

# Welcome

Project Update Meeting  
for the Niagara Region  
Wind Farm

## Thank you for coming!

We are happy to share new information about this clean, renewable energy project with you, based on our progress over the past 12 months.

Our full team of experts are present today. Please review the display boards and feel free to ask us any questions you may have.

We want to hear from you!  
If you would like to be added to the Project mailing list, please sign up at the front desk.



# Objectives of this Public Meeting



- Provide a status update on the Project Layout, Design and Technical Studies.
- Present and discuss the Draft Site Plan, which contains a map of the proposed turbine locations and project infrastructure.
- First meeting for the revised study area.
- Provide notice of the revised Study Area and provide properties newly added to the Study Area the opportunity to review project material in accordance with Ontario Regulation 359/09 under the Environmental Protection Act (REA Regulation).
- Provide an overview of the Renewable Energy Approval (REA) process.
- Provide an update on the status of the environmental studies completed to date.
- Answer questions that we've been hearing about the Project and outline next steps.
- Receive the community's input and feedback for consideration by the Project team.
- Provide information about the technology being used (Enercon Turbine).

# Who Are We?

Niagara Region Wind Corporation (NRWC) is a Canadian renewable energy company focused on the development of wind power in Canada.

NRWC is a partnership between Daniels Power Corporation and Renewable Energy Business Ltd., two privately held Ontario companies committed to renewable energy projects.

The Study Team for this Project includes:



Stantec  
Consulting Ltd.  
(Renewable Energy  
Approval process)



Hatch Ltd.  
(Engineering)



Intrinsic Inc.  
(Health)



Bridgepoint Group Ltd.  
(Media & Communications)



Enercon  
(Turbine Manufacturer)



**CONSTRUCTION LEADERS**  
PCL  
(Construction)

## Project Contact Information

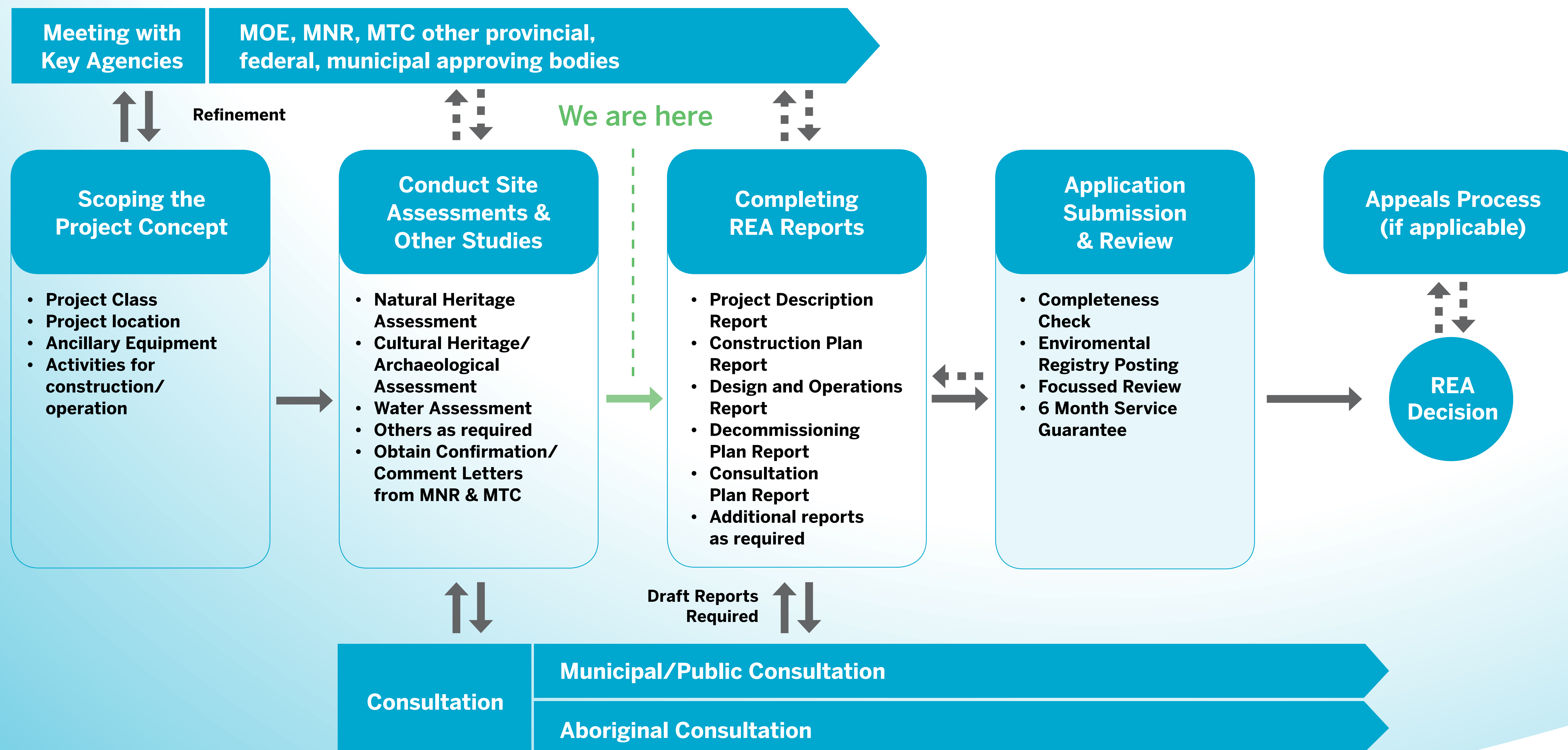
Website: [www.nrwc.ca](http://www.nrwc.ca) Email: [info@nrwc.ca](mailto:info@nrwc.ca)  
Phone: 905-390-3306 or 1-855-720-2892 (toll free)



# Renewable Energy Approval Process

## An Overview of How the Process Works

- Issued under Ontario Regulation 359/09 under the Environmental Protection Act (REA Regulation).
- Stringent environmental approval process that NRWC needs to satisfy before construction.
- Specifies how the Project will be designed, built, operated and decommissioned so that local community and environment are protected.
- For this project, the REA process began in July 2011, with the publication of a Notice of Proposal to Engage in a Renewable Energy Project.



## Niagara Region Wind Farm

# Project Overview

### Class 4

- This project is considered a Class 4 Wind Facility according to the REA Regulation.

### 230 MW

- The total nameplate capacity of this project will be 230 MW (1 MW can power approximately 250 Ontario homes).

### 77 turbines

- There will be 77 ENERCON E101 wind turbine generators (80 potential locations identified), each with a rated capacity of 3.0 MW. One or more turbines may have a generating capacity of less than 3 MW, for a total of 230 MW.

### Study Area

- The turbines will be located in West Lincoln and Wainfleet in Niagara Region and parts of Haldimand County, with the transmission line proposed in Lincoln, West Lincoln and Grimsby.

### PowerPurchase

- This Project has been awarded a PowerPurchase Agreement (FIT Contract) by the Ontario Power Authority in February, 2011.

