DALHOUSIE MOUNTAIN WIND FARMS
REGISTRATION DOCUMENT

VOLUME I
ENVIRONMENTAL ASSESSMENT AND REGISTRATION DOCUMENT

Submitted To:

Nova Scotia Environment
5151 Terminal Road
Halifax, NS
B3J 2P8

Submitted By:

RMSenergy Ltd.
796 Dan Fraser Road
Westville, NS
B0K 2A0

July 30, 2008

DALHOUSIE MOUNTAIN WIND FARMS: PHASE 1

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Throughout the Environmental Assessment and the Detailed Project Descriptions, reference to the following appendices are made to provide a thorough analysis of the claims, assumptions and predictions made by the proponents and their study teams. Appendices A through H were provided with the Draft Submission and stand unchanged for this Final Submission.

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A2 NSPI Letter
A3 ecoEnergy NPA – Dalhousie Wind Farm
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C3 Species at Risk Study
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AS 6: Watercourse Alteration and Culvert Installation Permit
AS 7: Environmental Protection Plan
AS 8: Environmental Management Plan

SECTION 1.0 - INTRODUCTION

1.1 Proponent Information

The proponent is RMSenergy Ltd., a Nova Scotia owned and operated corporation. The head office is located within 10 kilometres (km) of the proposed Wind Farm. The proponent's primary contact is:

RMSenergy Ltd.
Reuben Burge, (President)
RR 3 Westville NS B0K 2A0
Tel: (902) 695 2130
Fax: (902) 695 6271
Cell: (902) 771 0322
Email: reubenburge@eastlink.ca

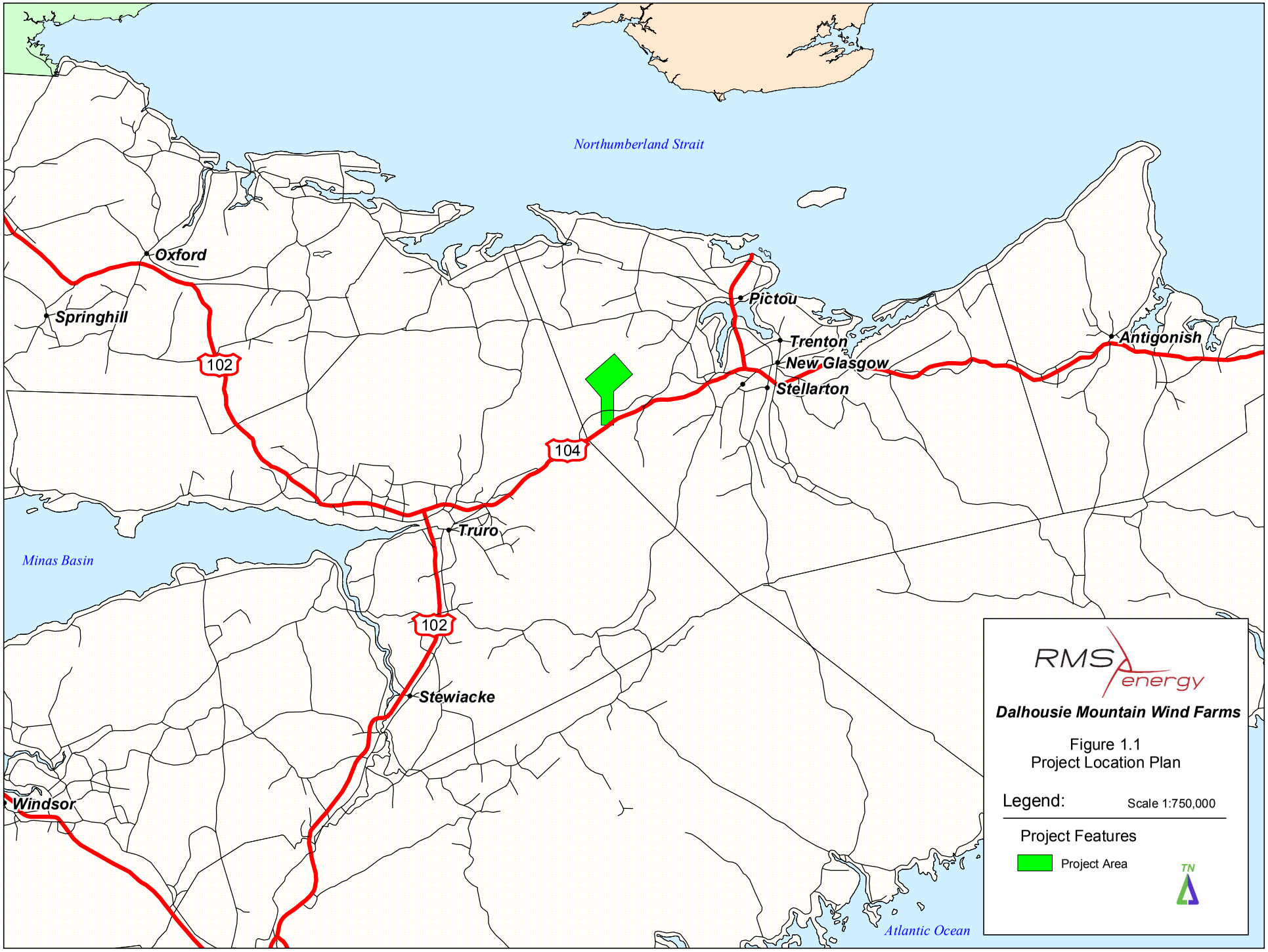
1.2 Project Overview

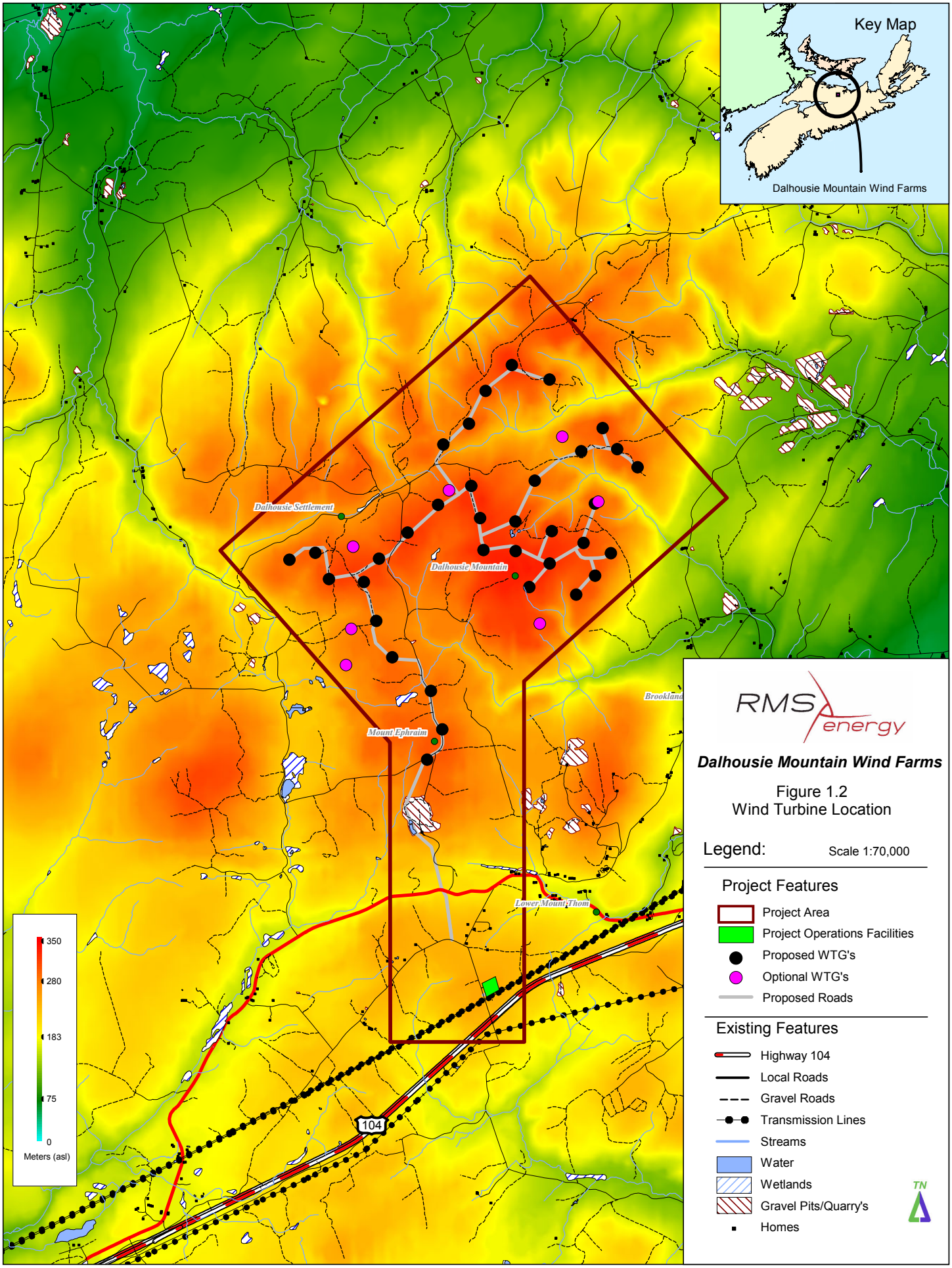
The name of the project is Dalhousie Mountain Wind Farms, located north of the Trans Canada Highway 104, Mount Thom, Pictou County, Nova Scotia. Figure 1.1 is an overview map showing the project location in reference to Nova Scotia and the other Maritime Provinces. Table 1.1 shows the UTM coordinates and elevations of the wind turbine locations.

RMSenergy Ltd. is responding to a Provincial and Federal strategy to provide approximately 20% renewable power to the Provincial grid by 2013. At this time, Nova Scotia Power Inc. (NSPI) has issued an open competitive Request for Proposals (RFP) for 130 MW for submission by December 2007. RMSenergy Ltd. was successful in its submission and has entered into a power purchase agreement with NSPI for 51MW of electrical power from the Dalhousie Mountain project.

The proposal is to install and locally maintain 34 Wind Turbines. There may be opportunities to install additional turbines at this location and other nearby locations in the future. For this reason, the present proposal is considered Phase 1 of the Dalhousie Mountain Wind Farm. The Phase I locations, in the vicinity of Dalhousie Mountain, are expected to generate 190 GWH of renewable power annually to Nova Scotia Power Inc. For purposes of this document, the project area is referred to as Dalhousie Mountain. Figure 1.2 shows the location of the selected turbine sites within the project area.

The Proponent, RMSenergy Ltd. has completed almost 4 years of wind monitoring, land acquisition and extensive expert studies since June, 2004. The site was chosen for several features that compliment wind farm suitability such as a very large setback from homes, the presence of existing logging roads in the project area, land which has been farmed or forested located 30 KM inland and an altitude above sea level of 300 metres.


