Appendix D

Regulatory Agency Issues

and Proponent Responses

BEAR MOUNTAIN WIND PARK

ENVIRONMENTAL ASSESSMENT CERTIFICATE APPLICATION REVIEW

REGULATORY AGENCY ISSUES TRACKING TABLE

Submitted to:

BC Environmental Assessment Office

2nd Floor 836 Yates Street
Victoria, BC, V8W 1L8

Prepared for:

Bear Mountain Wind Limited Partnership

200 - 9800 McDonald Park Road
Sidney, BC, V8L 5W5

Prepared by:

HEMMERA

Suite 250-1380 Burrard Street

Vancouver, BC V6Z 2H3

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LIST OF ABBREVIATIONS

BCEAA ..... *British Columbia Environmental Assessment Act*
BCTC ..... British Columbia Transmission Corporation
BEC ..... Biogeoclimatic Zone
BMP ..... Best Management Practice
CEAA ..... *Canadian Environmental Assessment Act*
COSEWIC ..... Committee on the Status of Endangered Wildlife in Canada
CSA ..... Canadian Standards Association
CWS ..... Canadian Wildlife Service
dB ..... decibel level
dB(A) ..... A-weighted decibel level
DFO ..... Fisheries and Oceans Canada (Federal)
EA ..... Environmental Assessment
EAO ..... British Columbia Environmental Assessment Office
EMS ..... Environmental Management System
EMP ..... Environmental Management Plan
HADD ..... Harmful Alteration, Disruption, or Destruction (Fish Habitat)
ILMB ..... British Columbia Integrated Land Management Bureau
IUP ..... Investigative Use Permit (Provincial)
LAeq ..... 24 hour Equivalent A-weighted average sound level
MAL ..... British Columbia Ministry of Agriculture and Lands
MEMPR ..... British Columbia Ministry of Energy, Mines and Petroleum Resources
ML/ARD ..... Metal Leaching and Acid Rock Drainage
MOE ..... British Columbia Ministry of Environment
MOFR ..... British Columbia Ministry of Forests and Range
MW ..... One Megawatt = 1 Million Watts
PRRD ..... Peace River Regional District
RESL ..... Rescan Environmental Services Limited (consultant)
RISC ..... Resources Inventory Standards Committee (formerly RIC)
SARA ..... Federal *Species at Risk Act*
TOR ..... Environmental Assessment Application Terms of Reference
TUS ..... Traditional Use Study
VEC ..... Valued Ecosystem Component
WHO ..... World Health Organization
WTG ..... Wind Turbine Generator

NOTES:
The Application sections cited in the table refer to the document entitled Application for an Environmental Assessment Certificate for Bear Mountain Wind Park, under the British Columbia *Environmental Assessment Act* (Application) prepared by Hemmera Inc. for Bear Mountain Wind LP (Bear Mountain).

The formal comment period for the application was December 7, 2006 to February 5, 2007.

Bear Mountain Wind Park Project
Environmental Assessment Certification Application Review
REGULATORY AGENCY ISSUES TRACKING TABLE
Updated July 2007

No.	Issue Raised	Proponent Response (sections/pages/tables and figures noted are found in the EA Application)	Mitigation / Commitment in EA Application
Northern Health Authority			
1.	Recommends that the World Health Organization's recommended level of 30 dB(A) as a threshold inside bedrooms at night and 45 dB(A) outside residences at night be used to determine the appropriate set back distance from residences.	The World Health Organization recommended level of 45 LAeq (dB) outside a bedroom at night is met by the Project, for both night and day. The predicted sound level outside the nearest residence is a maximum of 41.6 db(A) at a wind speed of 8 m/s.	
2.	Also recommends that the Proponent must meet all upcoming provincial legislation for wind farms.	The Proponent will, in developing and implementing the detailed Project design, abide by all applicable provincial regulatory policies including the wind turbine generator sound policy contained in the BC Crown Land Use Operational Policy for Wind Power Projects (May 2007). The Proponent must meet provincial policies to obtain a land tenure with ILMB.	
Ministry of Environment (Environmental Stewardship - Peace Region) – Graham Suther, R.P. Bio **Comment Letter Dated: January 20, 2006**			

3.	A key mitigation measure for minimizing vegetation impacts, particularly to listed species, is pre-construction surveys, results of which may identify areas where site-specific mitigation could occur. As the project footprint encompasses a relatively small area of 35ha, what is the rationale for not undertaking such surveys pre-application?	Rare plant surveys were conducted pre-application throughout the whole IUP to confirm the presence of rare plants within the IUP (as per the work plan approved by MoE). A pre-requisite for conducting pre-construction surveys is a finalized project design. Such a design was not available at the time of field surveys. Section 6.7.5.2 of the Application recommends that pre-construction surveys to identify habitats for blue – listed northern bog bedstraw and bog adder's-mouth and blue-listed ecosystems be conducted based on final project design.	6.7 p. 148
4.	"*Value of habitats to wildlife VECs was assessed by assigning habitat ratings criteria*…" From supplied information, we were unable to locate VEC specific spatial/aspatial data pertaining to habitat ratings within the project footprint or study area.	Please see appended habitat ratings criteria. Additional information regarding the spatial distribution of habitats has been provided in a memo (RESL 2007).	6.8 p. 154
5.	How were Northern goshawk call playback survey stations determined (egg. random selection, grid/transect process, same as owl survey stations)? The identified Northern goshawk "call station" color in the legend of Figure 6.8-1 does not correlate with a call station color spatially depicted on this figure.	Northern Goshawk call playback surveys were conducted as per RISC (2001). Transects used to collect winter data were used to conduct Northern Goshawk call playbacks. Call playback stations were separated by 800m with the density of plots over the study area ensuring that the 400m inter-station spacing was met across the study area. The colour of the symbol in the legend for Figure 6.8-1 should have been green to correlate with the map itself.	6.8 p. 156
6.	Regarding raptors, "*Two spring migration stand watch surveys…two survey locations…middle of the day*" and fall stand watch surveys were conducted "…*one in the morning and one in the afternoon*". Why the difference in daily spring/fall survey times and two spring survey locations versus one in the fall? According to Figure 6.8-1, why are spring/fall raptor survey locations different?	Spring migration surveys were conducted in conjunction with radar surveys and were conducted from or near radar survey stations. Fall migration surveys were added at the request of CWS and were dedicated raptor fall migration surveys. Fall migration surveys were located at locations that offered the observers clear views of Bear Mountain and the surrounding terrain. According to Figure 6.8-1, the spring and fall locations overlap at the north end of the project, however are different for the south end.	6.8 p. 156

7.	"*Habitat assessment rating for suitability…to key avian species at risk…were assigned to all major transects*…". We were unable to locate within the application or appendices any spatial/aspatial habitat suitability rating criteria.	Please see appended habitat ratings criteria. Additional information regarding the spatial distribution of habitats has been provided in a memo (RESL 2007).	6.8 p. 157
8.	"*The radar survey stations geographically encompass the area proposed for wind turbine generator locations*…". Referring to Figure 6.8-1 and Table 6.8-12, both spring and fall radar (horizontal and vertical) sessions culminated in visiting five different sites within the study area. However, the spring radar session occurred at four sites and the fall session occurred at three sites with only two of these sites visited during both spring and fall radar session. Why was there not a spring and fall radar session at each of the five sites and why were radar sites RS01/RS02 and RS04/RS05 largely overlapping, while other areas within the project footprint were not surveyed? Minimizing this overlap would have provided complete radar (horizontal) coverage of the project footprint.	Radar station locations were determined by road access within and adjacent to the IUP and account for gaps in the coverage. After spring surveys it was determined that conducting surveys at points RS-02 and RS-04 was not required due to the large overlap with stations RS-01 and RS-05. Additional pre-operational and operational bat studies are scheduled in the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007).	6.8 p. 157
9.	Where were "diurnal stand watch surveys" conducted?	Diurnal stand watch surveys were conducted adjacent to the radar stations with the observer outside the danger zone. The observer was within 100-300m of the radar station and in contact with the radar operator by radio. Distance from the radar station was determined by screening and terrain (e.g. visibility of the sky and surrounding landscape to the observer).	6.8 p. 161
10.	Bat activity was detected "…*on the radar unit being used to monitor spring and fall migration*". Which radar station(s) and what was the observed level of activity?	Please see appended Table – Bat Observations. Bats were detected visually during audio visual surveys conducted in conjunction with radar surveys: 5 in spring, at radar stations 1, 2, and 4 and 6; and 20 in the fall at stations 1 and 3. During radar surveys, a total of 25 bat targets were detected, 16 in spring at stations 1, 2 and 4 and 9 in fall at stations 1 and 3.	6.8 p. 162

11.	"*during habitat classification surveys…assessed for its ability to support northern long-eared myotis, hoary and silver-haired bat*". We were unable to locate within the application or appendices any spatial/aspatial bat habitat assessments.	Please see appended habitat ratings criteria. Additional information regarding the spatial distribution of habitats has been provided in a memo (RESL May 2007).	6.8 p. 162
12.	"*Suitability ratings were assigned in the field during surveys of breeding birds and bats*…" We were unable to locate within the application or appendices any spatial/aspatial habitat suitability rating criteria.	Please see appended habitat ratings criteria. Additional information regarding the spatial distribution of habitats has been provided in a memo (RESL May 2007).	6.8 p. 166
13.	According to Table 6.8-10, a single bay-breasted warbler (provincially red listed and identified as a species at risk under the provincial Identified Wildlife Management Strategy) was detected during spring breeding bird surveys and spatially identified on Figure 6.8-1. However, this information was not included in Table 6.8-9: *Avian species at risk documented in the study area.*	Thank you for identifying this omission. The bay-breasted warbler should have been included in Table 6.8-9.	6.8 p. 168
14.	"*Habitat suitability ratings indicate that suitable nesting habitat for all key avian species at risk…*". We were unable to locate within the application or appendices any spatial/aspatial habitat suitability rating criteria.	Please see appended habitat ratings criteria. Additional information regarding the spatial distribution of habitats has been provided in a memo (RESL May 2007).	6.8 p. 168
15.	Table 6.8-11 provides a brief description of the general ecosystem type of the five detected owl species in the study area. While all detections were recorded outside the project footprint, it would be helpful to compare the general ecosystem of the detection location to those within the project footprint. As several of the documented owls are cavity nesters, this would assist during application review in ascertaining potential loss of this nesting habitat type.	A comparison of the ecosystem, as per the ecosystem map, with owl locations would not provide any additional data on the presence of suitable nest trees. All areas within the footprint were considered as potential nesting habitat during the impact assessment and pre-construction surveys will identify actual nesting sites (p. 206).	6.8 p. 171