### Components

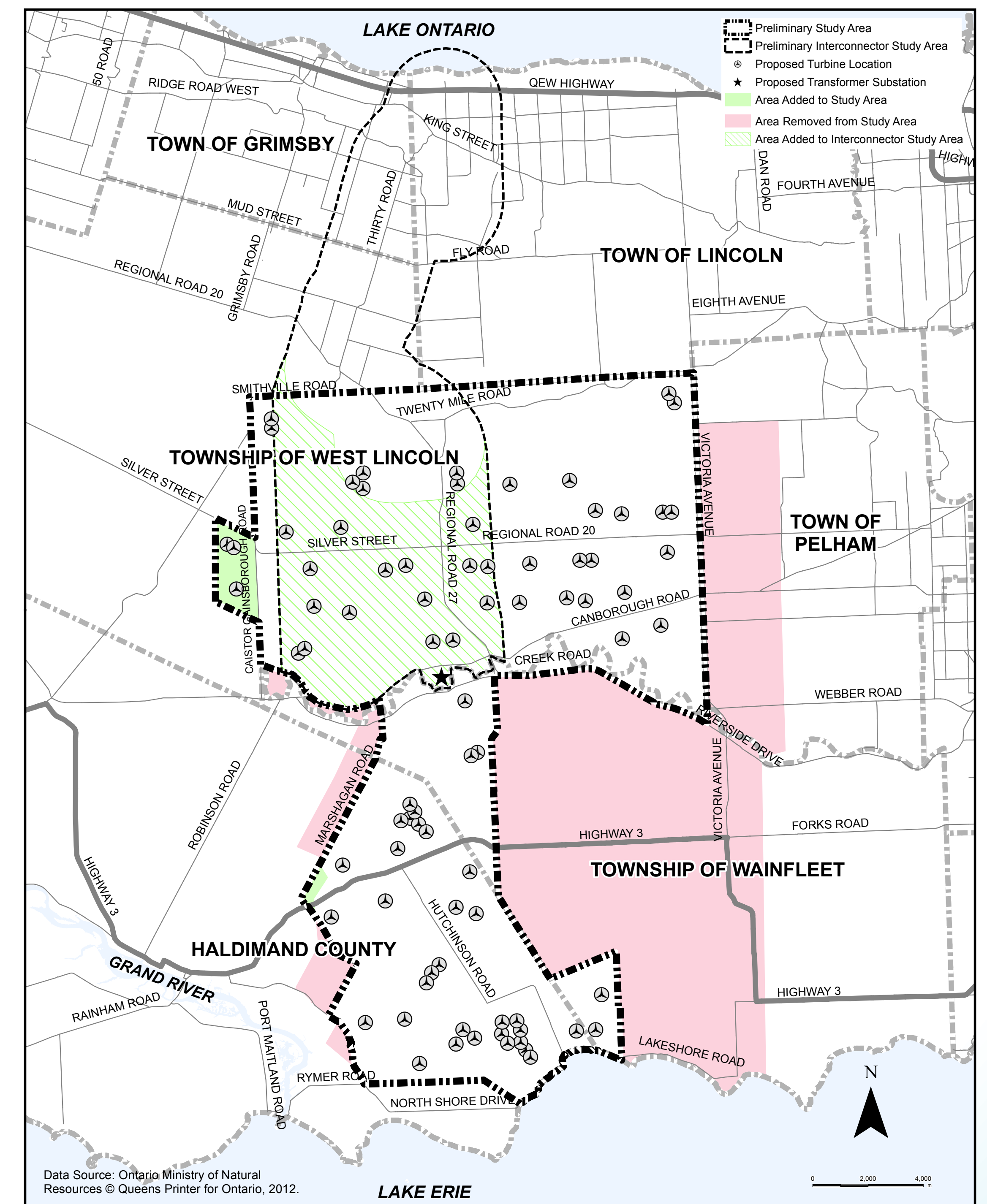
- Other Project components include: underground/overhead collector lines, transmission line, fiber optic / wireless communication system, operations and maintenance building, one substation, a manual disconnect switch, and turbine access roads with culverts (where required).
- Additional details regarding the preliminary design of this Project are located within the Draft Project Description Report (August 2012) and Draft Site Plan Report (August 2012), available for review today, at [www.nrwc.ca](http://www.nrwc.ca), local libraries and municipal offices.

## Niagara Region Wind Farm

# Project Study Area Changes

Over the past several months, NRWC has been refining the project location and completing various technical and environmental studies in preparation for finalizing the project layout. Through these studies, the Project Study Area has been refined as follows:

- No project components are located within the Town of Pelham;
- The majority of the Township of Wainfleet originally located within the Study Area has been removed with the exception of two small areas near Wellandport and Lake Erie;
- The Interconnection Study Area has been expanded to accommodate the location of the proposed transformer substation; and,
- A small area in the Township of West Lincoln has been added to accommodate 3 additional turbines west of the original Study Area.

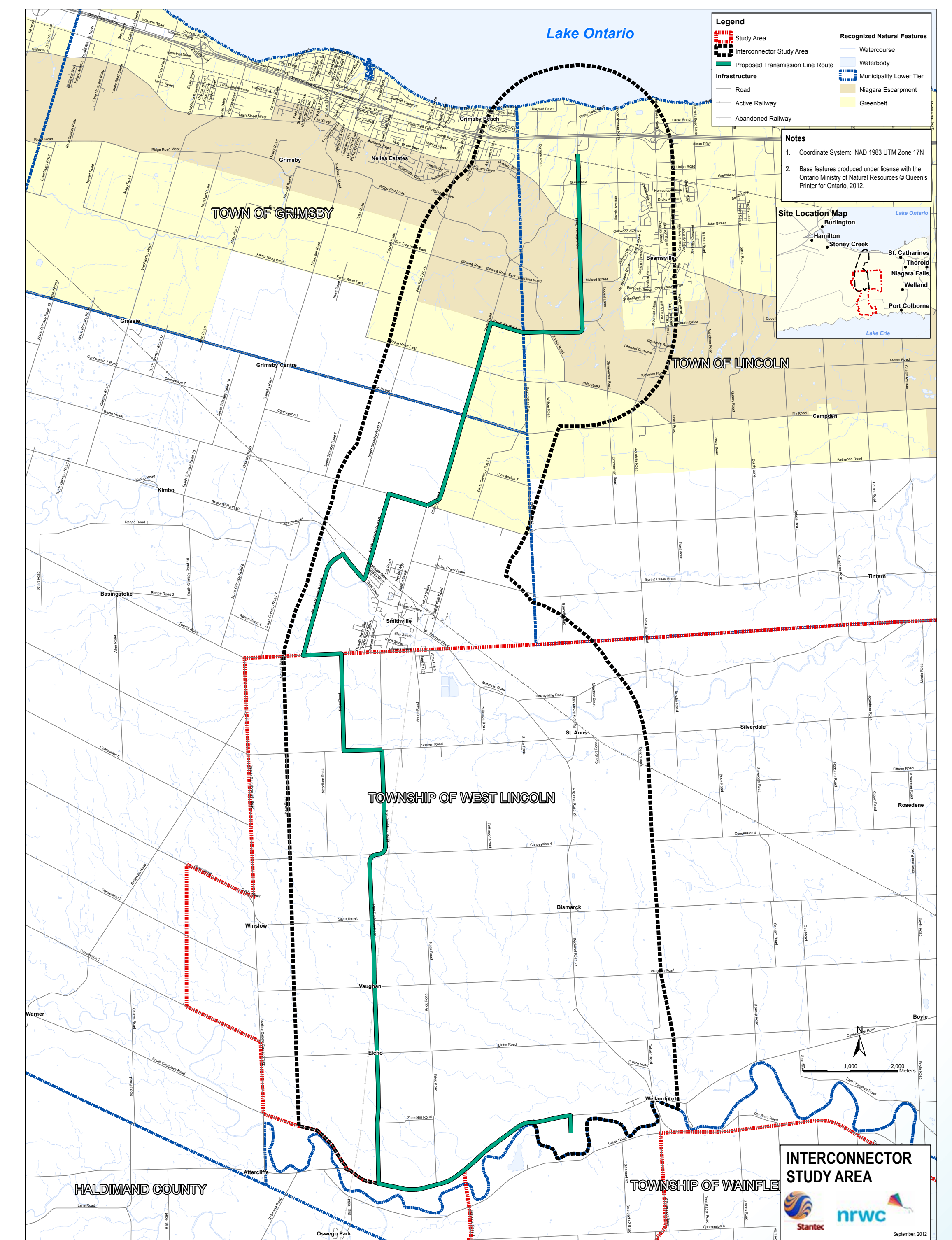


“Study Area” is used to describe the general location of the Project Components.

## Niagara Region Wind Farm

# Interconnector Study Area & Transmission Line

- The new transmission line would connect to the existing 115 kV Transmission Line along QEW.
- Proposing a 34.5 kV collection system with a single substation to step the voltage up to 115 kV for transmission.
- NRWC is connecting to the Beach T.S. for two reasons:
  - 1) there is existing transmission capacity, and
  - 2) this connection is a requirement of our contract with the Ontario Power Authority.
- There is no transmission capacity on the existing lines on top of the Escarpment and/or through the Study Area.
- Hydro One completed an investigation of transmission connection options and concluded: “there is no capacity to connect the Project along the top of the Escarpment and route the power to Beach T.S.”