Northumberland Strait
Oxford
Springhill
102
Pictou
Trenton
New Glasgow
Stellarton
Antigonish
104
Truro
Minas Basin
102
Stewiacke
Windsor
Atlantic Ocean
RMS energy
Dalhousie Mountain Wind Farms
Figure 1.1
Project Location Plan
Legend:
Scale 1:750,000
Project Features
Project Area
TN


Key Map
Dalhousie Mountain Wind Farms
Dalhousie Settlement
Dalhousie Mountain
Mount Ephraim
Brookland
Lower Mount Thom
104
350
280
183
75
0
Meters (asl)
RMS energy
Dalhousie Mountain Wind Farms
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Wind Turbine Location
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Project Features
Project Area
Project Operations Facilities
Proposed WTG's
Optional WTG's
Proposed Roads
Existing Features
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Local Roads
Gravel Roads
Transmission Lines
Streams
Water
Wetlands
Gravel Pits/Quarry's
Homes
TN

Table 1.1: Dalhousie Mountain Wind Farm Turbine Coordinates and Elevations

Turbine ID	UTM Coordinates [1]		Ground Elevation [3]
	Easting	Northing	(m asl)[6]
P1-1	502536	5048514	305
P1-10	504185	5047990	305
P1-11	502967	5046295	330
P1-13	503123	5045746	326
P1-15	504678	5047441	292
P1-16	502458	5046271	330
P1-17	504065	5046938	291
P1-18	504078	5045910	306
P1-19	502438	5046716	325
P1-20	503299	5045236	300
P1-21	502335	5047176	321
P1-22	503878	5047716	288
P1-24	504383	5047681	300
P1-25	502908	5048871	325
P1-26	503469	5046540	318
P1-27	503435	5048674	299
P1-28	501925	5043745	300
P1-3	503812	5045644	307
P1-34	501525	5046560	319
P1-36	500909	5045140	288
P1-37	501163	5046238	306
P1-39	499777	5046126	292
P1-4	501712	5043282	300
P1-40	500184	5046287	300
P1-41	500370	5045920	315
P1-42	500897	5045788	308
P1-43	501939	5047761	286
P1-45	501893	5046884	310
P1-46	501785	5044312	286
P1-5	501189	5044781	292
P1-6	503230	5047250	290
P1-7	504302	5046229	295
P1-8	503919	5046346	316
P1-9	502303	5048052	300

Notes: 1: UTM Coordinate Reference - NAD83
2: m asl = meters above sea level
3: Values rounded to the nearest meter

1.3 Public, Expert and Agency Consultation

During the 3 years planning of the Dalhousie Mountain Wind Farm Project, RMSenergy consulted with the public at Open House meetings, small informal meetings and by telephone. Information collected during these meetings assisted in identifying public concerns and issues that needed to be addressed and resolved, where possible. Table 1.2 provides a summary of consultations undertaken and a list of contacts with private individuals or corporations with knowledge or specific interests in the project area.

Three well advertised public Open Houses were held in West River which is located in the vicinity of the closest population to the proposed project. The few comments

received focused on Project scheduling, requests for turbines on their land and/or offers of services to the Project. Some just offered support in general for the project.

To date, there are no outstanding objections or concerns with respect to the proposed Project raised during public meetings and consultation with stakeholders. Public comment cards were distributed at the meetings and all the advertising and correspondence is documented in Appendix B1, 2, 3, 4 of this report.

Table 1.2: List of Private Individuals or Groups Contacted

Contact	Contact Method	Contact Reason
Bill Sinclair: Retired DNR	In Person, Site Visits	Mainland Moose Research
Donald Mackinnon: Woodsman	In Person, Site Walks	Moose / Settlement History
Allan Mackinnon: Woodsman	In Person, Site Walks	Moose / Settlement History
Peter Maclean: Operator, Mac Sugar Bush	In Person, Site Visit	Moose History
Millsville Community Neighbors: Hudson, Spicer, Parker Maclellan	In Person, Meetings	Turbine Setbacks to Houses
	In Person, Meetings	Setbacks and Noise
	In Person, door to door	Setbacks and Noise
	In Person, door to door	To invite to meeting
	In person, door to door	To invite to meeting
Ivan Cock: Snowmobile Club	In Person, meeting Invite	Trail management
Frank White: Snowmobile Club	In Person, meeting Invite	Winter Maintenance
DJ Campbell: Quarry Owner	In Person	Mapping/Blasting Interference
Alliant Telecom Engineer	By telephone	Distance from existing towers
CKEC radio	By telephone	Letter of non Interference
Rogers Wireless Engineer	By telephone	Distance from existing Tower
Gordon Young, Pictou County Trails Association	In Person	Gully Lake and Trails Association Issues

RMSenergy initiated contacts with landowners in the project area to discus potential lease agreements for turbine sites and to identify landowners who were interested in entering into long-term land lease agreements. These discussions also provided an opportunity to discuss concerns related to wind farm developments. Table 1.3 provides a summary of property identification numbers (PIDs), landowners and lease agreements which are in place for 40 locations required for the project.

Since the beginning and throughout the undertaking, RMSenergy has conducted informal consultation activities, such as face-to-face meetings or phone calls with landowners. As a member of the community, RMSenergy will continue this practice throughout the life of the Project.

The Proponent worked with the Municipality and with the members of the public during the implementation of a setback Bylaw. During the planning of the Bylaw, the

Proponent asked that the Municipality use a setback of 750m to 1000m from a residence in order to satisfy homeowners; a setback of 600m was established.

Table 1.3: Property Owner Identification for Leases at Proposed Locations

PID #	LANDOWNER	PURPOSE of LEASE
852533	Gaklis, C	230 kVA Easement
852533	Gaklis, C	Substation
851824/65047979	Weeks Rock Quarry , On Site	Easement/Aggregate/Cement Plant
854000	Neenah Paper	P1-28
854000	Neenah Paper	P1-4
831354	Adamson J	P1-9, 1-1
834507	Adamson J	P1-25
65008039	Cameron B	P1-26, 8
851840	C C Forestry	P1-18
853457	Brown, H	P1-7
65139388	Black G	P1-20
65064743	RMSenergy	Easement
65057633	Lavly, J	Easement
853416	C C Forestry	P1-3
853523	Lochead H	P1-16
854000	Neenah Paper	P1-5
831396	MacKenzie JM	P1-43, 19, 21
854000	Neenah Paper	P1-46
831172	MacKinnon A / D	P1- 35, 36, 40, 41, 42
853507	MacLean LL	P1-17, 6, 23
831362	Neenah Paper	P1-34,45
831347	Neenah Paper	P1-37
831438	Neenah Paper	P1-39
853481	Rafuse G	P1-11, 12, 13
834523	Mackay family	P1-14
834531	Burge, R	P1-24
834556	Mackay family	P1-10
853028	Mackay family	P1-15
870360	Sutherland M	P1-27
870360	Mackay family	P1-15

RMSenergy has appointed a Director for Safety and Public Concern. This position will remain in place throughout the lifetime of the project. The appointed Director is Mr. Charles Noel of Toney River, Pictou County, NS, (tel. 902, 759-2622). Mr. Noel is a Journeyman Boilermaker with certification and training in: WHMIS; Confined Space; Fall Arrest; Forklift; First Aid; Machine Operator-Driver; JLG Man-lift personnel training; Rigging; and Crane Signaling.

In order to assess the scope of Environmental Assessment for the project Registration, the Proponent has contacted and met with the Regulatory Authorities and Expert

Groups. These contacts were conducted over a 3 year period and the information provided has formed the basis for the assessment and the information used in the design of the turbines layout in accordance with the environmental features brought up during these discussions. Table 1.4 identifies the individuals, form of contact and issues of concerns addressed in these discussions. These discussions identified the scope of the environmental program in terms of the potential Valued Eco-system Components (VECs) which applied to the project area. The identification of potential VECs led to contracting a team of the experts in their respective fields of study, to identify and advise on the presence of potential VECs in the project area.

Table 1.4: Contact List of Agencies and Departments

Contact	Contact Method	Issues Or Concerns
Dan Busby, Canadian Wildlife Services (retired) M.K.Ince & Associates (current)	Phone / email / 2004/05/06/07/08	Review avian migratory maps/ Bird Monitoring Protocols/ Follow-up monitoring/ Mitigation/ Due Diligence Report
Sean Blaney, Atlantic Canada Conservation Data Centre	Onsite / Email / 2005/06/07/08	Birds / Botany in the area/ Studies and reference material
Stefan Garrets, Atlantic Canada Conservation Data Centre	Email / 2007	100km radius SAR list
Municipal Council of Pictou County, all members	Presented Maps / Entire Project 2006/07/08	Setbacks / Permits/ Public Concerns
Allister Macdonald, Warden	Telephone /Meetings 2005/06/07	Regulations
Vernon Parker, District Planning Commission	Meetings / Email 2005/06/07/08	Subdivision and survey plans
Charlie Parker, MLA	Meetings/ Support Letter 06/07	Support and Awareness
Hon. Peter Mackay, MP	Meetings/Support Letter 05/06	Tax / Support
Derek MacDonald, NS CEAA	Phone / Email 2005/06/07	Environmental Procedures
Curtis Lockett, Denis Bergeron Jimmy Royer, Susan Lapierre Canadian Environmental Assessment Agency	Telephone / Email / Letters 2005/06/07	Requirements for Project Description and Registration Number for ecoEnergy
Steve McDonos, Transport Canada	Telephone /Applications/2005/06/07	Aeronautical Clearance Forms
Bob Olgivie, Nova Scotia Museum of Culture, Heritage	Telephone Email 2007/ desktop report and area search	Special Places and Permits and Species of concern
Mark Elderkin, NS DNR	Telephone / Email 2007	Species of Concern in Area
Don Jullian, Confederacy of Mainland Mi'kmaq (CMM)	Telephone / Email / In person 2007	Native Land and Showed Project Boundary Maps
Dan MacDonald, John Francis, Anne Francis Muise, Pictou Landing First Nations	Telephone / Sent letter / Several conversation over 3 years	Native Land Interest/ Native Routes/ First Nation Opinion of Wind Energy in General
Vanessa Margueratt, NSDEL	Telephone / Email / In person 07/08	Procedures / Scope of Studies
Nelida Young, NS DNR	Telephone / Email / In person 06/07/08	Crown Land Lease Procedures
Robert Sarson, NR Can	Telephone / In person 07/08	Crown Land Easements
Kathleen Johnson, NS DEL	Telephone /In person/presentation 07	Wetlands Crossing / Maps/ Data/ procedures
Doug Archibald, Reg. Biologist	Telephone 07	Species at Risk / Moose
Charles McInnis, DFO	Telephone / in person presentation 07	Fish / water-crossings / maps
Van Macleod, District Planning Department	Telephone / in person 06/07/08	Part ix Subdivisions
Michael Cox, Norma Prosper, CMM	Telephone / In person /Project map review/ 2008	Procedures for 2008 spring field study with Fulton Energy Research
Ross Hall, Biologist	Telephone / in person / Studies 07/08	Species at Risk and Mainland Moose Area search and Study
Lisa Fulton, Fulton Energy Research	Telephone / in person / Email / Reports / Mail outs 07/08	Liaison with Mi'kmaq Rights, CMM, Pictou Landing First Nations
Twila Gaudet, Mi'kmaq Rights Initiative	Telephone March 2008	Guidance on contacts through First Nations bodies

Table 1.5 lists the environmental and socio-economic issues identified in these discussions and the action undertaken by RMSenergy to address these issues for this document. These component studies are included in the Appendices of this document.