16.	"*Ten individuals of four species of hawk…were observed during spring stand watch surveys".* Are these the same "surveys" as the earlier mentioned spring diurnal surveys?	Yes, these species were observed during the spring diurnal raptor surveys conducted in conjunction with the spring radar surveys (p. 161, and summarized in Table 6.8-13 on p. 177).	6.8 p. 171
17.	"*Broad-winged hawk…Suitability ratings for this species*…". We were unable to locate within the application or appendices any spatial/aspatial habitat suitability rating criteria.	Please see appended habitat ratings criteria. Additional information regarding the spatial distribution of habitats has been provided in a memo (RESL May 2007).	6.8 p. 173
18.	The quoted spring/fall horizontal and vertical radar hourly detection rates do not agree with those in Table 6.8-12.	The comments at the bottom of p. 173 provide the range of bird detections per hour (not in the table), whereas the table presents the total numbers of birds per survey period and the average hourly flow rates. For each of the days surveyed in Table 6.8-12, the survey time was divided between horizontal and vertical observations, usually 2 hours for horizontal and 2.5 hours for vertical. The average horizontal flow rates expressed in the Table 6.8-12 are the average for the 2 hours for each survey.	9.8 p. 173
19.	The estimated percentage of spring and fall radar detections exhibiting migratory behaviour was 83% and 96% respectively. What are the remaining detections (egg. resident bird species, bats)?	The remaining 17% of activity in spring and 4% in fall is a combination of bat activity and resident bird activity and potentially non-migratory behavior of migratory species.	6.8 p. 173
20.	Both text and Figure 6.8-4 depict spring and fall vertical radar detections as either flying at or above elevation ranges of turbine blades. Were there detections flying below the elevation range of turbine blades?	In spring there were 4 detections below blade height, and in fall there were 2 detections below blade height, not considered sufficient to include in the summary analysis. They may be an artifact of the radar set-up.	6.8 p. 175

21.	Both Figures 6.8-4 and 6.8-5 duplicate spring vertical radar detections when the latter should be fall vertical radar detections.	The spring and fall vertical radar data, re-analyzed for one blade height, are included in the errata provided to agencies. The re-calculated average of the number of birds at rotor height is 26 % (ranging from 13 % to 38 % per survey night) for spring and 29 % (ranging from 26 % to 36 %) for fall, a decrease from an average of 36% (18% to 53%) and 37% (34% to 44%) respectively.	6.8 p. 175
22.	"*Fall migration was observed September 17 with a total of 124 raptors*…" however, referring to raptor fall survey results in Table 6.8-13, eight raptors where observed. Why this apparent discrepancy? Were any of these 124 raptors flying at or close to rotor elevations as alluded to by the comment "*flying at treetop over the study area*"?	Please see appended fall raptor migration data for September 2006. Spring raptor stand watch surveys were conducted in conjunction with radar surveys and were conducted from or near radar survey station locations (but during the day). In accordance with the terms of reference, they were not intended to address raptor migration. Spring surveys occurred over two days (14 and 16 May) at two locations, one in the north and one in the south of the study area (Figure 6.8-1) that offered the observers clear views of Bear Mountain and the surrounding terrain. Fall raptor stand watch surveys (12, 13, 14 and 16 August) were also conducted after radar surveys at or near radar survey station locations, and in accordance with the terms of reference they were not intended to address raptor migration. These surveys also occurred at two locations, one in the north and one in the south east of the study area (Figure 6.8-1 and Table 6.8-13). Additional fall raptor stand watch surveys were conducted at the request of CWS on 13 to 17 September to sample migration. To clarify the text in the report, 124 birds were observed during stand watch surveys on September 13, 16 and 17. Of these, the cluster of 48 raptors observed on September 17 were considered to be in migration, and the 7 raptors observed on each of September 13 and 16 were not considered to be migrating due to their low overall numbers. The remaining 62 birds were sandhill cranes observed flying	6.8 p. 177

		over the Kiskatinaw valley on September 16. The estimated flying heights above ground varied, however the red-tailed hawk and the rough legged hawk were below 200m and potentially in the range of the blade height (approx. 37 to 119 m). Please see the discussion in the impact section regarding this and potential risk to red-tailed hawk (p. 196). While the potential mortality effects to raptors is high without mitigation, the residual impacts from the project, following mitigation and accounting for the ability of raptors to avoid turbines, are predicted to be of low to moderate significance (p. 210), as has occurred at most wind energy projects world wide. The proponent considers that the adaptive management programme proposed in the Application, and expanded upon in the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007), will effectively mitigate potential impacts (also see Proponent letter to MOE, May 9, 2007, on EAO website).	
23.	First and last mention of the September 13 observation of 62 sandhill cranes (provincially blue listed and identified as a species at risk under the provincial Identified Wildlife Management Strategy). While these birds, during migration, typically fly at heights well above the predicted top of wind turbine height, useful information to include would be flight direction and estimated height above ground level.	The flock was flying SW at approximately 125 m above the ground, which is above turbine height. The flock was leaving fields at valley bottom and rising while transiting through study area. The observer was stationed at BMRA03 (0665275 X 6173542) Sandhill cranes are not considered a concern for Bear Mountain, because there are no landscape features providing food for stopovers (fields are preferred) and they typically fly at much higher levels than the turbines (Hemmera, May 2007). As such, effects will likely be negligible or low. Monitoring during pre-operation and operation will provide additional information on the presence/absence of sandhill crane use of the Project area.	6.8 p. 177

24.	Regarding white-tailed deer and moose, "*Suitability ratings indicate the majority of the areas sampled provided low to no value winter habitat…despite these species being present".* We were unable to locate within the application or appendices any spatial/aspatial habitat suitability rating criteria. Given that "*Slopes along the western portion of study area provide valuable winter deer habitat…*" how is *majority* defined and what is the ungulate winter suitability rating for the minority of the study area?	Please see appended habitat ratings criteria. Additional information regarding the spatial distribution of habitats been provided in a memo (RESL 2007). The majority of the study area includes plateau areas, not those along the steep western slope. Deer winter range is shown on Figure 6.8.2, and while the area is not calculated it can be seen to be a minority of the IUP area. No ratings were assigned to habitat along the slope as this area is outside the project footprint and was not targeted for ground sampling. The habitat suitability rating of the winter range area would be "3", based on the criteria for habitat suitability appended to this table. The site has steep, warm aspect slopes, but does not have old Douglas fir dominated forests or a tall shrub layer.	6.8 p. 179
25.	"*Fisher habitat assessed…ranged in value from moderate to nil*". We were unable to locate within the application or appendices any spatial/aspatial habitat suitability rating criteria. Is the rim rock area habitat rated moderate to nil suitability even though being referred to as "*Key fisher habitat*…" (pg 198)?	Please see appended habitat ratings criteria. Additional information regarding the spatial distribution of habitats has been provided in a memo (RESL May 2007). Habitat ratings were assigned at vegetation classification plots. No plots were conducted at the rim rocks and no ratings were assigned to the rim rocks specifically. It is possible that these areas would be assigned a moderate, low or nil rating as per the criteria in the ratings table and still be key habitat within the Bear Mountain area.	6.8 p. 180

26.	research at several operational wind energy facilities show "…*birds and bats colliding… rate of collisions generally low*" and "…*no evidence to suggest that birds and bats collide with wind turbines more than other structures*". To assist in ascertaining predicted impacts (to Bear Mountain passerines, raptors and bats), the cited research (and results) should be put into context with this project. For example, are Bear Mountain migratory bird detections and study area topography/vegetative cover similar to these other researched wind energy developments.	The papers cited in the application reviewed existing wind farms in the US and Canada and are cited to put into context overall trends that have been recorded at existing wind projects. Some of these projects are in forested habitats while some are in grasslands. The data cited in these reports provide indications of potential trends. Additional context on the potential for impacts is provided by Kerlinger (2007), in which the impact of mortality is not considered to be biologically significant. Baseline data from radar surveys of migrating passerines indicate that average bird densities for spring were approximately 190 targets/km/hour (ranging from 70 to 478 targets/km/hour) and 57 targets/km/hour (ranging from 36 to 88 targets/km/hour) for fall. While there is considerable variation in the target densities, the rates are similar to those determined for other proposed wind farms in the Peace Region. These rates are also less than the average rates referred to in the preliminary CWS literature review prepared during the Bear Mountain review (i.e., In spring, 258 for eastern studies, 509 for high traffic (Young and Erickson 2007, cited in CWS letter May 3, 2007)). Context on migration rates at Bear Mountain has been provided in a letter to the EAO (Kerlinger 2007). The Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007) will facilitate the development of site specific mitigation procedures.	6.8 p. 191
27.	In relation to the project footprint, where is the mentioned "…*significant*…" natural salt lick habitat feature? Was any fieldwork conducted to ascertain if animals arrive at this feature from all directions or via defined travel corridors. If the latter, would the proposed key mitigation measure "…*100m setback*…" (pg 207) be applied to both the feature and travel corridor(s)?	The natural salt lick was purposefully omitted from the figures to discourage public visits to this location. It is in the north east of the Project area, outside of the footprint. No data were collected on the animal travel corridors to the salt lick. The 100m setback applies only to the salt lick itself.	6.8 p. 197

28.	Another noted "…*significant*…" habitat feature is a white-tailed deer yarding area located on the "…*slopes below the ridge and west of the study area*…". According to Figure 6.8-2 (pg 159), no ungulate winter track counts were conducted below the western ridge so how was the significance and spatial extent of this feature determined?	A winter transect parallels the east side of this area below the top of the ridge. Additional information was provided by local sources. Please see response to comment No. 31 for suitability rating.	6.8 p. 197
29.	A key mitigation measure for minimizing wildlife impact (amphibians, raptors, furbearers and bats) is pre-construction/clearing surveys which may identify features important to various wildlife species and subsequently assist in specific wind turbine site selection. As the project footprint encompasses a relatively small area of 35ha, what is the rationale for not undertaking such surveys pre-application?	The scope of the application was intended to identify mitigation measures, such as pre-construction surveys, which would be carried out when more detailed locational information on the Project components would be available. Pre-construction surveys were not undertaken pre-application due to: 1. the time lag between completion of the surveys and commencement of construction and 2. the potential for modifications in project layout during the design process. Pre-construction surveys are species specific and their need will depend on the final project footprint and the construction schedule in relation to the species of concern. For example, if clearing is to occur in January and February the areas that are to be cleared will have to be surveyed for nesting owls immediately prior (e.g. within 7 days) to the commencement of clearing. If a nest is documented buffers would be established and clearing within the buffer could only occur once the young fledge or if the nest fails due to natural causes. Surveys conducted in 2006 as part of pre-application work will not be a valid means of locating active owl nests in 2007/08.	6.8 p. 205-208
30.	A key mitigation measure for migrating birds is "*assist with wind turbine placement, based on fall 2006 survey results…these mitigation measures will be discussed in detail in an addendum to this assessment*". This implies that radar detection results may indicate migratory bird pathways or corridors used in 2006. If so, why are these data not included in the application? Additionally, why were the detailed mitigation measures not included in this application and why only consider fall survey	Fall migration data for all bird groups (except for some of the raptor migration data) was included in the Application, and all the mitigation measures were included (the Application is in error). Fall raptor migration data to complete the requirements is appended to this table. Following discussion with agencies, and due to the timing of field studies, raptor migration data is only available for fall. Post construction monitoring (section 6.8.5.6 p. 207) will add further information for birds on migration, and is a major component of the	6.8 p. 207

