St. Joseph Wind Farm Inc.

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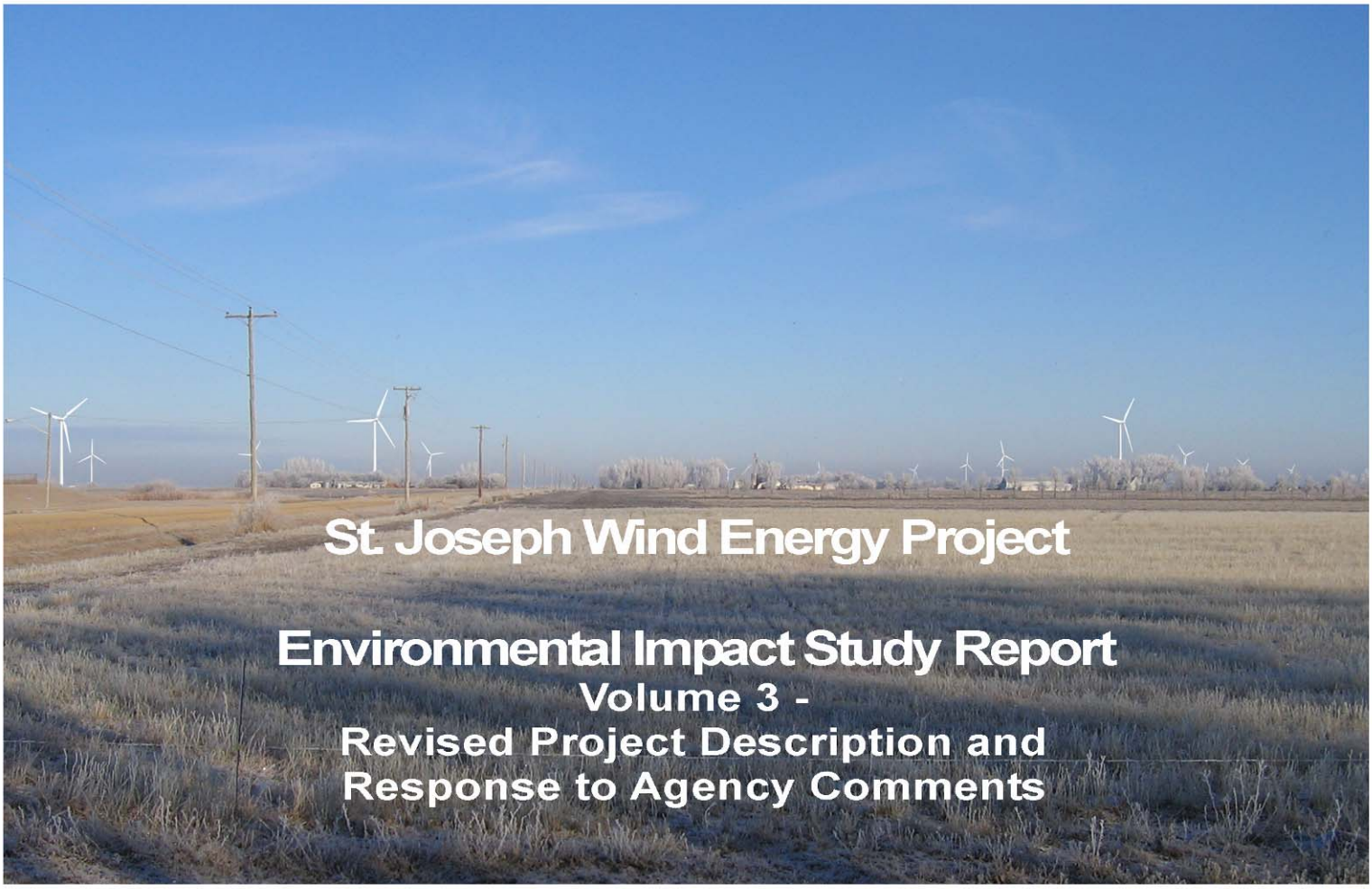

St. Joseph Wind Energy Project

Environmental Impact Study Report
Volume 3 -
Revised Project Description and Response to Agency Comments




Submitted to :
Manitoba Conservation
Canadian Environmental Assessment Agency

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helimax
Membre GL Group Member

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VOLUME 3

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1 INTRODUCTION

The current document was prepared to meet three main objectives which are: 1) to present the changes made to the St. Joseph Wind Energy Project (the "Project") since the Environmental Impact Study Report (EISR) was submitted to Manitoba Conservation and to the Canadian Environmental Assessment Agency, in July 2008; 2) to assess any new potential effect on the environment that could occur as a result of the changes to the Project; 3) to address concerns brought up to the Proponent by the provincial and federal agencies during the review of the EISR.

The present document is a complement to the EISR documents previously submitted, and as such, should be reviewed with a full understanding of these documents.

2 REVISED PROJECT DESCRIPTION

2.1 Optimization Process and Project Layout

2.1.1 Revised Project Layout

Since the submittal of the EISR, the St. Joseph turbine layout has been revised due to a change in the wind turbine manufacturer and to further reduce any potential effects. Originally, as a worse-case scenario, a layout of 200 1.5-MW wind turbine generators was considered to assess the potential environmental impacts. These wind turbines were to be distributed over a surface area of approximately 215 km^2 of agricultural land. Since then, an agreement with Siemens was conducted and the Siemens SWT-2.3-101 2.3 MW wind turbine is now the model selected for the Project. This change, for the same nameplate capacity of 300 MW, brings the total number of turbines down to 130. Map 1 illustrates the new layout as well as the former locations.

2.1.2 Revised Project Constraints

In addition to the constraints and setbacks listed in the EISR, new constraints were considered in order to address specific concerns expressed by the population or government specialists. The new constraints considered in the revised layout are the following:

- A 1-km setback was implemented from the built-up area of St. Joseph
- Setbacks requested by Parks Canada consisting of:
    - Implementing a 3.2-km setback from the village of Neubergthal,
    - Avoiding the 9 sections to the east of Neubergthal (1-2-1-W, 36-1-1-W, 25-1-1-W, 6-2-1-E, 5-2-1-E, 31-1-1-E, 32-1-1-E, 30-1-1-E, 29-1-1-E),
    - Avoid placing turbines along Highway 421 on a distance of 8-km (5 miles) east of the village to protect that line of sight when accessing the community (Note: there are no turbines closer than 1.4 km of Highway 421 within 11 km east of the village of Neubergthal).

Map 2 presents the new layout and all constraints considered.

2.2 Project Components

The changes to the project components mainly involve the turbine model and the number of turbines to be installed. All other items described in the EISR remain the same, although associated figures, such as the length of new access roads for example, have been updated. However, it should be noted that the entire electrical collection system will now be installed underground. The only overhead lines will be the 230-kV transmission lines, for which more details are provided below. The following tables present, when applicable, the changes in the Project components. Map 3 presents the revised layout and other project infrastructures.

Table 2-1: Project Components and Infrastructures

Components	Characteristics	
	EISR	Revised
Wind Turbines		
Maximum number	200	**130**
Model	GE 1.5 sle – 1.5MW, Mitsubishi MWT95 – 2.4 MW, or equivalent	**Siemens SWT 2.3-101 - 2.3 MW**
Nameplate capacity	300 MW	
Collector System, Substation and Transmission (TX) Line		
Collector System Information	34.5 kV - Mix of underground and overhead lines	34.5 kV - **All underground lines**
Substations Locations	North and south end of the Project (see Map 3) 34.5 kV to 230 kV	
TX Line from substations to Manitoba Hydro station	230 kV, 2 sections	230 kV, 2 sections of 7 km each **(14 km total length)**
Manitoba Hydro Station Location	Near Letellier, on Road 201	
Access Roads and Crane Pads		
New roads	59 km	**between 35 and 53 km**
Existing roads used (some of which will be improved and/or widened)	133 km	**between 68 to 112 km**
Crane pad	300 m^2 each	
Other		
Met towers	St. Joseph 1 (BE22401): installed on 13 July 2005 St. Joseph 2 (BE22402): installed on 4 August 2006	
Operation and maintenance building	Located with north substation	
Gravel pit	Location to be determined	

Table 2-2: Specifications of the Siemens SWT-2.3-101

	Specifications*		Total for Project	
	EISR	Revised	EISR	Revised
Capacity	Between 1.5 and 2.4 MW	**2.3 MW**	200	**130**
Hub Height	80 m		N/A	N/A
Tower	Steel, tubular shape, white; 3-4 sections; total length of 80 m; 4-5 m diameter at base, 3 m at nacelle	**3 sections**	200	**130**
Blades	Hollow structure mostly made of fibreglass, white; length of 37-46.2 m	**Length of 49 m**	600	**390**
Rotor	Diameter: 77 - 95 m Swept Area: 4,656 - 7,088	**Diameter: 101 m** **Swept Area: 8,000 m^2**	N/A	N/A
Rotation Speed	9.0 – 20 rpm	**6.0 – 16.0 rpm**	N/A	N/A
Cut-in/Cut-out Speeds	3.0 – 25.0 m/s	**4.0 – 25.0 m/s** **(14.4 – 90 km/h)**	N/A	N/A
Noise Level	103.7 - 107.3 dBA	**104 dBA at 6 m/s**	N/A	N/A
Nacelle	Houses the major components		200	**130**
Generator	Voltage: 575 V to 690 V Frequency: 50 / 60 Hz		N/A	N/A
Transformer	In the nacelle or at the base of the tower. Steps up the WTG's generated power to 34.5 kV	**Inside the base of the tower. Steps up the generated power to 34.5 kV.**	N/A	N/A
Estimated Total Weight of Turbine	Approximately 200 tonnes	**Approximately 300 tonnes**	N/A	N/A
Foundation Dimensions	Gravity-type: footprint of 400 m^2 (approx 20 m diam. x 1.5 m deep; depending on soil conditions) Concrete Pile and Cap: footprint of 60 m^2 (8.5 m diam. x 1.5 m deep cap with 24 x 0.6 m diam. x 13.5 m deep pile)	**Deep Pile-Type:** footprint of 150 m^2 **- Driven Steel Pile: Octagon ring of approx: 24 piles, 12.2 m diam., driven to rejection estimated at 37 m depth.** **- Pile Cap: Excavation approx.: 3 m depth by 13.7 m wide octagon, with 386 m^3 of concrete 2.1 m thick and 0.6 m below grade. 0.6 m deep, 5.6 m diam. turbine pedestal at grade.**	8 ha	**1.95 ha**
Estimated Excavation Size for Foundation	500 m^3, approximately (Depending on soil condition)	**466 m^3, approximately**	N/A	N/A
Estimated Material Volume Once Excavated	700 m^3 per foundation, approximately (Depending on type of material excavated)		140,000 m^3	**91,000 m^3**
Crane pad (same material as new access roads)	300 m^2		6 ha	**3.9 ha**
Temporary Footprint for Turbine Installation Area (i.e., cleared area required to assemble the turbine)	100-m diameter (0.8 ha) maximum (Conservative assumption)		160 ha	**104 ha**
Permanent Footprint of Turbine (once assembled – incl. foundation, crane pad, transformer)	700 m^2		14 ha	**9.1 ha**

2.2.1 Transmission Line

As indicated on Map 3 and on Figure 2-1, the two transformer stations will connect to the Letellier substation by two 230-kV transmission line segments. The two 7-km long segments will run on the east side of the Mile 4E road toward Highway 201, and then head east along 1/4 section lines on both sides of the Highway to the Letellier substation. The total right-of-way length for both segments is 14 km. The proposed transmission line routes shown are based on specific engineering design criteria. Final route optimization might result in minor modifications to the alignments shown.

Figure 2-2 and Figure 2-3 show cross-sections of possible transmission lines scenarios. Where the proposed route is located on property immediately adjacent to a road allowance, the structures will typically be situated just outside the road allowance. The maximum right-of-way requirement, outside the public road allowance, will be approximately 29 m. Where the proposed route is located along the 1/4 section lines, the maximum right-of-way requirement will be approximately 50 m. The selected right-of-way width will comply with Manitoba Hydro standards and meet Canadian Standards Association (CSA) standards for radio interference.

Following the St. Joseph project licensing under *the Environment Act*, any conditions of the License pertaining to the transmission line component will be transferred to Manitoba Hydro, who will design, construct, own and operate the transmission line. Property compensation for the transmission line and right-of-way will be consistent with Manitoba Hydro's Corporate policy.