Table 1.5: Component Studies

Issue:	Carried out by using data from:	Appendix
Mainland Moose population searches	Ross Hall, Biologist: Study covers habitat, search transects, history of the Mainland Moose and last sightings on Dalhousie Mountain.	C8
Bat monitoring program and desktop studies	Hugh Broders Ph.D.: Desktop Study covers natural bat habitat, nearby caves, and existing Published sources. Field Study covers Anabat II detector.	C7
Bird monitoring program and desktop studies	Steve Vines, B.Sc., Birder: Point count, procedures In accordance with Dan Busby CWS. Data gathered from existing public sources and local knowledge. Fall and Spring Migration, Winter Resident and Breeding bird Surveys.	C4,5,6, Appendix Supplement
Visual Impacts on Landscape	M.K. Ince and Associates Ltd.: Viewscape study conducted using Wind Pro software	C1
Agricultural and residential land-use	RMSenergy: Data obtained from provincial government, published information, and other reports	EA 5.2.2
Surface Water and Fish Habitats	RMSenergy: Data from existing published sources. DFO Antigonish has reviewed site plans to identify species at risk, and assess foraging and spawning area avoidance. R. Bancroft, M.Sc. Biologist: Field inspection and data review.	EA 5.2.5
Noise levels	DEWI Wind Institute GMBH: Study carried out by using actual dB noise rating published by the turbine manufacturer and data from existing published sources.	C2
Geophysical Environment	Jacques Whitford Ltd.: Conducted a preliminary geotechnical study of the surface and subsurface conditions at the study sites. Data Gathered from actual borehole samples on several locations	C11
Public Consultation	RMSenergy: Data gathered at 3 public meetings and various presentations to NS DNR, Municipality, MLAs, and other groups over the 3 year period	B1,2,3,4
Heritage and Archaeological Sites	Davis Archaeological Ltd.: Desktop Study - site visits and workshop procedures to protect and record any findings. Initial searches performed by NS Museum. Data collected from 1879 Pictou County Historical Atlas. Field studies of turbine locations and access roads, 2008	C9
Land and resources used by aboriginal persons	RMSenergy: Desktop Study - researched and consulted with CMM, local Band Office and Nova Scotia Museum to identify land claims and or previous land use. CMM: MEK study 2008.	C9
Public Health and Safety	RMSenergy Ltd.: Data collected from NSPI, NSDEL and existing published sources to incorporate procedures into a company Safety Policy Manual.	EA Section 5
Meteorology, climate, onsite wind conditions	Ortech Environmental Ltd.: Study conducted for 3 years using an onsite data collection system to determine site conditions for turbine design, wake analysis, energy yield, extreme weather.	C10
Botany, Flora, geophysical conditions	Sean Blaney: M.Sc., David Mazerolle, Biologist: Carried out mapping and field studies to determine the conditions at each site and easement routes.	C4 , C5
Species at Risk	Ross Hall, Biologist: Desktop research, site visits and previous data and experience being a regional biologist for Pictou County.	C3
Wildlife, Species at Risk	Bob Bancroft, M.Sc. Biologist: Assessment of present environmental site conditions and evaluation of potential impacts.	EA / Registration
Environmental Assessment and Socio-economic Issues	T. Windeyer, B.A: Environmental Consultant, Stantec Consulting Ltd: Evaluation of Socio-economic issues, Document preparation	EA / Registration

SECTION 2.0 – PROJECT DESCRIPTION

2.1 Turbine Locations for Dalhousie Mountain

The locations selected for turbines are a critical element of power generation efficiency and optimal project economics. The selection of locations is also conditional on the absence of significant ecological or heritage features of the project area. Site selection; therefore, must consider both of these elements in order to have a successful project with minimal environmental Impacts. The planning and selection process for the Dalhousie Mountain turbine locations followed an iterative approach where each site was assessed both for its energy capacity and the presence of sensitive ecological or heritage resources. Sites, which were considered at early stages in the project, have now been scrutinized from an ecological perspective and locations adjusted to mitigate potential environmental impacts. The same level of scrutiny has been applied to the location of access roads in order to minimize ecological impacts on plant communities and aquatic habitat. To the extent possible, access roads follow high ground with the route selected to minimize water crossings. The site locations, listed in Table 2.1 and shown on Figure 1.2 with the access road layout, have been derived using this careful selection process.

The property required to install the Dalhousie Mountain Wind Project is located on privately owned land only, not requiring easement over Federal or Provincial lands. Private long term leases and easements are in place to permit the entire installation of this project.

In light of unforeseen requirements to move sites to mitigate impacts on natural environmental features, the Proponent feels it is important to have more than the minimum number of sites studied as potential wind turbine sites. For Phase 1 of the Dalhousie Mountain project, 41 locations have been evaluated from which 34 turbine locations have been initially selected with 7 optional sites available to mitigate potential impacts. The site selection could be adjusted to any of the optional sites if an environmental issue was found at any site. All of the proposed 41 sites follow the same road system, collector lines, substation, easements and 230 KVA inter-tie connections to the provincial grid. All 41 sites have been studied for various environmental impacts including but not limited to: visual representation: noise levels at various distances: avian point counts and species identification; bat study; Mainland Moose population searches and research; wetland and waterway crossing; botanical and biological habitat and geological conditions.

Table 2.1: Dalhousie Mountain Wind Farm: Turbine Locations and Optional Sites: Coordinates and Elevations

Turbine ID	UTM Coordinates [1]		Latitude (W) [2]			Longitude (N) [2]			Ground Elevation [3]	Nacelle Elevation [4]	Maximum Elevation [5]
	Easting	Northing	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds	(m asl)[6]	(m asl)[6]	(m asl)[6]
P1-1	502536	5048514	45	35	25	62	58	3	305	385	423
P1-10	504185	5047990	45	35	8	62	56	47	305	385	424
P1-11	502967	5046295	45	34	13	62	57	43	330	410	449
P1-13	503123	5045746	45	33	55	62	57	36	326	406	444
P1-15	504678	5047441	45	34	50	62	56	24	292	372	410
P1-16	502458	5046271	45	34	12	62	58	7	330	410	448
P1-17	504065	5046938	45	34	33	62	56	52	291	371	409
P1-18	504078	5045910	45	34	0	62	56	52	306	386	424
P1-19	502438	5046716	45	34	26	62	58	8	325	405	443
P1-20	503299	5045236	45	33	38	62	57	28	300	380	419
P1-21	502335	5047176	45	34	41	62	58	12	321	401	439
P1-22	503878	5047716	45	34	59	62	57	1	288	368	406
P1-24	504383	5047681	45	34	58	62	56	38	300	380	419
P1-25	502908	5048871	45	35	36	62	57	46	325	405	444
P1-26	503469	5046540	45	34	21	62	57	20	318	398	437
P1-27	503435	5048674	45	35	30	62	57	21	299	379	418
P1-28	501925	5043745	45	32	50	62	58	31	300	380	418
P1-3	503812	5045644	45	33	52	62	57	4	307	387	425
P1-34	501525	5046560	45	34	21	62	58	50	319	399	438
P1-36	500909	5045140	45	33	35	62	59	18	288	368	406
P1-37	501163	5046238	45	34	11	62	59	6	306	386	424
P1-39	499777	5046126	45	34	7	63	0	10	292	372	411
P1-4	501712	5043282	45	32	35	62	58	41	300	380	419
P1-40	500184	5046287	45	34	12	62	59	52	300	380	419
P1-41	500370	5045920	45	34	1	62	59	43	315	395	433
P1-42	500897	5045788	45	33	56	62	59	19	308	388	426
P1-43	501939	5047761	45	35	0	62	58	31	286	366	404
P1-45	501893	5046884	45	34	32	62	58	33	310	390	429
P1-46	501785	5044312	45	33	8	62	58	38	286	366	404
P1-5	501189	5044781	45	33	24	62	59	5	292	372	411
P1-6	503230	5047250	45	34	44	62	57	31	290	370	409
P1-7	504302	5046229	45	34	11	62	56	42	295	375	414
P1-8	503919	5046346	45	34	14	62	56	59	316	396	434
P1-9	502303	5048052	45	35	10	62	58	14	300	380	419

Notes: 1: UTM Coordinate Reference - NAD83
2: Latitude and Longitude Coordinate Reference - WGS 84
3: m asl = meters above sea level
4: Nacelle Elevation = ground elevation + 80m (height of centre of nacelle)
5: Maximum Elevation = nacelle elevation + 38.5 m (length of vertical blade)
6: Values rounded to the nearest meter

For the future phases of the project, wind assessments have identified several sites on Provincial Crown land that have potential to be excellent sites in addition to other private lands in the direct vicinity of Phase 1. RMSenergy has applied to the Crown Land Lease Division for the use of these locations and is subject to an Independent Review (IRM) process prior to granting a lease. The intent is to use 2 locations on Crown land in a future phase of the development.

2.2 Main Project Components

2.2.1 Wind Turbine Generators

The basic components of the Project include 34 wind turbines with a corresponding total installed capacity of 51 MW, 34 step-up transformers (i.e., converting 690 V to 34.5 kV) positioned immediately adjacent to each turbine, a 34.5 kV underground and aboveground electrical line gathering system, roughly 16 km of 34.5 kV of overhead power line, a substation, (converting 34.5 kV to 230 kV), and a maintenance shop/control building located off site.

The proposed turbines are General Electric 1.5 sle. The GE Energy 1.5 sle 60 Hz unit is a three bladed, upwind, horizontal-axis wind turbine with a rotor diameter of 77 m. The turbine rotor and nacelle are mounted on top of a tubular tower giving a rotor hub height 80 m. The components and dimensions of the turbines are illustrated in Fig 2.1a and b. Service platforms are provided. The tubular tower is tapered and manufactured in three sections from steel plates. Access to the turbine is through a lockable steel door at the base of the tower. Access to the nacelle is provided by an interior ladder with a fall arresting safety system. Interior lights are installed at critical points from the base to the top of the tower.

The machine employs:

- Active yaw control (designed to steer the machine with respect to the wind direction),
- Active blade pitch control (designed to regulate turbine rotor speed), and a
- Generator/power electronic converter system from the speed variable drive train concept (designed to produce nominal 60 Hz, 690 v electric power). The generator is a doubly fed induction-generator with wound rotor and slip rings. Nominal speed at 1.5 MW power output is 1440 rpm.
- The generator is mounted to the bedplate on elastomeric foundations to reduce vibration and associated noise.
- Temperature sensors are built into the generator windings to provide a temperature reading to the wind turbine controller. In the event the generator temperature is outside of the normal operating range, an automatic shutdown of the turbine is initiated.
- The electrically actuated individual blade pitch systems act as the main braking system for the wind turbine. Braking under normal operating conditions is

accomplished by feathering the blades out of the wind. Any single feathered rotor blade is designed to slow the rotor, and each rotor blade has its own back-up battery bank to provide power to the electric drive in the event of a grid line loss.