# Niagara Region Wind Farm

## Preferred Route



Existing Condition



Proposed Condition

Mountainview Road Potential Transmission Line – Vantage Point 2 (South)  
Figure E3

**DRAFT**



- Commences at the proposed substation near Wellandport
- Current Local Distribution Company (LDC) supports up to 27 kV within municipal Right of Way (ROW)
- Primarily wooden pole design with minimal use of concrete or steel poles
- Relatively flat and avoids built-up areas and natural features to the extent possible
- The preferred route must cross the Niagara Escarpment

### NEC Planning Area:

- Gradual ascent up the Escarpment
- Low potential visual impact (ex. LDC and telephone lines, relatively flat)
- Minimum tree trimming and impact on the escarpment
- Constructability, access & minimal bends
- Short, straight route entirely within previously disturbed ROW
- Wide ROW
- Passes fewer properties
- Avoids built-up areas



## Niagara Region Wind Farm

# Overview of Draft Site Plan

The Draft Site Plan Report for the Niagara Region Wind Farm was released to the public on August 20, 2012 in accordance with Section 54.1 of O. Reg. 359/09, and the MOE's "Technical Guide to Renewable Energy Approvals" (MOE, July 2011).

- [The Draft Site Plan](#) identifies the coordinates of 80 turbine locations of which 77 will be constructed.
- For the purposes of crystallization and completion of the various technical studies, all 80 turbine locations will be assessed as part of the REA process.
- The proposed transformer substation will be located on Canborough Rd (Regional Rd. 63) west of Wellandport, north of the Welland River.
- The Draft Site Plan identifies approximately 3500 noise receptors within 2 km of the proposed turbines and transformer substation. Noise levels at these locations will be no greater than 40.0 dBA in accordance with MOE's "Noise Guidelines for Wind Farms" and section 54 of O. Reg. 359/09.
- A 35 km 115 kV transmission line is proposed to connect power (generated by the turbines) from the transformer substation to the existing transmission line south of the QEW.



## Niagara Region Wind Farm

# Revised Draft Project Description Report

The Draft Project Description Report (PDR) has been revised and updated to reflect changes to the Project based on the completion of various technical and environmental studies over the past 12 months.

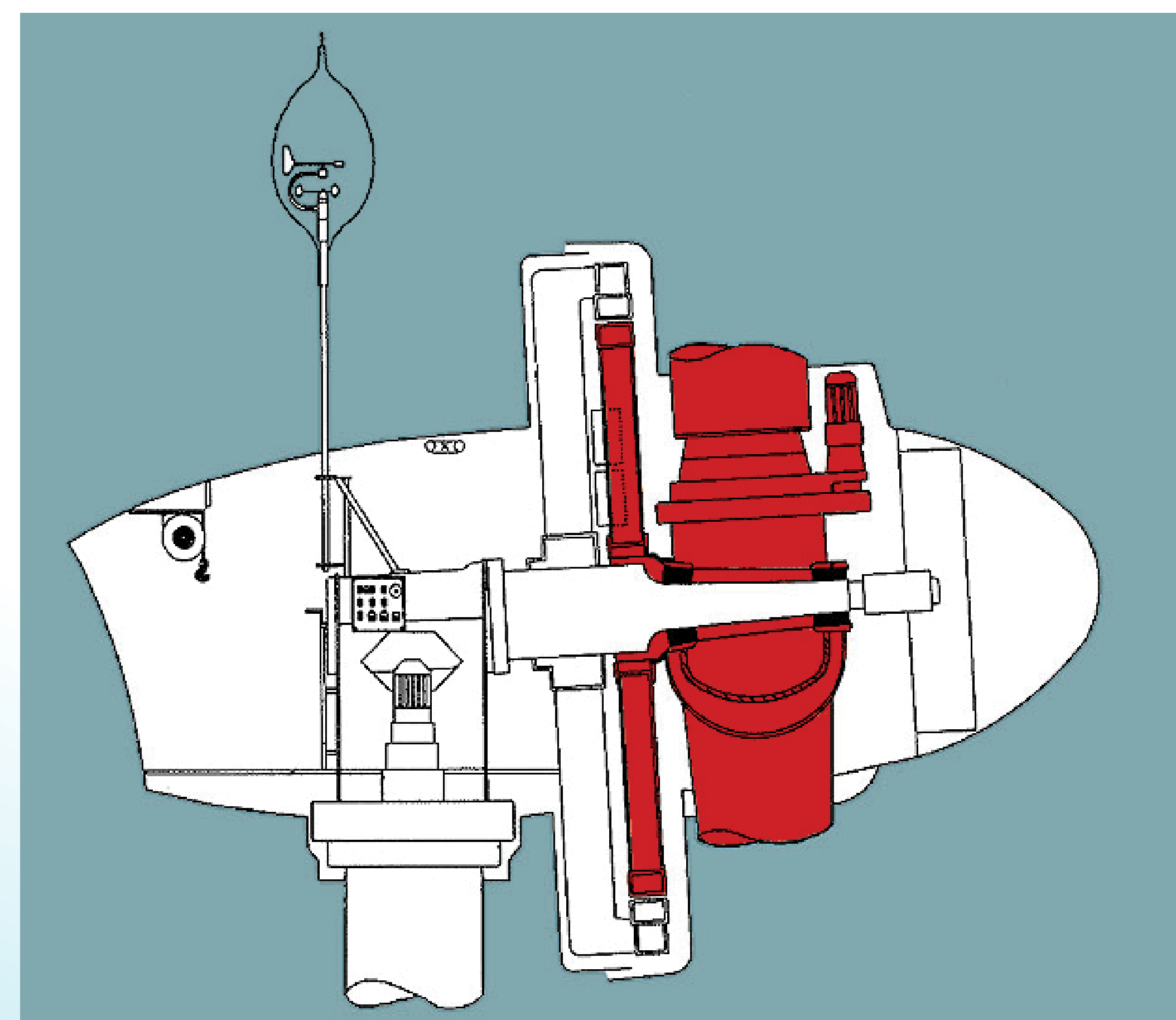
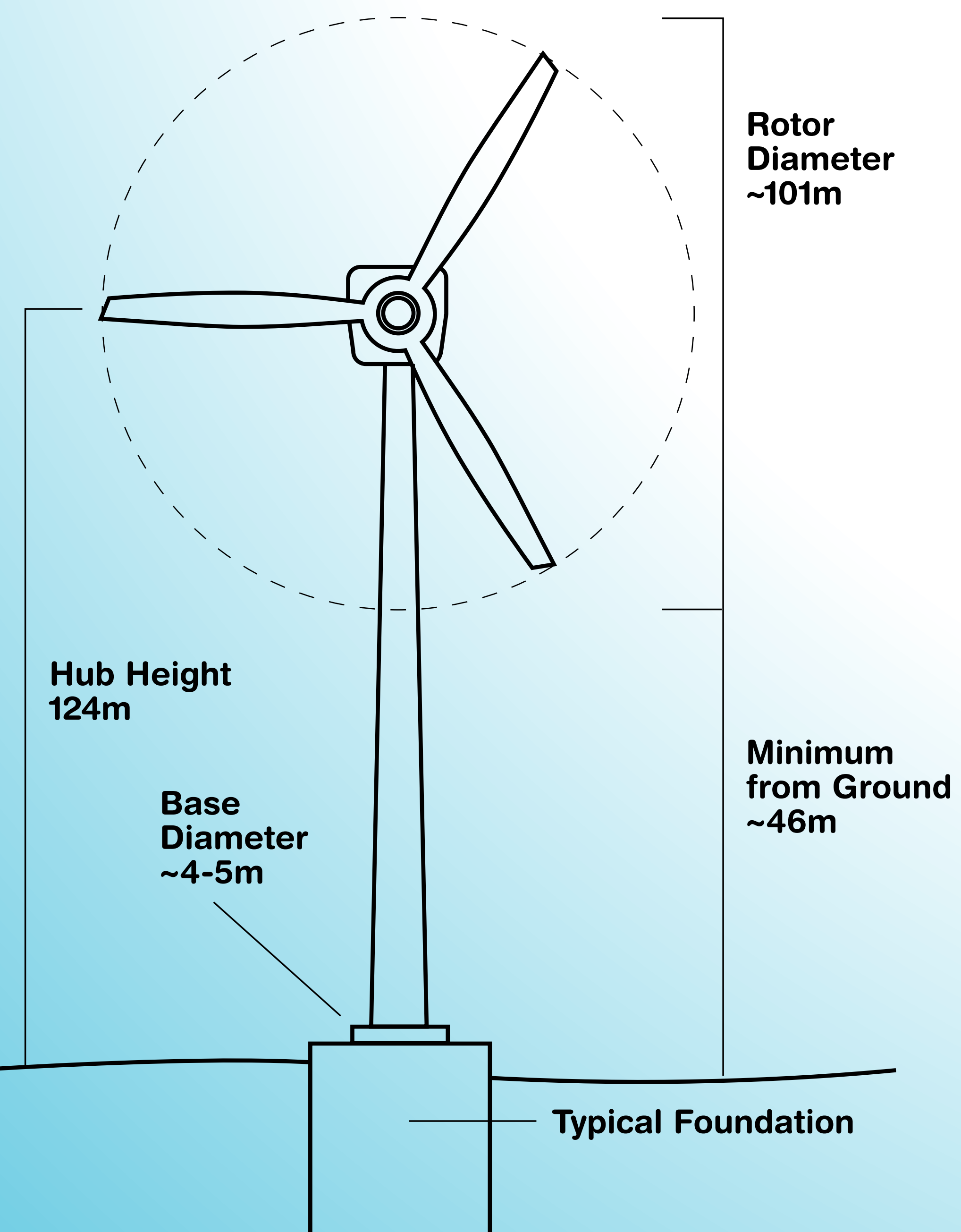
The Draft PDR provides a description of project components, schedules, activities, ownership, processes, potential environmental effects, and a list of key permits and approvals still required.