Figure 2-1 High Voltage Transmission Line Routing

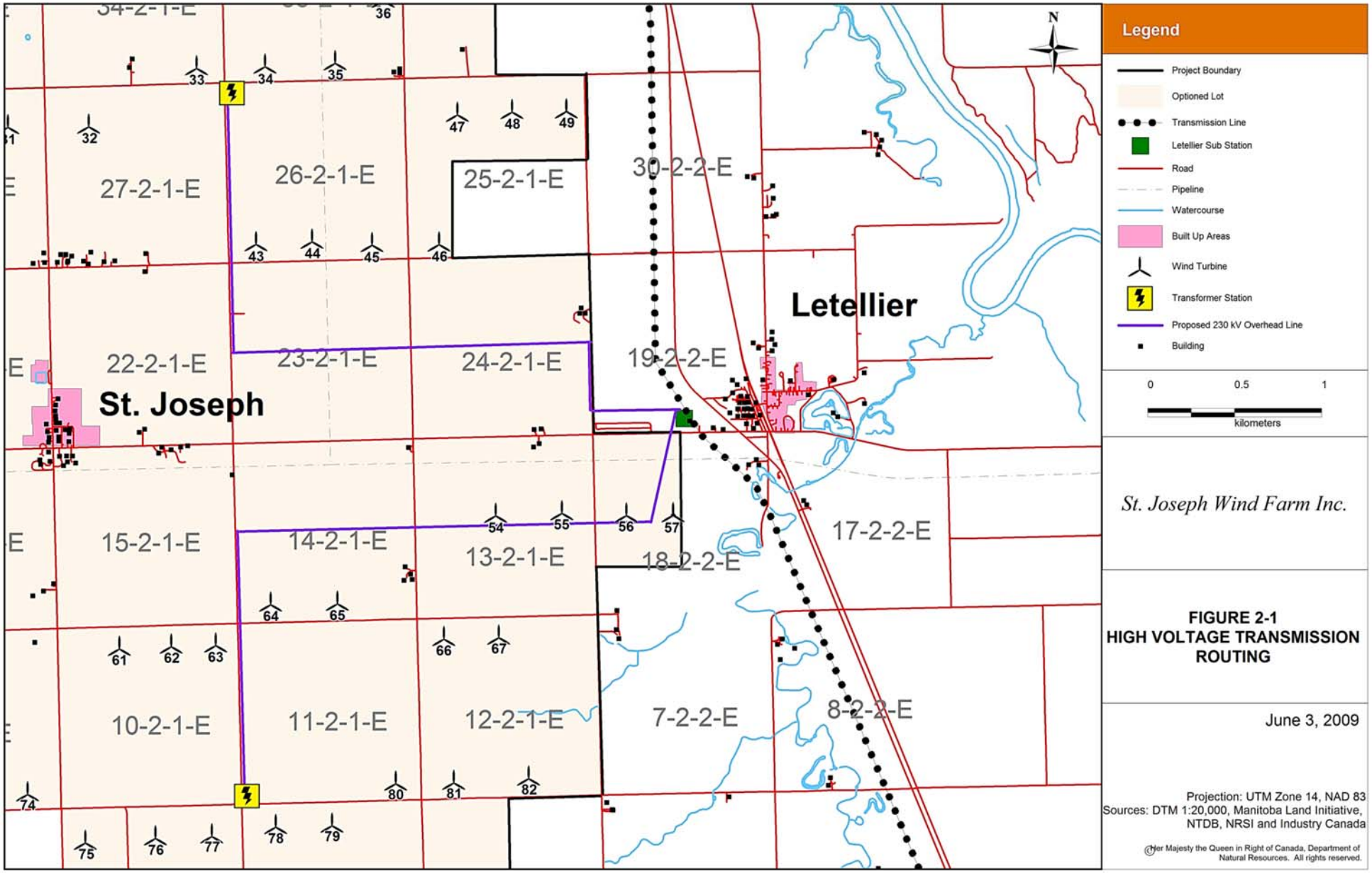
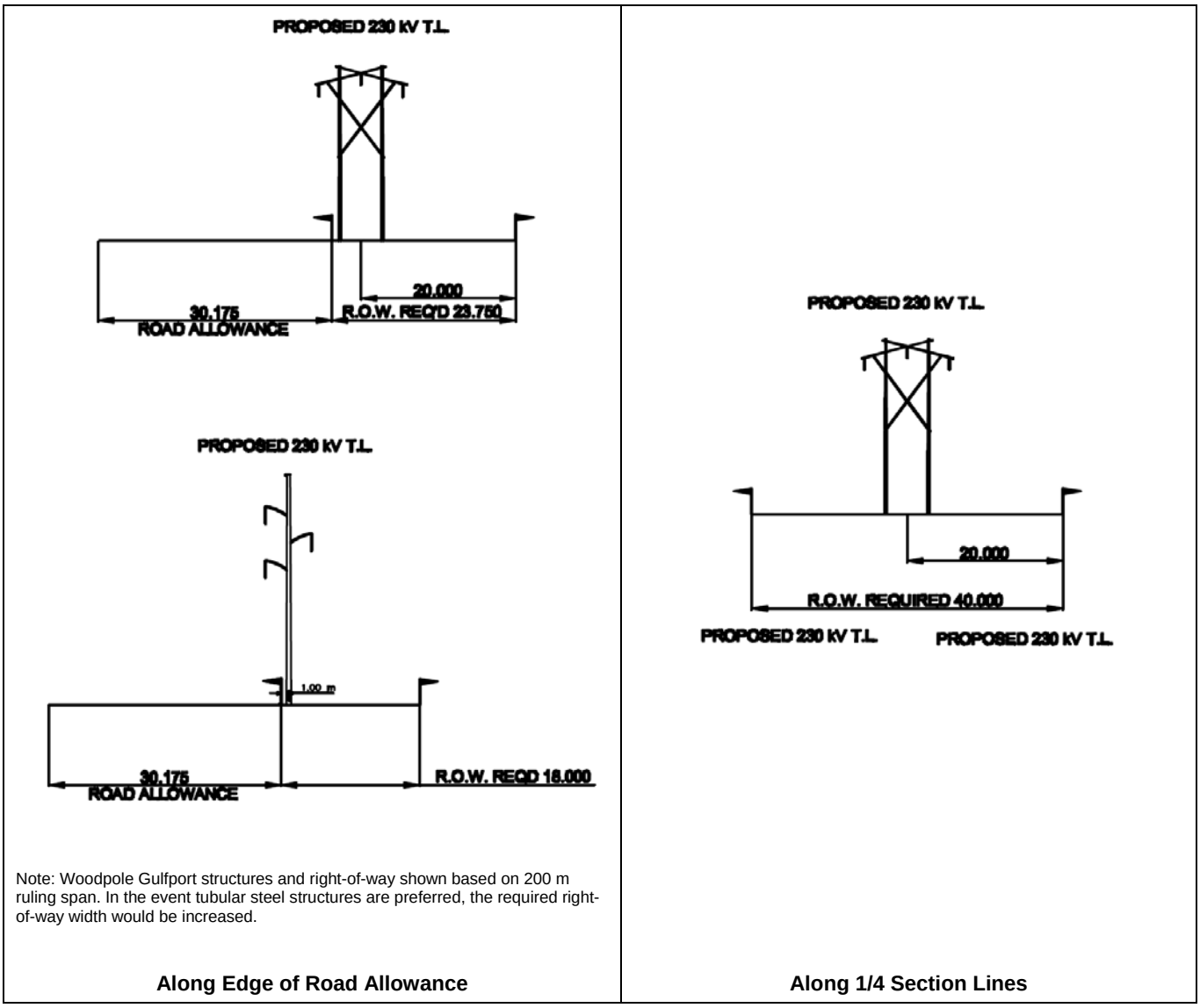


Figure 2-2 Possible Transmission Line Cross-Sections for Woodpole Gulfport Structures (Schematic View)

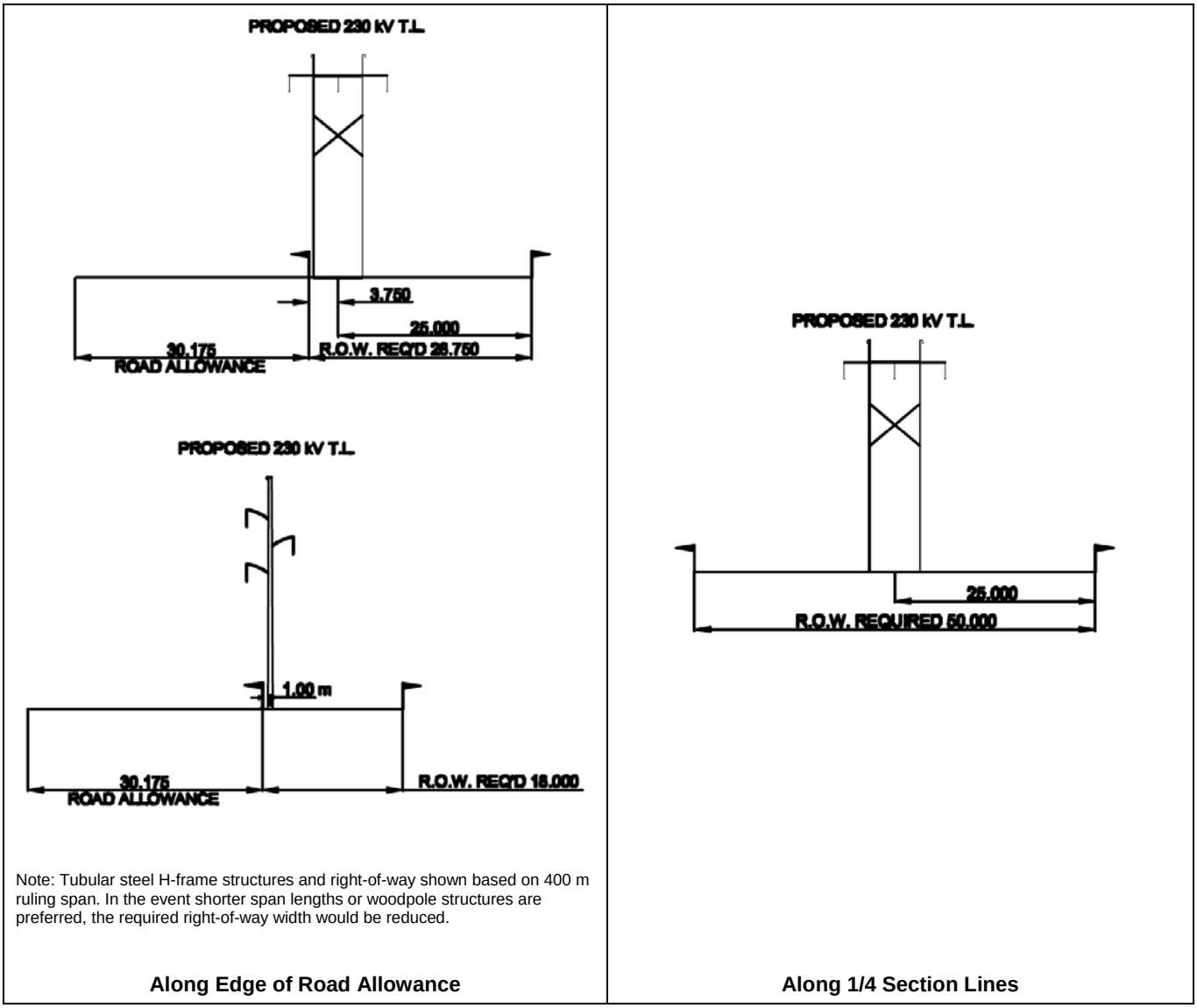


Note: Woodpole Gulfport structures and right-of-way shown based on 200 m ruling span. In the event tubular steel structures are preferred, the required right-of-way width would be increased.

Along Edge of Road Allowance

Along 1/4 Section Lines

Figure 2-3 Possible Transmission Line Cross-Sections for Tubular Steel H-Frame Structures (Schematic View)



Note: Tubular steel H-frame structures and right-of-way shown based on 400 m ruling span. In the event shorter span lengths or woodpole structures are preferred, the required right-of-way width would be reduced.

Along Edge of Road Allowance

Along 1/4 Section Lines

2.2.2 Revised Total Project Footprint

As a result of the new layout, the Project footprint has been reduced, as summarized in Table 2-3.

Table 2-3: Summary of revised Total Project Footprint

Component		During Construction [ha]		During Operation [ha]	
		EISR	Revised	EISR	Revised
Turbines	0.8 ha/turbine during constructional phase 0.07 ha/turbine during operations	160	**104**	14	**9.1**
New Access Roads	**Max. of 53 km** [59]* 11 m width for construction 5 m width during operation	65.4	**58.3**	29.7	**26.5**
Existing Roads potentially to be Enlarged/Improved	**Max. of 93 km** [133]* 6 m extra width	79.6	**55.8**	79.6	**55.8**
Electrical Collection System (All underground)	**136 km** [166]* Trench of 1.5 m width	Included in road ROW or turbine footprint	**20.3 (some of which will be Included in road ROW or turbine footprint)**	Included in road ROW or turbine footprint	**0 (all affected areas will be restored)**
Transmission Lines (230 kV - Overhead)	**14 km** [15.5 km]*, **29-50 m** [40m]* ROW	62	**60**	62	**60**
Maintenance Building and Substations	North: 100 m x 50 m; South: 50 m x 50 m	0.75	0.75	0.75	0.75
Project Area	**20,200 ha** [21,529]*	-	-	-	-
Total Footprint	ha	368	**295.1**	186	**148.2**
	% of Project Area	1.7%	**1.5%**	0.9%	**0.7%**

*Note: Where indicated, former ESIR specifications stated in [ ]; revised specifications indicated in **bold.**

3 REVISED IMPACT ASSESSMENT

In the EISR, the potential impacts of the Project on the biophysical and social environment were assessed for a "maximum impact" scenario. Since the Project size was significantly reduced in terms of number of turbines, the potential impacts will either remain the same or be reduced for all valued components. Potential impacts due to new access roads, collection system and transmission lines were discussed in the EISR and will either remain the same or be reduced. The following table summarizes the changes to the previous impact assessment for each valued environmental components.