- The turbine is also equipped with a mechanical brake located at the output (high-speed) shaft of the gearbox. This brake is only applied immediately on certain emergency stops (E-stops). This brake also prevents rotation of the machinery as required by certain service activities.

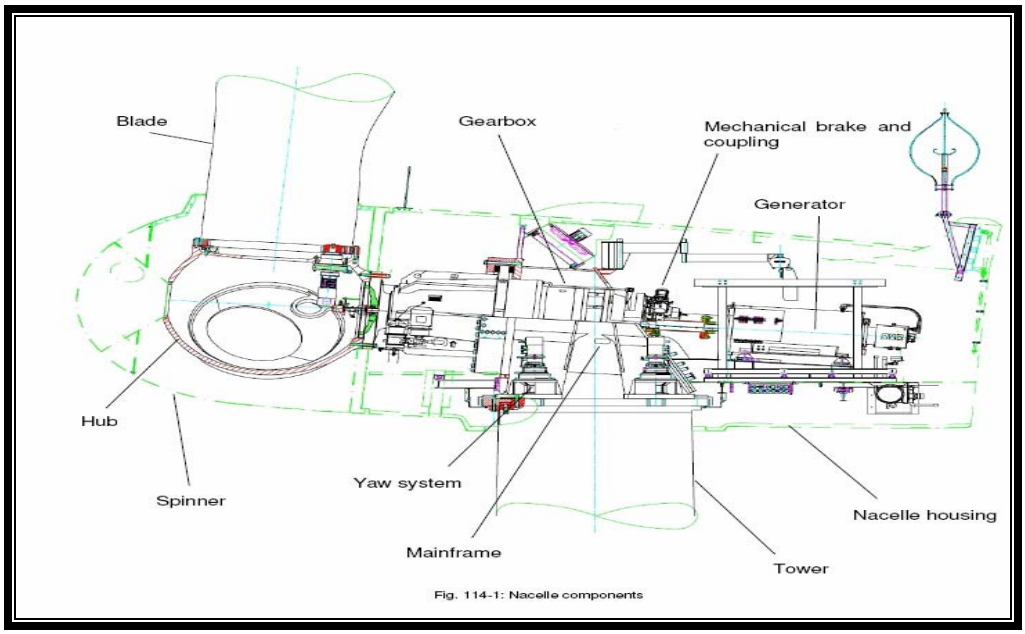


Fig. 2.1a: GE Energy 1.5 sle 60 Hz Wind Turbine Generator: Internal Components

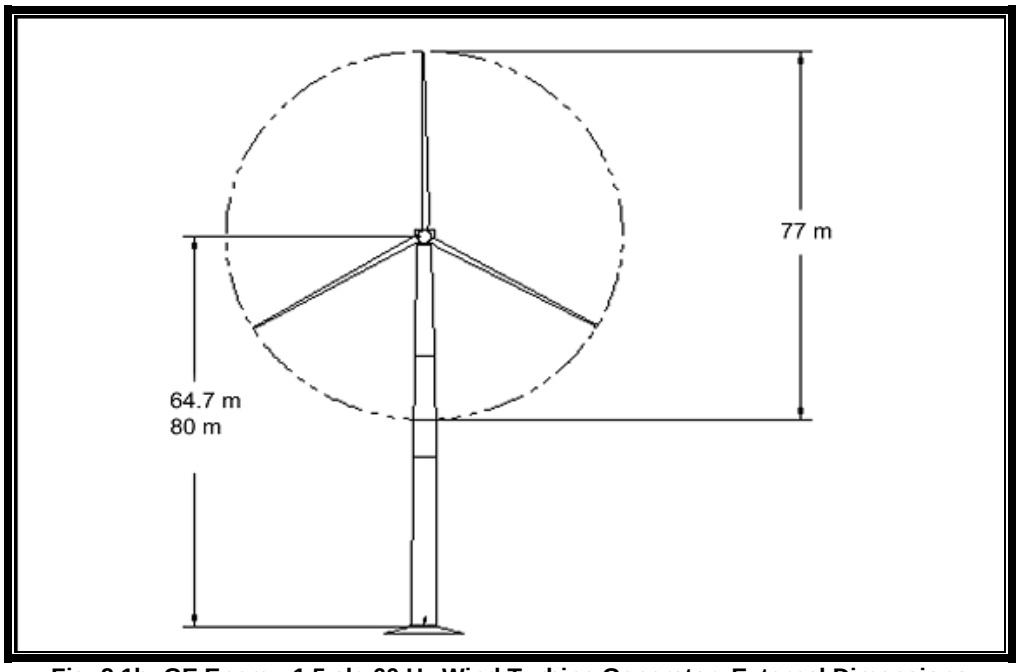


Fig. 2.1b: GE Energy 1.5 sle 60 Hz Wind Turbine Generator: External Dimensions

- Lightning protection: the rotor blades are equipped with a strike sensor mounted in the blade tip. Additionally a solid copper conductor from the blade tip to root provides a grounding path that leads to the grounding system at the base of the tower foundation.

- Service switches at the tower top prevent service personnel at the bottom of the tower from operating certain turbine systems while service personnel are in the nacelle. To override any machine operation, E-stop buttons located in the tower base and in the nacelle can be activated to stop the turbine in the event of an emergency.
- The wind turbine can be controlled automatically or manually from either the control panel located inside the nacelle or from a personal computer (PC) located in a control box at the bottom of the tower.

Turbine installation is completed by the mounting of the three-bladed rotor hub to the main shaft after the nacelle assembly has been mounted to the top of the tower. The nacelle of the turbine is constructed of fibreglass and lined with sound insulating foam. This sound insulating foam helps reduce acoustic emissions from the wind turbine.

2.2.2 Electrical Components

The interconnection point is located on NSPI Transmission line L-7004 at a point near NAD 83 UTM 20T 502590E x 5039970N from this point heading north to Mount Ephraim. The substation is designed with a 50 mva main transformer and is capable of adapting two additional and identical transformers to provide for future Phase 2 or 3. The substation will require cement pads, perimeter fence, wooden poles and an 8' x 24' insulated structure to house the communication system, telephone, internet, computer monitors, WFMS (Wind Farm Management System) and electrical switching system.

A two months construction period is anticipated to complete the main components and a two week commissioning period will be required after individual turbine commissioning is completed. At the substation, line voltage will be converted from a step down transformer into two overhead collector line circuits with voltage of 34.5 kva out to each wind turbine. The wind turbine itself produces 690 v and 3 phase power and is sent via underground cables through the foundation base to a transformer pad outside the turbine. The power will be converted here by a small pad mounted step-up transformer to convert the 690 v from each turbine to line voltage on the above ground collector lines.

The overhead electrical collector lines will follow the road system close to the ditch to provide reliable ongoing maintenance access. The poles will be placed by an excavator crew using standard methods (e.g.; blasting, drilling and/or jackhammer). Poles will be approximately 70 m apart and 350-400 poles will be required to complete Phase 1. The collector line circuits will be completed within a three month period. Timing and

installation will work simultaneously and in conjunction with the turbine erection crew. (See Table 2.1: Construction Timing.)

2.2.3 Ancillary Components

The delivery roads are currently in place from previous land uses and some new roads will be constructed between turbine locations. Figure 2.2 shows the turbine layout and access roads of the Wind farm along with other site features. To the extent possible, existing woods roads will be used, with appropriate upgrades to meet the load requirements for trucks transporting materials to the turbine sites. Some stream crossings on existing roads are in poor repair, do not have adequate culverts/ bridges installed or have been washed out. These conditions have allowed sediment and runoff from ATVs and motor vehicles to run into the watercourse at some locations.

The Proponent has contacted NSE in Granton, NS and DFO in Antigonish to present this project in its early stages and is fully aware of the water crossing and wetland crossing requirements in place. RMSenergy employs a contractor who holds a license to install water crossings in accordance with NSE Requirements.

New roads will not be constructed over waterways. Upgrades to existing roads will include properly designed bridges and culverts to replace damaged and inadequate water crossings.

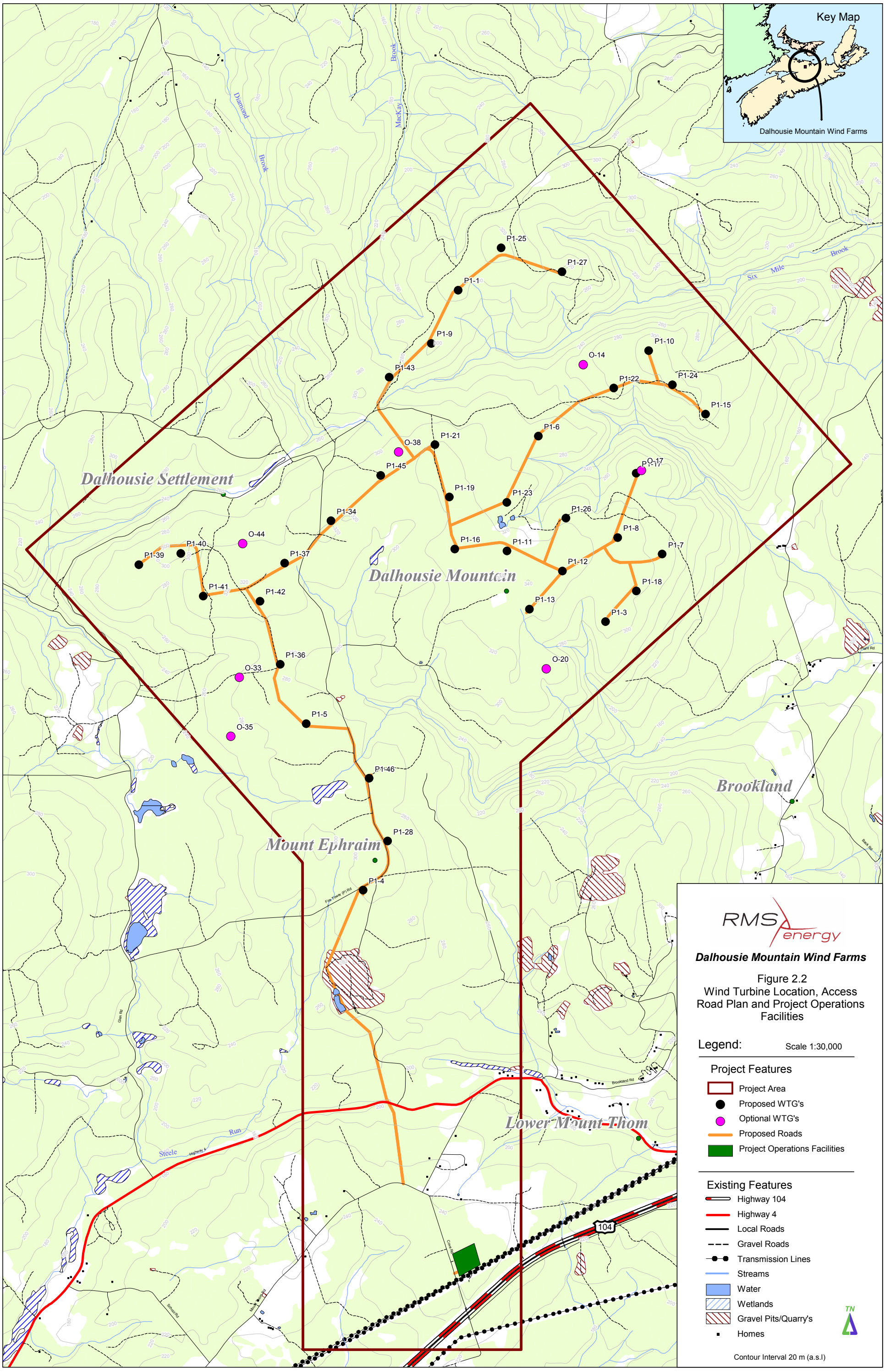
2.3 Construction Activities:

2.3.1 Surveying and Site Preparation

Site survey and design has been undertaken since June 2004 with considerations given to Section 1, Table 1.1 Valued Eco-system Component studies to determine the best possible locations and carried out within the study areas listed in Section 1.9 Study Area Boundaries.