As outlined in the Draft PDR, Project components include:

- 77 Enercon E-101 wind turbines with a capacity of 3 MW each (one or more turbines may have a generating capacity of less than 3 MW), for a maximum installed nameplate capacity of 230 MW.
- Overhead and underground collector lines will run from each turbine along municipal road allowances to a central transformer substation.
- Fibre optic cables will follow similar routes to provide a communication connection to monitor and control each turbine.
- Two main step-up transformers will convert power from 34.5 kV to 115 kV at the central transformer substation.
- Access roads will be built on private property to provide access to the turbines during construction and operation (maintenance).
- Additional project components include MET towers, temporary work areas, water crossings and operation and maintenance facility.

A copy of the Draft PDR is available for review today, at [www.nrwc.com](http://www.nrwc.com), and at local municipal offices.

# Enercon's E101 The Facts



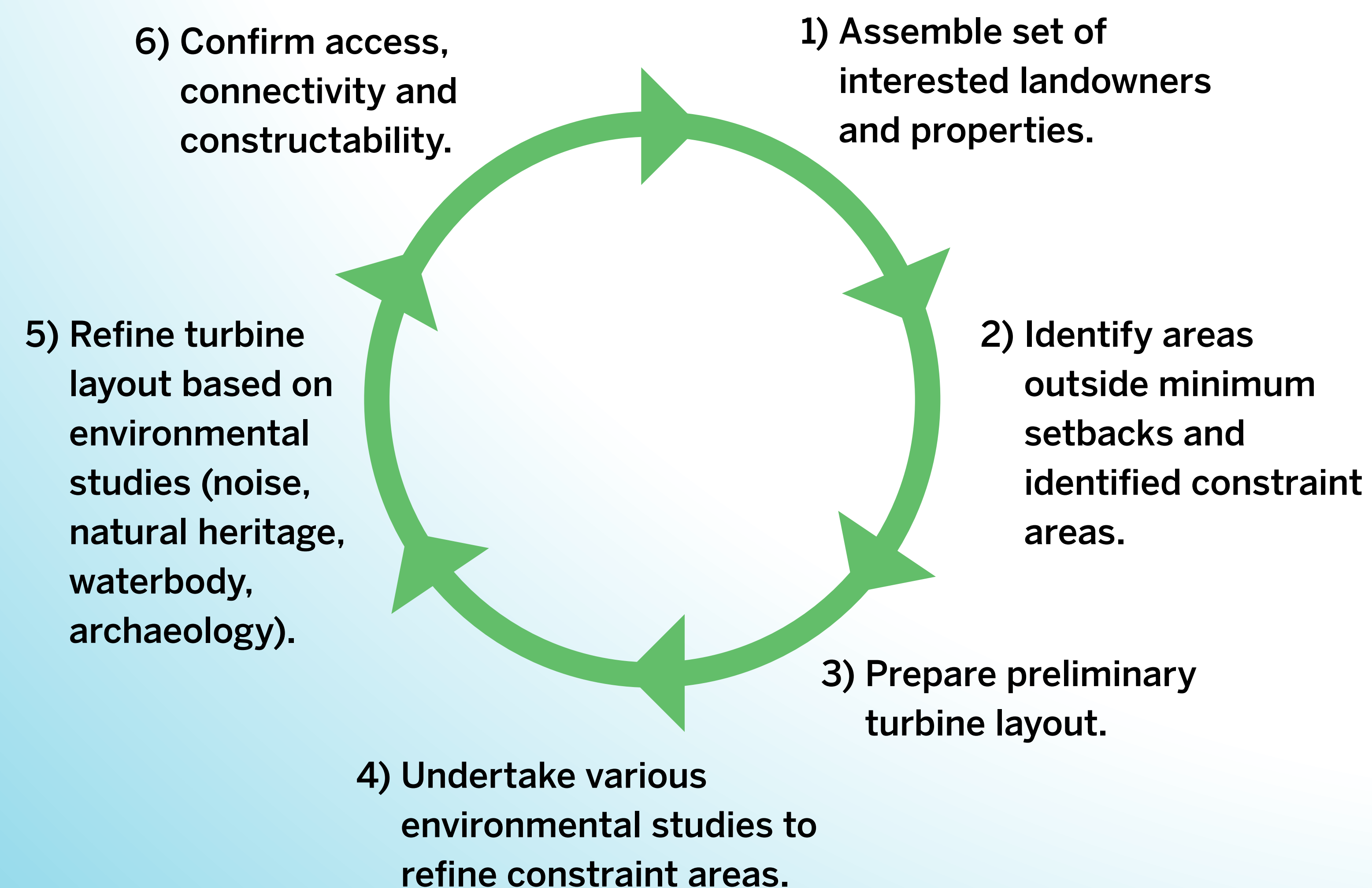
## Uniqueness of ENERCON turbines

- Maximum sound power level of 105 dBA
- Rated capacity of up to 3 MW
- Gearless, direct-drive generator
- Concrete tower creates a durable structure for the turbine
- Aerodynamic blade and nacelle designs help to reduce turbulence and noise level
- Integrated and robust mechanical design enables turbine to operate from low wind speeds (2-3 m/s) up to storm conditions (28-34 m/s)
- Absence of hydraulic fluid and lubricating oils in the nacelle makes for an environmentally friendly machine
- Aesthetics of green feet and grey tower help blend turbine into the landscape

## Niagara Region Wind Farm

# Site Selection

### Determining Specific Project Component Locations



Note: this process is iterative and repeated with rigour in order to maximize efficiency and minimize impacts.

## Why Haldimand County & Niagara Region?

The Project team considered many factors when it proposed building the Project here. They included;

- Strong wind regime
- Electrical Interconnection capacity exists on the Hydro One provincial grid near the QEW
- Environment – to date, our review of existing environmental features shows that the Project can be designed to avoid or minimize impacts on wildlife and natural features
- Landowner interest
- Compatible land uses – agricultural land requiring a small footprint for Project components
- Flat topography for the Study Area
- Site access – good existing road infrastructure
- Access to skilled labour

# Setback Distances

A key component of the Renewable Energy Approval (REA) process is the establishment of common setbacks for all renewable energy facilities in the Province.