	data?	Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007).	
31.	An Environmental Management Plan, completed prior to construction, should not be a recommendation but a mandatory requirement. While acknowledging the necessity of wind turbine carcass monitoring, what is the anticipated number of wind turbine locations to be monitored?	The proponent is committed to timely completion of the construction EMP, which will likely be included as a commitment of the Environmental Assessment Certificate. Monitoring plans, in consultation with regulatory agencies, will be designed to adequately cover the line of wind turbine generators.	6.8 p. 208
32.	From the cumulative impact aspect, access concerns were not addressed because "It is assumed…construction mitigation measures, such as the traffic management plan…will address any concerns as they arise". What does the traffic management plan entail?	The traffic management plan will entail coordination of construction traffic regarding appropriate travel times, notices, radio controls, safety requirements and dust mitigation if required (p. 28).	8.0 p. 316
33.	The application determined habitat loss associated with the Bear Mountain project "…is not considered…to result in cumulative environmental effects…because the areas involved are small in relation to the area available...". Are any of the identified habitats/vegetation/ecosystems impacted by the project unique at the spatial level considered in the cumulative environmental effects assessment?	Potential residual effects on habitat (p. 150) are anticipated because it is unlikely that the Project can avoid every important or threatened ecosystem in the study area, (such as threatened White spruce – currant – bluebells). However, the adverse effects are considered of low significance, because the ecosystems occur elsewhere in the study area (are not unique) where there are no Project – related effects.	8.0 p. 317
34.	"In general, wind park locations with the following characteristics present the greatest risk to birds and bats, and should be avoided…migratory flight paths where hundreds or thousands of bird movements occur hourly during migration" (pg 191). Is this statement based on reviewing Bear Mountain data and/or taken from somewhere in the literature? Referring to Table 6.8-12 (pg 173) during both spring and fall radar sessions, hourly detection rates are in the hundreds with several spring radar sessions resulting in passage rates in the thousands.	These comments are in line with CWS recommendations that these characteristics be considered be to assess the sensitivity of a site to development and assess the requirements for pre and post development studies (Wind turbines and birds: a guidance document for Environmental Assessment cited in the Application as Kingsley and Whittam (2005)). (Unfortunately we cannot locate the correct source for this comment). An analysis of baseline data from radar surveys of migrating passerines (Table 6.8-12) indicate that average bird densities for spring were approximately 190 targets/km/hour (ranging from 70 to 478 targets/km/hour) and 57 targets/km/hour	P. 191

		(ranging from 36 to 88 targets/km/hour) for fall. While there is considerable variation in the target densities, the rates are similar to those determined for other proposed wind farms in the Peace Region. These rates are also less than the average rates referred to in the preliminary CWS literature review prepared during the Bear Mountain review (i.e., In spring, 258 for eastern studies, 509 for high traffic (Young and Erickson 2007, cited in CWS letter May 3, 2007)). Context on migration rates at Bear Mountain was provided in a letter to the EAO (Kerlinger 2007) with additional information in a report to the EAO (Kerlinger in press). The application section continues to suggest design mitigation measures for wind parks (p.192), all of which are met by Bear Mountain, including for example spacing of turbines, choice of turbine design (non – lattice, no stays), and temporarily adjusting specific wind turbine operation to avoid specific days or times of day. Please see summary response to comment No. 46.	

35.	Regarding bird and bat collision risk, the application acknowledges "…design of the Wind Park indicate there is potential for an effect on birds (and possibly bats)…though the magnitude of any such impact is currently unknown…" (pg 193). The application further acknowledges the Bear Mountain ridge is the only elevated landform in the area and strong winds, which the majority of the time is perpendicular to the ridge, create updrafts.	The low – moderate level residual effects identified in the Application for birds, and the moderate level effects for bats (Application p. 210) are not considered to lead to significant adverse effects because the Bear Mountain Monitoring and Follow-up Programme (termed adaptive management in the Application) and other recommended mitigation measures are expected to decrease impacts such that they are not population-level residual effects. While the Bear Mountain ridge is elevated, it is not a pass or valley which confines travel routes, the turbines are in a single row rather than a series of rows, there is spacing between the turbines, the turbine design reduces the risk of collision by avoiding lattice towers and cable stays, the blade rotation speed is low (less than 1 HZ) and an adaptive management program to adjust specific turbine operations in terms of seasons/times of day is proposed. This comment that the project site is not a pass or a valley which constricts bird movement is in reference to design guidelines noted by Langston and Pullan 2003, (referenced in the EA Application p. 192). Within the Peace Region, Bear Mountain is not topographically unique, as it is part of a series of NE/SW ridges in the Alberta Plateau.	p. 193

36.	Preliminary application radar data may suggest populations of spring and fall migrating birds/bats, when moving through the general area, particularly during strong wind conditions blowing perpendicular to the slope (which are present 80% of the time – pg 196), concentrate toward the study area ridge feature because of the associated updraft. If so, the anticipated 26-29% (RESL personal communication 2007) of detections at rotor elevation could negatively impact several bird and bat species at a population level (depending on number and cohort impacted), particularly species at risk. Additionally, several of the project documented raptor species (e.g. red-tailed hawk) may regularly utilize these updrafts for travel and/or prey observation and could be at risk of rotor collisions. In comparison to preliminary quantitative migratory bird information, supplied bat data provides a presence/absence level of information. However, the south-west aspect escarpment and cliff features within the study area recognized as "…significant habitat…" for bats as they could be "…sufficiently warm in summer to support solitary or maternity colonies of breeding females" (pg 186). Four of the documented seven bat species in the study area are known to roost in such geologic features and hence at risk of rotor mortality. Additionally, two species of migratory bat (silver-haired and hoary) were documented in the study area. Research at a number of other wind energy facilities have documented bat rotor mortalities, the majority of which occurred during fall migration, and include the aforementioned two bat species. As previously described for migratory birds, migratory bats possibly concentrate towards the study area in the fall and risk rotor collision.	Please see response to comment No. 42. The Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007) (adaptive management program) with pre-operational and operational monitoring will provide additional information on the level of potential effects on birds and bats for this specific locale.	p. 196 p. 186

37.	Furthermore, the application notes that additional data on bats is required as "…more detailed studies with long term netting and acoustic sampling…required to determine if the bats captured or detected…are summer residents or bats moving through the area during late summer-autumn migration or dispersal to hibernation sites" (pg 186). In the absence of such information, we cannot assess the magnitude of project impacts, particularly direct bat mortality due to rotor collisions.	The Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007) developed in consultation with the MOE and CWS (the adaptive management program in the Application) will be implemented to address additional baseline information to support development of mitigation measures that are determined to be necessary as the Programme proceeds.	Additional avifauna comments p. 186
38.	The application assessed the potential mortality to raptors, migrating birds and bats from operational activities (rotor collision) of the project as high (pgs.196, 197, 200 respectively). The primary proposed mitigation is turbine monitoring (e.g. carcass surveys) and subsequently, if required, temporally alter operations of particular turbines (e.g. slowing or rotor shutdown). However, the applications' Residual Effects (Section 6.8.7) concludes migrating/breeding bird and raptor collision risk is considered low to moderate but there is acknowledged uncertainty with this prediction and regarding threatened species "…the potential for population-level effect…if mitigation proves unsuccessful" (pg 209). A similar conclusion is made for bats.	Please see response to comments No. 29, 41, 44 and 46, which note that the residual effects to raptors, migrating birds and bats are low to moderate, and the mitigation measures developed as part of the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007) are expected to be effective and successful.	Pgs. 196, 197, 200 & 209
39.	Given the proponent's acknowledgement of a high risk of operational mortality to avifauna, uncertainty of proposed mitigation effectiveness and the potential importance/uniqueness of the study area, we are not able to assess the level of risk the Bear Mountain project present to avifauna, particularly to species at risk, raptors and bats. Considering the information made available as a result of the Application, MoE considers that the Project poses a substantive hazard to avifauna and bats, some of which are species at risk. The proposed mitigation measure may not have any appreciable effect in terms of reducing bird and bat mortality. Considering these risks and uncertainties, and given that the project footprint is potentially located on a unique topographic feature important to migrating avifauna, bats and foraging raptors, there is the	Please see responses to comments No. 29, 41 and 44. Of all the wildlife components assessed in the Application only three were identified as having the potential for residual effects: threatened warbler species (low impacts due to habitat loss), breeding birds, raptors and birds on migration (low to moderate impacts, depending on the group, due to collision risk) and bats (high impacts due to collision risk). However, it is important to note that these are the assessed impacts prior to the application of mitigation. After the application of mitigation (alteration of turbine schedules if monitoring indicates the need) the residual impacts are low to moderate, though for bats they may be moderate (Application pg. 210). The level of assessed residual effects must be considered in	

	significant probability that the project will result in high risk of impact to bird and bat populations in the short and long-term, dependant on the species, number and cohort involved. (MOE 2007)	conjunction with criteria used in making the assessment. For the assessment undertaken on the Bear Mountain Project a three tier effects assessment was used (Application pg. 189). The significance of any project-related residual effects was assessed according to the following: • low – no population-level effects within or outside the study area, • moderate – no population level effects outside the study area, and any population-level effects in the study area are short-term and reversible, and • high – long-term population-level effects within, and or outside the study area. Thus the low – moderate level residual effects identified in the Application for birds, and the moderate level effects for bats are not considered to lead to significant adverse effects because the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007) (termed 'adaptive management' in the Application) and other recommended mitigation measures are not predicted to lead to population-level residual effects. While the proponent acknowledges the uncertainty of predictions based on non-local information, the assessment of low to moderate significance of effects assumes the successful implementation of mitigation and the likelihood that most birds will avoid operating wind turbines, as has been shown for most operating wind farms (Application, p. 197; Millikin 2005; Kerlinger 2006). The proponent's review of research and literature for North American wind farms and comparison to Bear Mountain differs from the MoE analysis regarding the efficacy of the operational monitoring, adaptive management and mitigation as outlined in the Application. There is no evidence that similar rates of bird passage for Bear Mountain as at other wind farms translates into a "substantive hazard to avifauna	

		and bats". Similarly the notion that "mitigation may not have an appreciable effect in terms of reducing bird and bat mortality" does not consider that CWS guidance documents (Environment Canada 2007) indicate the utility of such mitigation. The information provided and analyzed by the proponent does not support MOE's conclusions that there is a "significant probability that the project will result in a high risk of impact to bird and bat populations in the short and long-term". Finally, while the Application notes that Bear Mountain Wind Park is located on a ridge (Application, p. 196), the discussion contained in the Application was confined to the context of the Project study area and immediate vicinity (2 km). Within the Peace Region, Bear Mountain is not topographically unique in a regional context, as it is part of a series of NE/SW ridges in the Alberta Plateau, leading up to the Rocky Mountain Foothills 60 km to the west and extending the length of the east side of the Rocky Mountains. While the Proponent and agency perspectives on the potential level of impact may differ, Bear Mountain Wind has worked with both MOE and CWS to prepare a Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme to address the concerns regarding birds and bats. A schedule of pre-operation and operation studies has been developed, and will include • Conducting pre-operational surveys for birds and bats, and evaluating the data to identify appropriate mitigation that could be applied as necessary during operational monitoring; • Monitoring operations, and if concerns are identified through a consultative process with a Qualified Environmental Professional (Section 6 of the Programme) applying mitigation, and • At the end of two years of operational monitoring,	

