The x, y, z coordinates of the proposed wind turbines were placed in the model and the base of the turbine model snapped to those coordinates for each turbine location.

Vantage points and Cameras: The GPS coordinates of the vantage points, which were collected at the time the photography was taken, were located on the modeled surface. Each vantage point was positioned 1.6 m above the surface to simulate the approximate distance of the human eye from the ground surface. A virtual camera, with focal length set to mimic the focal length used in the real photographs, was placed in the AutoCAD model at these locations to provide a simulated view that closely represents the view of the proposed conditions that an individual would see if standing in that location.

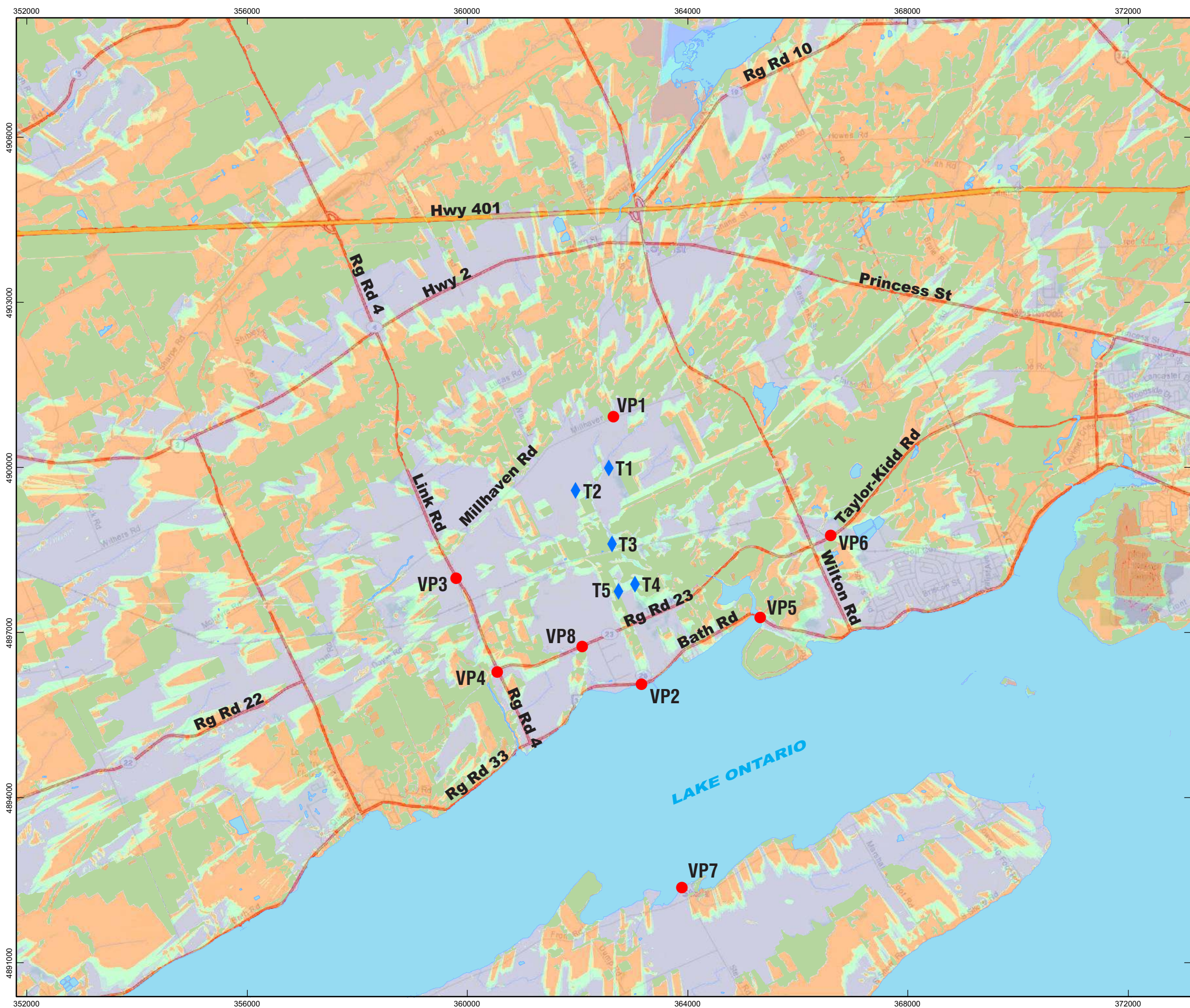
Final Image Creation

The simulated view from each virtual camera was rendered and saved in a raster image format. The simulated view was superimposed and aligned over the photographic image. At least 3 visual cues were used to align the simulated view with the real image to produce the final panoramic simulations.

Accuracy

These simulations are intended to convey the general visual impact of proposed wind turbines from selected vantage points. The 3D model was built using the most accurate and up-to-date data available. The data was used responsibly, and the results have not been purposely exaggerated or diminished in any way. The results are as accurate as the data will provide. These simulations represent, to the best of our knowledge and ability, how the proposed turbines would appear in real life if they were to be installed in the proposed locations.

