

ENVIRONMENTAL ASSESSMENT REGISTRATION

Top Pond Wind Farm

Prepared For:

**Government of Newfoundland and Labrador
Department of Environment and Conservation
Environmental Assessment Division
St. John's, NL**

Prepared by:

Top Pond Wind Farm Limited Partnership

May 2006

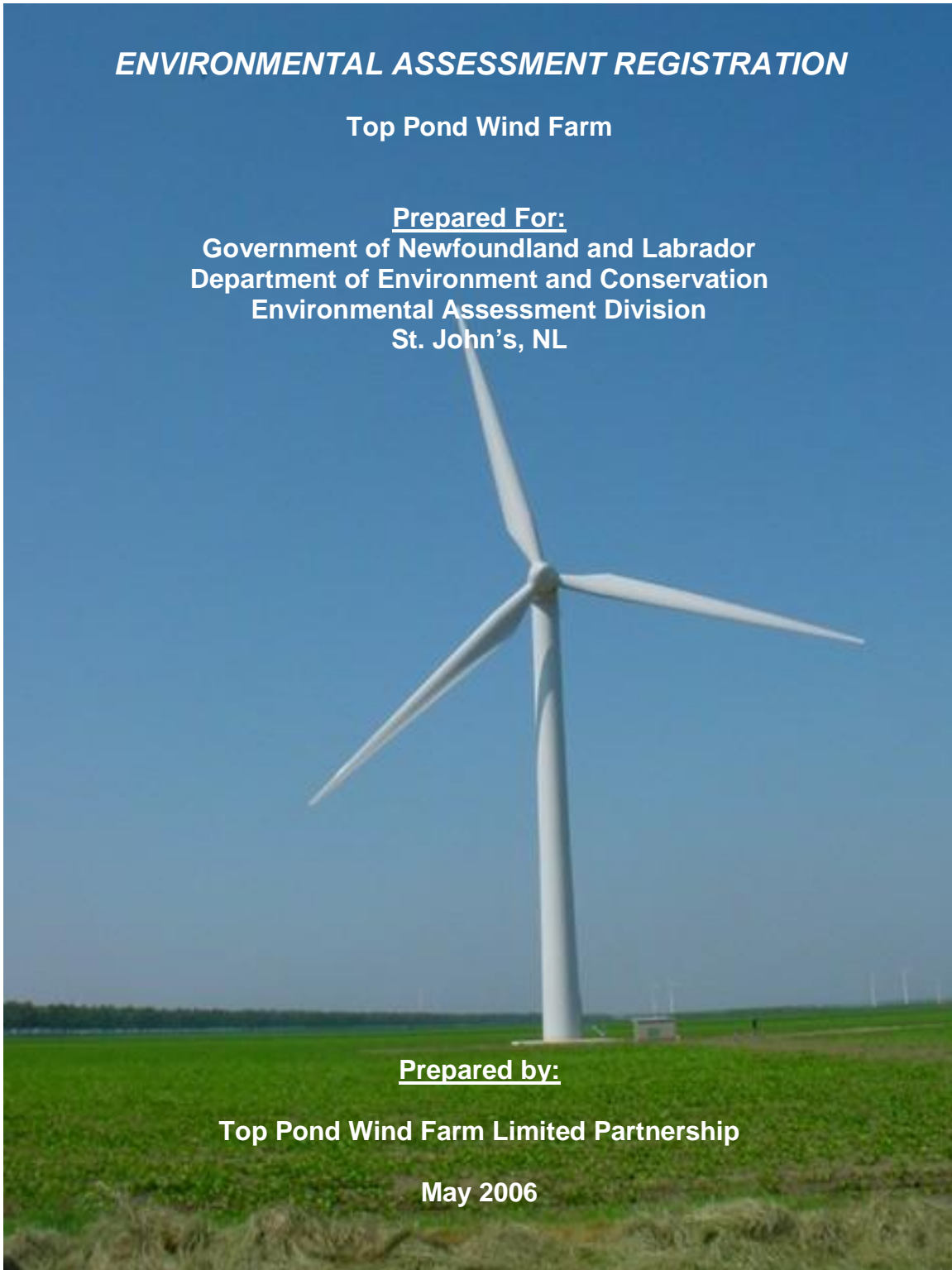


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1.0 NAME OF THE UNDERTAKING

Top Pond Wind Farm.

2.0 PROPONENT

2.1 Name of Corporate Body

Top Pond Wind Farm Limited Partnership

2.2 Address

Top Pond Wind Farm Limited Partnership
200 Consumers Road, Suite 604
Toronto, ON
M2J 4R4

2.3 Contact

Name: Mr. Ansar Gafur
Official Title: Vice-President, External Relations (AIM PowerGen Corporation)
Address: As Above
Telephone: 416 502 0993 ext. 223
Fax: 416 502 1415

2.4 Principal Contact for Purposed of Environmental Registration

As above.