Table 3-1: Valued Environmental Components and Revised Impact assessment

VEC	Impact Assessment Change Due to New Layout
Biophysical Components	
Air and Climate	No change
Terrain, Geology, Soils, and Drainage	Lesser footprint – Impact reduced
Hydrogeology	Lesser footprint – Impact reduced
Aquatic Ecosystems	Less water crossing – Impact reduced (with the revised layout, less than 20 drain crossings are expected and no new stream crossing are foreseen)
Vegetation	Lesser footprint – Impact reduced
Avian Fauna	Less WTGs – Impact reduced
Bats	Less WTGs – Impact reduced
Mammals	Less WTGs – Impact reduced
Reptiles and Amphibians	Less WTGs – Impact reduced
Human Components	
Economics and Community Setting	Lesser number of WTGs will reduce the construction duration, hence the temporary employment period for workers hired. No change for total landowner compensation amount during operation since the Project capacity remains at 300 MW. Overall positive economical impacts on the community remain significant.
Public Services and Infrastructure	No significant change
Land Use	Lesser footprint – Impact reduced
Archaeology and Heritage Resources	Lesser potential impact – The area near Neubergthal National Heritage Site was avoided as per Parks Canada's request
Acoustic Environment	Less WTGs – Impact reduced (See Map 4)
Landscape	Less WTGs – Overall visual impact reduced – Increased in rotor diameter size is not significant – The area surrounding Neubergthal was preserved (See revised photomontages in Appendix A)

4 RESPONSE TO COMMENTS FROM FEDERAL AGENCIES

4.1 Comments from the Federal Agencies

Comments from various Federal Agencies were received through the Canadian Environmental Assessment Agency (CEAA). Responses to each Agency's comments are provided in the next section. Comments received are presented in Appendix B.

4.1.1 Environment Canada (EC):

4.1.1.1 Orientation of the turbines

Numerous turbine strings oriented in an east-west direction may increase mortality risk to migrating birds and bats.

Response from the Proponent

As stated in Section 2.2 of the EIS Report, the proposed Project has been configured to maximize its energy yield while taking into consideration a set of biophysical and human-related constraints to ensure the Project is developed in a sustainable manner. The potential impacts on birds and bats were assessed in consideration of the turbine layout presented in the EIS Report. The results of the extensive acoustic bat monitoring conducted during the spring, summer and fall of 2007 revealed low passage rates throughout the monitoring period, even during typical peak periods of summer swarming and bat migration.

Bird monitoring in 2007 and 2008 found that bird use of the Project Area was relatively low. Also considering that the proposed turbines are also set back from the shoreline of the Red River and any significant vegetated areas, a low incidence of bird collisions with turbines is anticipated.

Therefore, given the low mortality risk anticipated, the specific set of constraints, and the reduced number of wind turbines proposed in the revised Project (from 200 to 130), there is no indication that the mortality risk could be further reduced.

4.1.1.2 Lighting

Proponent should be encouraged to seek alternatives to incandescent lighting. The commitment to discuss lighting with CWS is acknowledged.

Response from the Proponent

No additional comment.

4.1.2 Disruption of bird nests for migratory birds

Vegetation clearing should avoid the period between April 15 and July 31 to minimize disturbance to breeding migratory birds. EC supports the proponent recommendation to have a trained biologist on site if vegetation clearing is required during the breeding season.

Response from the Proponent

Very few, if any, vegetation clearing is foreseen. No additional comment.

4.1.3 Mortality monitoring/follow-up

Two years of monitoring for birds and bat mortality are recommended, with the program developed with EC (Canadian Wildlife Service). EC further recommends the proponent discuss mitigation approaches or strategies if mortality monitoring identifies concerns.

Response from the Proponent

The Proponent will conduct two years of post-construction mortality monitoring for birds and bats. The monitoring program will be developed with Canadian Wildlife Service. If concerns are identified, mitigation approaches and strategies will be carefully evaluated and the most recent findings on the matter will be considered when the time comes. The Proponent concurs that there is limited information on potential effects in Manitoba; however the effects have been studied for many years in other Provinces, in United States and across the world. Conversely, research for effective mitigation measures is still at its early stage, especially for bats, and it would be premature to propose specific measures now. The need and the efficiency of current mitigation measures to reduce mortality rates are still to be demonstrated at most wind farms, but promising studies are in progress at other locations, especially in Alberta, from which valuable information will hopefully emerge.

4.1.4 Monarch Butterfly (SARA special concern)

Potential impacts of the project on monarch butterflies should be assessed, with provisions for monitoring.

Response from the Proponent

The monarch butterflies (*Danaus plexippus*) of North American have the most extensive annual migration of any butterfly species. Monarchs that inhabit southeastern Canada (east of Saskatchewan) travel up over 4000 km every fall to their overwintering grounds in Mexico. In Manitoba, this migration occurs during the last two weeks of August.

It is extremely difficult to study flight altitudes of migrating butterflies because their small size makes them inconspicuous (Gibo 1980). Many migrating butterfly species fly near the ground where wind velocity is minimal and they can maintain their flight speed without much effort (Walker 1985), however monarchs have been observed by glider pilots flying as high as 3600 m from the ground during peak migration (Calvert 2001). There is little known about how monarchs are able to fly such great distances although many researchers believe they glide on rising air currents (thermals) (Monarchwatch 2008).

To date there is no existing literature on the impacts of wind turbine operation on butterflies and no specific protocol for assessing butterfly mortalities (Grealey & Stephenson 2007). However, based on the extensive literature available on butterfly natural history and behavior, as well as personal observations (J. Grealey, pers. obs.; A. Taylor, pers. obs.) the majority of butterflies typically fly at flight heights between 0.1 and 3 m above ground. The only species that is likely to fly at a height within the typical blade sphere (40-120 m) of a wind turbine is a migratory monarch.

A study undertaken in Southern Ontario (Gibo and Pallett 1978) investigated flight techniques and patterns of migratory monarch butterflies. It was found that monarchs employ a variety of flight techniques to conserve energy during migration. If strong winds are blowing from the south, the butterflies did not migrate and tended to stay within 1 m of the ground. When wind was from a northern direction, flight techniques changed and flight heights were observed to be 2-15 m. During favorable conditions for soaring, monarchs used thermals to achieve flight heights of 300 m+. This study reveals that the only time monarchs would typically fly within blade sphere is when they are using thermals to achieve soaring altitudes.

Overall, based on currently available data, there is not much evidence to suggest that wind turbine operation is likely to negatively effect monarch migration or cause mortalities.

As stated in the EISR and the Biological Characterization Report, all incidental butterfly observations were recorded during the monitoring period. As a result, 134 incidental observations of monarch were recorded, almost all of them within the month of June.

No specific protocol for assessing butterfly mortalities caused by collisions with wind turbines currently exists. Until a valid protocol is established, the Proponent will add observations of monarch and monarch mortalities in the bird and bat post-construction monitoring protocols.

4.1.5 Natural Resources Canada (NRCan)

4.1.5.1 Federal Assessment requirements

The EIS should clarify certain aspects required in the federal assessment, specifically describing scope of project and assessment, and clarifying federal roles and responsibilities.

Response from the Proponent

The Scope of Project, as defined in the NRCan's *Environmental Impact Statement Guidelines for Screenings of Inland Wind Farms under the* Canadian Environmental Assessment Act (2003)*,* is described in *Section 2 – Technical Project Description* of the EISR. The Scope of Assessment is provided in *Section 3 – Environmental and Social Setting*, where the environmental components likely to be affected by the project are described, and in *Section 5 – Assessment of Effects, Mitigation and Monitoring*, where the potential effects on these components are assessed. The federal roles and responsibilities are described in *Section 1.5 – Regulatory Framework.*

4.1.5.2 Further information required

The specific number, size, and location of the turbines will be required for NRCan to complete its assessment. Other information on project components and activities is requested including for: permanent dwelling locations, noise receptors, gravel pits, temporary concrete batch plants (if any), and vegetation clearing.

Response from the Proponent

Information regarding the number, the size and the locations of the turbines are provided in this Addendum, as well as dwelling locations and noise receptor locations (see Map 4). Detailed construction information regarding gravel pits, temporary concrete batch plants will be provided as soon as final locations are determined. No significant vegetation clearing is foreseen.

4.1.6 Health Canada (HC)

4.1.6.1 Noise

Comments from Health Canada regarding noise, including recommendations for identification of sensitive noise receptors, comments on noise modelling, and recommendations for application of mitigation, can be found in Appendix B (letter from R. Grabowecky to T. May, Sept. 2008).

Response from the Proponent

1. No sensitive noise receptors, as defined by HC, were identified within the Project Area;
2. The revised noise analysis was conducted with Siemens SWT 2.3-101 wind turbine model for which sound power level is reported to be 104 dBA at 6 m/s wind speed. Revised noise isocontours are shown on Map 4.

3. The noise simulation was produced using the noise output of the wind turbine when the wind speed is 6 m/s at a height of 10 m above ground level (104 dBA), whilst respecting 40 dBA for all dwellings considered as point of receptions, as defined in Ontario (i.e. *any point on the premises of a person within 30 m of a dwelling, where sound or vibration originating from other than those premises is received*). For "Participating Receptors" (i.e. *a dwelling on a property that is associated with the Wind Farm by means of a legal agreement with the property owner for the installation and operation of wind turbines or related equipment located on that property*), the maximum sound level used for this project is 45 dBA. The noise simulation was conducted for one-storey (1.5 m agl) and two-storey buildings (4.5 m agl). A noise simulation using noise output at 8 m/s (106 dBA) was also conducted to confirm that all dwellings will be compliant with the 45 dBA limit.

4. Noise simulations are produced using industry standard software, such as CadnaA in the case of St. Joseph. The software is based on the currently approved ISO 9613 standard. This standard provides a model for the calculation of the equivalent continuous A-weighted sound pressure level at a distance from one or more point sources under meteorological conditions favourable to propagation from sources of sound emission. These conditions are for downwind propagation and propagation under a well-developed moderate ground-based temperature inversion, such as commonly occurs at night. The method consists of octave-band algorithms (i.e. with nominal mid-band frequencies from 63 Hz to 8 kHz) for calculating the attenuation of the emitted sound. The algorithm takes into account the following physical effects:
    - Geometrical divergence – attenuation due to spherical spreading from the sound source;
    - Atmospheric absorption – attenuation due to absorption by the atmosphere;
    - Ground effect – attenuation due to the acoustical properties of the ground.

    ISO-9613 input parameters are ambient air temperature, ambient barometric pressure, humidity, source ground factor, middle ground factor, receptor ground factor, receptor height and wind turbine characteristics, amongst others. As a worst-case scenario, the following parameters are considered:
    - the model takes into account the cumulative effect of all turbines;
    - the model assumes that the dwellings are always downwind from all turbines;
    - the model does not include any screening from vegetation.

    In addition to being internationally recognized, ISO 9613 is the calculation methodology strongly recommended by CanWEA (2007) and provinces such as Ontario (NPC-252), Quebec (Instruction Note 98-01), and Alberta (AUC Rule 012).

    Calculations and criteria used are conservative and reflect the fact that the ambient sound levels increase with wind speed.

5. St. Joseph Wind Farm Inc. will carry out any justified noise monitoring required by an Environment Officer at the point of reception, as commonly requested by Manitoba Conservation in previous wind farm Environment Act Licenses. St. Joseph Wind Farm inc. will also implement a complaint reporting and recording process and propose mitigation measures if noise levels exceed current regulation.

4.1.7 Parks Canada

4.1.7.1 Visual Impact on Neubergthal National Historic Site

Notwithstanding previous efforts on the part of the proponent in relocating turbines to minimize visual impact, Parks Canada recommends relocation of turbines 139-142; 123-128; and 154 to 158 due to potential effect on the heritage value associated with the Neubergthal Street Village National Historic Site.

Response from the Proponent

As indicated previously, all recommendations were considered in the revised turbine layout. The constraints map (Map 2) indicates the setback area recommended as a "National Historical Site" area to be avoided.

4.1.8 Transport Canada (TC)

4.1.8.1 Navigable Waters Protection Act (NWPA)

Transport Canada requests that the navigability of the water bodies within the project area be determined. If the water bodies are deemed navigable, then applications under the NPWA will be required, if crossings involve these water bodies. The proponent is advised to submit applications to the Navigable Waters Protection Program with location options. Further information can be found at the following website: http://www.tc.gc.ca/marinesafety/oep/nwpp/guide.htm

Response from the Proponent

The only significant navigable water body is the Rivière-aux-Marais, for which existing water crossings will be used during the construction. If any new crossing is considered in the final construction designs, applications under the NPWA will be submitted.