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ZONE OF VISUAL INFLUENCE



0 1 2 Kilometers

1:70,000

Distance to nearest turbine

- VP1 → T1 = 940m
- VP2 → T5 = 1754m
- VP3 → T2 = 2694m
- VP4 → T5 = 2639m
- VP5 → T4 = 2394m
- VP6 → T4 = 3665m
- VP7 → T5 = 5455m
- VP8 → T5 = 2381m

- Vantage Point
- ◆ Turbine Location
- Woodland (Average 20m canopy)

No. of Visible Turbines

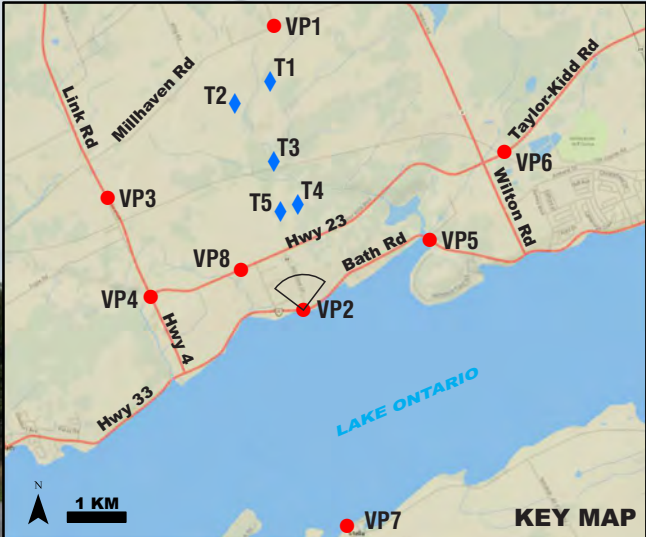
- 0
- 1
- 2
- 3
- 4
- 5

Ernestown Wind Project Visual Simulations Ernestown, Ontario



T4 T5 T3 T1 T2

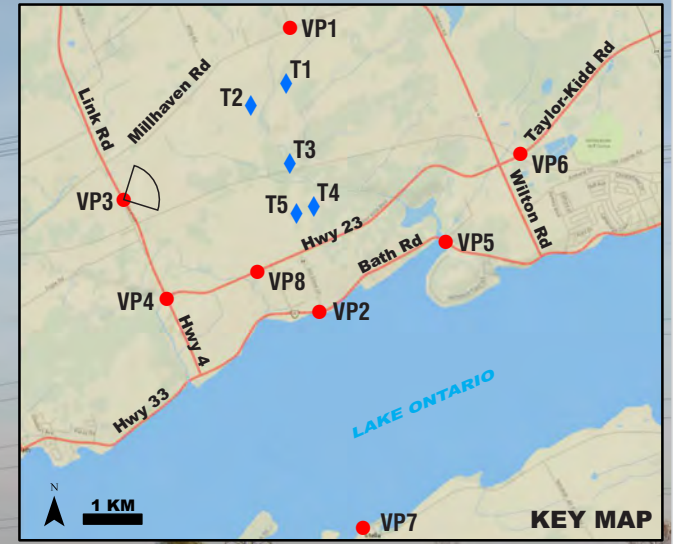
EXISTING



PROPOSED



T5 T3 T1 T4



T2 T1

T3

T4

T5



EXISTING



PROPOSED



T5 T4 T3 T2 T1

EXISTING



PROPOSED

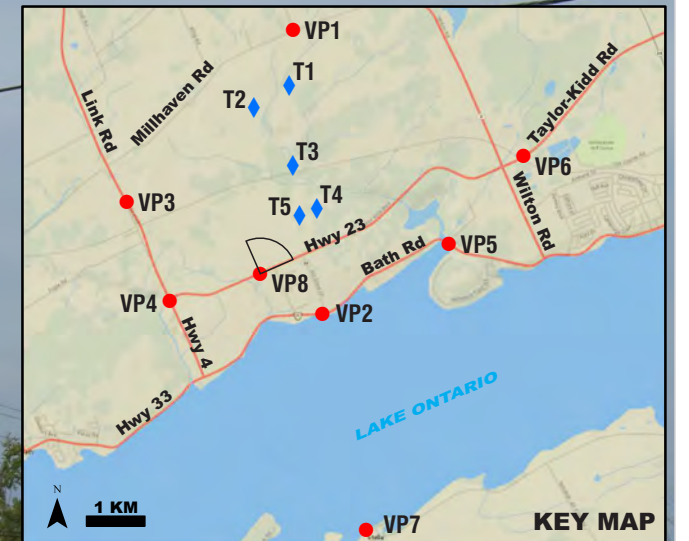


T5 T4 T3 T2 T1



T2 T5 T3 T1 T4

EXISTING



PROPOSED