3.0 THE UNDERTAKING

3.1 Nature of the Undertaking

Top Pond Wind Farm Limited Partnership (TPWFLP) proposes to construct and operate a wind generation farm at a site near Top Pond, in southwestern Newfoundland (See Appendix A).

The proposed wind farm will consist of a total of thirteen (13) Enercon E-70 Turbines. Each turbine will be capable of producing 2.0 MW for a total output of 26.0 MW. The site is located near Top Pond approximately 25 kilometers north of the community of Burgeo, NL and will be accessible from provincial highway no. 480 via a gravel access road, about 1 km off the highway.

Each turbine will have a hub height between 58 and 80 meters in height with a blade diameter of 71 meters. Turbines will be connected with protected

(underground if possible) 26.4 kV lines. The wind generation facility will be connected to the power grid via the existing 138 kV transmission line TL 250, near Grandy's Brook Terminal Station with the intention being to sell power to Newfoundland and Labrador Hydro under contract.

3.2 Purpose/Rational/Need for the Undertaking

Since August 2005, TPWFLP has been receiving data from a test tower erected as a site known as Top Pond, about twenty five kilometers north of the community of Burgeo. The site was selected in late 2004 as a potential wind farm and an application was submitted for Crown Lands for that purpose. The lease was approved in June 2005. In January 2006, TPWFLP responded to Newfoundland and Labrador Hydro's (NLH) request for expressions of interest for the development of wind energy. Final documentation for the expression of interest is due in August, 2006.

With increasing global awareness and concern regarding the burning of fossil fuels as well as the ecological disturbances associated with hydro electric power, governments and utility companies are looking closer at alternative energy production. With Newfoundland and Labrador being one of the windiest places in North America, it is not surprising that this interest is at a peak in this province.

As noted above, Newfoundland and Labrador Hydro have issued a Request for Proposals for a Wind Generation Project. Some notable criteria for this RFP include:

- Single Wind Farm with single interconnection point with NLH's existing grid.
- An installed capacity of 25 MW.
- Wind Farm must be complete and operational no later than December 31, 2008.
- Project must be registered with the Newfoundland Department of Environment and Conservation under the Newfoundland and Labrador Environmental Assessment Act.

The goal of the project will be to establish a viable wind generation farm that demonstrates the potential for wind generation as an alternative to and to augment existing facilities.

4.0 DESCRIPTION OF THE UNDERTAKING

4.1 Geographical Location

The subject site is located in an undeveloped area in southwestern Newfoundland (see Appendix A for site location). The location was chosen after a review of numerous sites with respect to the meeting of several criteria, including:

- Sustained wind potential;
- Minimal environmental disturbance for construction (i.e. minimal access distance from existing roads, minimal watercourse and stream crossings, etc.); and,
- Nearby power grid with capacity for interconnection.

4.2 Physical Features

4.2.1 Major Physical Features of the Undertaking

The major physical features of the proposed project will obviously be the new wind generation towers and associated infrastructure. Specifically, the following structures and improvements summarize the proposed development:

- 12-13 New Enercon T-70 Wind Generation Turbines;
- Associated power cables (buried if possible), transformers, etc.;
- Electrical sub-station;
- Access road; and,
- Power transmission lines to nearby NLH grid.



Appendix C contains technical data on the Enercon T-70 wind turbines. These structures will generally consist of a wind tower, 3 bladed rotor and generator and controls housed in a nacelle. The foundations will likely be directly anchored to bedrock or will consist of reinforced concrete as required. Each tower will also have a small transformer located near its base. The photo, courtesy of Enercon E-70 website, illustrates how a typical E-70 tower would appear.

In addition to the tower, and associated wiring and transformers, a small electrical substation will be constructed that will convert the generated electrical power to a higher voltage appropriate for provision to the existing grid system. The final electrical component will be the overhead connection to the existing grid system. The site is located approximately 3-4 kilometers away from the existing NLH Grid System.

The site is close to an existing highway minimizing access road requirements. The access road will be gravel and will be between 1.0 and 1.5 kms in length. The area is not located near any major watercourses (See Appendix A).

4.2.2 Areas to be Effected by the Undertaking

The total area to be affected is limited to the wind farm site and associated connection with the existing power grid.

The major disturbance anticipated would be that of the gravel access roads to the towers. These roads will likely be constructed with minimal excavation required as exposed bedrock is prominent in the area. Road widths are anticipated to be between 6.0 and 8.0 meters. Some minor stream crossings will be required and the applicable guidelines will be followed, and applications for approval submitted.

(a) Climate

The climate in the vicinity of the proposed wind farm is characterized by cool temperatures ranging from a summer mean of approximately 13° to a winter mean of approximately -5°. The area receives moderate amounts of precipitation as compared to the rest of the island with an average of approximately 1,700 mm of annual precipitation. With the average annual wind speed of approximately 21 km/h and average winter wind speeds near 30 km/h, the regional weather can be harsh. (source: Environment Canada).