		evaluating the need for additional third year monitoring requirements to supplement the predetermined studies. This Programme outlines how operational monitoring will be conducted to evaluate the effects on raptors and migrating birds and bats and how mitigation may be applied. It also indicates how Bear Mountain Wind, MOE and CWS will work together to conduct the evaluation of this work. After operational monitoring and follow-up, ongoing mitigation actions and the criteria / criterion that would be used to trigger the application of mitigation will be formulated. Reporting requirements, and the initiation of a Technical Advisory Committee (TAC) to evaluate monitoring results, are outlined. Monitoring data will be evaluated by agencies and the Proponent to establish appropriate criteria to guide the application of mitigation. The mitigation will be based on scientific data relating to parameters that are predicted to minimize the collision risk to raptors and migrating birds and bats. There are four types of parameters that in combination will be evaluated to determine the application of mitigation (alteration to turbine operations): reactions of biota to speed of blade, spatial location of turbine(s), temporal considerations (time of day and season) and weather.	
40.	Regarding the Bear Mt Wind Energy Project Application, there are several identified N. Goshawk nests in the vicinity of the project footprint (apparently not located within the project footprint). FYI, the draft Wildlife Habitat Feature document provides the following information/bmps for Northern Goshawk nests: Large stick nests of the interior subspecies of Northern Goshawk, as well as Broad-winged Hawk (Blue-listed)and Swainson's Hawk (Red-listed), are given a HIGH significance rating in the Northern Interior Forest Region due to their regional significance and provincial conservation status. Their associated	Thank you for providing specific guidelines for these species. The Northern Goshawk was the only species identified nesting in the Project area. No blasting or helicopter flyovers are anticipated for the Project. Proposed mitigation measures to accommodate the guidelines include (p. 206): • Identify a year round buffer of 275 m for active nests, with a connection to an adjacent intact forest of at least 36 ha. • Pre-construction surveys (call playbacks) will locate	6.8.5.4, p. 206

	Management Guidelines are described below. If the nest is intact: • Establish a forested buffer of approximately 24 ha (i.e., WTP or other retention patch with ~275 m radius or equivalent area) around the nest tree. Ideally, the nest tree should be roughly centred within this forested patch; the patch should be connected to adjacent contiguous mature timber where possible. This will help protect the integrity of the nesting area (i.e., including the current nest tree, alternate nest trees, and perch trees). • Where possible, avoid High impact activities (see Table 9), including road construction, blasting or low altitude helicopter fly-overs between March 1 and August 15, within a 500 m radius of the tree. • Where possible, locate all new roads >200 m from the nest tree. • Contact MWLAP for additional direction as this species is regionally important.	owl and northern goshawk nests during each year of construction, • A 500 m buffer for roads/construction, where possible, is proposed around active raptor nests between March 1st and June 30th and within 300 m between July 1st and August 15th, • The historical nest sites are greater than 200 m from the proposed roads (Figure 6.8-1).	
Canadian Wildlife Service Issues. Adam La Rusic, P. Eng., Senior Environmental Assessment Engineer 604 666-8342			
	General		
41.	In the wildlife section, it would be very helpful to keep reporting of survey methods and results in a consistent order (i.e. by season, species group) throughout the Application.	Good point, thank you.	n/a
42.	The wildlife surveys reveal a very diverse wildlife community in the Bear Mountain Study Area with over 65 species of landbirds, 12 species of raptors, 7 species of bats and several listed species including plants, amphibians, butterflies, and birds. Some of the broad surveys indicate more detailed work is needed prior to vegetation removal and construction, so as to properly evaluate and mitigate potential environmental impacts.	The field program, as outlined in the Work Plan, was successful in identifying the wildlife community for the Project. Additional preconstruction surveys have been recommended, targeting for early breeding owls, fisher dens, northern goshawk nests and amphibians, and for birds and bats in the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007).	Sect 6.8.5.1, p. 202

43.	There remain significant gaps in the coverage of some vegetation and wildlife surveys, particularly for groups where there are known environmental risk from wind turbines. These include migrating raptors and bats. CWS is unable to assess the environmental risk or provide advice regarding approaches to mitigation in the absence of certain and specific survey data.	The surveys for the baseline information for wildlife, as noted in section 3 of the Wildlife and Wildlife Habitat Assessment Workplan (May 24, 2006) included: • Butterflies, • Amphibians, • Breeding birds (point counts, transects), • Raptors (May and August diurnal stand watch surveys and September migratory surveys, owl call playback surveys, northern goshawk call playback surveys in July, • Migratory birds (May and August, vertical and horizontal radar surveys, nighttime audiovisual surveys), • Bats (habitat assessment, mist netting, acoustic detection • Ungulates (winter transects) • Furbearers • Small and medium sized mammals Mitigation measures are presented for each of the above wildlife. The mitigation measures propose pre- and post monitoring surveys to address uncertainties regarding potential effects and time/season sensitive information. The proposed monitoring includes bird and bat mortalities, as part of the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007) (adaptive management) developed in consultation with MOE and CWS.	Sect 6.8.5.1, p. 201

44.	Based on its expertise concerning birds in migration, and in consideration of the data collected to date, CWS is not sufficiently informed to advise decision makers or the proponent on the level of risk these projects present to avifauna, including migrant passerines, but most specifically with respect to migrating raptors and bats. After further, thorough pre-construction surveys, CWS is fairly satisfied that the proponent can identify species-at-risk most likely to be impacted by the project.	Pre construction surveys have been recommended, targeting for early breeding owls, fisher dens, northern goshawk nests, and amphibians. Additional studies, both pre-operation and during operation, are included in the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007) for bats, raptors and migrating birds (Section 6.8.5.3). Continued consultation with CWS is included as a part of the Programme.	p. 201, 202
45.	It is important that the proponent be aware that the destruction of migratory bird nests, even in the course of otherwise legitimate industrial activity (termed "incidental take"), is prohibited under paragraph 6(a) of the Migratory Bird Regulations of the Migratory Birds Convention Act, 1994.	Legislative requirements, including this Act, are noted on p. 152. Recommendations adhere to the Act on pre-construction surveys and restriction of clearing to ensure that the project does not destroy active migratory bird nests.	n/a
	Vegetation		
46.	Approximately 35 ha of land will be removed as a result of the Project, including 1.2 ha of a blue-listed ecosystem (White Spruce-Currant-Bluebells), and 1.8 ha of wetland habitat (Application, pp. 144-145). It should be noted that fragmentation effects will extend 300 m inward from the cut edge along the boundary of the removed habitat— perhaps larger in the case of wetlands—thereby increasing the overall area of impact.	The effects of habitat loss and fragmentation, and their extent beyond the footprint of the Project, are noted in Section 6.8.4.1, p. 190. Minimizing these effects underlies the rationale for several mitigation measures, such as minimizing vegetation clearance, and implementing buffer zones (p. 201, 202). However, the area in the vicinity of the project footprint is already or will be fragmented by existing (i.e. winter recreational vehicles, grazing, oil and gas investigations) and scheduled (i.e. forestry) activities, complicating the assessment of fragmentation and edge effects that may be attributable to this Project.	p. 201, 202

47.	During broad vegetation sampling of the Project area, three blue-listed species were found, two of which, Tender Sedge and Bog Bedstraw, would be removed during Project construction. These three plant species were not on the list of the 18 possible provincial species of risk likely to occur on in the Project area. The wetland/bog habitat (polygons 1, 6, 14, 61, 64, 65, 67, 70) encompasses a large component of the turbine footprint (fig. 6.7-1). The proposed mitigation strategy includes shifting turbine and road locations to avoid impacting bog and wetland habitat as well as species of risk (Application, pp.149, 337). We question the interpretation provided on page 141 of the Application suggesting that Tender Sedge and Bog Adder's-mouth are not considered blue-listed within this Biogeoclimatic Zone (BEC). As far as we are aware, the province does not consider the typical distribution of the plants to extend within the Boreal White and Black Spruce BEC.	The three blue-listed plant species documented within the study area were not expected to occur, and are therefore not listed as in the table of those likely to occur (p. 142). While the species were not previously noted to occur within the biogeoclimatic zones of the study area, the proponent recognizes that they are blue-listed throughout the province in any zone.	p. 149, 337
48.	Considering the relatively small footprint of the project, the high potential for plant species of risk and wetland/bog irreversible habitat loss, and a variety of options available for mitigation, CWS recommends detailed rare plant surveys and mapping of wetland/bog habitat be conducted within all Project footprint areas prior to vegetation removal and construction (as suggested on p. 148).	As noted, this was recommended (page 148) to allow for comprehensive coverage of sensitive habitats that may be impacted once the project design and footprint have been finalized. The need for these surveys is expected to be a condition of the Environmental Assessment Certificate. Further, these surveys are expected to make-up part of the Project's Environmental Management Plan	p. 148
49.	An Environmental Management Plan (EMP) should be developed that reflects, amongst other things, survey objectives, timing, and mitigation options in the event rare plants and/or wetland/bog habitats fall within proposed Project footprint areas. Environmental regulatory agencies and other interest groups should be provided the opportunity to review the EMP prior to commencement of Project construction. Through the EMP, turbine and/or road placement could be adjusted based on the results of detailed pre-construction surveys.	It is expected that the Environmental Management Plan will be developed and reviewed by appropriate regulatory agencies prior to commencement of construction, as part of the overall monitoring process. CWS should be aware that latitude for the adjustment of project design will be small once construction commences and the EMP is in force. Required refinements in project layout will occur during the detailed design phase, which will be completed prior to commencement of construction.	p. 342 (Section 11, Environmental Management System)

50.	Depending on the scope and level of environmental impact, the Proponent should consider enhancing equivalent habitat outside of the Project footprint, and possibly outside of the Project area.	The effects of the Project cover a small footprint, less than 15 ha for operation within the IUP, and the recommendation for pre- construction surveys (see response to comment No. 55) will further identify the affected ecosystems. Approximately 1.24 ha of blue-listed ecosystem will be lost, and this ecosystem is present in other areas of the IUP (p. 145). As this is a multi-use area, and as proposed for the revegetation within the construction footprint, any habitat management measures would have to be developed in consultation with other users. Enhancement of equivalent habitat has therefore not been considered within the Application.	
51.	In regards to plant species at risk and wetland/bogs sensitivities to chemical compounds, chemical spraying should be prohibited, not minimized (Application, p. 337).	Chemical spraying is not anticipated unless required by regulators, for example under the BC *Weed Control Act*.	Sect 6.12.2.3 p. 246
	Butterflies		
52.	Table 6.8-8 of the Application does not highlight provincial blue-listed butterfly species as stated. Detailed vegetation surveys along the footprint as noted in comments 8-10 above would assist in development of mitigation plans for blue-listed butterflies and their associated plant species.	Thank you for identifying this omission. The following species in Table 6.8-8 should have been highlighted in bold: arctic blue, red-disked alpine.	n/a