The setback requirements from natural features (i.e., wetlands) are determined by measuring the distance from the closest potential point of interaction, whether that is a construction laydown area or the tip of the turbine blade, whichever is closer. Setback distances are outlined on the next storyboard.

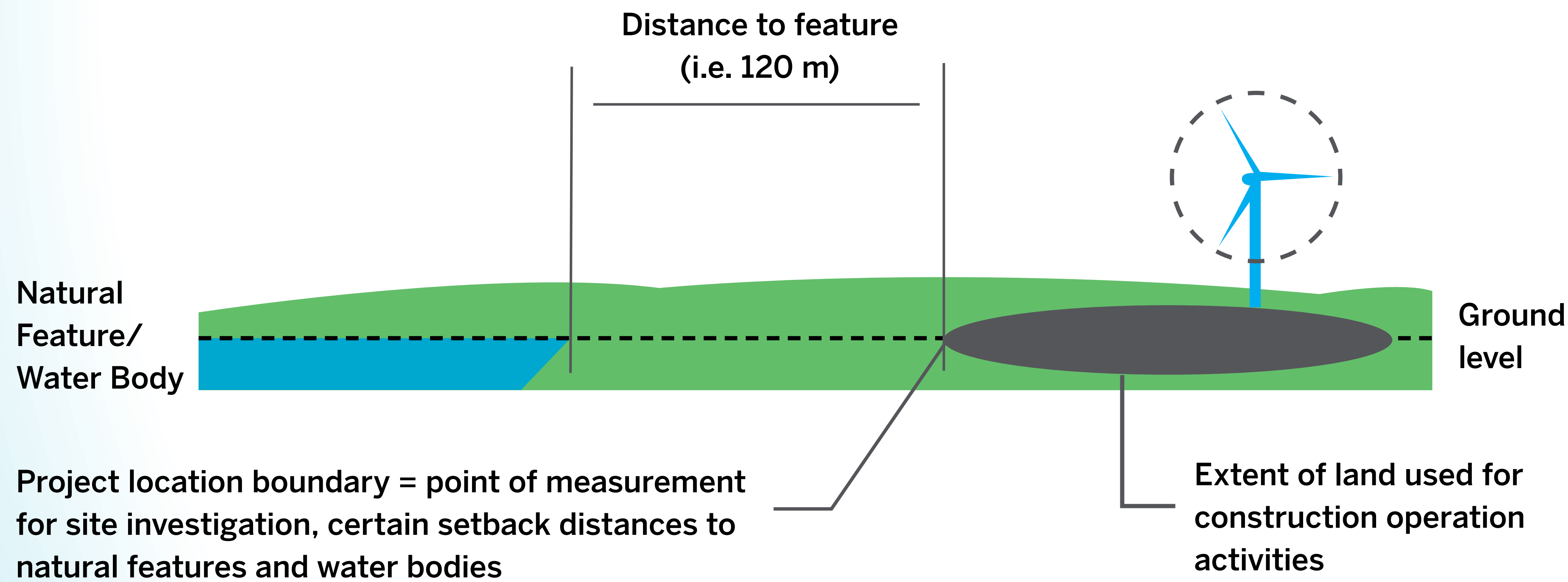


Figure 1. Project location boundary where construction area is furthest

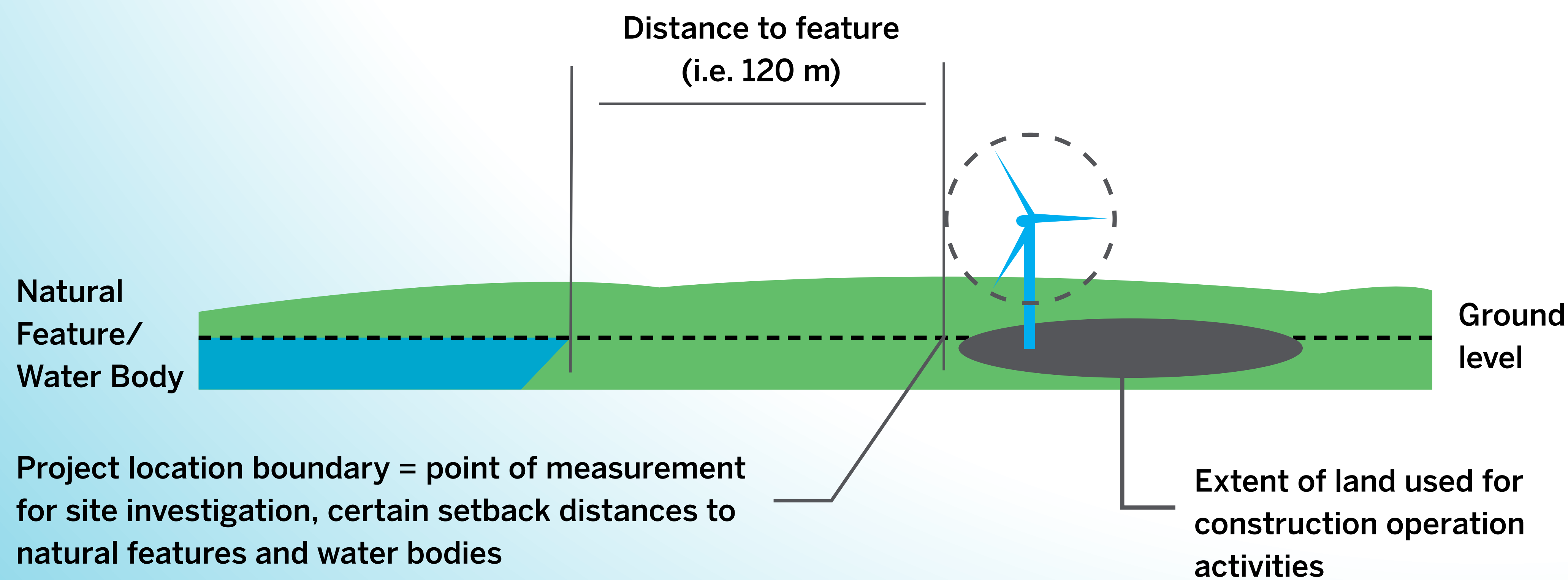
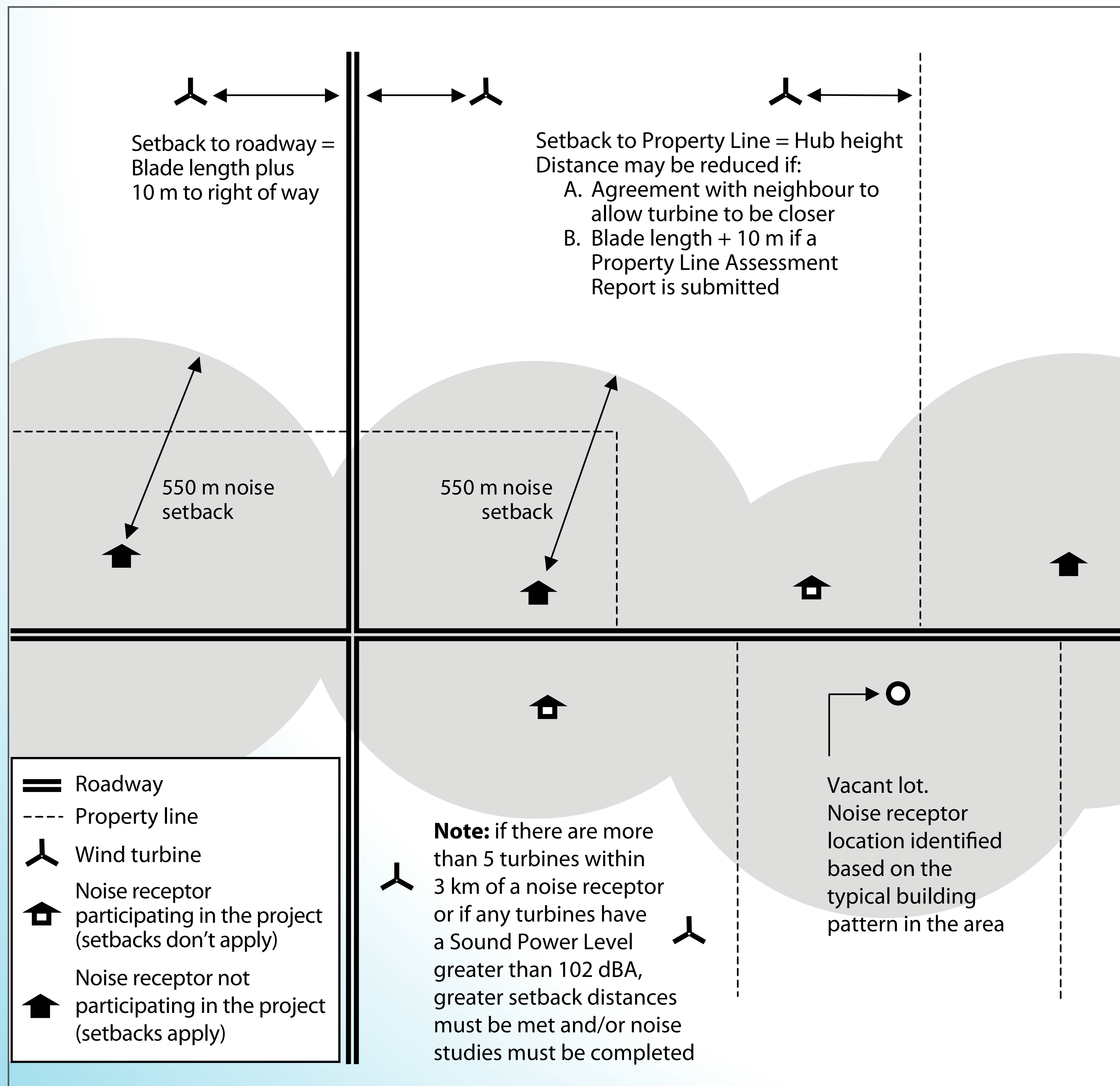