Ice and snow buildup will be the primary concern with respect to climactic impact on the proposed wind farm.

(b) Vegetation

The proposed site is located in an undeveloped area. The local environment is composed mainly of barren lands with some small ponds and streams. Vegetation consists primarily of shrubbery with some smaller tree species and is locally known as tuckamoor.

The overall land area description for the site can be summarized as follows:

<u>Land Cover Type</u>	<u>% of Total Area</u>
Exposed bedrock	20 %
Barren	25 %
Bog	15%
Tuckamoor forest	25 %
Ponds/streams	15 %

Source: Available aerial photos, topographical maps and site visits.

(c) Fish and Fish Habitat

No significant aquatic vegetation or fish habitat is known to exist within the bounds of the proposed project. It is the intent of the Proponent to obtain approval from the Federal Department of Fisheries and Oceans Canada (DFO) Area Habitat Biologist as well as the Newfoundland and Labrador Department of Environment and Conservation (DOEC), Inland Fish and Wildlife Department prior to the commencement of any construction activities.

All work on the project will adhere to DFO and DOEC regulations and guidelines to ensure as little impact as possible on the aquatic populations.

(d) Wildlife and Birds

The area is known to be conducive for several types of terrestrial wildlife, primarily mammals and birds.

Mammalian species that would be anticipated to frequent the area include moose, caribou, lynx, bear, fox, rodents such as mice, rats, and shrews, beavers, bats, etc.

As the proposed wind farm is relatively small with respect to the size of surrounding habitat, little disturbance, if any, is anticipated to local mammalian ecology.

As with any wind power project, a prime concern would be the potential impact on avian (bird) species in the area. Examples of the types of bird species anticipated in the local area include waterfowl such as ducks and geese, ptarmigan and grouse, raptors such as eagles and hawks, ravens, crows, robins, and potentially shorebirds such as gulls, sandpipers, and sanderlings, etc.

TPWFLP will liaise with applicable federal and provincial agencies to ensure that all aspects of the development are within acceptable standards with respect to the protection of avian habitat.

4.2.3 Conceptual Layout

Appendix B contains a conceptual layout of the proposed wind farm. It should be noted that specific infrastructure locations may vary slightly from that shown once preliminary engineering activities have been completed.

4.3 Construction

4.3.1 Construction Period

Preliminary engineering and design work is ongoing for the proposed wind farm. If approved to proceed, construction of the proposed new wind farm is scheduled to commence in the Spring of 2008 and be completed in the Fall of 2008.

4.3.1.1 Potential Sources of Pollutants

Potential sources of pollutants during the construction phases of the project are:

- Silt and sediment from earthworks activities;
- Construction debris;
- Sewage from construction workers;
- Risk of fuel, lubricant and hydraulic fluid release
- Airborne emissions from construction equipment
- Noise pollution

4.3.1.2 Mitigation Measures

(a) Silt and Sediment

All applicable guidelines and regulations for environmental protection during construction activities will be strictly followed. Siltation controls such as silt fences, cutoff ditches, etc. will be implemented, and maintained during the construction process.

(b) Construction Debris, Solid Waste and Garbage

Solid waste and garbage from construction activities will be minimized. Materials will be collected on a regular basis and disposed of at an approved disposal site. Construction debris will not be permitted to be disposed of on site. It may be contained on site for short periods of time in approved containers prior to disposal at an approved disposal site.

(c) Sewage

The sewage generated during construction activities will be collected using portable toilets which will be serviced by a licensed operator on a regular basis. This practice will prevent the release of untreated sewage to the local environment.

(d) Risk of Fuel, Lubricant and Hydraulic Fluid Release

To minimize the risks of a fuel, lubricant or hydrocarbon release, construction equipment will not be permitted to be re-fueled within 30 m of any water body and equipment will be well maintained with any worn hydraulic lines replaced immediately. Spill containment and cleanup materials will be stored on site during construction operations.

(e) Airborne Emissions

Construction equipment will have their exhaust systems maintained to provide emissions released to the standards, the equipment was designed to, by the manufacturers, in accordance with Canadian Emission Standard guidelines.

(f) Noise Pollution

Disturbance or displacement of aquatic and terrestrial wildlife by construction activities will generally be limited to incidental encounters.

Exhaust systems will be maintained to ensure noise levels are within the design specifications for that machinery.

4.3.2 Resource Conflicts

To maintain the integrity of the site, only areas that are required for placement of infrastructure will be disturbed.

(a) Fish and Fish Habitat

No significant aquatic vegetation or fish habitat is known to exist within the bounds of the proposed project. It is the intent of the Proponent to obtain approval from the Federal Department of Fisheries and Oceans Canada (DFO) Area Habitat Biologist as well as the Newfoundland and Labrador Department of Environment and Conservation (DOEC), Inland Fish and Wildlife Department prior to the commencement of any construction activities.