	Amphibians		
53.	Broad, incidental observations of amphibians during other surveys detected Western Toad, a "species of special concern" listed under the federal Species at Risk Act. It is listed due to population declines and extirpations, primarily at the southern and coastal extents of its range. Dependent upon oligotrophic and fishless ponds and small lakes for breeding, it is also relatively intolerant to habitat deterioration (especially due to urban expansion and agriculture), introduced exotic predators and competitors, and disease. Despite assessing the potential project risks to amphibians as moderate, there is little to no mitigation strategy proposed.	The mitigation measures proposed in the application, including buffering, pre-construction surveys, amphibian salvages in areas of existing suitable habitat, and avoidance of off-road travel, address the potential effects to amphibians.	p. 202, 205
54.	Please clearly identify the location of Western Toad in Fig. 6.8-2.	Western toads were sighted: • in the middle of the transect running NW SE, to the east of the project footprint, in the north end of the IUP, UTM 661251 X 6177565 • along the eastern boundary of the IUP, approximately75 km north of Radar Lake Road (radar site RS-04) UTM 664584 X 6173417	n/a
55.	Pre-construction amphibian surveys (also suggested on p. 205) prior to vegetation removal within the Project footprint would allow assessment of the potential impacts and design of effective mitigation. The Proponent should keep abreast of developments of the federal Management Plan for Western Toad due in 2008 pursuant to the Species at Risk Act.	The Proponent will consider this Management Plan, if available, prior to pre-construction surveys and amphibian salvage plans.	Sect 6.8.5.3 p. 205
	Breeding birds - Resident raptors		
56.	Clarify raptor observations made. Unless further evidence is provided to the contrary, CWS is of the view that mid-May raptor observations are not of raptors in migration, but more likely of	While the spring and fall (May and August) raptor stand watch surveys were conducted in conjunction with radar surveys (which were focused on migrating birds other than raptors) it is recognized that the individuals observed may not	p. 206

	breeding or resident raptors. The acoustic owl surveys detected a diverse community of owl species (11 individuals of 5 species) within the Project area. The Northern Saw-whet Owl is highly migratory, and may use other habitats during migration. The remaining are typically resident species that sometimes migrate along elevation gradients depending on temperature (e.g. Northern Pygmy Owl) or moving nomadically looking for food (e.g. Boreal Owl). The raptor stand watches completed in mid-May (Application, pp. 172,177) most likely indicate resident or breeding Red-tailed Hawk, Northern Harrier, Northern Goshawk and Broad-winged Hawk and not spring migrants. The Application notes detections of American Kestrel, Sharp-shinned Hawk, and Rough-legged Hawks on p. 171 and in Table 6.8-13 as spring or fall watches. Most observations were at or below 150 m above the ground, which is within the height range for risk of collision with turbines. Nests and successfully breeding Northern Goshawks were also found (Application, p. 172) near the project footprint. It has been documented that foraging raptors are at risk of colliding with wind turbines. The smallest owls will forage 1.5 km from their nests, with larger owls over 100 ha within their home ranges. Certain species, such as the Northern Goshawk, Northern Saw-whet Owl, Northern Pygmy Owl, and Barred Owl, typically forage in and/or along forests and hunt from perches (e.g. Barred Owl and Northern Saw-whet Owl). Further, some species, such as the Northern Harrier, Boreal Owl, and Great Horned Owl, are more likely to forage over open spaces. Red-tailed Hawk is known to have a greater risk of collision with turbines on ridge tops during strong winds blowing perpendicular to the slope (Hoover and Morrison 2005, referenced in the Application, p. 196). The west side of Bear Mountain is a steep slope, where strong winds are perpendicular to the slope 80% of the time (Application, p.196). This suggests a high risk to raptors attracted by strong winds and associated updrafts created by the western ridge of Bear Mountain.	have been migrants. The species observed in May are included in Table 6.8-13, p. 177, (as noted in the comment) as are the species observed in August. At the request of regulatory agencies, fall raptor migration studies for September were added to the wildlife workplan; however there was no intent to include spring raptor migration studies. Details of the September survey are appended to this table. The ability of raptors to effectively avoid turbines or become habituated to them, and the proposed mitigation measures (p. 196, 206) are expected to reduce the potential mortality risks to raptors. Please see response to comment No. 47 for pre-construction mitigation measures. Mitigation measures for the operation phase will be developed as part of the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007). While the potential mortality effects to raptors is high without mitigation, the residual impacts from the project, following mitigation and accounting for the ability of raptors to avoid turbines, are predicted to be of low to moderate significance (p. 210), as has occurred at most wind energy projects world wide. The proponent considers that the adaptive management programme proposed in the Application, and expanded upon in the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007), will effectively mitigate potential impacts (also see Proponent letter to MOE, May 9, 2007, on the EAO website).	

57.	Active raptor nests are protected by the provincial Wildlife Act. All of the observed raptor species, except Northern Harriers, nest in trees or snags. Owls and other raptors nest earlier than other landbirds, and prior to the suggested exclusion period of 15 April – 31 July, p. 338. As such, CWS recommends raptor nest surveys be conducted along the 8km footprint prior to vegetation removal.	The Application recommends pre-construction surveys be conducted if any clearing is proposed between mid February and April 15th. (p. 203, 206). If a nest is documented buffers would be established and clearing within the buffer could only occur once the young fledge or if the nest fails due to natural causes. Buffers would conform to buffers recommended in appropriate Best Management Practices documents. (Table 10.1, p. 338, references Section 6.8.5, which contains more specific measures.)	p. 203, 206
58.	Given the potential for foraging raptors to collide with turbines, and the diverse raptor community observed at turbine height during the limited surveys conducted to date, CWS recommends that pre-construction raptor watches and behavioural surveys be conducted along the footprint prior to project construction. These surveys should extend throughout the entire nest-building and post-fledgling period, following standard protocols for behavioural raptor studies. The results of these surveys would inform the Proponent and regulatory agencies in the development of mitigation strategies, including such things as: a. Turbine placement; b. Forage habitat management in and around proposed turbine sites; c. Assessment of potential forest edge effects; and, d. Assessment of weather conditions/seasonal timing where shutdown of specific turbines might be warranted to reduce collision risk potential.	The Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007) provides a schedule for raptor stand watch studies (behavioural studies) for the pre-operation and operation phases, based on consultation with agencies, and recommended protocols for surveys (EC 2007b). The Programme will develop mitigation strategies for alteration of turbine operations to minimize effects on raptors, such as an assessment of the weather conditions/timing where turbine operation could be altered (see sections 3.4 and 4.4 of the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007)). Management of forage habitat is dependent on consultation with other tenure holders for the Project site. In addition, Project design has addressed avoiding/minimizing the potential operational impact on raptors by setting by the turbines back from the ridge by 50 m or more, where possible given the topography of the site (Kerlinger, 2007, p. 4 notes effectiveness of this measure).	p. 201

	Breeding Birds - Songbirds		
59.	Thorough breeding surveys indicate a diverse songbird community. Habitat loss will remove nesting habitat for provincially-listed species; further, numerous provincially-listed individuals were documented during surveys either side of the turbine footprint. The risk of collision during foraging trips, the displacement of these breeding birds in adjacent habitats, and/or other indirect effects, are presently poorly understood in the context of type of project development. Also, two breeding species, the Wilson's Snipe and Rufous Hummingbird, perform aerial displays of up to 50 m above the ground. These behavioural characteristic leads us to believe these species may be at an increased risk of interacting with turbines. Research to evaluate this risk is warranted.	General effects on wildlife, including sensory disturbance, habitat loss and fragmentation, mortality and bird/bat collision risk are discussed in Section 6.8.4.1, p. 188 to 193, and specific effects on breeding birds on p. 194. The footprint effect of the project will be less than 35 ha (2%) within the IUP for construction, and less than 15 ha for operation. Mitigation measures (p. 205) include avoiding the core breeding period, limiting noise, and providing buffers for active nests (with consultation with CWS).While recognizing the potential impact on species with aerial displays, during baseline surveys only 1 humming bird and 2 snipe were documented in the study area. A review of the extent and location of the ecosystem units with high and moderate suitability ratings confirms the assessments in the Application that population effects from loss of habitat are not predicted to be significant, because the area of habitat affected is low, the habitat is extensive within and surrounding the IUP, and/or mitigation measures presented in the Application address potential effects (for example, avoiding clearing during breeding season for bats and raptors, and avoiding specific habitats where possible)(RESL 2007). Operational studies in the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007) include summer point counts and carcass searches, which will provide additional information to assess potential impacts to breeding species.	p. 205

60.	Pre- and post-construction migratory bird work should include an assessment of direct, and particularly, indirect effects of wind turbines on provincially-listed species. If the magnitude or scope of the impact is moderate-to-high, then CWS recommends that mitigation include measures aimed at enhancement of habitat for these provincially-listed species outside of the Project impact area. This type of initiative could include interested local non-government agencies, naturalist groups, First Nations, and possibly government agencies as well.	Operational studies in the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007) include summer point counts and carcass searches, which will provide additional information to assess potential impacts to breeding species. As this is a multi-use area, and as proposed for the revegetation within the construction footprint, any habitat management measures would have to be developed in consultation with other users, including those holding grazing tenure. Enhancement of habitat has therefore not been considered within the Application.	For example, p. 337, Table 10.1, summary of potential effects and mitigation.
	Migrating Birds - raptors		
61.	The surveys completed for raptors during mid-May do not provide any data on raptor migration. Peak migration of Golden Eagles through Alberta's southern Rockies occurs mid-March, with many other raptors moving through in significant numbers up until mid-April. Coverage during fall migration for raptors includes five days of surveys during a single period in mid-September. Raptor fall migration through Alberta's southern Rockies effectively commences mid-September, continuing into November. Peak numbers are often observed after the first week of October.	Please see response to comment No. 63. The fall raptor timing in September was based on raptor migration activity observed further north and discussion with local bird experts. Additional data on movement and timing will be provided by the fall and spring stand watch and carcass searches noted in the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007).	n/a