Figure 2. Project location boundary where turbine blade tip is furthest

Source: Technical Guide to Renewable Energy Approvals (MOE, 2011)

# How Setback Distances are Calculated



Adapted from the Ministry of the Environment's  
Technical Guide to Renewable Energy Approvals (2012).

# Key Setbacks

Key setbacks which are being applied throughout the design of the project are as follows:

Feature	Setback Distance	Study Required When Within Setback
Non-participating dwelling, school, etc.	Minimum 550 m (from centre of turbine base)	Not Applicable
Public road right-of-way and railway right-of-way	Turbine blade length + 10 m (from centre of turbine base)	Not Applicable
Property Line	Turbine height (excluding blades) (from centre of turbine base)	Property Line Setback Assessment (no less than 10m from blade tip without neighbour's consent)
Provincially significant wetland (PSW)	120 m (development prohibited within PSW)	Environmental Impact Study
Provincially significant Areas of Natural and Scientific Interest (Earth Science)	50 m	Environmental Impact Study
Provincially significant Areas of Natural and Scientific Interest (Life Science)	120 m	Environmental Impact Study
Significant valleyland	120 m	Environmental Impact Study
Significant woodland	120 m	Environmental Impact Study
Significant wildlife habitat	120 m	Environmental Impact Study
Non-provincially significant wetland within the Greenbelt	120 m	Environmental Impact Study
Sand barren, savannah, tallgrass prairie or alvar within the Greenbelt	120 m	Environmental Impact Study
Non-Provincially significant Areas of Natural and Scientific Interest (Life Science) within the Greenbelt	120 m	Environmental Impact Study
Lake or a permanent or intermittent stream	120 m (from the average annual high water mark) (turbines and substations prohibited within 30 m)	Water Body Report
Seepage area	120 m (turbines and substations prohibited within 30 m)	Water Body Report

# Preliminary Environmental Findings

The Natural Heritage Assessment and Water Assessment studies have been initiated, as follows:

## Data collection

Compilation and review of existing background information

## Mapping

Overlay of existing information with current aerial photography

## Consultation

Meetings with Ministry of Natural Resources,  
Niagara Escarpment Commission and Conservation Authorities

## Field investigations

Completion of:

- Fall and spring migratory bird surveys
- Winter raptor surveys
- Ecological Land Classification and vegetation surveys
- Amphibian call count surveys
- Breeding bird surveys
- Surveys for Species of Special Concern
- Species at Risk surveys





# Preliminary Environmental Findings

No Provincial Parks or Conservation Reserves occur within the study area.



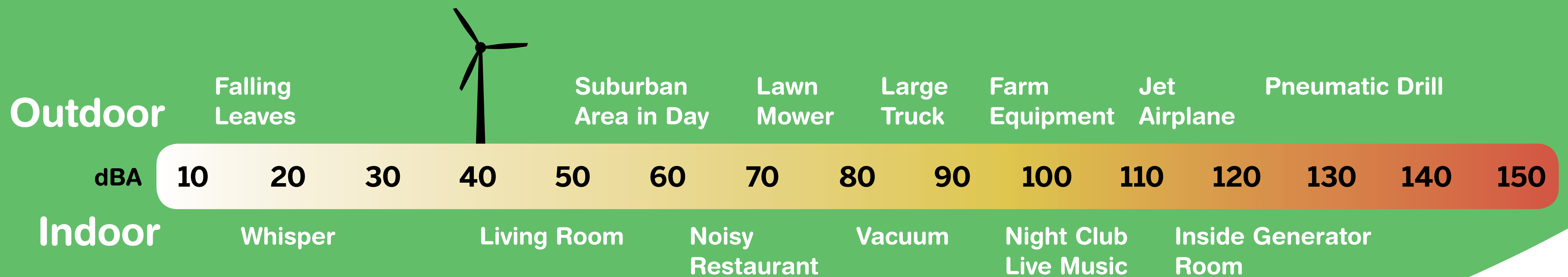
## Existing natural features known to occur within 120 m of the Project Location:

- 16 Provincially Significant wetland complexes and 3 locally significant wetland complexes
- 3 Life Science and 1 Earth Science ANSIs
- Numerous candidate significant wildlife habitat features including:
  - a. breeding and migratory bird habitat
  - b. amphibian habitat
  - c. habitat for winter raptors
  - d. Deer congregation areas
- Rare vegetation communities and rare plant species
- Numerous woodlands and unevaluated wetlands
- Special Concern and rare wildlife species
- Niagara Escarpment and associated natural features
- Welland River is the largest watercourse within the study area
- Other local tributaries of Lake Erie, Lake Ontario and Grand River also occur
- Primarily a diverse warmwater fish community with >40 species
- Most project components will be located outside of the significant natural features to avoid potential impacts
- Few sections of collector line will be installed beneath wetlands and woodlands, including Welland River and Welland Feeder Canal, to avoid vegetation removal