All work on the project will adhere to DFO and DOEC regulations and guidelines to ensure as little impact as possible on the aquatic populations

(b) Mammals and Birds

As the project area is relatively small, little or no effect is anticipated on the distribution or movements of big game animals or furbearers.

The construction of the project should not adversely affect waterfowl or raptor populations. No construction will take place in localized nesting areas.

(c) Human Activities

As the project is located in a relatively remote area, human recreational activities are not considered an issue.

4.4 Operation

4.4.1 Description of Operation

Once complete, the facility will be operated by TPWFLP as per the NLH Expression of Interest document and the resulting generated electrical power will be integrated into the existing NLH grid system.

4.4.2 Period of Operating

The period of operation would start in the Fall of 2008 with an anticipated operational life of 25 years.

4.4.2.1 Potential Sources of Pollutants

Potential sources of pollutants during the operation phase of the project are:

- Potential for the release of hydrocarbons from maintenance activities.
- Noise Pollution

It is noted that the wind farm will not be manned full time but will be monitored remotely 24 hours a day. Maintenance requirements will see periodic visits to the site. Specifically, two workers will be required to spend three weeks at the site twice per year for regular maintenance. Therefore, no permanent facilities such as water supply and sewer disposal will be required.

4.4.2.2 Mitigation Measures

(a) Potential for the Release of Hydrocarbons

The proposed new wind farm will require ongoing maintenance. Typical oils and lubricants will be required for such maintenance. Such items will not be stored on site and will be transported to the site with maintenance workers. Maintenance workers will be trained in spill containment procedures and will have spill containment materials appropriate for the volumes used on site.

(b) Noise Pollution

The area is undeveloped, so the effect of wind farm noise is not anticipated to impact human activities in the area. Noise levels from these facilities are not considered high and are normally only present during windy periods when the turbines are in operation. Typically, ambient wind noise during these events are higher than the noise generated by the turbines.

4.4.2.3 Resource Conflicts

(a) Vegetation

Minimal disruption of vegetation will occur during construction (limited to areas where new infrastructure is required) and none will be expected to occur during the operation of the facility.

(b) Fish and Fish Habitat

The only disturbance (albeit minimal) to fish habitat would be during construction (see above). Once all roadways, culverts, etc. have been installed, no further impact is anticipated.

(c) Mammals and Birds

Little or no effect is anticipated on the distribution or movements of big game animals or furbearers as a result of the operation of the facility. The proposed wind farm area is very small compared to the overall area of habitat

The operation of the development should not adversely affect waterfowl or raptor populations. The proposed new facility will not be located in any localized nesting areas.

As the project is located in an existing undeveloped area, human activities are not considered an issue.

4.5 Occupations

4.5.1 Construction

During the construction of the proposed wind farm, it is expected that 33 people will be employed as a direct result of the project. The number of positions anticipated during the construction phase of the Project, using the National Occupational Classification System are as follows.

National Occupational Classifications Applicable Classifications for Top Pond Wind Farm Limited Partnership – Top Pond Wind Farm. based on NOC 2001		
NOC Occupational Title Code	Title	# of Positions Anticipated
0711	Construction Manager	1
1241	Secretaries	1
2131	Professional Engineers	5
2154	Land Surveyors	1
2231	Civil Engineering Technologists and Technicians	2
2253	Drafting Technologists and Technicians	2
7215	Contractors and Supervisors, Carpentry Trades	2
7217	Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Services	2
7241	Electricians	2
7282	Cement Finishers	2
7312	Heavy – Duty Equipment Mechanic	1
7411	Truck Drivers	2
7421	Heavy Equipment Operators	2
7611	Construction Trades Helpers and Laborers	4
7612	Other Trades Helpers	4
	Total	33

4.5.2 Operation

For the operation of the wind farm it is expected that 7 people will be employed as a direct result of the project. The new wind farm will be operated by the TPWFLP Staff. The number of positions anticipated for the operation of the project using the National Occupational Classification system are as follows:

National Occupational Classifications		
Applicable Classifications for Top Pond Wind Farm Limited Partnership– Top Pond Wind Farm. based on NOC 2001		
NOC Occupational Title code	Title	# of Positions Anticipated
2225	General Managers	1
2131	Project Engineer	1
7312	Maintenance Supervisors	2
0312	Secretary	1
7241	Electricians	2
	Total	7

4.6 Project Related Documents

There are no project related documents at this time.