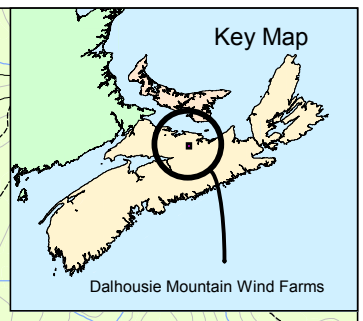
2.3.2 Access Roads

The access roads will be upgraded and built to accommodate the size requirements of the crane and the load specifications to support the delivery of approx 300-400 flatbed truck loads of turbine components. The roads will be approximately 5-8 m wide with ditches and culverts added where required. The gravel used to supply the 6” compacted surface will be obtained on site at Week’s Construction Ltd. rock quarry. The surface soil and grubbing will be re-located in borrow areas along the road side and graded to prevent erosions and sediment runoff. The ditches will be constructed along the road edge following provincial guidelines and procedures to control for surface water runoff. Culverts will be installed under the roads where necessary.


Key Map
Dalhousie Mountain Wind Farms
Diamond Brook
MacKay Brook
Six Mile Brook
Dalhousie Settlement
Dalhousie Mountain
Brookland
Mount Ephraim
Lower Mount Thom
P1-25
P1-27
P1-1
P1-9
P1-43
P1-10
O-14
P1-22
P1-24
P1-15
P1-6
O-38
P1-21
P1-45
O-17
P1-17
P1-19
P1-23
P1-26
P1-8
P1-34
O-44
P1-40
P1-39
P1-16
P1-11
P1-7
P1-37
P1-12
P1-41
P1-42
P1-18
P1-13
P1-3
O-20
P1-36
O-33
P1-5
O-35
P1-46
P1-28
P1-4
Fire Tower (P) Rd
Glen Rd
Steele Run
Highway 4
School Rd
Brookland Rd
Cove Rd
104
RMS energy
Dalhousie Mountain Wind Farms
Figure 2.2
Wind Turbine Location, Access Road Plan and Project Operations Facilities
Legend:
Scale 1:30,000
Project Features
Project Area
Proposed WTG's
Optional WTG's
Proposed Roads
Project Operations Facilities
Existing Features
Highway 104
Highway 4
Local Roads
Gravel Roads
Transmission Lines
Streams
Water
Wetlands
Gravel Pits/Quarry's
Homes
TN
Contour Interval 20 m (a.s.l)

ID	Culvert_size_in	Easting	Northing	Type	Status
A	24	501,651	5,044,430	Round	Rebuild
B	18	500,870	5,045,660	Round	Rebuild
C	22	503,130	5,047,050	Arch	Rebuild
D	26	503,570	5,047,550	Round	Rebuild

UTM, Zone 20, NAD83



Dalhousie Settlement
Dalhousie Mountain
Mount Ephraim
Brookland
Lower Mount Thom

P1-1, P1-3, P1-4, P1-5, P1-6, P1-7, P1-8, P1-9, P1-10, P1-11, P1-12, P1-13, P1-15, P1-16, P1-17, P1-18, P1-19, P1-21, P1-22, P1-23, P1-24, P1-25, P1-26, P1-27, P1-28, P1-34, P1-36, P1-37, P1-39, P1-40, P1-41, P1-42, P1-43, P1-45, P1-46

O-14, O-17, O-20, O-33, O-35, O-38, O-44

A, B, C, D

Brook, MacKay Brook, Six Mile Brook, Steele Run, Highway 4, 104, Fire Tower (P) Rd, Glen Rd, Brookland Rd, Cove Rd, Mount Thom Rd, School Rd, Black Rd, Right Rd

RMS energy

Dalhousie Mountain Wind Farms

Figure 2.3
Access Road Plan and
Water Crossings

Legend: Scale 1:30,000

Project Features
- Project Area
- Proposed WTG's
- Optional WTG's
- Water Crossings
- Proposed Roads
- Project Operations Facilities

Existing Features
- Highway 104
- Highway 4
- Local Roads
- Gravel Roads
- Transmission Lines
- Streams
- Water
- Wetlands
- Gravel Pits/Quarry's
- Homes

TN

Contour Interval 20 m (a.s.l)

To access the turbines, approximately 8 km of new road construction will be required and approximately 20 km of existing previously built to support logging activities will be upgraded. These roads will be upgraded with gravel and ditched to control surface water along all sections.

Figures 2.4 shows the design features which will be incorporated in the construction of access roads for the Dalhousie Mountain Wind Farm.

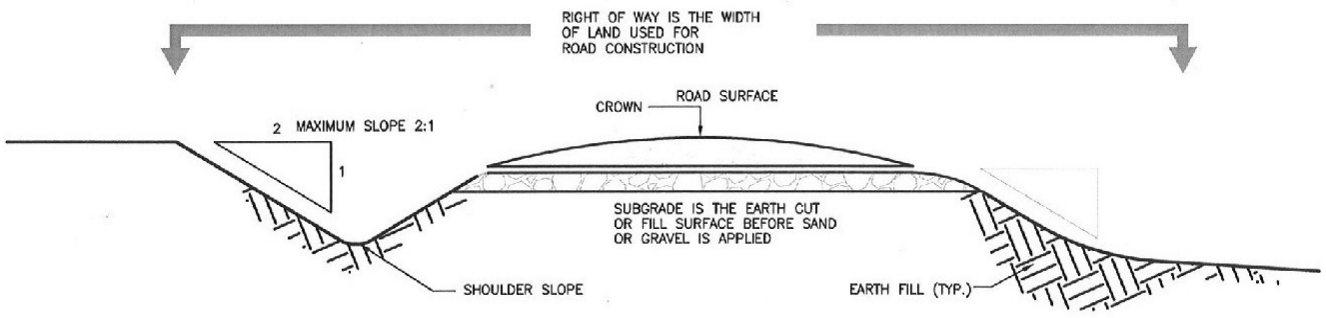


Figure 2.4: Design features for Access Roads on Dalhousie Mountain Wind Farm (adopted from: Watercourse Alteration Certification Training Manual)

2.3.3 Water Crossings, Erosion and Sediment Control

Water Crossings

There will be four water crossings required for access roads for the Dalhousie Mountain Wind Farm. Culvert sizes were determined using the 100 year peak flow and based on the drainage area up-gradient of the crossing, a standard headwater depth of 1.5m and a rainfall coefficient of 1.75. The calculation of culvert size was based on the methodology provided in the Nova Scotia Environment, Watercourse Alteration Certification Training Manual, November 2007, *Headwater Depth for Round CSP & SPCSP Pipe Culverts with Inlet Control*. Figure 2.5 illustrates the culvert design features.

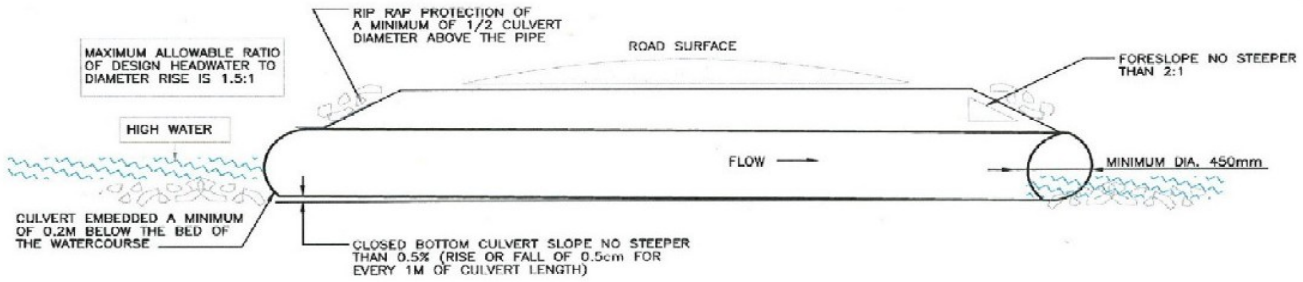


Figure 2.5: Design features for Culverts on Dalhousie Mountain Wind Farm access roads (adopted from: Watercourse Alteration Certification Training Manual).

The following provides descriptions of the drainage areas and culvert size determination for the four water crossing locations indicated on Figure 2.2.

- **A – Bezanson Lake Logging Road:** (existing culvert)
  Location: UTM coordinates 501650 x 5044430.
  Drainage Area: 24 ha.
  Peak 100year Flow: 0.42m^3/sec
  Description of Proposed Upgrade: New culvert. The calculated culvert size is 575mm. This is equivalent to a 23" diameter culvert.

- **B- Donald MacKinnon's Logging Road.** (existing culvert)
  Location: UTM coordinates 500870 x 5045660.
  Drainage Area: 12ha.
  Peak 100year Flow: 0.21m^3/sec.
  Description of Proposed Upgrade: New culvert. The calculated culvert size is 450mm. This is equivalent to an 18" diameter culvert.

- **C - MacLean's Sugarbush Road (snowmobile trail and 1800's existing crossing 1879 atlas)**. (bridge in disrepair)
  Location: UTM coordinates = 503130 x 5047050.
  Drainage Area: 21 ha.
  Peak 100year Flow: 0.37m^3/sec.
  Description of Proposed Upgrade: Open Bottom Culvert. The calculated culvert size is 550mm or 22"; however, this crossing will be much larger than the minimum requirement for the peak 100 year flow. A large open bottom culvert will be necessary due to the slope of the road on either side of the stream and the difference between the grade level of the road and the stream. This

calculation exercise was done at this crossing to indicate that the proposed installation, although not a circular culvert, will allow unrestricted flow with no alteration to the stream bed.

Photos 1a: Existing Bridge on the MacLean's Sugarbush Road Showing Deteriorated Condition

Photos 1b: Existing Bridge on the MacLean's Sugarbush Road Showing Deteriorated Condition

Photos 1c: Existing Bridge on the MacLean's Sugarbush Road Showing Deteriorated Condition

- **D- Six Mile Brook/Dalhousie Road. (1879 atlas).** (existing culvert)
  Location: UTM coordinates 503570 x 5047550.
  Drainage Area: 31 ha.
  Peak 100year Flow: 0.542m^3/sec.
  Description of Proposed Upgrade: New culvert. The calculated culvert size is 650mm. This is equivalent to a 26" diameter culvert.