62.	Because migrating raptor surveys were not completed during the spring of 2006, CWS is not in a position to advise the environmental assessment review of the potential risk this Project poses to this bird group. This data gap is problematic given the high number of raptors observed during the limited surveys completed thus far, that they were observed flying height at blade height, and given they are known to make use of updrafts in similar wind conditions as noted at Bear Mountain (Application, p. 196 notes the aforesaid as 'high risk').	It was the Proponent's understanding of the approved workplan that fall 2006 raptor studies would be carried out and dedicated spring raptor surveys were not required. Fall stand watch surveys were done in mid September 2006 to meet the obligation. The comprehensive pre-operation and operation Monitoring and Follow-up Programme provides for migrating raptor stand watch surveys and carcass surveys which will allow the determination of site specific measures to mitigate impacts to raptors. In addition, summer 2010 breeding behavioural studies will be carried out if summer 2009 carcass surveys indicate a concern. Please also see response to comment No. 63 (The ability of raptors to effectively avoid turbines or become habituated to them is expected to reduce the potential mortality risks to raptors, such that it is not high).	n/a
63.	The fall migration of raptors of 124 birds (including 49 red-tailed hawks, typically an earlier raptor migrant) observed on September 17 is not reported in a table (Table 6.8-13 appears to be missing a majority of relevant data). Do the other species include Rough-legged Hawk, Northern Goshawk, American Kestrel, Sharp-shinned Hawk? Please clarify.	Please see appended table for details on raptors surveyed during September. Of the 124 birds surveyed at that time, 62 were sandhill cranes, observed over the fields in the Kiskatinaw valley. The raptors included the rough-legged hawk, sharp-shinned hawk, northern goshawk, northern harrier and broad-winged hawk. Table 6.8-13 presents only the May and August stand watch results.	n/a

64.	The fall migration survey of raptors was limited to five days, and was undertaken early in the migration season. Considering the high risk (Application, p.196) of collision (p. 177 notes the 124 raptors observed on September 17 used thermals on the west side of the study area to gain altitude), CWS recommends that preconstruction raptor migration surveys be conducted, following standard protocols that encompass the entire migration period. These surveys are recommended to be completed prior to Project construction.	Please see response to comment Nos. 29, 63,65and 69 and appended table on September raptor migration. The unmitigated risk may be high (p. 196), however the application notes that raptors are likely to change their behaviour to avoid turbines and reduce the potential impact. Where possible, Bear Mountain Wind has mitigated the risk by locating the turbines a minimum of 50 m in from the rim rock areas on the west side, where the thermal wind regime is present. A comprehensive Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007) developed in consultation with CWS addresses the recommendation for additional surveys.	p. 201
	Migrating birds – other birds		
65.	Excellent detail is recorded for the radar methodology. The quality of migration surveys is excellent, though the number and breadth of coverage during the migration season, particularly during the fall, is limited. The three days of survey work is effectively only a snapshot of fall migration, which typically lasts twelve-plus weeks, from the end of July to the beginning of October. Despite the limited coverage, large numbers of nocturnal migrants were detected. Using vertical radar in spring, almost 10,000 birds were detected. At times, 400-1500 birds/hour with approximate one-third of these on average (and up to over 50%) observed flying at turbine height. Most of these detections are believed to have been passerines, but there were confirmed observations of shorebirds, waterfowl and raptors as well. During nocturnal migration, passerines are known to be at risk for collision with wind turbines; however, it is unclear exactly what risk factors lead to collision beyond lighting and low cloud effects.	Thank you for the recognizing the quality of the field study methodology. The post construction Monitoring and Follow-up Programme will assist in clarifying factors that lead to risk between passerines and wind turbines for the Project site. Please see response to comment No. 25 (Table 6.8-12 Radar station results) Please see response to comment No. 33 for additional analysis for the target (bird) passage rates, which reference passage rates per kilometer rather than the rates noted in the comment, which apply to the approximately 3 km diameter of the radar range. Based on the data to date, bird passage rates are similar to those for other studies in the region and for other areas for which data is available, rather than high as advised by the CWS (2007). Data for birds flying at blade height was re-analyzed for one turbine height (two heights were originally used), and is included in the errata provided to the working group. The re-calculated average of the number of birds at rotor height is less than the values noted in the comment. The revised	n/a

		values are 26 % (ranging from 13 % to 38 % per survey night) for spring and 29 % (ranging from 26 % to 36 %) for fall, a decrease from an average of 36% (18% to 53%) and 37% (34% to 44%) respectively. It should also be taken into consideration that the turbines are spaced, in a single line, and that the rotation of the blades is less than 1 Hz, all of which decrease the mortality risk. Please note that the preferred navigational lighting option for the wind turbines is activated only in the presence of aircraft, and as most aircraft in the vicinity use visual flight rules, their operation at night and during low cloud is limited.	
66.	Given the high numbers of nocturnal migrants that were detected, CWS recommends that pre-construction radar surveys be continued. Doing so is likely to increase our understanding of bird movement patterns, and identify potential high risk conditions. For example, do certain wind or weather conditions encourage lower altitudinal migration over the Bear Mountain ridge? Or are certain ridge points likely to experience lower migration activity, and thus provide for potential future mitigation options? We recommend these surveys cover a wider period during migration than has been completed to date, particularly during the fall. CWS can advise the proponent and their consultants in this regard.	The proponent has sought the advice of CWS during the design of the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007), and CWS has approved the pre-operation and operation schedule for studies in the Programme.	p. 201, 207

67.	A flock of 62 migrating Sandhill Cranes was observed on September 17th (Application, p.177); however, details have not been provided regarding their location and behaviour. Without this information, CWS is not in a position to advise the environmental assessment as to potential risk this Project poses to this species. CWS recommends additional information be provided to regulatory agencies for review and comment.	The flock was flying SW at approximately 125m above the ground. The flock was leaving fields at valley bottom and rising while transiting through study area. The sandhill cranes were observed once in migration and are considered a migratory bird for this area. Sandhill cranes are not considered a major concern for the Bear Mountain Wind Park because during migration they typically fly well-above turbine height. As such, effects will likely be negligible or low. Additional information, collected through the stand watch surveys in the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007), will be reviewed by CWS, and mitigation measures if necessary will be developed as part of the Programme. The observer was stationed at BMRA03 (0665275 X 6173542)	n/a
	Bats		
68.	Bear Mountain supports a diverse bat fauna that, to date, totals seven species. The consultant's effort to thoroughly survey the bat community is evident and noted. Over 90% of bat mortalities due to collisions with wind turbines involve migratory species (Lausen et al. 2006), including the Hoary Bat and Silver-haired Bat. These aforesaid species were detected at Bear Mountain. There may be more vulnerability in wind energy installations for bat collisions along forest edges, ridge tops and near bodies of water (Lausen et al. 2006).	The Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007) will assist in identifying factors that lead to an increased risk between bats and wind turbines and provide direction for operational mitigative measures.	n/a

69.	A major gap in the survey coverage for bats is the failure to follow the appropriate protocols (Lausen et al. 2006) for detecting migrating bats. Tree-roosting, migrating bats typically fly at turbine height, which is above mist net height and the range of acoustic detectors set on the ground (vertical detection limit approximately 30 m). As such, acoustic detectors should be set above 30 m from the ground, at the elevation of anticipated turbine height. CWS recommends that acoustic bat surveys be conducted during August until mid-September. Further, recognizing the known high collision risk, and the habitats present and topography of Bear Mountain for all bat species, CWS recommends that bat surveys following standard protocols be completed prior to project construction.	The bat program followed was outlined in the project work plan which was reviewed by CWS and followed the approved protocol for British Columbia. The protocols referred to in the CWS comments were developed for Alberta and provide a basis for future bat work. Additional information regarding methodology for future bat surveys is provided in the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007). The program successfully detected the presence of migratory bats, specifically the silver-haired and hoary bats. These two species which along with the red bat (which has yet to be documented in BC) are the most vulnerable to collisions with wind turbines. Operational monitoring will provide data on the interactions between the wind park and all bat species and provide the basis for site specific mitigation.	p. 201
70.	Considering provincial recommendations, surveys for maternal roosts and hibernacula (surveyed for in October) of resident/breeding bats may be warranted.	Surveys of maternal roosts and hibernacula were not included in the approved wildlife work plan.	n/a
71.	Review and include mitigation suggestions for bats according to recent bat protocols for wind farms. See, for example, http://www.srd.gov.ab.ca/fw/guides/pdf/inventoryguide/ABBatTurbineProtocol15May06R.pdf.	Recommendations in this and other documents will be used in developing both the post construction monitoring and adaptive management plans. (such as at: http://www.wbwg.org/Papers/TurbineProtocol15May06R.pdf) Additional information regarding methodology for bat surveys is provided in the Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007).	n/a

72.	Contrary to the assertion made on p. 191 of the Application, bats are more at risk to collide with wind turbines than other tall structures. As noted elsewhere in Application, migrating bats may be attracted to wind turbines (Arnett 2005, referenced in the Application, p. 192). Please correct.	The paragraph on page 191 should be re-worded to say the following: Recent research in the USA has shown that bats are attracted to the moving turbine blades (Arnett 2005) and suggests that contrary to prior research (Erickson et al. 2001 and Kingsley and Whittam 2005) may be at a greater risk to collide with operating turbines. Wind turbines not operating (e.g. blades not turning) do not attract bats (Dr. R. Barclay personal communication) and are not considered a greater risk than other tall structures.	n/a
73.	Where are the rim rocks where bat activity was noted on p. 142 of the Application?	Bat activity was noted in Polygons 60 and 62 of the ecosystem map (Figure 6.7-1), to the west of the turbines and access road, consisting of the bluff on the west of the study area. The road and turbines will be set back to the east from the edge of the bluff, where possible, approximately 50m or more. The label for polygon 60 should include 10% rock.	n/a
74.	Myotis Keenii was found in the study area, but then there is nothing more about this species in the Application. Please clarify.	*Myotis Keenii* was not found nor expected to be found in the study area (Table 6.8-3). It is referred to as one of the myotis species that cannot be identified based on echolocation calls (page 163).	n/a
	Other		
75.	Considering all of the project impacts, the feasibility of fencing and other options to minimize traffic on sensitive habitat should be explored with the regional manager (Application, p. 149) and integrated recommendations made clearer.	The Project is located on Crown Land, and is a multi-use area over which the Proponent does not have jurisdiction to determine access restrictions. Any permanent fencing would have to be agreed upon by multiple government agencies and several commercial enterprises.	n/a
76.	Missing references (e.g. Boffa Miskell 2005 on p. 192) should be included.	This citation should read Miskell 2005, and is included in the references.	n/a

77.	The potential risk of collision (considered high for some species) indicates the inclusion of extensive carcass searches in post-construction monitoring should continue for at least two years after turbines commence.	The Raptor, and Migratory Bird and Bat Monitoring and Follow-up Programme (Hemmera 2007), including the spatial extent and length of the programme, has been developed in consultation with regulatory agencies, and includes three years of operational monitoring, with an assessment at the end of two years to evaluate the need for additional third year monitoring requirements to supplement the predetermined studies.	p. 201
Fisheries and Oceans Canada, Dale Desrochers			
78.	It is the opinion of DFO, that the Bear Mountain Wind Park Project is unlikely to result in impacts to fish and fish habitat based on the information contained within the application, specifically the biophysical assessments, incorporation of DFO Operational Statements, development of sediment and erosion control plan, and project design to eliminate development of concrete batch plants and associated water withdrawals.	No residual adverse effects to fish and fish habitat, including a HADD, are expected to result from the proposed project (p. 219).	Sect. 6.9.4 p. 218
Ministry of Energy, Mines and Petroleum Resources Issues. Neil Bannera, Electricity and Alternative Energy Division, 250 952-0655			
79.	The BC Energy Plan; A Vision for Clean Energy Leadership encourages the development of independent power projects to meet British Columbia's growing electricity requirements. Policy #10 of the Plan states: Ensure self-sufficiency to meet electricity needs, including "insurance". Policy #21 states: Ensure clean or renewable electricity generation continues to account for at least 90 percent of total generation.	No response required.	n/a