5.0 APPROVALS REQUIRED FOR THE UNDERTAKING

The following permits, approvals and authorizations may be required:

APPROVAL REQUIRED	APPROVAL AUTHORITY
Approval for the Undertaking (Newfoundland Environmental Assessment Registration Document)	Newfoundland Department of Environment and Conservation – Environmental Assessment Division
Habitat Letter of Advice	Federal Department of Fisheries and Oceans
Application for Environmental Approval to Alter a Body of Water	Newfoundland Department of Environment and Conservation – Water Resources Division
Application for Culverts Installation	Newfoundland Department of Environment and Conservation – Water Resources Division
Habitat Letter of Advice	Newfoundland Department of Environment and Conservation – Inland Fish and Wildlife Division

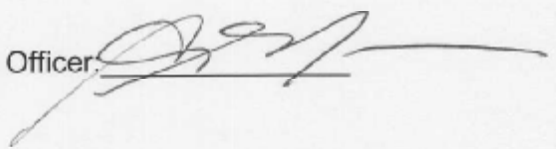
6.0 SCHEDULE

Construction of the proposed new wind farm is scheduled to commence during the Spring of 2008. Construction is expected to take approximately four months and will likely be complete during the Fall of 2008. Operation of the facility is expected to commence immediately following the final completion of construction. The facility life is estimated at 25 years.

7.0 FUNDING

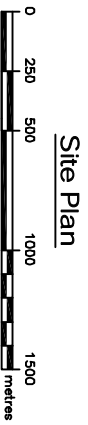
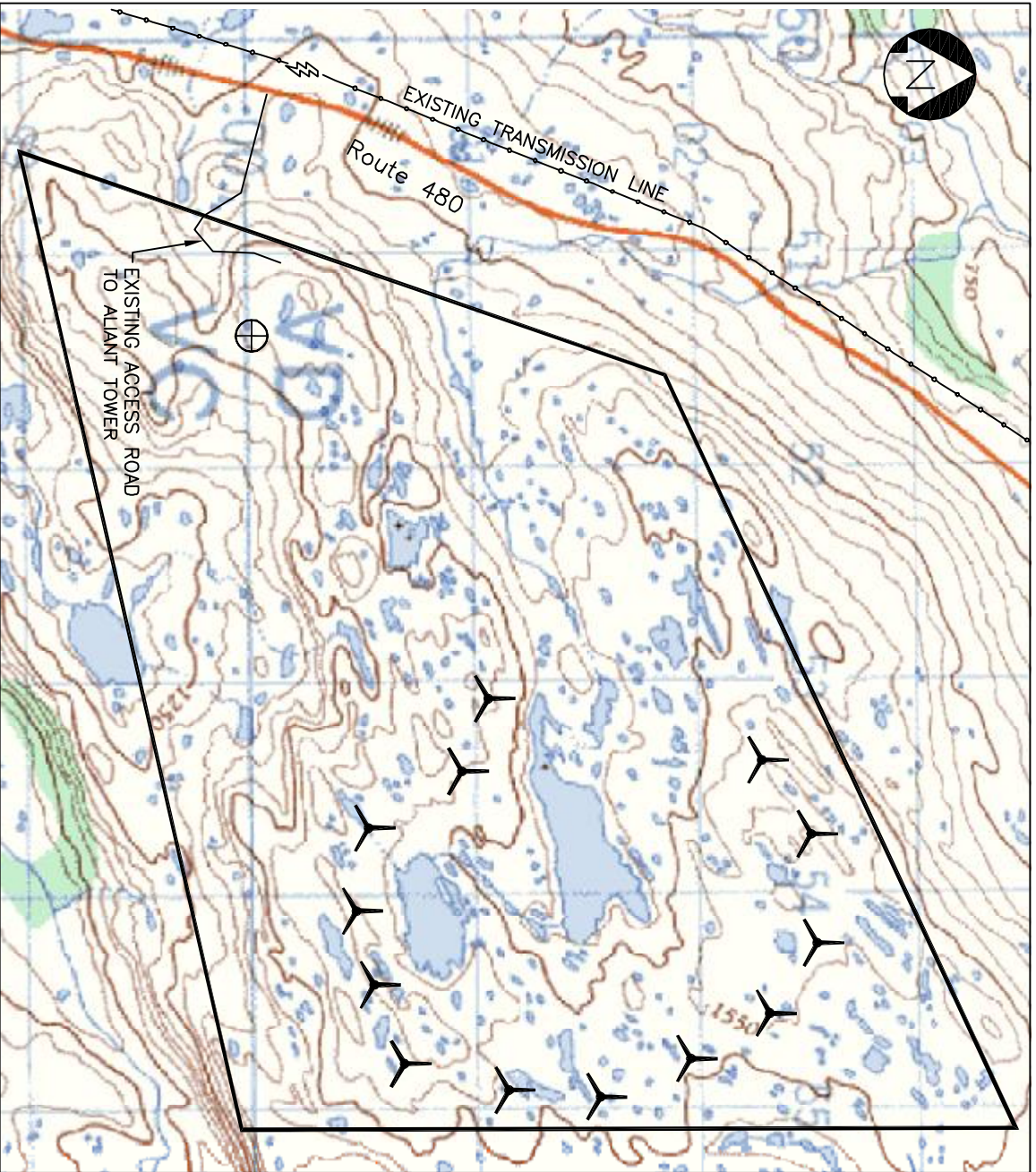
Funding for this project will be acquired from private sources and is therefore not dependent on grants or loan of capital funds from a Federal or Provincial Government Agency.