4.1.8.2 Aeronautical Obstruction

Aeronautical Obstruction Clearance Forms should be submitted to the Transport Canada, Aerodromes & Air Navigation for the wind towers.

Response from the Proponent

Forms have been submitted in April 2009.

4.1.9 Fisheries and Oceans Canada (DFO)

4.1.9.1 Stream Crossing information and recommendations

Design details for specific stream crossings are requested. DFO Operational Statements are noted, specifically Manitoba Operational Statement for High Pressure Directional Drilling (http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/mb/os-eo09_e.htm) and Manitoba Operational Statement for Isolated or Dry Open Cut Stream Crossings (http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/mb/os-eo22_e.htm).

Response from the Proponent

Design details for specific stream crossing, if any, will be provided as soon as they are available, i.e. when the Project enters the construction design phase.

4.1.10 Royal Canadian Mounted Police (RCMP)

4.1.10.1 Radio Frequency issues

The RCMP raised questions regarding radio frequency studies, and whether Manitoba Telecom Services (MTS) sites were taken into account.

Response from the Proponent

A radiocommunication system inventory and impact assessment was conducted in June 2008 and considered the MTS sites (St. Joseph EIS Report, Volume 2, Appendices). Turbines 21, 22 and 23 located within the 1-km consultation zone were relocated in the revised layout.

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Gibo, D. L. and M.J. Pallett. 1979. Soaring Flight of Monarch Butterflies, *Danaus plexippus* (Lepidoptera: Danaidae), During the Late Summer Migration in Southern Ontario. Canadian Journal of Zoology 57: 1393-1401.

J. Grealey and D. Stephenson. 2007. Effects of Wind Turbine Operation on Butterflies. North American Windpower, February 2007, 4(1): 32-33.

Manitoba Co-Operator, 2007. June 21, 2007. p.10
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Monarchwatch. 2008. Research Projects: Flight Vector Analysis. Available at: http://www.monarchwatch.org/class/studproj/vector.htm

Natural Resources Canada, 2003. Environmental Impact Statement Guidelines for Screenings of Inland Wind Farms under the Canadian Environmental Assessment Act.
http://www.canren.gc.ca/programs/index.asp?CaId=190&PgId=1155

Walker, T.J. 1985. Butterfly Migration in the Boundary Layer. Department of Entomology and Nematology, University of Florida.

Map 1. Revised Project Layout (compared with previous EISR layout)

[see seperate file]

Map 2. Revised Project Layout and Constraints

[see seperate file]

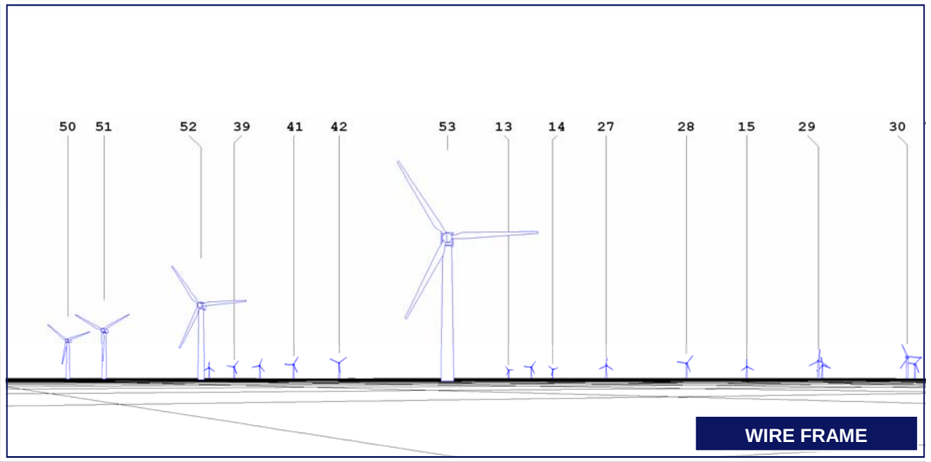
Map 3. Revised Access Road and Electrical Collection System Layouts

[see seperate file]

Map 4. Revised Simulated Noise Isocontours

[see seperate file]

APPENDIX A REVISED VISUAL SIMULATIONS



Note:
* The Wire Frame Technical drawing does not take into consideration vegetation. It is possible that wind turbines are visible on the wire frame drawing but not on the visual simulation.

TECHNICAL DATA

PHOTOGRAPH - VIEW POINT

Photograph Number:		STB0090
Coordinates (UTM 14 NAD83) :	616465 W	5443490 N
Altitude with respect to mean sea level:		238 m
Date Photograph was taken :		November 22, 2007
Direction :		300 degrees T.N.
Focal Length :		35 mm
View span :		54 degrees
Altitude of photograph with respect to ground :		1.8 m

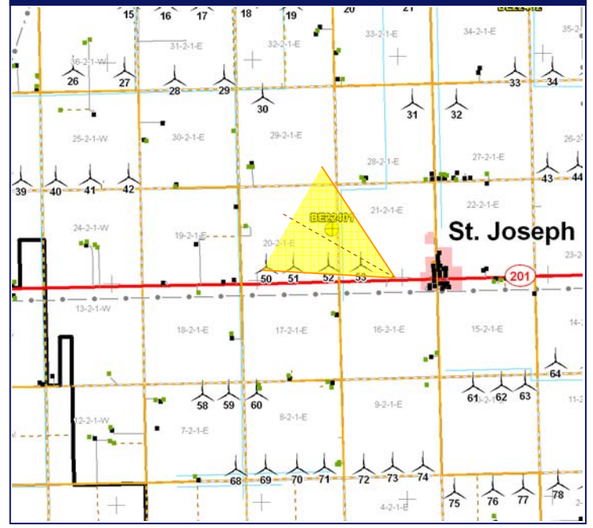
WIND TURBINES USED

Model :	Siemens 2.3-101
Height of nacelle—mid point :	80 m
Rotor Diameter :	101 m

SIMULATION

Visual Simulation No. :	PM02-277_02STJO-STB0090-E616465_N5443490-L30-T03-D300-SD00.WFV
Configuration No. :	L30CLIENT-277STJO(ALL)-20090409-SD.WFL
Total number of wind turbines for the project:	130
Total number of visible wind turbines in visual simulation:	19
Closest visible wind turbine :	No 53 at 0.5 km
Furthest visible wind turbine :	No 13 at 8.6 km

MAP



Prepared for :

St. Joseph Wind Farm Inc.

Prepared by :

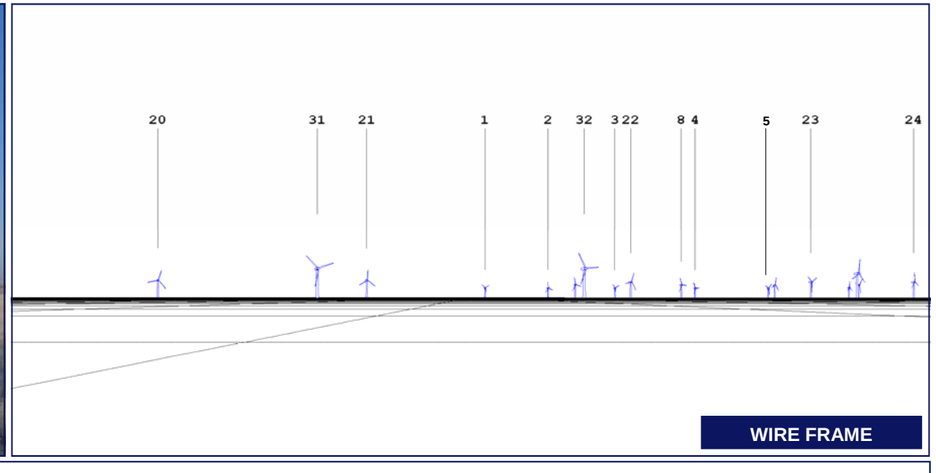
helimax
Membre GL Group Member

Date : April 10th, 2009
Version 04

VISUAL SIMULATION 2

View from West Side of St-Joseph, Looking North-West

St. Joseph Wind Energy Project



Note:
* The Wire Frame Technical drawing does not take into consideration vegetation. It is possible that wind turbines are visible on the wire frame drawing but not on the visual simulation.

TECHNICAL DATA

PHOTOGRAPH - VIEW POINT

Photograph Number:		STA0075
Coordinates (UTM 14 NAD83) :	617309 W	5443964 N
Altitude with respect to mean sea level:		238 m
Date Photograph was taken :		November 21, 2007
Direction :		0 degree T.N.
Focal Length :		35 mm
View span :		54 degrees
Altitude of photograph with respect to ground :		1.8 m

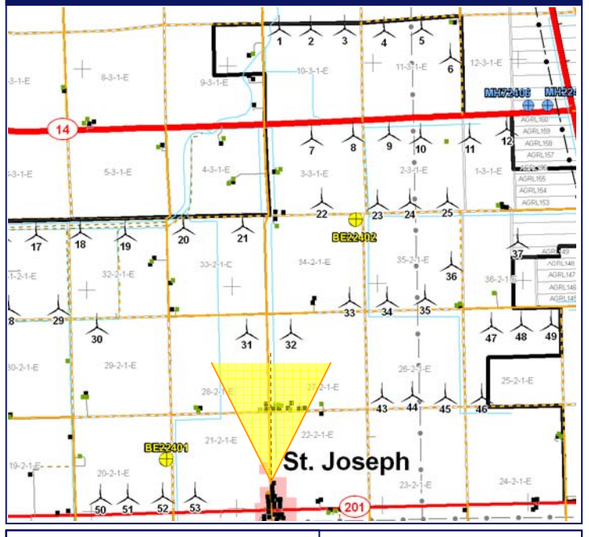
WIND TURBINES USED

Model :	Siemens 2.3-101
Height of nacelle—mid point :	80 m
Rotor Diameter :	101 m

SIMULATION

Visual Simulation No. :	PM03-277_02STJO-STA0075-E617309_N5443964-L30-T03-D0-SD00.WFV
Configuration No. :	L30CLIENT-277STJO(ALL)-20090409-SD.WFL
Total number of wind turbines for the project:	130
Total number of visible wind turbines in visual simulation:	16
Closest visible wind turbine :	No 31 at 2.5 km
Furthest visible wind turbine :	No 5 at 8.0 km

MAP



Prepared for :

St. Joseph Wind Farm Inc.

Prepared by :

helimax
Membre GL Group Member

Date : April 10th, 2009
Version 04

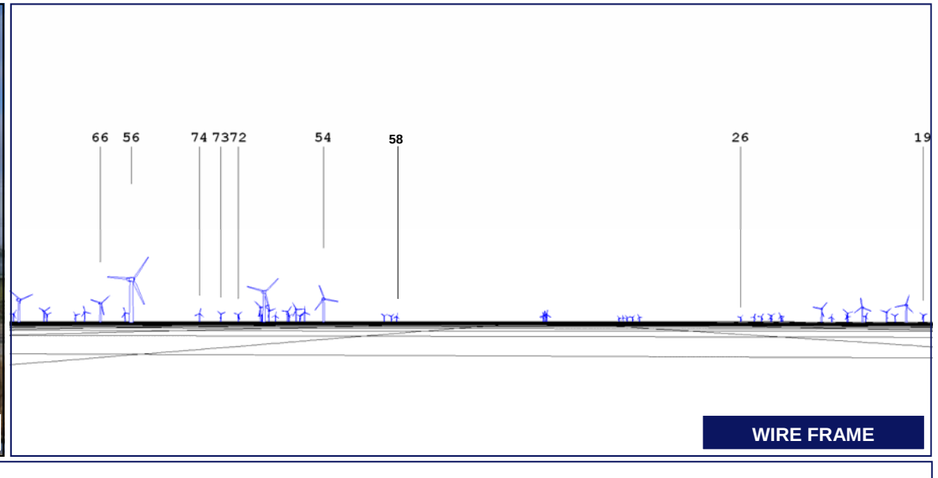
VISUAL SIMULATION 3

View from North End of St-Joseph, Looking North

St. Joseph Wind Energy Project

VISUAL SIMULATION

ORIGINAL PHOTO



WIRE FRAME

Note:
* The Wire Frame Technical drawing does not take into consideration vegetation. It is possible that wind turbines are visible on the wire frame drawing but not on the visual simulation.