80.	Comments on the project were previously provided via teleconference call to the Working Group on January 11, 2007 and are reflected in the minutes of that meeting. Those constitute input from this Ministry. At that time, it was recommended that the proponent undertake additional sound assessments to determine at what locations turbines would need to be located to ensure that the sound emitted from the project would be reduced to 40 decibels outside of an existing residence or at the nearest property line of existing, undeveloped residential parcels.	In response to concerns raised by residents in the pre-application phase over potential sound effects, the Proponent carried out an additional sound study (see appendices 6.4 and 6.5). The first considered sound levels predicted with a wind energy industry tool, and the second additional study used a sound prediction methodology utilized for multiple industries (ISO 9613-2, *Attenuation of Sound During Propagation Outdoors, Part 2: General Method of Calculation*). Sound levels at receptors were predicted for wind speeds of 6, 7 and 8 m/s (21.6, 25.2 and 28.8 km/hr), as the maximum speed of the rotation of the blades is just under 8 m/s. The predicted sound does not consider the ambient sound levels at a residence, which increase as wind speed increases, and could mask the predicted sound. The predicted sound levels at residential receptors are less than 40 dBA for all residences at 6 m/s, and less than 40 dBA at wind speeds of 7 m/s and 8 m/s for all residences except one, where predicted sound is 41.2 dBA and 41.6 dBA respectively. The predicted sound levels meet WHO sound guidelines. Following these studies, questions were raised regarding the predicted sound levels to property lines, rather than to residential receptors. Conversations between the Ministry and the Proponent, subsequent to the January 11, 2007 Working Group meeting noted in the comment, clarified the work requested by the Ministry in this regard. The Proponent was required to conduct acoustic modelling at the property line for residential properties without existing residences. For the property meeting this requirement, to the north of the turbines, the predicted sound level at the property line is 41.0 dBA.	n/a

81.	It should be noted that the province is currently reviewing what a policy to manage sound emitted from wind turbines might look like. Therefore this recommendation should not be taken as constituting the policy itself, but rather a considered approach by the proponent which does not rely on the regulatory regime of another jurisdiction or the best management practices recommended by industry itself	The proponent has responded to the recently released provincial sound management policy for wind turbines (Bear Mountain Wind 2007e), and has modified the Project to meet the policy by removing the three northern most turbines. Additional assessment and study with respect to the sound policy will be carried out following determination of the final Project layout in the design phase.	
82.	Recommendations were also made concerning potential flicker effect of the turbines, and the expression of that potential in terms which are more readily understandable. For example, how many minutes of the day at different times of the year will flicker occur, and what locations would feel this effect.	Additional analysis regarding shadow flicker has been prepared, and the table of results is appended to this table. The average shadow hours per day range from 0:00 to 0:14 h/day for the sites previously noted in the Application (see Figure 6.12-11).	
83.	Other comments were made concerning maintenance of water quality in any water supplies located in proximity to the proposal, and preservation of the trails along the western edge of Bear Mountain. Finally, it is noted that the proponent stated that trees would not have to be removed to enhance the wind resource itself.	Impacts to the water quantity and quality to ground and surface water within or outside the project area are not anticipated. The land occupied by the project components is small compared to the size of the individual watersheds, i.e., the project components occupy less than 0.2 % of each of the individual watersheds that they occupy, therefore the project components are not anticipated to impact the natural drainage pattern of the area. Changes in the flow regime during spring run-off (and at other times) as a result of the project are unlikely to occur. The design of the project includes measures to minimize impacts to streamflow, and utilizing existing access roads to the site where possible. A strategic monitoring plan (p. 129) and best management practices will be in place to minimize soil erosion and stream morphology changes (Sections 6.5.5 and 6.6.5, Mitigation). Further assessment of potential water supply concerns for specific sites in the vicinity of the project were carried out (see Bear Mountain Wind Park Water Supply Report (Hemmera 2007) posted on the EAO website). Regulations under the BC Groundwater Protection Act will be followed.	Sect 6.5.5 p. 111, Sect 6.5.6 p. 113, Sect 6.6.7 p. 129, Sect 6.7.5.1 p. 147

		The proponent originally proposed to follow existing roads and trails on Bear Mountain to minimize the footprint of new roads. However, following discussion with recreational users, and taking into account geotechnical considerations, the proposed road was moved to follow a direct route between the turbines, as shown in the Application. This route is set back from the western edge by more than 50m, with the exception of the northern section where the ridge narrows, and preserves much of the length of trails along the rim rocks. Trees will not be removed to enhance the wind resource. The footprint of the proposed project will be minimized, including minimizing vegetation (tree) removal (p. 147).	

BC Ministry of Forests and Range, Ian Wiles, May 9, 2007, (250) 784-1290			
84.	Appropriate cutting authorities need to be obtained when any timber is cut, even if non-merchantable. Discussions with Louisiana Pacific should continue prior to harvesting to ensure conflicts in timing of operations do not arise, safety is maintained and amendments can be made to pre-existing and future cut block site plans if necessary. Very recently major licensees in the peace forest district have begun to work under Forest Stewardship Plans. They no longer provide 5 year forest development plans where the location of proposed cut blocks and roads are indicated and the MOFR can easily check for conflicts. Because of the mountain pine beetle these companies may not be harvesting within their traditional operating areas but can potentially harvest anywhere in the Dawson TSA. Therefore these companies should also be contacted directly to determine if there are any new blocks planned in the area. The likelihood of planned blocks in the IUP area is likely low but they should be contacted to verify this. These companies are West Fraser (Chetwynd), Canfor (Chetwynd), LP (Dawson Creek), Tembec (Chetwynd) and BC Timber Sales (Dawson Creek).	Appropriate cutting permits for merchantable and non merchantable timber will be obtained as required. Negotiations with the forestry tenure holders or private land owners to salvage merchantable timber, manage access and coordinate construction with harvesting activities (p. 251) will continue.	Sect. 6.12.3.3, p 251
85.	The woodlot holder has exclusive right to any timber in his license area. Therefore he will have to apply for the cutting permit for any timber to be harvested in this area. This is a relatively common process that takes place for oil and gas activities occurring on woodlots. Discussions will have to take place between the proponent and the woodlot licensee for reasonable compensation for the loss of productive land, if any, and any costs associated with applying for the permit	Compensation to land and tenure owners will be negotiated as necessary (p. 251).	Sect. 6.12.3.3, p 251

86.	Trappers and Guide/outfitters should also be contacted.	The trapper in the vicinity of Bear Mountain has been advised of the project on an ongoing basis, and will be contacted prior to construction to advise of construction time periods, which may temporarily overlap with the trapping season during late fall / early spring. However, no operation effects to the trapping operation are anticipated. Mitigation measures for furbearers and ungulates are included (p. 201), and no significant adverse effects of the project on furbearers or ungulates have been identified (p. 210).	
87.	Range inventory was completed Dec. 2006 and map and report have been available since that time (paragraph 1, p. 243) The range tenure authorizes 5852 AUM's, earlier estimate of 5940 available AUMs replaced by current carrying capacity of 5863 AUM's, (due to logging) (paragraph. 3, p. 243). No longer any buffer for loss of AUMs.	Thank you for the additional information, available subsequent to the submission of the Application. It will be considered in the discussions with the tenure holders.	
88.	The result of a long narrow strip of tame pasture along the towers will reduce cattle use of the adjacent native aspen range, particularly later in the season, and may result in a net decrease in carrying capacity rather than the net increase contemplated in the report (p. 245 paragraph. 5).	During construction, the proponent will work with the MOFR, other agencies and tenure holders to minimize potential negative effects on carrying capacity, and where possible increase the carrying capacity, through the development of the revegetation plan. While the verges beside the road may focus cattle on the road area, a long narrow continuous strip of tame pasture between the turbines (which are offset slightly from the road) will not result, as the turbines are spaced and there will be areas between them which are not disturbed or revegetated.	Sect. 6.12.2.3, p. 248
89.	Cattle guards should be installed at all fence crossings (p. 246 paragraph. 4).	Cattle guards will be installed as necessary to ensure safe cattle movement and containment, including where roads cross fence lines.	Sect. 6.12.2.3, p. 246

90.	Statement that tame forage will increase carrying capacity is not accurate. Depending on how this tame forage influences established grazing patterns on aspen native range the tame pasture may increase carrying capacity; may have no net effect; or may decrease carrying capacity (p. 247 last paragraph).	The Application notes that there are potential grazing benefits, and recognizes that careful management is required to ensure that the best use of the available native and forage grazing areas is maintained. Revegetation of disturbed areas, and the location of areas reseeded in forage, will be determined in conjunction with users and agencies, with the objective of improving the overall carrying capacity if possible.	Sect. 6.12.2.3, p.248
91.	It is indicated that the disturbed land during construction will be returned to productive land and therefore the impact on the available timber supply is minimal. Will topsoil removed from sites during construction be placed back on sites to be revegetated? Will trees be planted under the wind towers where they will not interfere with WTG activities or will only grass seeding take place? (p. 250).	Topsoil removed during construction will be replaced on sites to be revegetated. (For example, see Figure 2.3, p. 18) Revegetation species will include native species, trees and forage, depending on agency and users consultation.	Sect. 6.12.2.3, p.248
Peace River Regional District Comments. Forwarded from Electoral Area Directors Committee EADC by Bruce Simard			
92.	From a general perspective the Regional District is satisfied with the requirements for public consultation required by the EAO. Now that the consultation period has come to a close the Regional District respectfully reserves opportunity for further comment on the application based upon the results and the proponent's responses. Without limiting comment, the Regional district will be particularly interested that the proponent has met EAO consultation requirements, has fully documented and fairly summarized input, and has fully and genuinely responded to matters raised.	The proponent has met the requirements of the EAO for public consultation, including holding two public meetings and door to door visits with residents within 3.2 km of the project to discuss their concerns. The public consultation program is summarized in the *Report on Public Consultation Program,* which will be posted on the EAO website.	n/a

93.	The Regional District is also concerned with Provincial agency response to the consultation, being mindful of previous Regional District comments, recommending a 1.6 km setback from property lines and sound thresholds measured at property lines, to the proposed provincial policy for the mitigation of impacts from wind turbine generators. The PRRD is not satisfied with the proponent's response to the issue of Wind Turbine setbacks and the recommended 1.6 kilometer setback and the measurement of sound thresholds at property lines. It is expected that the government will require the 1.6 km setback prior to construction if the project proceeds	The proponent has responded to the recently released provincial sound management policy for wind turbines and has modified the Project to meet the policy by removing the three planned-for northern most turbines. Additional assessment and study with respect to the sound policy will be carried out following determination of the final Project layout in the design phase.	n/a
94.	The Regional District is recommending that an Advisory Committee, similar to the Wartenbe project, be established to advise how to achieve the lowest possible impact project. The proponent should be held accountable to their commitments, throughout the entire construction and operation of the project, should it proceed. This Advisory Committee would be comprised of regional community representatives including: • area residents; • area business and industries; • impacted First Nations; • Municipal officials and Peace River Regional District staff; • Northern Light community college; • Northern Health Authority; • and any other impacted tenure holders and stakeholders.	Bear Mountain Wind is committed to the consultations with stakeholders identified in the Application. In addition, the Proponent will be required to adhere to all the commitments of the EA Certificate. Adherence to the sound policy will also be a condition of the Crown land tenure with ILMB (please see response to comment No. 100).	