Date: May 03, 2006

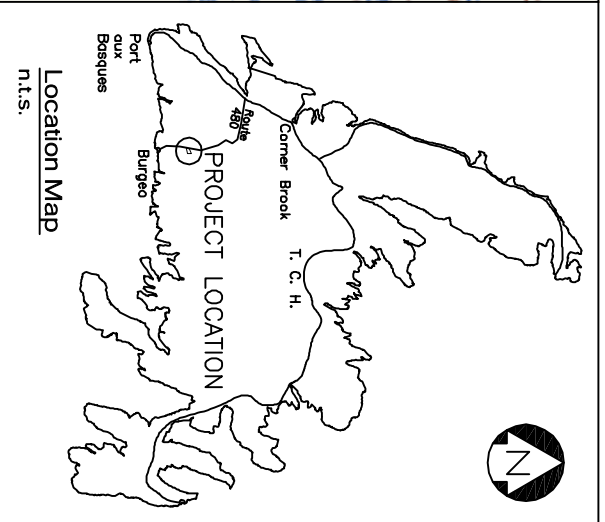
Signature of Signing Officer: 






Appendix A – Preliminary Site Plan





Site Plan



- Legend**
-  PROPOSED E-70 TURBINE LOCATION
 -  EXISTING WIND MONITORING TOWER
 -  INTERCONNECTION POINT
 -  EXISTING TRANSMISSION LINE
 -  EXISTING ROAD
- CONTOURS SHOWN IN FEET ABOVE MEAN SEA LEVEL (15.24 m INTERVAL)