It is important to note that all 4 crossings already exist and with the exception of C, all are in good condition and sized properly to allow peak flow. The roads going in for the delivery of the turbines and ancillary equipment will be 6m wide, therefore the existing culverts will have to be removed and replaced with longer ones. These calculations were preformed by RMS to ensure the replacements met the project requirements and fell under regulations for NSE. Figure 2.6 illustrates the features of an open bottom culvert installation which will be used for the crossing on the MacLean's Sugarbush Road.

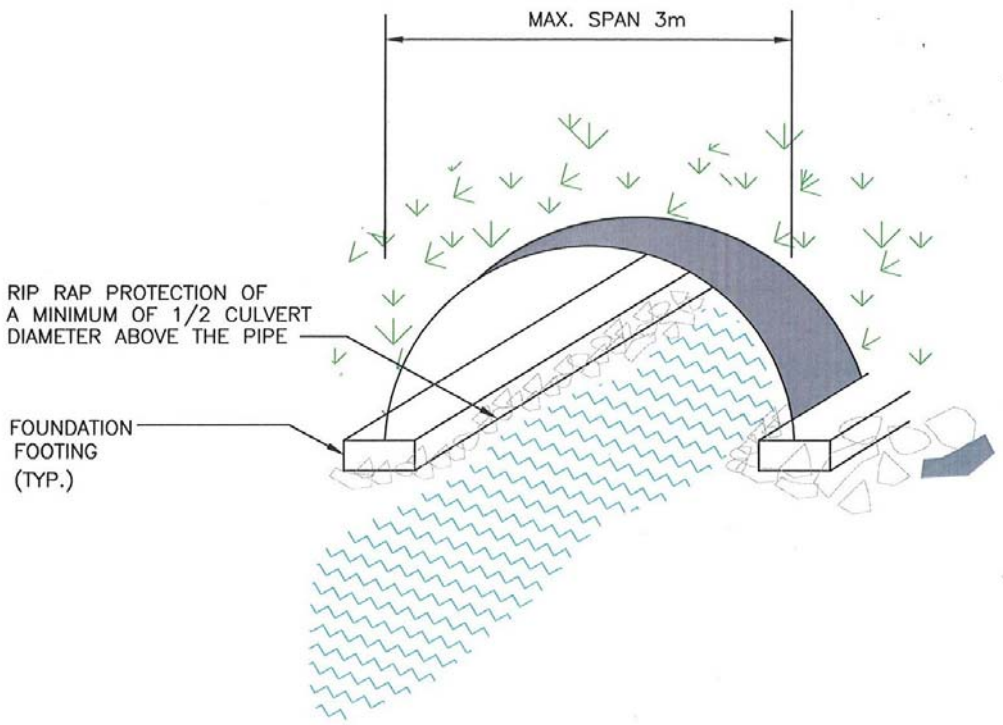


Figure 2.6: Design features for an Open Bottom Culvert for the MacLean's Sugarbush Road crossing.

All installations will be done under a blanket permit, in the dry, with no destruction or harm to streambeds or fish habitat. In accordance with NSE regulations, an erosion control plan which includes mitigation of potential sediment transfer into watercourses will be in place during construction activities and throughout operation and decommissioning.

The following operating procedures will be maintained during the construction of water crossing or any other construction activities or operations conducted near streams.

General Measures to Protect Fish and Fish Habitat

- All in-water work will be done while adhering to NSDNR fisheries timing windows for each specific water body to protect local fish populations during their spawning and nursery periods.
- All materials and equipment used for the purpose of site preparation and project construction shall be operated and stored in a manner that prevents any deleterious substance (e.g., petroleum products, silt, etc.) from entering the water.
- Any stockpiled materials will be stored and stabilized away from the water.

- Vehicle and equipment re-fuelling and maintenance will be conducted away from the water.
- Sediment and erosion control measures will be implemented prior to construction and maintained during the construction phase to prevent entry of sediment into the water.
- All sediment and erosion control measures will be regularly inspected to ensure that they are functioning properly and are maintained and/or upgraded as required.
- If the sediment and erosion control measures are not functioning properly, no further work will occur until the sediment and/or erosion problem is addressed.
- All disturbed areas of the construction site will be stabilized immediately and re-vegetated as soon as conditions allow.
- Sediment and erosion control measures will be left in place until all areas of the construction site have been stabilized.

Measures to Protect Fish and Fish Habitat when Constructing Overhead Lines

- Avoid work during wet, rainy conditions.
- The removal of select plants may be necessary to accommodate the overhead line. These removals will be kept to a minimum and will not be wider than the right-of-way.

Measures to Protect Fish Habitat when Constructing New Culverts or Culvert Extensions

- Water crossing culverts will be embedded a minimum of 10-20% of the culvert diameter, below the natural channel both upstream and downstream or install bottomless culverts.
- Water crossings will be backfilled with substrate material that is consistent with the existing substrate size and texture and will remain in/under the crossing.
- Existing stream flows will be maintained downstream of the de-watered work area during all stages of work.
- All sediment and erosion control measures will be inspected weekly. Additionally the measures will be inspected during and immediately following rainfall events.

2.3.4 Turbine Foundations

Excavation for the turbine foundations will begin by removing topsoil and placing it in a dry pile, covered with plastic and will be re-placed over the area to provide a natural soil base for regeneration of indigenous plant species. The foundation requires digging to a depth of 2 m and a diameter of approximately 17 m wide, to the severely fractured bedrock layer typically found in this region under the topsoil mat. The bedrock surface will be levelled, compacted and covered with a 100 millimetre (mm) thick levelling layer of concrete to allow an engineered surface to install the bolt ring section and the reinforced concrete structure. When the foundation construction is complete, the topsoil

and gravel mixture will be replaced and compacted in accordance with the engineering requirements for soil density.

The foundations are designed and approved by the turbine manufacturer and certified in Nova Scotia as required. Tests such as concrete air entrapment and structural integrity will be performed by Jacques Whitford, NS. The sand, aggregate and concrete will be prepared on site in the Weeks Mount Thom Rock Quarry in accordance with the Provincial Environmental and Labour standards. This will reduce the fuel consumption of the concrete delivery trucks by over 80% and greatly reduce noise, dust disturbance and delays.

2.3.5 Delivery to Site

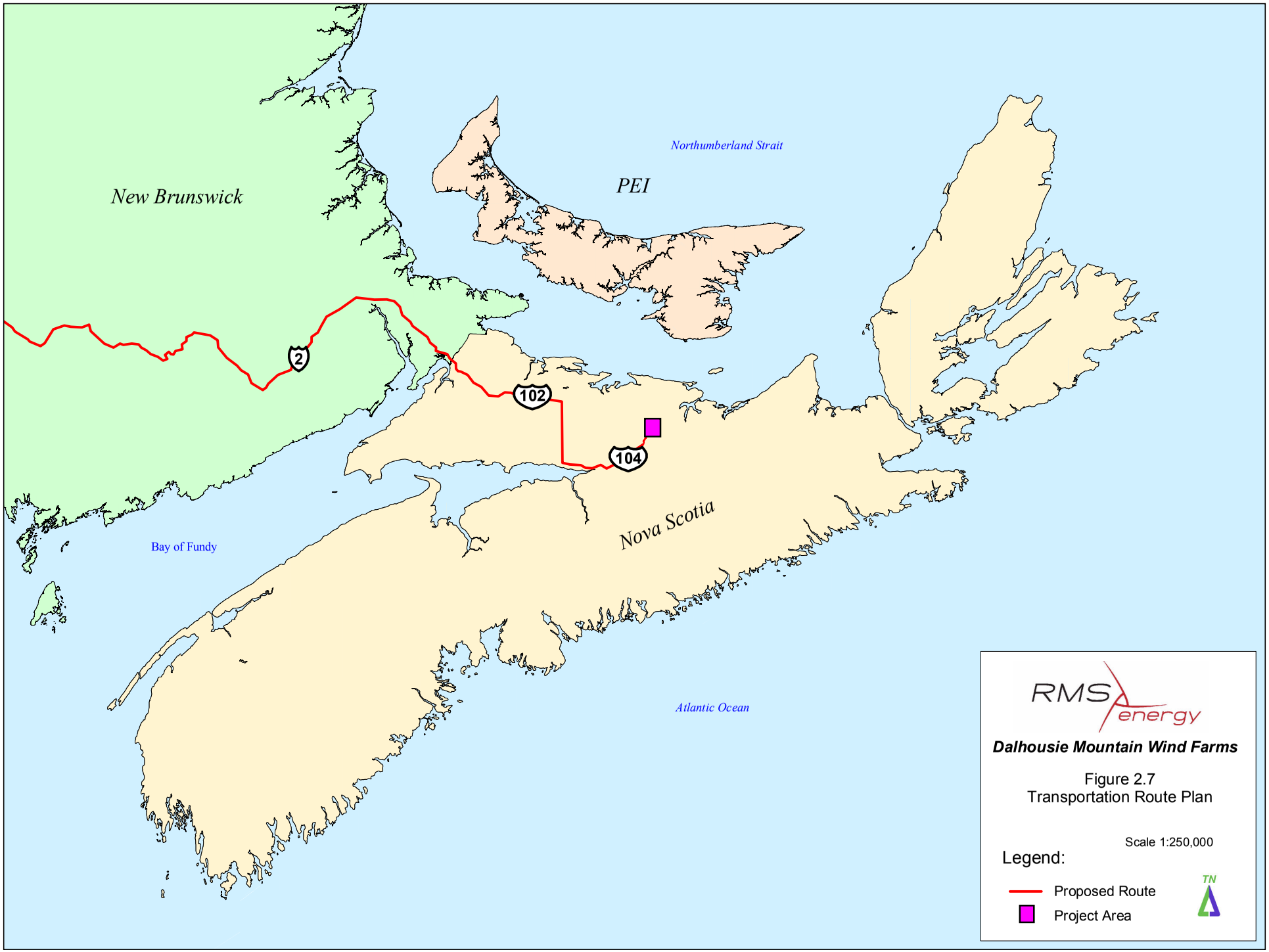
Delivery of the tower sections and main turbine components for Phase 1 will commence as early as June 2009 as described in Table 2.1 Construction Schedule. This date will ensure that all road restrictions imposed by the Department of Transportation are not exceeded resulting in construction delays. Typically in April and May, when the frost recedes, heavy vehicles may cause damage and erosion problems. When this occurs, the shoulders of the road become unpredictable and can lead to vehicle rollover. For safety reasons and logistics, delivery will take place only when safe road conditions are met. The benefits of a clean, gravelled road surface will reduce the environmental impact of: dust and airborne pollutants; mud on the employees work boots causing a slip or fall; truck tires transferring mud to Highway #4; cranes driving in between turbine sites and possibly sliding off the roads.

The transportation of wind tower components to the site will include approximately 8 trucks per turbine. Figure 2.7 shows the route selected for transporting turbine components through the Maritime Provinces.

The transportation of the 300 ton erection crane and the crane components will require up to four flatbed trucks. The 75 ton and 150 ton hydraulic wheeled cranes will unload the trucks and place each turbine on the setup pad located at each individual turbine location. The first tower section may be placed during unloading for convenience and to minimize the size of the layup area. The erection crane will use a tailing crane to erect the two top tower sections, the nacelle, then the hub and blades will be placed last to complete major construction.