TECHNICAL DATA

PHOTOGRAPH - VIEW POINT

Photograph Number:		IMG0003
Coordinates (UTM 14 NAD83) :	623788 W	5443672 N
Altitude with respect to mean sea level:		235 m
Date Photograph was taken :		November 21, 2007
Direction :		265 degrees T.N.
Focal Length :		28 mm
View span :		65 degrees
Altitude of photograph with respect to ground :		1.8 m

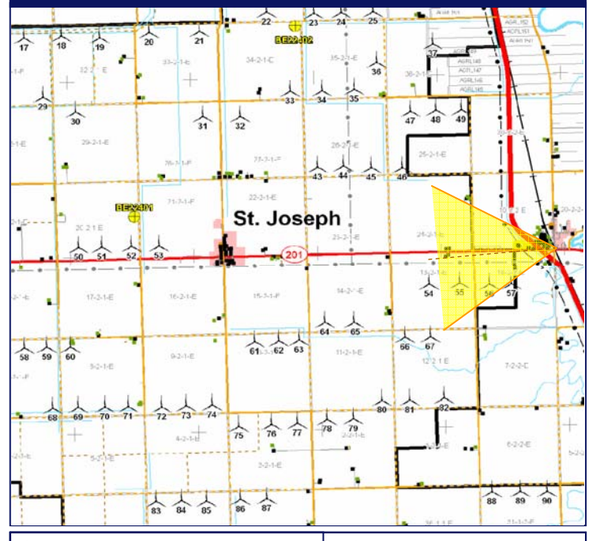
WIND TURBINES USED

Model :	Siemens 2.3-101
Height of nacelle—mid point :	80 m
Rotor Diameter :	101 m

SIMULATION

Visual Simulation No. :	PM04-277_02STJO-IMG0003-E623788_N5443672-L30-T03-D270-SD00.WFV
Configuration No. :	L30CLIENT-277STJO(ALL)-20090409-SD.WFL
Total number of wind turbines for the project:	130
Total number of visible wind turbines in visual simulation:	20
Closest visible wind turbine :	No 56 at 1.5 km
Furthest visible wind turbine :	No 58 at 10.6 km

MAP



Prepared for :

St. Joseph Wind Farm Inc.

Prepared by :

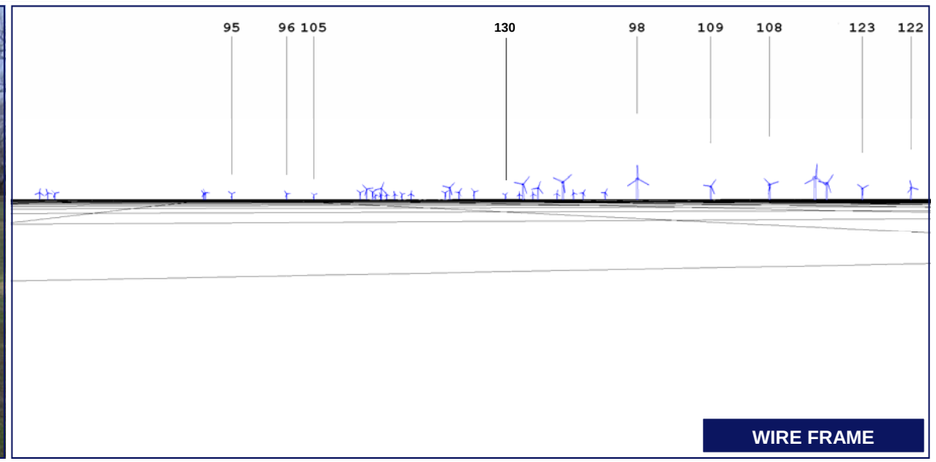
helimax
Membre GL Group Member

Date : June 3rd, 2009
Version 05

VISUAL SIMULATION 4

View from Letellier, Looking West

St. Joseph Wind Energy Project



Note:
* The Wire Frame Technical drawing does not take into consideration vegetation. It is possible that wind turbines are visible on the wire frame drawing but not on the visual simulation.

TECHNICAL DATA

PHOTOGRAPH - VIEW POINT

Photograph Number:		IMG_0011
Coordinates (UTM 14 NAD83) :	610877 W	5436585 N
Altitude with respect to mean sea level:		247 m
Date Photograph was taken :		May 1st, 2008
Direction :		104 degree T.N.
Focal Length :		41 mm
View span :		50 degrees
Altitude of photograph with respect to ground :		1.8 m

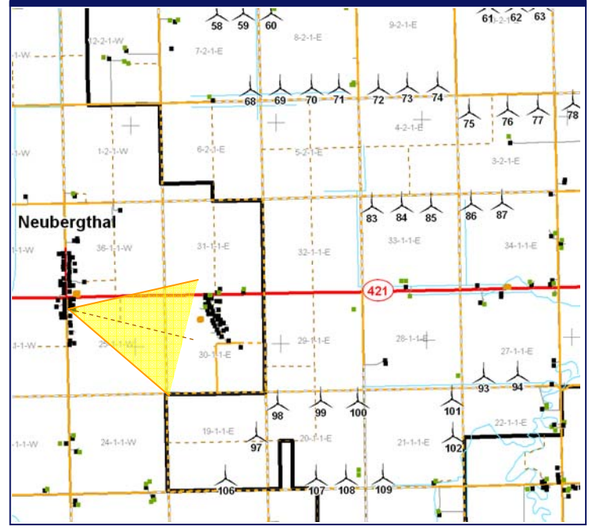
WIND TURBINES USED

Model :	Siemens 2.3-101
Height of nacelle—mid point :	80 m
Rotor Diameter :	101 m

SIMULATION

Visual Simulation No. :	PM05-277_02STJO-IMG_11-E610877_N5436585-L30-T03-D104-SD00.WFV
Configuration No. :	L30CLIENT-277STJO(ALL)-20090409-SD.WFL
Total number of wind turbines for the project:	130
Total number of visible wind turbines in visual simulation:	28
Closest visible wind turbine :	No 98 at 3.8 km
Furthest visible wind turbine :	No 130 at 15.4 km

MAP



Prepared for :

St. Joseph Wind Farm Inc.

Prepared by :

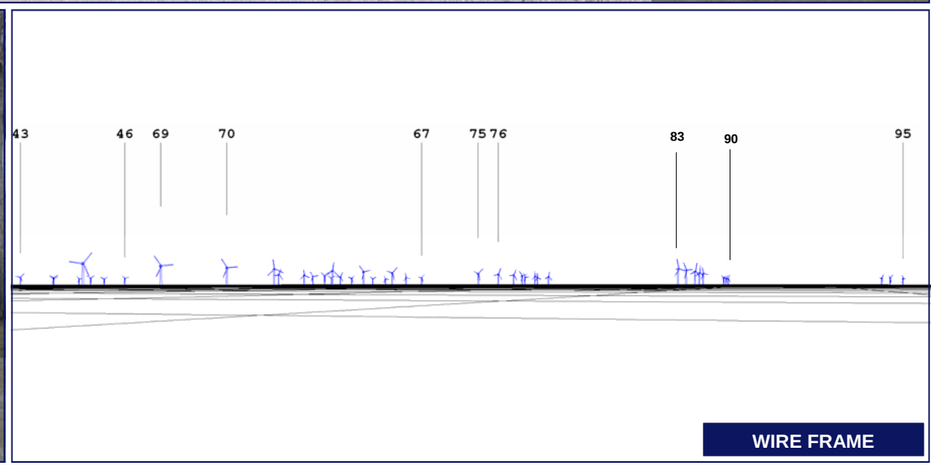
helimax
Membre GL Group Member

Date : April 10th, 2009
Version 03

VISUAL SIMULATION 5

View from Neubergthal Information Kiosk (Community Center)

St. Joseph Wind Energy Project



Note:
* The Wire Frame Technical drawing does not take into consideration vegetation. It is possible that wind turbines are visible on the wire frame drawing but not on the visual simulation.

TECHNICAL DATA

PHOTOGRAPH - VIEW POINT

Photograph Number:		IMG_0015
Coordinates (UTM 14 NAD83) :	610900 W	5437821 N
Altitude with respect to mean sea level:		244 m
Date Photograph was taken :		May 1st, 2008
Direction :		72 degree T.N.
Focal Length :		41 mm
View span :		50 degrees
Altitude of photograph with respect to ground :		1.8 m

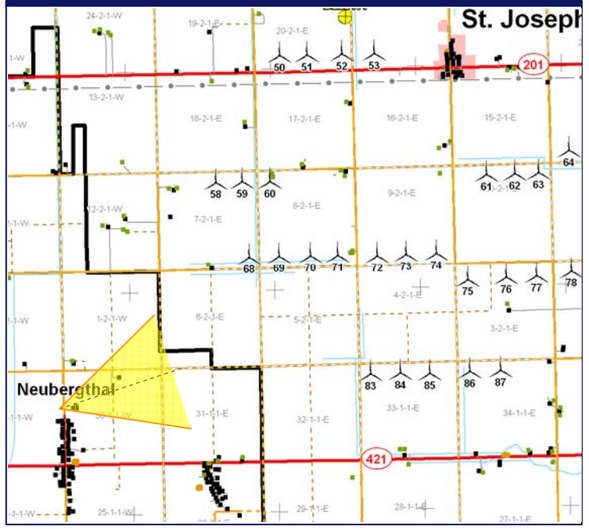
WIND TURBINES USED

Model :	Siemens 2.3-101
Height of nacelle—mid point :	80 m
Rotor Diameter :	101 m

SIMULATION

Visual Simulation No. :	PM07-277_02STJO-IMG_15-E610900_N5437821-L30-T03-D72-SD00.WFV
Configuration No. :	L30CLIENT-277STJO(ALL)-20090409-SD.WFL
Total number of wind turbines for the project:	130
Total number of visible wind turbines in visual simulation:	11
Closest visible wind turbine :	No 83 at 5.1 km
Furthest visible wind turbine :	No 90 at 12.8 km

MAP



Prepared for :

St. Joseph Wind Farm Inc.

Prepared by :

helimax
Membre GL Group Member

Date : April 10th, 2009
Version 03

VISUAL SIMULATION 7

View from Neubergthal Street Village Northern End (from the Church Parking Lot)

St. Joseph Wind Energy Project

TECHNICAL DATA

PHOTOGRAPH - VIEW POINT

Photograph Number:		IMG_0035
Coordinates (UTM 14 NAD83) :	610958 W	5436961 N
Altitude with respect to mean sea level:		247 m
Date Photograph was taken :		May 1st, 2008
Direction :		66 degree T.N.
Focal Length :		41 mm
View span :		50 degrees
Altitude of photograph with respect to ground :		1.8 m

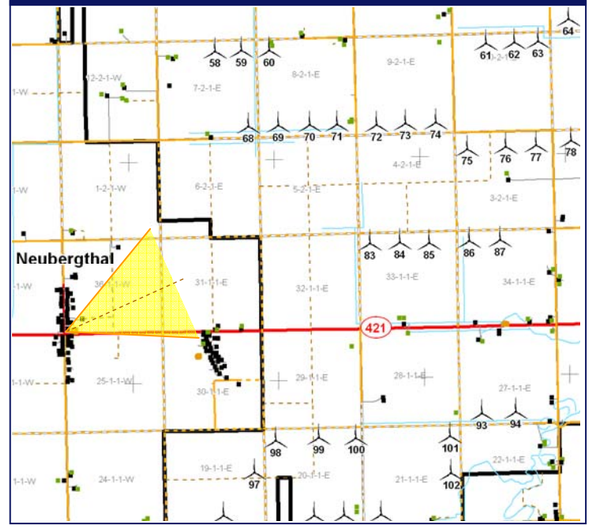
WIND TURBINES USED

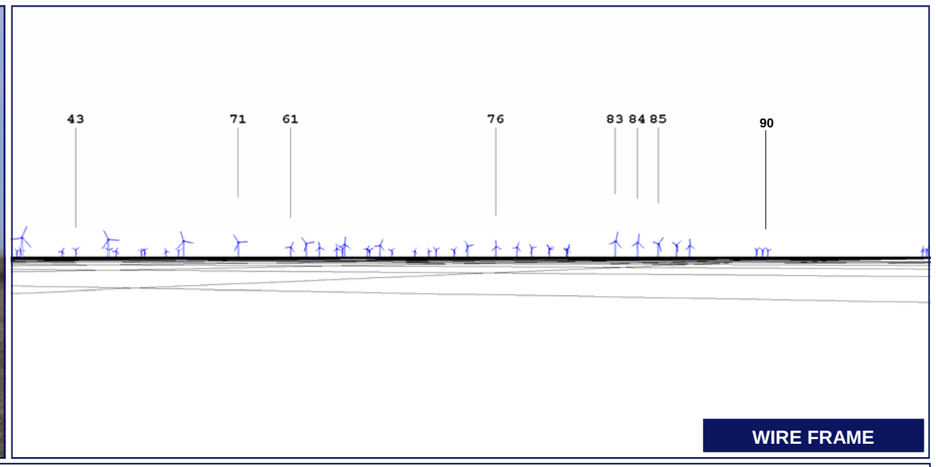
Model :	Siemens 2.3-101
Height of nacelle—mid point :	80 m
Rotor Diameter :	101 m

SIMULATION

Visual Simulation No. :	PM08-277_02STJO-IMG_35-E610958_N5436961-L30-T03-D66-SD00.WFV
Configuration No. :	L30CLIENT-277STJO(ALL)-20090409-SD.WFL
Total number of wind turbines for the project:	130
Total number of visible wind turbines in visual simulation:	17
Closest visible wind turbine :	No 83 at 5.3 km
Furthest visible wind turbine :	No 90 at 12.9 km

MAP





Note:
* The Wire Frame Technical drawing does not take into consideration vegetation. It is possible that wind turbines are visible on the wire frame drawing but not on the visual simulation.