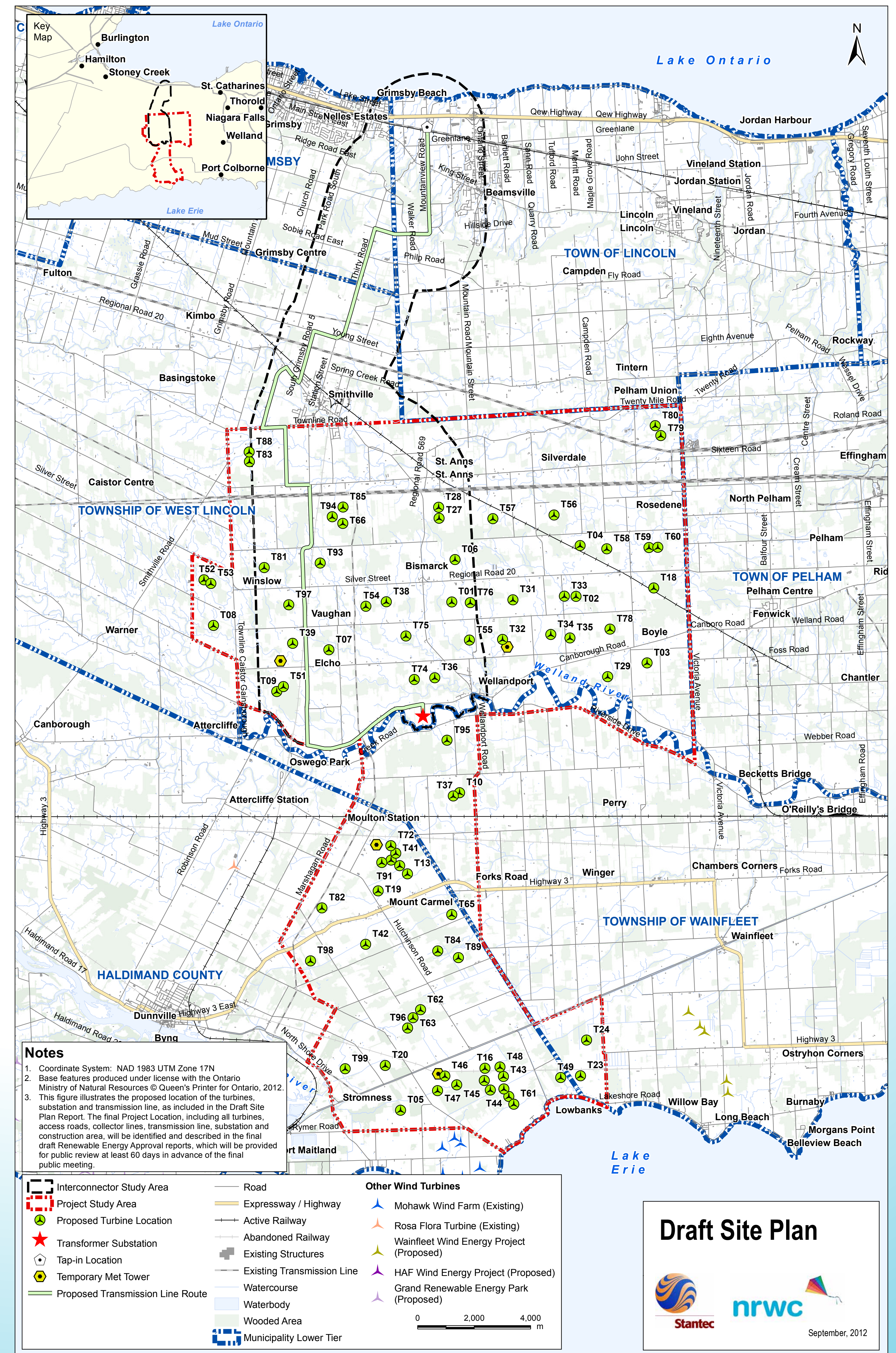
The Natural Heritage Assessment and Water Assessment studies will be provided in draft form for public review and comment a minimum of 60 days before Final Public Meeting.

# Environmental Noise Impact Assessment

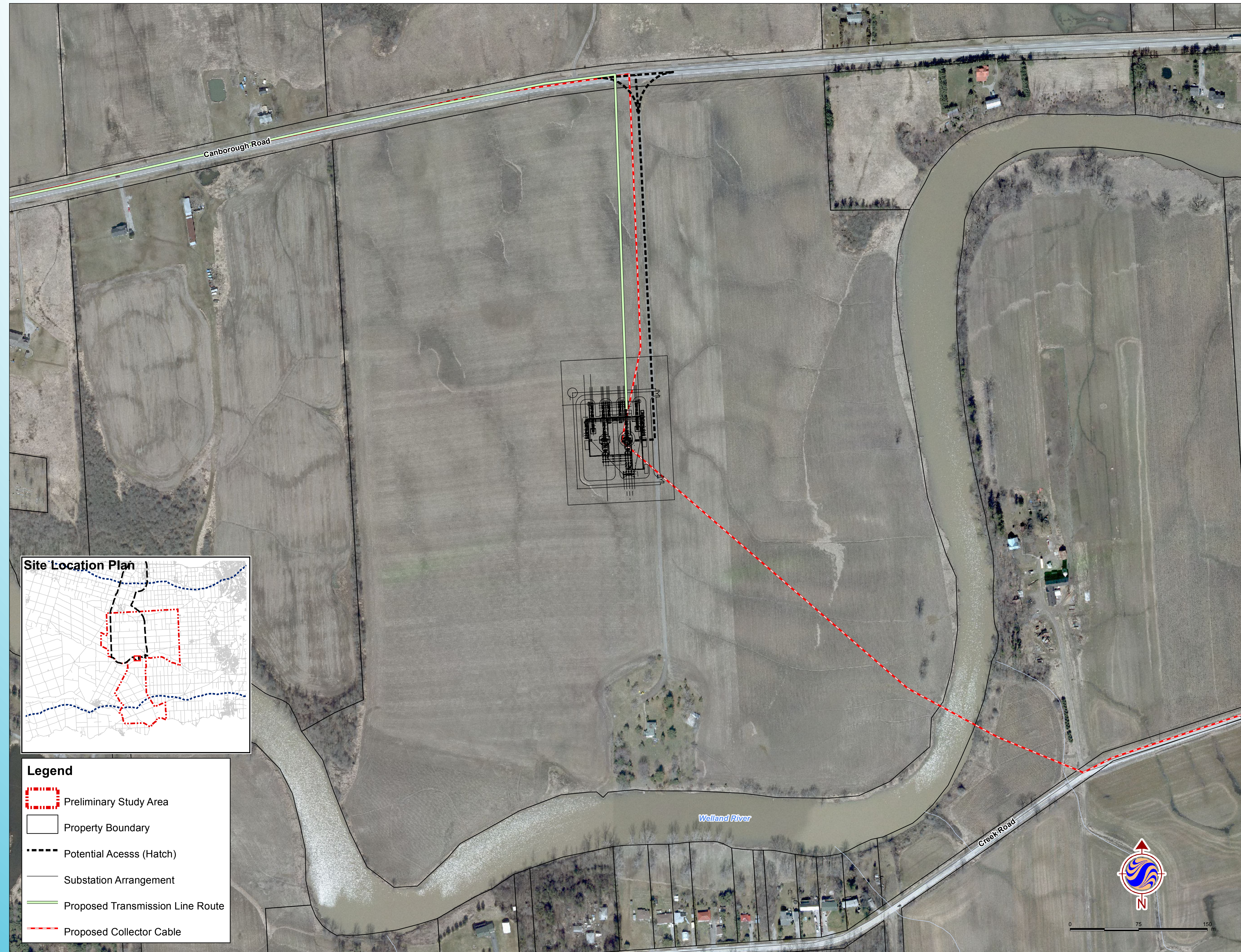
- An Environmental Assessment will be completed to ensure compliance with Ministry of the Environment (MOE) regulatory requirements.
- Currently, the MOE's requirements are to limit sound level outside all non-participating existing and vacant receptors to 40.0 dBA, from all turbines operating simultaneously at full capacity. This sound level is equal to the World Health Organization Europe (2008) night-time indoor noise guideline which is a health based value necessary to protect public from health effects.
- MOE further requires that no turbines are allowed within 550 metres of any noise sensitive non-participating receptors.
- Field verification was undertaken in fall 2011 to accurately establish all sensitive receptors covering 1.5 km beyond the Study Area.
- Turbines will be sited to meet the 550 metres setback and 40.0 dBA or less noise effect requirements.



# Overview of Draft Site Plan



# Transformer Station with Preliminary Design



# Sample Turbine Siting Layout

## Layout includes:

Temporary access, cabling and laydown areas for construction.

Layout incorporates setback requirements: noise; property boundaries; and, natural features.