2.3.6 Site Cleanup and Waste Management

Site cleanup includes all types of waste removal (oil, grease, garbage, human waste, organic waste and recyclables) and will be carried out in accordance with the requirements of the municipal landfill regulations. Keltic Trucking Ltd. has been hired


New Brunswick
PEI
Northumberland Strait
Nova Scotia
Bay of Fundy
Atlantic Ocean
2
102
104
RMS energy
Dalhousie Mountain Wind Farms
Figure 2.7
Transportation Route Plan
Scale 1:250,000
Legend:
Proposed Route
Project Area
TN

locally to ensure proper procedures are in place throughout all stages of development, construction and operations of the Dalhousie Mountain Wind Farms.

2.3.7 Private Gates

Several gates over private land will be required only on roads that will open up a new route that was not an existing easement for travel. All existing logging roads, ATV trails and snowmobile trails will not be affected by new gates unless requested by the private landowner to control excessive use.

2.3.8 Parking and Lay-down Areas

All machinery and turbine components will use existing and/or proposed roads or crane pads for parking and lay-down areas. The sites will be complete prior to accepting delivery to allow delivery of the components directly to the individual sites, preventing unnecessary extra movement, lay-down areas and cost.

2.4 Construction Schedule and Major Event Planning

In order to construct the proposed wind farm, a series of events will need to be undertaken. This EA considered the following construction events as part of the project scope:

2.4.1 Construction Schedule

The tentative construction schedule and major events are described in Table 2.2 and Table 2.3.

Table 2.2: Tentative Construction Schedule

Construction Item	Dates Between
Complete all permitting EA and NSPI	Jan 2007 to July 2008
Access Road Upgrading and Construction	July 2008 to Nov 2008
Crane pad preparation/compaction	July 2008 to Nov 2008
Foundation/excavation/construction/cleanup	Nov 2008 to June 2009
Transformer pad/ trench and construction	Mar 2009 to June 2009
230 kva easement clearing from L-7004	Sept 2008 to Oct 2008
230 kva line into substation	Sept 2009 to? (NSPI build)
230 kva x 34.5 kva substation	Mar 2009 to July 2009
34 kva overhead triplex collector lines	Apr 2009 to Aug 2009
Turbine tower base section # 1	July 2009 to Dec 2009
Turbine tower center / top sections	July 2009 to Dec 2009
Turbine nacelle / blades / hub assembly	July 2009 to Dec 2009
Testing/commissioning and final electrical permits	Sept 2009 to Dec 2009
Site remediation, clean-up, mitigation measures and follow-up measures will be incorporated	Planning/construction/operation-Ongoing-

Table 2.3: Major Event Planning

Planning Strategy for Major Events
• **Tree-clearing and road construction** will commence on existing logging roads allowing a safe travel route along the main corridor. Gravelled roads will prevent dust in the air, mud and sediment from entering water courses and wetlands and provide safe vehicle access to individual sites.
• **Foundation work** will take place by three teams working 2 to 3 days apart averaging 2.5 units complete each week.
• **230 kva Inter-tie and line works** will be timed in accordance with the Nova Scotia Power Incorporated interconnection queue. **50 mva Transformer will be ordere**d Feb 2008 with a 12-15 month delivery date.
• **Underground Conduit** from turbine to first pole location will be installed without Low Voltage and High Voltage cabling when the foundations are installed. Conduit will be inspected and stubbed off until overhead collector lines are installed, preventing cable damage or theft during construction.
• **34.5 overhead collection** lines will follow the crane in certain planned stages not to interfere with crane movements from site to site and will be energized in sequenced circuits to allow individual commissioning as turbine erection continues.
• **Turbine delivery** will be timed with the base section being erected. As trucks arrive, the cranes will be dedicated to unloading only and the erection crane will use a tailing crane as a separate team allowing the sites to spread out increasing work capacity per day.
• **Pre-delivery inspection** will be carried out by the Quality Control Engineer as equipment arrives, in accordance with the manufacturers' inspection schedule.

2.5 Operations and Maintenance

2.5.1 Maintenance Management

The daily operations and maintenance will be co-ordinated by the Proponent through a private maintenance and overhaul facility located off-site. Communications to the substation WFMS will be connected to the maintenance facility. The turbines will operate 24 hours a day and are subject to calendar maintenance and inspection schedules involving oil changes and grease lubrication. Malfunctions and parts replacement will be assessed on an individual basis. A spares inventory will be provided by the manufacturer at the maintenance facility, and will be available for the recovery of unexpected breakdowns. For maintenance planning, access to the site will be controlled and managed through private land under the rules the individual site leases. Site access will be carried out on routes pre-planned to reduce excess travel and impact on existing use.

2.5.2 Emissions and Waste Discharge

During operations and maintenance of the proposed wind farm emissions will be minimal. The wind turbines, once constructed, do not generate air emissions. Vehicle emissions will be reduced by pre-planned maintenance activities and pre-planned access routes. All waste products will be transferred to the maintenance facility and disposed of in accordance with the municipal waste regulations for collection and safe disposal.

2.5.3 Aeronautical Obstruction Lighting

Table 2.4 shows the selected turbines to be used in the aeronautical lighting plan.

Table: 2.4: Aeronautical Lighting Plan - Proposed Dalhousie Mountain Wind Farm

Turbine ID	Proposed Lit	Latitude [1] (N)			Longitude [1] (W)			Ground Elevation [2]	Nacelle Elevation [3]	Maximum. Elevation [4]
		Degrees	Minutes	Seconds	Degrees	Minutes	Seconds	(m asl) [5]	(m asl) [5]	(m asl) [5]
P1-1	Yes	45	35	25	62	58	3	305	385	423
P1-10	Yes	45	35	8	62	56	47	305	385	424
P1-11	Yes	45	34	13	62	57	43	330	410	449
P1-13		45	33	55	62	57	36	326	406	444
P1-15	Yes	45	34	50	62	56	24	292	372	410
P1-16		45	34	12	62	58	7	330	410	448
P1-17		45	34	33	62	56	52	291	371	409
P1-18		45	34	0	62	56	52	306	386	424
P1-19		45	34	26	62	58	8	325	405	443
P1-20	Yes	45	33	38	62	57	28	300	380	419
P1-21		45	34	41	62	58	12	321	401	439
P1-22		45	34	59	62	57	1	288	368	406
P1-24		45	34	58	62	56	38	300	380	419
P1-25	Yes	45	35	36	62	57	46	325	405	444
P1-26		45	34	21	62	57	20	318	398	437
P1-27	Yes	45	35	30	62	57	21	299	379	418
P1-28		45	32	50	62	58	31	300	380	418
P1-3		45	33	52	62	57	4	307	387	425
P1-34		45	34	21	62	58	50	319	399	438
P1-36	Yes	45	33	35	62	59	18	288	368	406
P1-37	Yes	45	34	11	62	59	6	306	386	424
P1-39	Yes	45	34	7	63	0	10	292	372	411
P1-4	Yes	45	32	35	62	58	41	300	380	419
P1-40	Yes	45	34	12	62	59	52	300	380	419
P1-41		45	34	1	62	59	43	315	395	433
P1-42		45	33	56	62	59	19	308	388	426
P1-43	Yes	45	35	0	62	58	31	286	366	404
P1-45	Yes	45	34	32	62	58	33	310	390	429
P1-46	Yes	45	33	8	62	58	38	286	366	404
P1-5		45	33	24	62	59	5	292	372	411
P1-6		45	34	44	62	57	31	290	370	409
P1-7	Yes	45	34	11	62	56	42	295	375	414
P1-8		45	34	14	62	56	59	316	396	434
P1-9		45	35	10	62	58	14	300	380	419

Notes: 1: Latitude and Longitude Coordinate Reference - WGS 84; 2: m asl = meters above sea level; 3: Nacelle elevation = ground elevation + 80m (height of centre of nacelle); 4: Maximum elevation = nacelle elevation + 38.5 m (length of vertical blade; 5: Value rounded to nearest meter

The proposed Aeronautical Obstruction lighting will be installed in compliance with Part VI of the Canadian Aviation Regulations 2007-2 Standard 6321.19 as administered by Transport Canada. The type of lighting will consist of flashing red beacons with an illumination of 20, 000 candelas during the day and red with an illumination of 2,000 candelas during night. This complies with CL-864 of Appendix B of the Standard. Figure 2.8 shows the layout of the Aeronautical Lighting Plan as applied for in June 2008. On July 25, 2008 RMSenergy received approval for the application with minor changes. Transport Canada indicated that lighting was not required on turbines P1-17, P1-18 and P1-6.

2.6 Decommissioning

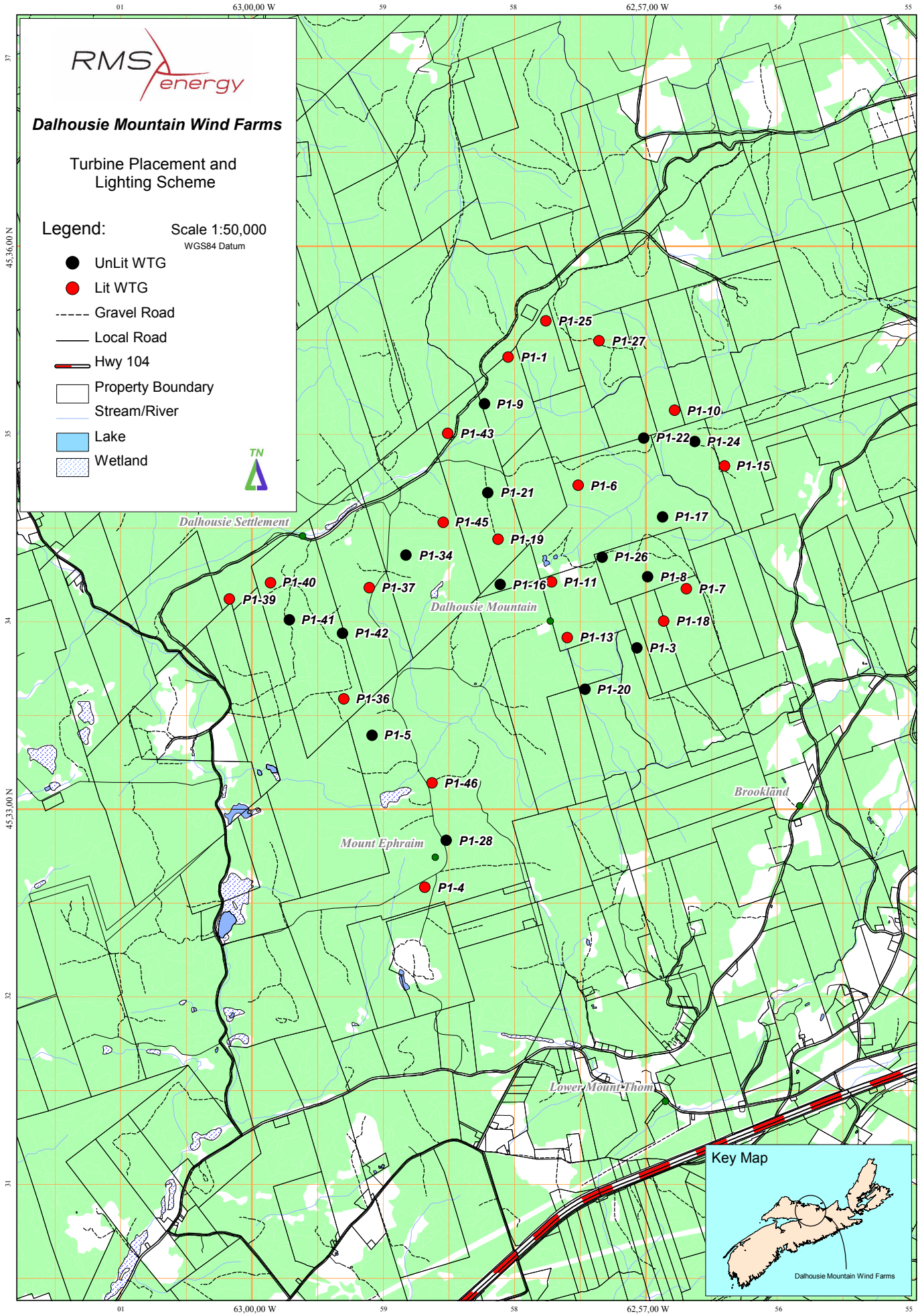
The expected useful life of a turbine is 30 years. The output production compared to the running cost in 30 years will determine the need to replace major components to increase productivity or to install new turbines. It is not uncommon for well-maintained projects to have a longer useful life than the design life. If during its useful life, the Project is no longer required to meet the Province's renewable energy needs, turbines could be dismantled and transported to another location.