Prepared for :

St. Joseph Wind Farm Inc.

Prepared by :

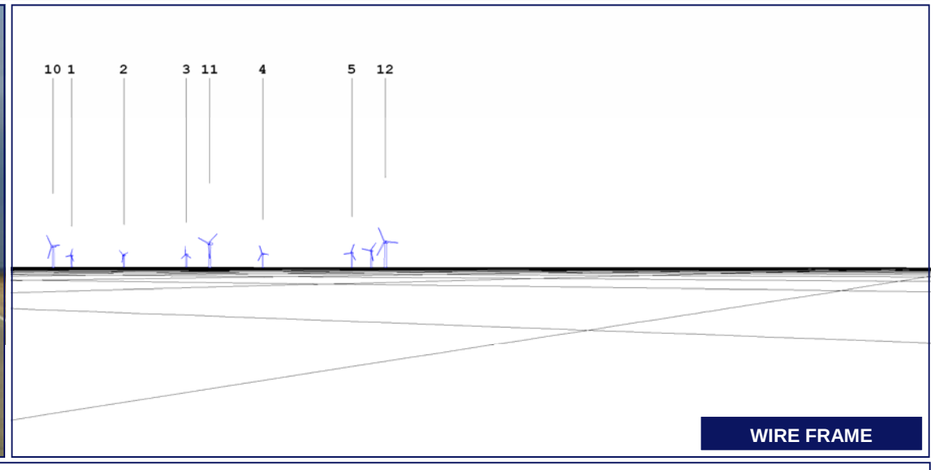
helimax
Membre GL Group Member

Date : April 10th, 2009
Version 03

VISUAL SIMULATION 8

View from Backyard of P. Klippenstein Site, next to Neubergthal Cemetery

St. Joseph Wind Energy Project



Note:
* The Wire Frame Technical drawing does not take into consideration vegetation. It is possible that wind turbines are visible on the wire frame drawing but not on the visual simulation.

TECHNICAL DATA

PHOTOGRAPH - VIEW POINT

Photograph Number:		STD0115
Coordinates (UTM 14 NAD83) :	622860 W	5447576 N
Altitude with respect to mean sea level:		240 m
Date Photograph was taken :		November 23, 2007
Direction :		330 degrees T.N.
Focal Length :		35 mm
View span :		54 degrees
Altitude of photograph with respect to ground :		1.8 m

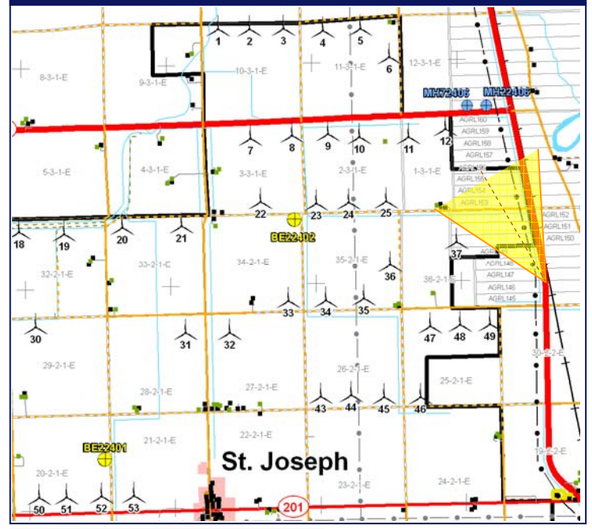
WIND TURBINES USED

Model :	Siemens 2.3-101
Height of nacelle—mid point :	80 m
Rotor Diameter :	101 m

SIMULATION

Visual Simulation No. :	PM09-277_02STJO-IMG0191-E622860_N5447576-L30-T03-D330-SD00.WFV
Configuration No. :	L30CLIENT-277STJO(ALL)-20090409-SD.WFL
Total number of wind turbines for the project:	130
Total number of visible wind turbines in visual simulation:	8
Closest visible wind turbine :	No 12 at 2.8 km
Furthest visible wind turbine :	No 2 at 6.3 km

MAP



Prepared for :

St. Joseph Wind Farm Inc.

Prepared by :

helimax
Membre GL Group Member

Date : April 10th, 200
Version 03

VISUAL SIMULATION 9

View from Highway 75, Looking North West

St. Joseph Wind Energy Project

APPENDIX B COMMENTS FROM THE FEDERAL AGENCIES

Canadian Environmental Assessment Agency
Agence canadienne d'évaluation environnementale

445 - 123 Main Street
Union Station
Winnipeg, Manitoba R3C 4W2

123, rue Main, pièce 445
Union Station
Winnipeg (Manitoba) R3C 4W2

October 29, 2008

CEAA File No.: MP2006-040
NRCan File No: MA-503
MC File No.: 5353.00

Mr. Bryan Blunt
Manitoba Conservation
Environmental Assessment and Licensing Branch
160 - 123 Main Street
Winnipeg, Manitoba R3C 1A5

Dear Mr. Blunt:

SUBJECT: St. Joseph Wind Energy Project - Manitoba

As requested in your letter of July 29, 2008, and as part of our participation in the co-operative environmental assessment of the above noted project, we are providing comments on the environmental assessment information submitted by the proponent. The document reviewed is:

> *Hélimax, 2008. St. Joseph Wind Energy Project – Environmental Impact Study Report. Prepared for St. Joseph Wind Farm, Inc. and submitted to CEAA and Manitoba Conservation. July 2008. 144 p. (Volume 1) and Maps and Appendices (Volume 2).*

A brief summary of comments received from federal authorities reviewing this document is included in this letter. For important details, please refer to the original responses that are attached to this response.

Environment Canada (EC):
Orientation of the turbines: Numerous turbine strings oriented in an east-west direction may increase mortality risk to migrating birds and bats.
Lighting: Proponent should be encouraged to seek alternatives to incandescent lighting. The commitment to discuss lighting with CWS is acknowledged.
Disruption of bird nests for migratory birds: Vegetation clearing should avoid the period between April 15 and July 31 to minimize disturbance to breeding migratory birds. EC supports the proponent recommendation to have a trained biologist on site if vegetation clearing is required during the breeding season.
Mortality monitoring/follow-up: Two years of monitoring for birds and bad mortality are recommended, with the program developed with EC (Canadian Wildlife Service). EC further recommends the proponent discuss mitigation approaches or strategies if mortality monitoring identifies concerns.
Monarch Butterfly (SARA special concern): Potential impacts of the project on monarch butterflies should be assessed, with provisions for monitoring.

Natural Resources Canada (NRCan):
Federal Assessment requirements: The EIS should clarify certain aspects required in the federal assessment, specifically describing scope of project and assessment, and clarifying federal roles and responsibilities.
Further information required: The specific number, size, and location of the turbines will be required for NRCan to complete its assessment. Other information on project components and activities is requested including for: permanent dwelling locations, noise receptors, gravel pits, temporary concrete batch plants (if any), and vegetation clearing.

Health Canada (HC)
Noise: HC provided a number of comments regarding noise, including recommendations for identification of sensitive noise receptors, comments on noise modelling, and recommendations for application of mitigation.

Parks Canada
Visual Impact on Neubergthal National Historic Site: Notwithstanding previous efforts on the part of the proponent in relocating turbines to minimize visual impact, Parks Canada recommends relocation of turbines 139-142; 123-128; and 154 to 158 due to potential effect on the heritage value associated with the Neubergthal Street Village National Historic Site.

Transport Canada (TC)
Navigable Waters Protection Act (NWPA): Transport Canada requests that the navigability of the water bodies within the project area be determined. If the water bodies are deemed navigable, then applications under the NPWA will be required, if crossings involve these water bodies. The proponent is advised to submit applications to the Navigable Waters Protection Program with location options. Further information can be found at the following website: http://www.tc.gc.ca/marinesafety/oep/nwpp/guide.htm
Aeronautical Obstruction: Aeronautical Obstruction Clearance Forms should be submitted to the Transport Canada, Aerodromes & Air Navigation for the wind towers.

Fisheries and Oceans Canada (DFO)
Stream Crossing information and recommendations: Design details for specific stream crossings are requested. DFO Operational Statements are noted, specifically *Manitoba Operational Statement for High Pressure Directional Drilling* (http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/mb/os-eo09_e.htm) and *Manitoba Operational Statement for Isolated or Dry Open Cut Stream Crossings* (http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/mb/os-eo22_e.htm).

Royal Canadian Mounted Police (RCMP)
Radio Frequency issues: The RCMP raised questions regarding radio frequency studies, and whether Manitoba Telecom Services (MTS) sites were taken into account.

As noted above, please refer to the attached letters from federal authorities, for specific advice related to the above summary comments.

Thank you for your consideration of these comments in the provincial review. My sincere apologies for the delay.

If you have any questions concerning this environmental assessment, please contact me at (204) 984-7935 or by e-mail at *wendy.botkin@ceaa-acee.gc.ca*.

Sincerely,

Wendy Botkin
Senior Program Officer

Encls.

cc.

Teresa LeMay, NRCan
Reg Ejeckam, EC
Alex Beckstead, RCMP
Ashley Presenger, DFO
Zeena Mohammed, TC
Katherine Cumming, Parks Canada
Rick Grabowecky, HC
Karl-Éric Martel, Hélimax

Distribution List

Teresa LeMay Environmental Assessment Officer Natural Resources Canada Environmental Assessment Coordination 580 Booth Street, 3rd Floor, Room: A7-5 Ottawa, ON K1A 0E4 Tel: (613) 992-8791 Fax: (613) 995-5719 E-mail: tlemay@nrcan-rncan.gc.ca	Corey Simpson Environmental Assessment Officer Natural Resources Canada Renewable and Electrical Energy Division 580 Booth Street, 11th Floor, Room C5-6 Ottawa, ON K1A 0E4 Tel: (613) 943-5913 Fax: (613) 995-8343 E-mail: cosimpso@nrcan-rncan.gc.ca
Reg Ejeckam Environment Canada 150 - 123 Main Street Winnipeg, MB R3C 4W2 Tel: (204) 984-3522 Fax: (204) 983-0960 E-mail: reg.ejeckam@ec.gc.ca	Anita Champagne Gudmundson Environmental Management Transport Canada P.O. Box 8550 3rd Floor, 344 Edmonton Street Winnipeg, MB R3C 0P6 Tel: 204-983-3388 E-mail: champan@tc.gc.ca
Margaret Keast District Manager Prairies Area, Manitoba District Department of Fisheries & Oceans 501 University Crescent Winnipeg, MB R3T 2N6 Tel: (204) 984-1334 Fax: (204) 984-2401 E-mail: Margaret.keast@DFO-MPO.gc.ca	Katherine Cumming Parks Canada Resource Conservation Winnipeg 3rd floor, 145 McDermot Avenue Winnipeg, MB R3B 0R9 Tel: (204) 984-1929 Fax: (204) 983-0031 E-Mail: katherine.cumming@pc.gc.ca
Rick Grabowecky Regional EA Coordinator Health Canada 510 Lagimodière Blvd. Winnipeg, MB R2J 3Y1 Tel: (204) 984-8318 Fax: (204) 983-5692 E-mail: rick_grabowecky@hc-sc.gc.ca	Mark R. Bartley Department of National Defence Air Traffic Control Radar Systems PO Box 1000 Station Forces 9 Alert Blvd Astra ON K0K 3W0 Tel: (613) 392-2811 Ext. 7042 +windturbines@forces.gc.ca
Tebesi Mosala Environmental Specialist Indian and Northern Affairs Environmental Planning and Management Unit 365 Hargrave St. Room 200 Winnipeg, MB R3B 3A3 Telephone: (204) 984-0711 Fax: (204) 983-3629 Email: mosalat@inac.gc.ca	The Canadian Broadcasting Corporation (CBC) Generic email inbox: eoliennes_windturbines@radio-canada.ca
Lori O'Brennan Industry Canada Spectrum, Information Technologies and Telecommunications 4th floor, 400 St. Mary Avenue Winnipeg, MB R3C 4K5 Tel: (204) 983-5554 Fax: (204) 984-6045 E-mail: obrennan.lori@ic.gc.ca	Alex Beckstead Royal Canadian Mounted Police (RCMP) alex.beckstead@rcmp-grc.gc.ca

Environment Canada Environnement Canada

Environmental Protection Operations Division
Prairie & Northern
123 Main Street, Suite 150
Winnipeg, MB R3C 4W2

Our File No: 4194-10-5/2949
4194-10-5/2779

Your File No.: MA-503

August 26, 2008

Ms. Teresa LeMay
Environmental Assessment Officer
Science and Policy Integration
Natural Resources Canada
580 Booth Street 3rd Floor
Ottawa, Ontario K1A

Dear Ms. LeMay:

RE: St. Joseph Wind Power Project (MA-503) Proposals

In August 2008, Environment Canada (EC) received a copy of the St Joseph Wind Energy Project description from the Canadian Environmental Assessment Agencyfor review.