# Timeline



**2011** Feed-In-Tariff contract awarded  
February, 2011

Field programs and technical work commenced summer, 2011

Initiate Renewable Energy Approval  
Process – July, 2011

Community Meeting  
July 26, 2011

Draft Project  
Description Report provided to Ministry of the Environment  
August 3, 2011

Draft Project  
Description Report and Municipal Consultation Form  
provided to Municipalities August 3, 2011

Public Meeting #1  
September 13, 14 and 15, 2011

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**2012** Notice of Draft Site Plan, Revised Study Area and Public Meeting  
Released August  
Draft Project Description Report and Site Plan Report released  
August 2012

**TODAY: Public Meeting #1 for the Revised Study Area:  
September 20, 2012**

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**2013** Final Public Meeting  
Winter 2013

REA Application  
Submitted to MOE  
Winter/Spring 2013

REA Issued by MOE  
Anticipated Summer/Fall, 2013

Start Construction  
Summer/Fall, 2013

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**2014** Repowering/  
Decommissioning  
(Approximately 25 years after COD)

# Renewable Energy Approval Process Required Reports

- 1 Project Description Report (Draft posted at [www.nrwc.ca](http://www.nrwc.ca) and available for review today)
- 2 Construction Plan Report
- 3 Design & Operations Report
  - Property Line Setback Assessment Report
  - Noise Study Report
- 4 Decommissioning Plan Report
- 5 Consultation Report
- 6 Natural Heritage Assessment and Environmental Impact Study
  - Environmental Effects Monitoring Plan (including Species at Risk Report)
- 7 Water Assessment Report (and Water Body Report, if required)
- 8 Protected Properties and Heritage Assessment
- 9 Archaeological Assessment
- 10 Wind Turbine Specifications Report

All reports, with the exception of the Consultation Report, will be made available in draft form for review and comment a minimum of 60 days before the Final Public Meeting.



# Other Approval and Permitting Requirements



Additional approval and permitting requirements may be required for the project from the following agencies:

- Ministry of Natural Resources (MNR)
- Niagara Escarpment Commission (NEC)
- Grand River and Niagara Peninsula Conservation Authorities (GRCA and NPCA)
- Haldimand County & Niagara Region (Township of Wainfleet, Township of West Lincoln, Town of Grimsby and Town of Lincoln)
- Ministry of Transportation (MTO)
- Transport Canada (TC)
- Ontario Energy Board (OEB)
- Fisheries and Oceans Canada (DFO)
- Nav Canada
- Hydro One Networks Inc. (HONI) and Others



# Health & Wind Power

Public health and safety will be considered during all stages of the Project.

**Audible/Inaudible Noise:** Ontario's Chief Medical Officer of Health (May 2010) conducted a review of the scientific literature related to wind turbines and public health. The review concluded that:

“while some people living near wind turbines report symptoms such as dizziness, headaches, and sleep disturbance, the scientific evidence available to date does not demonstrate a direct causal link between wind turbine noise and adverse health effects. The sound level from wind turbines at common residential setbacks is not sufficient to cause hearing impairment or other direct health effects, although some people may find it annoying.”

**Shadow flicker:** Scientific evidence suggests that shadow flicker from wind turbines does not pose a risk of photo-induced seizures; modern wind turbines simply do not rotate at a speed that has been linked to this condition (generally less than 20 rpm vs. over 60 rpm).

**EMF:** Health Canada (2010) has stated:

“You do not need to take action regarding daily exposures to electric and magnetic fields at extremely low frequencies. There is no conclusive evidence of any harm caused by exposures at levels found in Canadian homes and schools, including those located just outside the boundaries of power line corridors”.



# Health & Wind Power

Overall, health and medical agencies agree that when sited properly, wind turbines are not causally related to adverse effects\*.

“Ontario doctors, nurses, and other health professionals support energy conservation combined with wind and solar power – to help us move away from coal”\*\*.

Many studies have been conducted world-wide to examine the relationship between wind turbines and possible human health effects (e.g., audible/inaudible noise, shadow flicker, electromagnetic fields (EMF)).

Organizations that have come out in support of wind power include:

- Ontario Lung Association
- Ontario College of Family Physicians
- Registered Nurses Association of Ontario

Scientists and medical experts around the world continue to publish research in this area. In fact, Health Canada will be undertaking a study of wind turbine projects across the country, with results expected in 2014. It is important to note that Health Canada has not called for a moratorium on new wind projects across Canada while they undertake their research. Through our health consultants, NRWC is committed to keeping informed on this issue.

\*Chatham-Kent Public Health Unit, 2008; Australian Government, National Health and Medical Research Council, 2010; Australian Government, 2011; Massachusetts Department of Environmental Protection (MassDEP) and Massachusetts Department of Public Health (MDPH), 2012.

\*\*Ontario College of Family Physicians, Registered Nurses Association of Ontario, Canadian Association of Physicians for the Environment, Physicians for Global Survival, the Asthma Society of Canada, and the Lung Association.



# Addressing Community Priorities

NRWC has been listening to the dialogue about wind in the community. To that end, we are going beyond what is required by the MOE in the following ways:

- We have released information to the public as soon as it has become available.
- We are holding more public meetings than required by the REA process.
- We will be participating in local community events to meet our neighbours and to make ourselves accessible.
- We have contracted independent environmental health consultants to assist with the Project.
- We have established a newsletter to keep our project community informed of our activities.

We want to hear from you!

If you would like to be added to the Project mailing list, please sign up at the front desk.

# Community Benefits

**NRWC plans to be an active and good neighbour.**



We will be establishing a Community Benefits Fund, where a portion of the Project's revenue will be reinvested in the local community, with the input of local municipalities.

The Project would also be a positive benefit to the community:

- Approximately \$5 million in new local property tax revenue over 20 years, and approximately \$80 million in revenue to local landowners, would be generated
- Secondary source of income for local farmers and landowners
- New supply of safe and clean energy
- Helps to meet Ontario's commitment to renewable energy and phasing out of coal-fired power plants
- Helps to meet forecasted energy demand while reducing greenhouse gas levels
- The Project Team has committed to giving back to each municipality by establishing local community vibrancy funds
- In communities with turbines, NRWC is contributing \$3,500 per turbine per year for 20 years
- In communities with transmission lines, NRWC is contributing \$5,000 per kilometer per year
- The way in which these funds will be spent will be determined locally

# Economic Benefits

The Niagara Region Wind Project will provide significant economic benefits for the local community.

A study conducted by AECOM Canada Inc. to explore employment and income impacts shows that the Project has the ability to significantly positively impact unemployment rates in the region and across Ontario.

The Niagara Region Wind Project will create approximately 770 jobs annually during the four-year development and construction period and 120 long-term jobs during the subsequent 20-year operational period.

The project will generate \$230 million in direct Ontario-based capital expenditures.

NRWC will be contributing over \$20 million to local project communities through community vibrancy funds

In September 2011, ENERCON announced it will be building two manufacturing facilities in the area:

1. A tower manufacturing facility; and,
2. A converter and control panel manufacturing facility.

On June 8, 2012, ENERCON Canada announced the establishment of a converter and control panel manufacturing facility on Bartlett Road in the Town of Lincoln.

1. The facility will create over 50 new high quality, skilled jobs, and hiring has already commenced.
2. The facility represents a \$5 million investment.
3. This represents over \$9.39 million in contributions back to our communities.
4. NRWC's contract with ENERCON Canada to supply and maintain 77 wind turbines has anchored this investment in the Town.



# Benefits of Renewable Energy

CanWEA believes that wind energy can satisfy 20% of Canada's electricity demand by 2025. The benefits of achieving this vision are many:

- \$79 billion in new investment
- 52,000 new high quality jobs
- \$165 million in annual revenues for municipalities
- Reducing Canada's annual greenhouse gas emissions by 17 megatonnes
- Wind energy offsets the emissions of other energy sources, thus reducing our contribution to global climate change

Using wind to produce enough power for over 200 homes (2,000,000 kWh of electricity) instead of burning coal will leave 900,000 kilograms of coal in the ground and reduce annual greenhouse gas emissions by 2,000 tonnes. This has the same positive impact as taking 417 cars off the road or planting 10,000 trees.



# We Want to Hear From You!

## Opportunities for feedback:

- Sign up at the front entrance to be added to the project notification list.
- Pick up and fill out a paper questionnaire today.
- Call us to share your thoughts toll-free at 1-855-720-2892.
- Email your thoughts to [info@nrwc.ca](mailto:info@nrwc.ca).
- Visit us at the final Public Meeting for the Renewable Energy Approval process in 2013.
- Visit us on the web at [www.nrwc.ca](http://www.nrwc.ca) for copies of our information boards and for additional project details.

Copies of the display boards from this Public Meeting will be available on the web ([www.nrwc.ca](http://www.nrwc.ca)) September 20, 2012.