Although no definitive decommissioning plan has been finalized at this stage in the planning process, it is foreseeable that at the end of the Project's useful life, the structures can be dismantled. The steel towers, maintenance shop/control building could be kept to support another wind power generation project, converted to an alternate use, sold to a third party, or dismantled. Dismantling activities for the Project could involve the following works:

- Removal of mechanical and electrical equipment;
- Removal of ancillary facilities;
- Removal of concrete foundation to a depth that does not interfere with original land use operations:
- Demolish remaining site structures;
- Fill and grade the turbine site with suitable fill;
- Replace topsoil and cultivate and/or seed as required.

The procedures for decommissioning will be the reverse deployment of the construction activities and timing schedule (see Table 2.1). The road system will remain in place for landowner use.

As documented throughout this EA, the Project has been designed to minimize the risk of contamination during its operational lifespan. Containment and storage areas will limit contamination. Any remedial clean-up during the decommissioning or asset transfer will therefore also be limited. Provided the Project is operated and maintained in-line with industry best practices there should be no significant environmental liabilities associated with clean-up or remediation. Regardless of the ultimate outcome, all decommissioning activities will be performed in compliance with the applicable regulations in force at that time.


RMS energy
Dalhousie Mountain Wind Farms
Turbine Placement and Lighting Scheme
Legend:
Scale 1:50,000
WGS84 Datum
UnLit WTG
Lit WTG
Gravel Road
Local Road
Hwy 104
Property Boundary
Stream/River
Lake
Wetland
TN
63,00,00 W
62,57,00 W
45,36,00 N
45,33,00 N
P1-25
P1-27
P1-1
P1-9
P1-10
P1-43
P1-22
P1-24
P1-15
P1-6
P1-21
P1-17
P1-45
P1-19
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P1-26
P1-40
P1-37
P1-16
P1-11
P1-8
P1-7
P1-39
P1-41
P1-42
P1-18
P1-13
P1-3
P1-20
P1-36
P1-5
P1-46
P1-28
P1-4
Dalhousie Settlement
Dalhousie Mountain
Brookland
Mount Ephraim
Lower Mount Thom
Key Map
Dalhousie Mountain Wind Farms

SECTION 3.0 – SCOPE OF THE ASSESSMENT

In order to determine the scope of the RMSenergy wind energy project, the proponent has described the project and sought opinions from the public and regulators on the potential environmental and socio-economic issues related to the project. Tables 1-2 and 1-4 of Section 1.3 identify those individuals and groups who were contacted and who offered comments on the issues. These comments provide the basis for identifying the Valued Eco-system Components (VECs) which must be considered in the assessment.

The assessment must also consider the boundaries of the study area which are dependant on characteristics of individual VECs, guidance from environmental guidelines and regulations and the provisions of Provincial and County building codes and regulations.

3.1 Study Area Boundaries

All lands for the first phase of this project are located within a project boundary identified in Figure 1.1. The study area is different for each individual Valued Eco-system Component (VEC) and areas of concern. Separate study areas are listed below with the spacial boundaries for the individual studies. The study findings are described in Sections 4 and 5. The following is a summary of the environmental studies programs and special boundaries:

- **Flora: Botany, wetlands and waterways surveys** have been conducted on a 40 m wide swath along all existing and proposed access routes. These surveys have also been conducted at individual turbine locations at a 75m radius from the GPS turbine co-ordinates as listed in Table 2.1: *Dalhousie Mountain Wind Farm: Turbine Locations and Optional Sites: Coordinates and Elevations***.** Refer to Appendix C4, 5, 6 for the complete study.

- **Visual:** Photomontages were created for the posters used in public presentations. Two locations of good visibility were selected directly SW from center turbine #11 at a distance of 3.2 (km) away and 7.3 km. Fig.5.4 is a visual representation map indicating the number of turbines visible for a 25 km radius around the center Turbine # 11. Refer to Appendix C1 for the complete study.

- **Sound:** A computer analysis was performed using the decibel (dB) rating of the GE 1.5 as the maximum noise level. Sound levels were extended approximately 2 km away from the turbines and the results indicated that noise levels dropped to approximately 35 dB. Refer to Appendix C2 for the complete study.

- **Avian Species:** Bird surveys using various point count stations were carried out within a radius of 10 km from center Turbine # 11. Refer to Appendix C4, 5, 6**,** and AS 5 for the complete studies.

- **Mainland Moose Population:** Various surveys were carried out to points as far away as 10 km from center Turbine # 11 as shown in Fig 1.1. Refer to Appendix C8 for the complete study.

- **Bats:** Sonar recordings of bats were performed for 1 month during core migration at two turbine locations which reflect the most likely corridor of flight. Refer to Appendix C7 for the complete study.

  Archaeology: Desktop study and field surveys were carried out on all proposed areas of disturbance. First Nations land and European settlement features such as cemeteries and homesteads are the primary concern in this area. The focus for the construction phase is along the easements and on the turbine foundation areas. As mitigation, where archaeological sensitive sites are detected, construction work is subject to a work stop order procedure as laid out in Section 6 of this EA. Refer to Supplemental Appendix AS: 2 for the complete site specific archaeological field study and report.

3.2 Provincial Project Categorization

Environmental impact assessment in Nova Scotia is the responsibility of the NSE under *Environmental Impact Assessment Regulation* made pursuant to the *Environment Act*. Schedule A of that regulation defines those "undertakings" that may result in a significant environmental impact. Included is "all electric power generating facilities with a production rating of two megawatts or more" are required to submit a registration document following the guidelines provided in the *Proponents Guide to Wind Power Projects: Guide for preparing an Environmental assessment Registration Document, May 2007.* Under Schedule A of the Nova Scotia Environmental Assessment Regulations, the project is considered a Class 1 Undertaking.

To ensure that the Minister has the requisite information to make an informed decision in accordance with Section 12 of the *Environment Act*, this document provides details on the following:

1. The location of the proposed turbines on Dalhousie Mountain, Pictou County, Nova Scotia;
2. The size and scope of the proposed undertaking;
3. Reference to the meetings and consultations that have taken place;
4. Steps that have been taken by the Proponent to address environmental concerns;
5. Potential environmental effects associated with the construction and operation of the proposed wind turbines;
6. Detail of the proposed schedule; and
7. Detail on existing land use in the area.

3.3 Federal Project Categorization

Since an application has been made to NRCan for Eco-energy funding, the proposed Project is subject to the conditions and requirements of the federal Canadian Environmental Assessment Act (CEAA). This review is conducted in conjunction with the Provincial registration and assessment process cited in Section 3.1. The federal review process addresses those issues under federal jurisdiction. This document includes those issues pertaining to the federal domain.

For the proposed Project, NRCan is the Responsible Authority (RA) and thus responsibility falls to this agency to ensure that the screening report is carried out in compliance with the CEAA. The RA's determination is not whether to proceed with the project, but rather concerns the likelihood of significant adverse environmental effects. The three determination options available to the RA are:

1. The project is not likely to cause significant adverse environmental effects – following this determination the RA may exercise any power or perform any duty or function that would permit the project to be carried out in whole or in part;
2. The project is likely to cause significant adverse environmental effects that cannot be justified – following this determination the RA may not exercise any power or perform any duty or function that would permit the project to be carried out in whole or in part; or
3. It is uncertain whether the project is likely to cause significant adverse environmental effects, or the project is likely to cause significant adverse environmental effects that may be justifiable, or public concerns warrant referral to a mediator or review panel – following any of these determinations the RA must refer the project to the federal Minister of the Environment for a referral to a mediator or review panel.

3.4 Study Objectives

Working within the federal, provincial, and municipal approvals processes, and consistent with NRCan's scope of study, the main objectives of this EA are threefold:

1. To identify, define, and assess the potential effects of the project on VECs. The VECs identified for study represent environmental features that were known to occur or had a reasonable probability of occurrence within the study area, and which subsequently could be affected by the Project (e.g., wetlands, avian species, terrestrial flora, etc.). VECs selected for assessment within the study area are provided in Table 1.1 and are discussed in more detail in Section 5 and the technical appendices. This approach of focusing on pertinent VECs/key

issues for assessment is consistent with the International Association for Impact Assessment's (IAIA) best practice criterion of "focus" (Section 3.4).

2. To ensure environmental considerations are explicitly addressed and incorporated into the planning, design, and decision-making processes.

3. Considering objectives one and two, to design a project follow-up and monitoring program that contains plans to prevent, mitigate, and compensate for the potentially adverse environmental effects of the Project.

3.5 Methodology of Environmental Screening

A key component of the EA methodology is the identification and description of the pre-project environmental conditions (i.e., baseline conditions). During the preparation of this EA, primary and secondary data collection activities were undertaken to determine key baseline conditions in and around the proposed Project. These studies are referenced in the following Section 4: Description of the Existing Environment. The complete studies are presented in the appendices. Each study method was based upon the best practicable science and tools available at the time of survey as shown in Table 1.1 and through consultation with the Agencies listed in Table 1.2.

3.6 Uncertainty and Data Gaps

Identifying uncertainty and data gaps is important when evaluating the occurrence and significance of potentially adverse environmental effects and their probabilities. In terms of incomplete and unreliable knowledge during the EA, it was determined that existing information about the study area was insufficient for the purposes of the EA. Thus, background data collection studies were completed to provide a description of the Studies in Appendix C. The field-based information, collected on the basis of best practicable science and industry accepted methodologies, is considered reliable and suitable for use within the EA. The completion of these background field studies has minimized both uncertainty and data gaps related to the proposed Project and the assessment of its potentially adverse environmental effects.