Environment Canada has reviewed the above project description for proposed construction and operation of a 300 MW (net of net electrical generation capacity) commercial wind energy facility by St Joseph's Wind Farm Inc. in the vicinity of the town of St Joseph approximately 85 Km south of Winnipeg. The project area overlaps the Rural Municipalities of Rhineland and Montcalm.

EC's interest relates primarily to our mandate under the Migratory Birds Convention Act and the Species at Risk Act.

EC provides the following comments

Orientation of the turbines.

Turbines are located in numerous strings that are oriented in an east west direction (Map 2.1). This may be problematic for birds and bats which tend to migrate in a north south direction. There are instances where birds or bats would need to successfully navigate through 7 and 8 rows of strings. This may increase mortality risk. EC recommends the proponent explore opportunities to

optimize siting of turbines to facilitate north south movement of birds and bats where feasible.

Lighting (s. 2.3.1.8, Page 15)

Lighting should be of minimum intensity and duration to minimize the attraction to neotropical migrants. Incandescent lighting should be avoided. Red and white LED and strobe lighting is currently available on the market that meets Transport Canada requirements and the proponent is encouraged to seek this out. EC notes the proponent's commitment to discuss lighting with the Canadian Wildlife Service (page 111).

Disruption of Bird Nests. (Page 83)

The Migratory Birds Convention Act prohibits the destruction of migratory bird's eggs and nests. To minimize disturbance to breeding migratory birds it is recommended that at minimum vegetation clearing avoid the period between April 15 and July 31. As noted by the proponent on page 86 (s. 5.6.3.1), should vegetation clearing be required during the breeding season, EC concurs with the recommendation to have a trained (avian) biologist survey the site for nests and identify no work zones until the young have fledged.

Mortality monitoring (page 86 and 90)

The report states that two years of detailed post construction mortality monitoring for birds and bats, including scavenger and searcher efficiency, should be undertaken. It is unclear whether this is merely a recommendation by the consultant or a commitment by the proponent. This requires clarification. EC recommends two years of monitoring and concurs that the monitoring program be developed with Environment Canada (namely Canadian Wildlife Service).

Follow-up and monitoring (s.5.6.3)

The proponent states that the collision effect for birds and bats is LOW and Not Significant however does not provide follow-up for residual effects in the event that mortality monitoring identifies issues. EC notes that there is only one operational wind farm in the province of Manitoba hence our understanding of potential effects in this province is limited. EC recommends the proponent provide a discussion on mitigation approaches or strategies it will consider in the event mortality monitoring identifies concerns.

Monarch Butterfly (SARA Special Concern)

As noted in our June 18 2006 letter to Andrew Ryckman an assessment of potential impacts to migrating Monarch Butterflies continues to remain absent. EC recommends that an assessment of the potential impacts of the project be

undertaken for the Monarch Butterfly and that post construction avian and bat mortality monitoring include provisions for the Monarch Butterfly.

If you have any question, please contact me at (204) 984-3522.

Yours sincerely,

Reg. B. Ejeckam, *MSc. P. Geo.*
Environmental Assessment Coordinator
Environment Protection Operations Div.
Phone: (204) 984-3522;
Fax: (204) 983-0960
E-mail reg.ejeckam@ec.gc.ca
Internet: www.ec.gc.ca

Cc: Wendy Botkin, CEAA;

Natural Resources Canada | Ressources naturelles Canada

September 03, 2008 File: MA-503

Ms. Wendy Botkin
Senior Program Officer
Canadian Environmental Assessment Agency

Subject: Comments on the Draft Environmental Impact Statement- St. Joseph Wind Power Project

Dear Ms. Botkin,

NRCan has reviewed the Draft Application/Environmental Impact Statement for the St. Joseph Wind Power Project and has provided comments which can be found below.

Should you have any questions regarding NRCan's comments, please do not hesitate to contact me by phone at (613) 992-8791 or by e-mail at tlemay@nrcan.gc.ca

Sincerely,

Teresa LeMay
Environmental Assessment Officer

Canada

NRCan Comments on the Draft Application/Environmental Impact Statement for the St. Joseph Wind Power Project

General Comments

Overall NRCan agrees that this was a well done first draft of the proponents EIS; it provided as many details as the proponent may have had available at this point in time. However, NRCan believes that there are areas that will require additional information.

Scope of Assessment/Project

There is no scope of project or scope of assessment section; a scope of project and assessment that is clearly defined (as per the WPPI guidelines) would facilitate the RA's review.

Specific Comments:

Table 1.1 – pg. 5

In this table, in the second column, the proponent states that NRCan, EC, HC and INAC will be taking a decision on the Environmental Screening Report. Please note that as the sole RA under the CEAA, NRCan is the only Federal Department to be taking a decision in relation to this document. EC, HC, and INAC would be considered Federal Authorities whish means that they would only be providing expert specialist advice towards the creation of this final document.

In addition, NRCan received confirmation from INAC on August 20th, 2008 that they would not be participating as an FA for the Environmental Assessment of this project.

Section 3.1 - Permanent dwellings

It would be useful to include a table of all the permanent dwellings and their distances from the turbines. The proponent provides some detail (closest dwelling no more than 550 metres from turbine), however more information would be beneficial. Names of all the people who are receiving compensation would also be useful information to have. Considering the size of this project, in addition to the fact that all turbines are on private land, more information in this area would be beneficial to this projects review.

5.1.3 - Noise

Following on the above comments, a list of all the receptors and their distances from the turbines would also be useful for this projects review.

Section - 2.2.1 Turbines
There is no certainty yet as to the number of turbines and their size. It could be 200 turbines at 1.5 MW but if the proponent chooses use larger turbines (2.0 MW etc) the turbines will be less in number. The sooner this is known and communicated to NRCan the better.

We will also require the specific locations of these turbines. This information is not only required by NRCan to fulfill its assessment of this project, but must also be provided to CBC, DND, and the RCMP.

Section 2.3.3.5 - Temporary concrete batch plant
The EIS does not address the potential effects on the construction, operation or decommissioning of the temporary plant if it is the chosen option. If the temporary plant is part of the scope of the project this information should be included and evaluated in the Environmental Impact Statement.

2.3.3.7 Gravel Pits
Additional information needs to be provided in this section. An estimate of the amount of aggregate to be required would be useful, as well as proposed sources for this aggregate.

Table 2.7 – Project Activities during construction phase
More clarification is necessary in this section of the EIS– i.e. how much deforestation must take place?

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Health Canada / Santé Canada

Safe Environments Directorate
510 Lagimodière Blvd.
Winnipeg, MB R2J 3Y1

Our file ON-2008/09-005

Sept 8, 2008

Teresa LeMay
Natural Resources Canada
580 Booth St
Ottawa, ON K1A 0E4

Sent by e-mail to: tlemay@NRCan.gc.ca

Subject: Health Canada's Review of the Environmental Impact Study Report for the St. Joseph Wind Energy Project

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Dear Ms LeMay,

This letter is in response to Health Canada's review of BoArk Energy Ltd.'s Environmental Impact Study Report (EISR) for the St. Joseph Wind Energy Project dated July, 2008. Health Canada is participating as a Federal Authority in this environmental review under the provisions of the *Canadian Environmental Assessment Act* as per NRCan's e-mail request of July 31, 2008.

We have reviewed the EISR and have the following comments related to noise:

1. The EISR does not provide information regarding the existence of facilities with sensitive noise receptors in the project area including daycares, schools, hospitals or senior's centres. It is advisable to consider any such sensitive receptors identified in the project area for additional mitigation as appropriate. If there are none, this should be stated.

2. Map 5.1 of the EISR provides simulated noise isocontours using sound power levels for the wind turbines of 103.7 dBA at a wind speed of 6 m/s. However, table 2-3 of the EISR reports a noise emission specification ranging from 103.7 to 107.3 dBA at a wind speed of 6 m/s. It is prudent that the more conservative end of the range provided (i.e 107.3 dBA) be used to calculate the noise isocontours.

3. Similarly, the noise power results were modeled using the single wind speed of 6 m/s. Section 5.14 indicates that the wind turbines would operate within the range of 3m/s to 25 m/s. For typical relationships between wind turbine sound power and wind speed, an assessment at only 6 m/s does not fully account for potentially substantial increases in the percentage highly annoyed with wind turbine noise once the wind turbine project becomes operational. Therefore it is advisable that the predicted sound power emissions from the project be reported as a function of a range of representative operational wind speeds.

4. In quiet rural areas, Health Canada recommends that technically and economically feasible mitigation be applied if the predicted sound level at receptors due to wind turbine operation exceeds 45 dBA. The prediction is to be determined using the wind speed yielding the maximum sound power from the wind turbine.

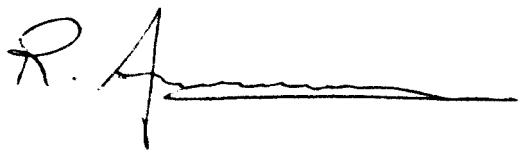
   Health Canada uses a 45 dBA criterion limit for the sound level at receptors due to wind turbine operation in quiet rural areas to reduce or eliminate the potential of adverse health effects including; disturbance of rest and sleep; interference with speech communication, psycho-physiological effects, mental-health and performance effects; effects on residential behavior and annoyance; and interference with intended activities (HC, 2005, WHO, 1999). Assuming constant noise, the World Health Organization, (WHO), sleep guideline value of 30 dBA indoors (estimated 45 dBA outdoors for partially open windows) is one rationale (WHO, 1999). A draft criterion based on an increase of 6.5% increase in the percentage highly annoyed for a quiet rural area is also currently used by Health Canada (ISO1996-1 2003). It suggests a criterion level of about 43 dBA for a project Leq 24 (Michaud et al., 2007). Taking all of these criteria into account the use of a 45 dBA limit seems reasonable, assuming that the noise estimate is a worst case level based on favorable propagation conditions and the highest turbine noise level.

   Please provide the predicted noise levels at the receptors due to the wind turbine at conditions of maximum noise output to determine compliance to the above criteria. Please also provide the worst case predicted levels for wind turbine operation (also see the preceding # 2 and #3 items). Please calculate the sound propagation as if all receptors were downwind of the turbine, regardless of their actual position. Mitigation measures would be advisable if the predicted noise levels are in exceedance of the 45 dBA described above. A complaint resolution process would be also advisable in the event of public complaints.

5. Health Canada notes that due to uncertainty in sound predictions, there is a possibility that the Leq at the receptor may exceed 45 dBA during operations. As such, Health Canada suggests that if, for the maximum sound power from the wind turbine, the predicted operational Leq is within 3 dB of 45 dBA (i.e., the typical estimated uncertainty for modeling), it would be advisable that the proponent have a mitigation plan including a complaint resolution procedure and a monitoring program to validate the predicted sound levels during operation.

Please contact this office at the coordinates below should you have any questions regarding the comments provided.

Sincerely,



Rick Grabowecky
Regional Environmental Assessment Coordinator
Manitoba-Saskatchewan Region
Ph # (204) 984-8318 Fax # (204) 983-5692
Rick_Grabowecky@hc-sc.gc.ca

cc: Stan Hnatiuk (HC)
Anne-Marie LaFortune (HC – Senior Environmental Assessment Advisor)
Wendy Botkin (CEAA)

REFERENCES

Health Canada, 2005. Acoustics Division. "Health Canada Wind Turbine Fact Sheet – Draft.

ISO 1996-1, 2003."Acoustics - Description, measurement and assessment of environmental noise - Part 1: Basic quantities and assessment procedures". International Organization for Standardization, Switzerland

Michaud, D.S., Keith, S.E., Bly, S.H.P, 2007. "A Proposal for Evaluating the Potential Health Effects of Wind Turbine Noise for Projects Under the Canadian Environmental Assessment Act". Presented at the Second International Meeting on Wind Turbine Noise, Sept 20-21, 2007 in Lyon, France

World Health Organization .1999. "Guidelines for Community Noise," Geneva, WHO.

Parks Canada Parcs Canada

Parks Canada
145 McDermot Ave.
Winnipeg, MB
R3B 0R9

September 5, 2008

Ms. Wendy Botkin
Canadian Environmental Assessment Agency
123 Main St. Suite 445
Winnipeg, MB
R3C 4W2

Re: St. Joseph Wind Energy Project - Manitoba

Dear Ms. Botkin,

Parks Canada has reviewed the *St. Joseph Wind Energy Project:Environmental Impact Study Report (Volume 1)*. Parks Canada is providing advice pursuant to section 12(3) of the *Canadian Environmental Assessment Act (CEAA)* and consistent with Parks Canada's recognition in the CEAA Reference Guide, *Involving Expert Federal Authorities*, as an expert federal authority in:

I. cultural resources
II. historical, archaeological, paleontological and architectural resources
III. management of protected areas, national parks, national historic sites, historic rivers and heritage canals

The village of Neubergthal was designated a National Historic Site of Canada by the Government of Canada in 1989. On behalf of the Government of Canada, Parks Canada is the lead agency for National Historic Sites. Parks Canada works with the owners, operators and stewards of these nationally significant places for the benefit of current and future generations. Please find the attached comments on the potential impacts of this project on Neubergthal Street Village National Historic Site of Canada.