AIM Power Gen Corp.
 PROPOSED TOP POND WIND FARM
 SITE PLAN & LOCATION MAP

Appendix B – Preliminary Layout Document



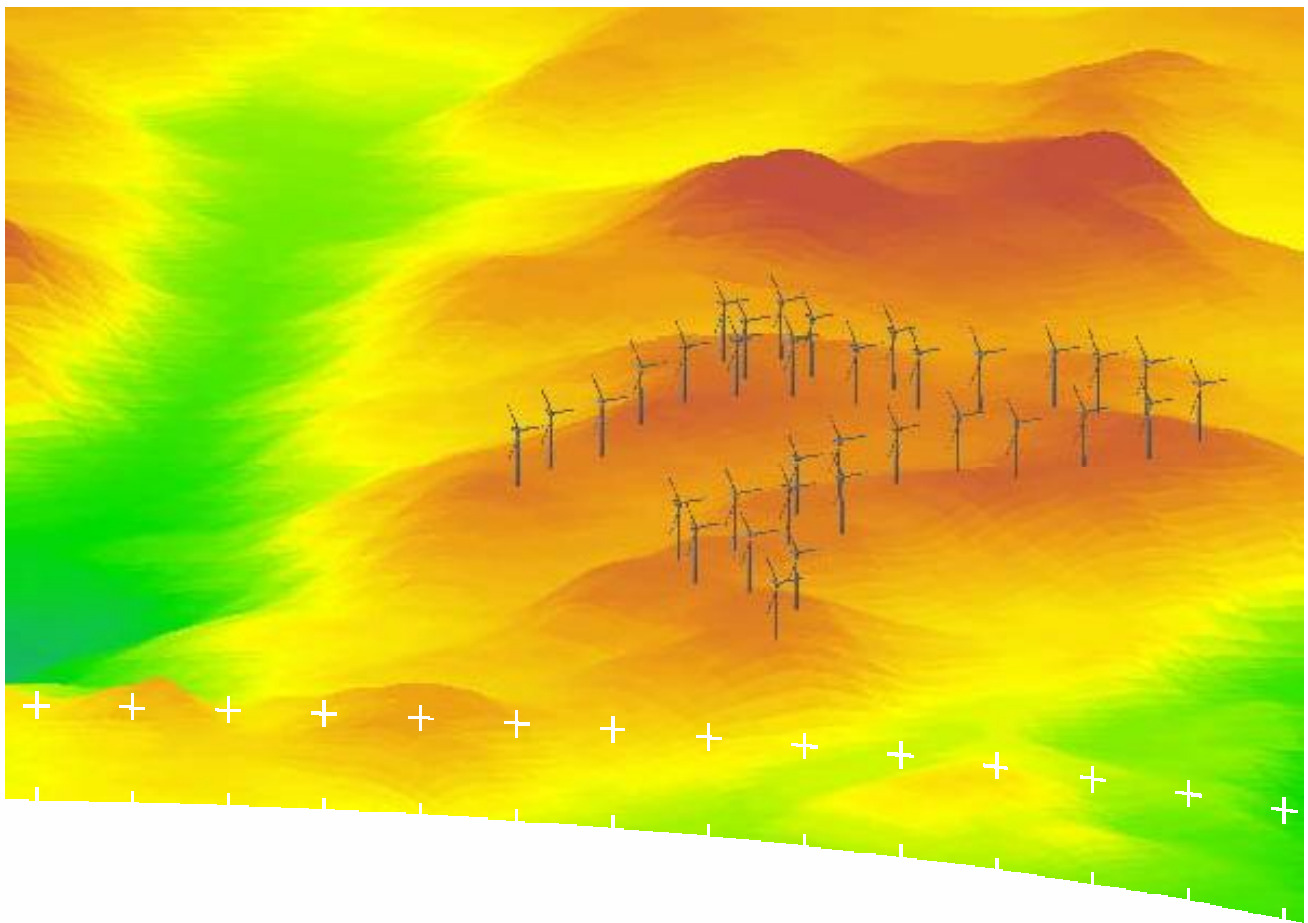
PRELIMINARY WIND TURBINE LAYOUT

Top Pond E-70, Newfoundland

Prepared for
Aim PowerGen Corporation

by
Helimax Energy Inc.

January 2006



Wind energy consultant for the world

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1 SCOPE OF WORK

The Client is interested in preparing a preliminary wind turbine layout for Top Pond, Newfoundland. The wind farm is to have a nameplate capacity of 26 MW using the Enercon 2 MW turbine with a 58-m hub height.

2 ASSUMPTIONS AND CAUTIONS

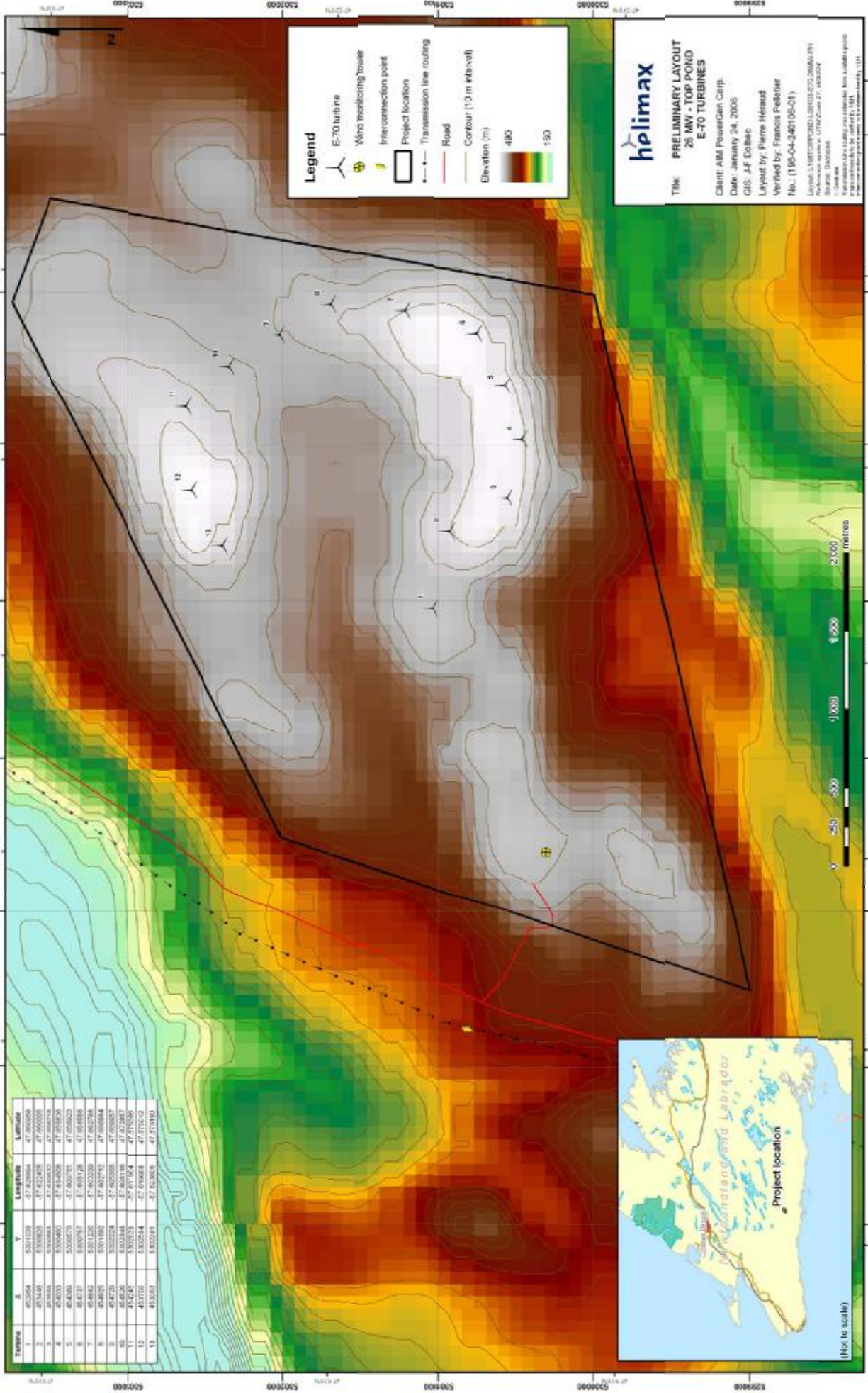
The following items should be taken into consideration when interpreting the preliminary turbine layout:

- The layout has been optimized for a wind farm within the project site boundaries indicated by the Client;
- No wind speed data were used in the configuration;
- Directional wind data were obtained from a mesoscale map of the region;
- Road construction costs or electrical network construction and feasibility were not taken into account;
- Shadow flicker, ice throw from blades, visual impact and noise levels were not considered;
- Typical constraints and their appropriate buffer zones were not considered for the analysis;
- Once a site visit is made to validate turbine positioning, it is possible that some turbines will be eliminated or moved due to local restrictions (slope, rocks, soil type, etc.).

3 RESULTS

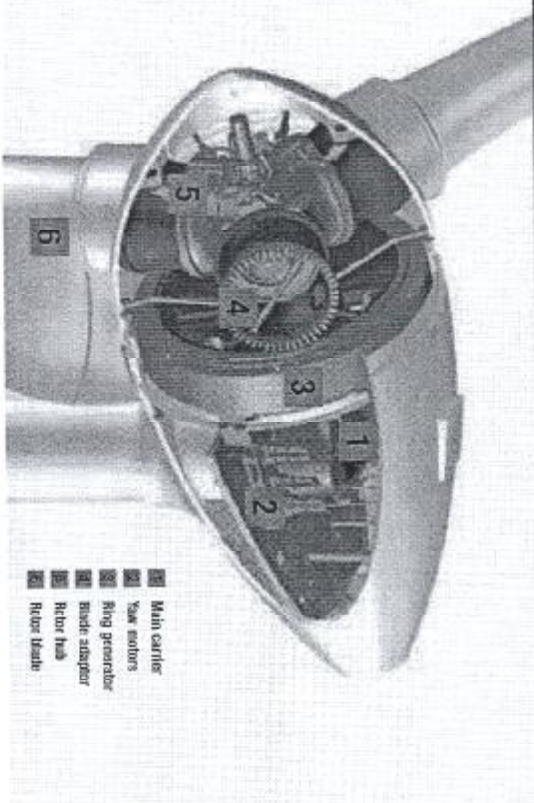
The attached map details the preliminary layout. In all, 13 2-MW turbines can be placed within the project site area yielding an installed capacity of 26 MW.

It should be noted that the Enercon E-70 turbine was chosen for this site. However, this turbine choice may change pending one year of wind data, at which time more information will be known on turbulence intensity and extreme wind speeds.



Appendix C – Enercon E-70 Turbines – Technical Data





SYSTEM MANUFACTURING

ENERCON E-70 wind turbines are individually manufactured taking the location, the conditions of service and the applicable regulations and guidelines into consideration.

OPTIONS AND ACCESSORIES:

- Tower versions

Hub height	Tubular steel tower	Prefab concrete tower
64 m	X	
85 m	X	
98 m	X	X
113 m		X

- Personnel lift (for towers up to 98 m)
- Special tower paint
- Shallow foundations and deep foundations
- Grid characteristics (transmission / distribution / chopper cabinets / UPS)
- Transformer substations
- Day and night identification / synchronisation
- Shadow shut-off
- Blade heater
- Heated anemometer
- External display

TECHNICAL DATA

Rated power: 2000 kW
 Rotor diameter: 71 m
 Hub height: 64–113 m (various towers and bases)

Turbine concept: Gearless, variable speed, variable pitch control

Rotor Type: Upwind rotor with active pitch control
 Direction of rotation: Clockwise

Number of blades: 3

swept area: 3959 m²

Blade material: Fibreglass (epoxy resin), integrated lightning protection

Rotational speed: Variable, 6–21.5 rpm

Tip speed: 22–80 m/s

Pitch control: ENERCON blade pitch system, one independent pitching system per rotor blade with allocated emergency supply

Drive train with generator

Hub: Rigid
 Main bearings: Dual-row tapered/single-row cylindrical roller bearings
 Generator: Direct-drive ENERCON amfiter generator

Grid feeding: ENERCON inverter

Braking systems: – 3 independent blade pitch systems with emergency supply
 – Rotor brake
 – Rotor lock

Yaw control: Active via adjustment gears, load-dependent damping

Cut-in wind speed: 2.5 m/s

Rated wind speed: 13.5 m/s

Cut-out wind speed: 26–34 m/s

Planned maintenance: ENERCON SCADA