Sincerely,

Katherine Cumming
Environmental Assessment Scientist
cc: Teresa LeMay, Natural Resources Canada
David Hems, Cultural Resources Manager, Parks Canada
Frieda Klippenstein, Historian, Parks Canada

Canada

Review of the St. Joseph Wind Energy Project:

Environmental Impact Study Report (Volume 1)

Context of Parks Canada's Interest

Parks Canada has reviewed the *St. Joseph Wind Energy Project: Environmental Impact Study Report (Volume 1)*. Parks Canada is providing the following advice pursuant to section 12(3) of the *Canadian Environmental Assessment Act (CEAA)* and consistent with Parks Canada's recognition in the CEAA Reference Guide, *Involving Expert Federal Authorities*, as an expert federal authority in:

I. cultural resources
II. historical, archaeological, paleontological and architectural resources
III. management of protected areas, national parks, national historic sites, historic rivers and heritage canals

The village of Neubergthal was designated a National Historic Site of Canada by the Government of Canada in 1989. On behalf of the Government of Canada, Parks Canada is the lead agency for National Historic Sites. Parks Canada works with the owners, operators and stewards of these nationally significant places for the benefit of current and future generations.

Neubergthal Street Village National Historic Site of Canada

Based on the recommendation of The Historic Sites and Monuments Board of Canada the commemorative intent of Neubergthal Street Village National Historic Site of Canada is as follows:

> Mennonite Street Villages are Prairie settlement forms of both national historic and architectural significance and they are commemorated at Neubergthal, Manitoba, which not only possesses a considerable amount of resource integrity but an apparently unique 'sense of place'.

Arriving in 1874-1881, Mennonites were the first large group of immigrants to settle successfully on the wide-open prairies of Manitoba, a feat previously considered impossible because of the lack of resources needed for survival. Neubergthal is an excellent example of a typical Mennonite Street village on the Canadian Prairies. The street village architecture was a good model for settlement. It required close interaction and co-operation among residents. Neubergthal continues to project a strong sense of place today. While the communal, open field system of farming has long since been replaced with farming on individually owned lands, and the uniformity of the earlier village formation has given way to diversity, in Neubergthal the central village street remains the prominent orientation.

The designation of Neubergthal is not typical in Canada's system of National Historic Sites because it is an area designation, which includes the entire village, comprised largely of private lands. Yet the importance of protecting the commemorative integrity of this cultural landscape remains. Parks Canada has described commemorative integrity as follows.

> The concept of commemorative integrity is used to describe the health or wholeness of a national historic site. A national historic site possesses commemorative integrity when the resources that symbolise or represent its importance are not impaired or under threat, when the reasons for the site's national historic significance are effectively communicated to the public, and when the site's heritage values are respected by all whose decisions or actions affect the site.

The landscape surrounding Neubergthal Street Village National Historic Site of Canada is important to protecting the commemorative integrity of the recognized settlement pattern because it contributes to the "sense of place" by contrasting the wide-open prairie with the village structure. In particular the surrounding landscape contributes to "sense of place" when visitors are approaching and entering the village. As a visitor enters the village he or she observes the contrast between the open prairie and the village. The surrounding landscape is a key component in communicating the reasons for the site's national significance to the public, an important element of commemorative integrity. The Commemorative Integrity Statement for Neubergthal Street Village National Historic Site of Canada states that the site will be safeguarded and understood when:

> the meaning of the immediate and larger landscape is revealed through interpretation thereby increasing understanding of its value and support for its preservation.

Neubergthal Street Village National Historic Site as a cultural landscape requires a great deal of sensitivity to its landscape character to maintain one of its key heritage values a "unique sense of place" as defined by the Historic Sites and Monuments Board of Canada.

Assessment of the EIS with respect to Neubergthal Street Village National Historic Site of Canada

Given Parks Canada's mandate in relation to national historic sites and role as a Federal Authority reviewing the *St. Joseph Wind Energy Project – Environmental Impact Study Report*, potential visual impacts relative to the placement of some turbines near Neubergthal Street Village National Historic Site were identified prior to the official environmental assessment process. Parks Canada provided information to Bowark Energy Ltd. about the national historic site and its significance. In addition, after concerns were raised by community stakeholders about visual impacts, Bowark Energy Ltd. met with community members. This meeting served to

ensure visual impact assessment was conducted and community members had an opportunity to express concerns. The efforts made by Bowark Energy Ltd. to produce the visual stimulation has provided Parks Canada an opportunity to make a more informed assessment of potential visual effects on the site.

The St. Joseph Wind Energy Project Environmental Impact Study (section 5.14.2.3 - Neubergthal Landscapes) concludes "considering that turbines will be seen from relatively few view points on the east side of the Village, and that consultation with representatives from the Village of Neubergthal resulted in the relocation of four turbines, the resulting expected visual impact on Neubergthal is considered low, and not significant." However, a review of the visual simulations brings into question the assessment that there are few viewpoints and the visual impact is low.

As a result of the meeting with community members, Bowark Energy Ltd. made a commitment to maintain a 3.2 kilometre buffer around the Village of Neubergthal and consequently four turbines were relocated. The relocation of the four turbines (139, 140, 141, and 142) identified in the Environmental Impact Statement technically meets the 3.2 kilometre criteria established in the discussion with community representatives and has lessened the magnitude of visual impact from the site along the northeast viewpoint.

However, the decision to relocate the four turbines along a new linear line directly east of the site has resulted in broadening the geographic extent of visual impact when seen in relation to the other visible wind turbines. This relocation has increased the number of eastern viewpoints for which the turbines are distinctively visible from the community. It also affects the visitor's view and understanding of the village's defining characteristics as a community settlement pattern on the open prairie, as these four turbines line the entry to the village on the primary route of arrival. In addition, there appear to be new turbines placed towards the south-eastern edge of the village. The following specific observations were made from the visual simulations provided in Appendix E.

Visual Simulation 5 (View from Neubergthal Information Kiosk)

- Turbines (154 – 158) are prominent landscape features in the centre of this visual stimulation.
- Turbines (139 –142) are in alignment with the Historic Sites and Monuments Board Plaque, the primary location from which most visitors will be introduced to the site.

Visual Simulation 6 (View from the Balcony of Neubergthal Interpretive Centre)

- Due to the height of the cottonwoods, the visual impact will be low from this viewpoint.

Visual Simulation 7 (View from Neubergthal Street Village Northern End)

- **T**urbines 123 to 128 are very distinctive landscape features in the center of this visual plane.

Visual Simulation 8 (View from Backyard of P. Klippenstein Site, next to Neubergthal Cemetery)

- The relocated turbines (139, 140, 141 and 142) are very distinctive landscape features on the right-hand side of the photograph.

After review of the visual simulations it appears the likelihood of visual impact occurring over a broad geographic extent is high. The effort to relocate the wind turbines, although decreasing the magnitude of impact along one visual plane has increased the overall residual impact of the wind turbines on Neubergthal Street Village National Historic Site. The overall broad extent of the visual impact and the duration for which it will exist raises questions as to whether the impact on Neubergthal National Historic Site is low and insignificant as concluded in the Environmental Impact Statement.

Conclusion

The *Standards and Guidelines for the Conservation of Historic Places in Canada* (Parks Canada, 2001) provide guidance on the best way to conserve heritage places and have been adopted by Parks Canada and the Province of Manitoba. The *Guidelines* recommend:

> preserving viewscapes such as vistas, views, aspects, visual axes and sight lines that may (or may not) be framed by vertical features or terminate in a focal point — that are important in defining the overall heritage value of the landscape.

The *Guidelines* recommend not:

> removing or radically changing viewscapes that are important in defining the overall character of the landscape.

The visible expanse of the turbines on a flat prairie landscape in concert with the broadened extent of visual impact from the relocated turbines will have a long-term effect (minimally 20 - 25 years, the identified lifespan of the turbines) over a wide geographic extent covering a number of viewpoints. Parks Canada has concerns that this project is not in keeping with the *Standards and Guidelines for the Conservation of Historic Places in Canada* and will have an overall negative effect on the "senese of place" identified as a key heritage value associated with Neubergthal Street Village National Historic Site. To assist in mitigating the geographic extent of the visual impact on Neubergthal Street Village National Historic Site, Parks Canada has the following recommendations.

1. Parks Canada recommends turbines 139-142 are removed from their proposed location on map 5.2, dated July 16, 2008. These turbines are highly intrusive on the sense of place for visitors when entering the village, as they are located along Highway 421, the main point of entry to the site. These turbines also greatly broaden the visual impact on the village because there are no other turbines on this line of site and they align with the centre of the village. Therefore Parks Canada recommends that there should be no turbines:
    - within 3.2 kilometres of the village, nor
    - on the 9 sections to the east of Neubergthal (1-2-1-W, 36-1-1-W, 25-1-1-W, 6-2-1-E, 5-2-1-E, 31-1-1-E, 32-1-1-E, 30-1-1-E, 29-1-1-E), nor
    - within 5 miles of the village along Highway 421 to protect that line of sight when accessing the community.

2. Parks Canada recommends turbines 123 –128 and turbines 154 –158 are removed from their proposed location on map 5.2, dated July 16, 2008. Both lines are very visible along northeast and southeast planes respectively. Therefore Parks Canada recommends that there should be no turbines:
    - within 3.2 kilometres of the village, nor
    - on the 9 sections to the east of Neubergthal (1-2-1-W, 36-1-1-W, 25-1-1-W, 6-2-1-E, 5-2-1-E, 31-1-1-E, 32-1-1-E, 30-1-1-E, 29-1-1-E), nor
    - within 5 miles of the village along Highway 421 to protect that line of sight.

Fisheries and Oceans Canada | Pêches et Océans Canada

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Your file *Votre référence*

26 August 2008

Our file *Notre référence*
06-HCAA-CA1-01427

Mrs. Wendy Botkin
Canadian Environmental Assessment Agency
Suite 263, Union Station
123 Main Street
Winnipeg MB R3C 4W2

Dear Mrs. Botkin:

Subject: Request for additional information from Responsible Authority

Fisheries and Oceans Canada, received the EIS on 20 August 2008 concerning the St. Joseph Wind Energy Project, in St. Joseph MB. It has been assigned the following file numbers and title:

Referral File No.: **06-HCAA-CA1-01427**
Referral Title: **St. Joseph Wind Power Project - St. Joseph, Manitoba**

Please refer to them on any subsequent correspondence.

In order to provide our advice with respect to the impact to fish and fish habitat or determine our potential role related to your environmental assessment, we require the following additional information:

- *The design details for the following crossings:*
  - *CKC-004 – detailed map showing location of proposed crossing, site photos, design specs, water flows for proposed crossing. Note: the proposed crossing will be located on Buffalo Creek, which in this section is classified as Type B habitat, in which the creek has been straightened and channelized, yet contains indicator (large-bodied) fish species. Because of this, an authorization with compensation and fish passage is likely required at this location for most types of creek crossings.*
  - *CKC-032, CKC-033, CKC-034 – site photos, design specs*

Canada

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- *CKC-037, CKC-038, CKC-039 – detailed map showing location of proposed crossings, site photos, design specs, water flows for proposed crossings*

Please note that works or undertakings resulting in the harmful alteration, disruption or destruction of fish habitat are prohibited under subsection 35(1) of the *Fisheries Act* unless authorized by the Minister of Fisheries and Oceans pursuant to subsection 35(2) of the *Fisheries Act*. In keeping with the Department's Policy for the Management of Fish Habitat, no such authorizations are issued unless acceptable measures to compensate for the habitat loss are developed and implemented by the proponent. The proposed issuance of an authorization under subsection 35(2) of the *Fisheries Act* is a trigger for the *Canadian Environmental Assessment Act*. The information provided to date is not sufficient to enable us to determine whether an authorization is required.

The methods used for the installation of the electric cabling will likely be consistent with the type of work covered by the attached "**Manitoba Operational Statement for High Pressure Directional Drilling**" and the attached "**Manitoba Operational Statement for Isolated or Dry Open Cut Stream Crossings**". However, it is your responsibility to ensure that the conditions and measures described in the Operational Statement are followed. If you determine, after reviewing the attached Operational Statements, that you are unable to comply with those conditions and measures, please contact DFO.

Should you have any questions or comments, please contact me directly by telephone at *204* 984-0405, by fax at *204* 984-2402, or by e-mail at Ashley.Presenger@dfo-mpo.gc.ca

Yours sincerely,

Ashley Presenger
Fish Habitat Biologist

c.c.: DFO Distribution
T. LeMay (Natural Resources Canada, Ottawa)