City of Dawson Creek Comments. Jim Chute, CAO City of Dawson Creek.			
95.	The City of Dawson Creek believes that the proponent's EA application is complete, and responds sufficiently to the issues that were identified in the Terms of Reference. The City has no further comments to offer.	The Proponent notes the City's comment that they consider that the issues identified in the terms of reference have been addressed.	n/a

SUPPLEMENTARY INFORMATION

The following sections present supplementary information for the Regulatory Agency Comments Tracking table, including the wildlife suitability ratings tables, detailed fall raptor migration survey results and data on bats observed during the radar surveys. The information has been provided by Robertson Environmental Services Ltd.

SUITABILITY RATING TABLES

The ratings tables below, from the Wildlife Workplan (May 24, 2006), are attached for reference.

Table 1. Ratings criteria for assessing Black-throated Green Warbler breeding habitat

Rating	Criteria
HH	Mature and old growth (structural stages 6 and up) mixed wood forest comprising of patches of mature or older white spruce trees in a deciduous (aspen or even balsam poplar) forest. Mesic site. Interior forest conditions.
MM	Same as High except forest has very small patches (less than 9? trees) of spruce. Young forest (structural stage 5). Edge conditions.
LL	Mature and old growth deciduous forest with very little old spruce. Grazing present (damage to understorey).
NN	No mature conifers. Structural stage 4 and younger.

Table 2. Ratings criteria for assessing Connecticut Warbler breeding habitat

Rating	Criteria
HH	Young, mature and old growth aspen forest (structural stages 5 and up); can be mixed age. Noticeable gap between shrubby layers and the canopy. Grassy area(s) in stand. An even canopy. Dense low-shrub and rich herbaceous layers. Interior forest conditions.
M	Same as High but with some spruce and/or balsam poplar. Tall shrubs present but concentrated in one or two areas. Grassy area(s) in stand.
L	Same as High but forest is pole stage aspen; and there can be signs of light grazing outside of breeding season.
N	Coniferous or mixed wood forest. No gap between shrub layer and canopy; no grasses in herbaceous layer. Heavily grazed. Edge conditions.

Table 3. Ratings criteria for assessing Bay-breasted Warbler breeding habitat

Rating	Criteria
H	Mature and old growth white spruce forest (structural stages 6 and up). Presence of spruce budworm. Sparse but patchy sub-canopy, shrub layer present. Interior forest conditions.
M	Mature and old growth mixed wood forest with conifer dominant. Presence of other forest insect pest. Frequent openings.
L	Mature or old growth mixed wood forest with deciduous dominant. Young conifer or mixed wood forest.
N	Pole forest (structural stage 4 and younger).

Table 4. Ratings criteria for assessing Cape May Warbler breeding habitat

Rating	Criteria
H	Mature and old growth pure white spruce or white spruce-dominated forest (structural stages 6 and up). Presence of spruce budworm. Fairly dense but with frequent openings. Fairly flat topography, open mossy ground cover. Interior forest conditions.
M	Same as High but forest is deciduous or mixed wood or other coniferous species. No super-canopy layer. Presence of other forest insect pest. Edge conditions.
L	Same as Medium except scattered mature and old growth spruce in the stand. Young conifer or mixed wood forest.
N	Pole forest (structural stage 4 and younger). No conifers.

Table 5. Ratings criteria for Broad-winged Hawk breeding habitat

Rating	Criteria
H	Mature and old growth (structural stages 6 and up) dense, undisturbed mixed wood and mixed aged forest. Hunting perches available in area of nest. Within 1 km of a wetland or water body; Forest openings present.
M	Open forest of structural stages 6 and up. Wetland or water body farther than 1 km away. Edge habitat.
L	Structural stage 5 and younger with occasional vets
N	Structural stage 5 and younger; closed forest; no large trees; and/or no openings.

Table 6. Ratings criteria for Canada Warbler breeding habitat

Rating	Criteria
H	Young, mature or old growth deciduous or mixed wood forest (structural stages 5 and up). Well-developed shrub layer. Gaps in canopy. Moderate to steep slope, cool aspect. Considerable amount of woody debris. Limited ground cover.
M	Same as High but slope is gentle, shrub layer is moderately developed.
L	Shrub layer not well-developed, moderate crown closure, very little woody debris.
N	No shrub layer, well-developed ground cover, no gaps in canopy; structural stage 4 and younger.

Table 7. Rating criteria for White-tailed Deer winter habitat

Rating	Criteria
1	Steep (>25%), warm aspect slopes dominated by old Douglas-fir dominated forests with arboreal lichens and a tall shrub layer (2-10m tall).
2	Steep (>25%), warm aspect slope, old forests with Douglas-fir not dominant with arboreal lichens and a tall shrub layer (2-10m tall). Steep (>25%), south aspect slopes dominated by old Douglas-fir dominated forests with arboreal lichens and no/limited tall shrub layer (2-10m tall) (<10%).
3	Steep (>25%) warm aspect old/mature forest, no Douglas-fir, arboreal lichens present, shrub layer composed of Saskatoon, red-osier dogwood, high bush cranberry and willow.
4	Gentle slope (<25%), old/mature forest, no Douglas-fir, arboreal lichens present, shrub layer composed of Saskatoon, red-osier dogwood, high bush cranberry and willow.
5	Forests with no Saskatoon, red-osier dogwood, high bush cranberry and willow in the shrub layer. Deciduous forests.
6	Wetlands, clear cuts, fields

Table 8. Ratings criteria for Moose winter habitat

Rating	Criteria
1	Flood plain and riparian habitats
2	Structural stage 3a or 3b, adjacent to mature forests (structural stage 6 or 7) with gentle slopes (<10%) dominated by willow (>30% cover)
3	Structural stage 3a or 3b, adjacent to mature forests (structural stage 6 or 7) with gentle slopes (<10%) with willow cover (<30% cover) or Structural stage 3a, 3b, 6 or 7, with gentle slopes (<10%) with shrubs cover of >30% composed of a mix of willow, red-osier dogwood, black twinberry. Structural stage 6 and 7 to have an open canopy (<200 stems/ha)
4	Structural stage 5-7, gentle slope (<10%), open canopy, shrub layer with 30-50% cover of high bush cranberry, Saskatoon, black twinberry, red-osier dogwood and willow.
5	Forests with < 30% cover of high bush cranberry, Saskatoon, black twinberry, red-osier dogwood and willow.
6	Closed canopy forests with no shrub layer, clear cuts < 10 years old, ponds and wetlands with no aquatic vegetation, steep slopes.

Table 9. Ratings criteria for assessing Northern Long-eared Myotis habitat.
(Source: Vonhof and Wilkinson 1999)

Rating	Criteria		
	Summer roosts	**Foraging**	**Winter Hibernacula**
H	Mature aspen, balsam poplar dominated forests. Live or dead trees (decay stage 2) with loose bark, cavities or vertical cracks.	: Ponds Streams Wetlands Edge habitats	Caves Mines
M	Young aspen, balsam poplar dominated forests. Live or dead trees (decay stage 2) with loose bark, cavities or vertical cracks Buildings	n/a	n/a
L	Mixed forests (conifers dominate), low occurrence of deciduous trees with loose bark, cavities or vertical cracks	n/a	n/a
N	Young coniferous forests with no deciduous component No buildings	Closed forests with no wetland/riparian habitats, ponds, edges or roads	No Caves or mines

Table 10. Ratings criteria for assessing Silver-haired Bat habitat.
(Source: Vanhof and Gwilliam 2000)

Rating	Criteria	
	Summer roosts	**Foraging**
H	Mature large dead trembling aspen, decay stage 2. Cavities, hollows, loose bark and cracks present.	Ponds Streams Wetlands Edge habitats
M	Mature large dead trees deciduous (non aspen), decay stage 2. Cavities, hollows, loose bark and cracks present.	n/a
L	Mature, large dead coniferous trees, decay stage 2 or greater. Cavities, hollows, loose bark and cracks present.	n/a
N	Young forests with no dead trees or wildlife trees.	Closed forests with no wetland/riparian habitats, ponds, edges or roads

Table 11. Ratings criteria for assessing Hoary Bat habitat
(Source: Willis and Brigham 2005)

Rating	Criteria	
	Summer roosts	**Foraging**
P	Open foliage of live deciduous and coniferous trees.	Ponds Streams Wetlands Edge habitats Road corridors
A	No live trees	Closed forests with no wetland/riparian habitats, ponds, edges or roads

Table 12. Ratings criteria for assessing Fisher habitat

Rating	Criteria
1	Mature (mid and late successional; age class 6-9; structural stages 6 and 7) coniferous and mixed coniferous-deciduous forest stands > 40 ha in size with riparian habitats, below 1000 m elevations. Generally, areas with moderate values of most structural attributes; multi-storied and continuous overhead cover (crown closure class 7-10), rust brooms and other tree defects, large spruce, fir and cottonwood trees and a complex ground structure with coarse woody debris (decay class 2-6) and a well-developed understory.
2	Mature (mid and late successional; age class 6-9; structural stages 6 and 7) coniferous and mixed coniferous-deciduous forest stands fragmented by harvesting activities with riparian habitats, below 1000m elevations. Multi-storied and continuous overhead (crown closure class 7-10) cover with rust brooms and moderate coarse woody debris (decay class 2-6) and understory.
3	Mature coniferous and mixed coniferous-deciduous forest stands (age class >5; structural stage 6) with riparian habitats, below 1000 m elevations. Continuous overheard cover (crown closure class >3) with sparse understory, coarse woody debris (especially decay class 2) and other structural attributes (rust brooms, etc.).
4	Young successional coniferous and mixed coniferous-deciduous forest stands (age class 2-6; structural stages 4 and 5) with riparian habitats and low complexity of coarse woody debris (especially decay class 2) and understory.
5	Aspen parkland forests (structural stage 6 and 7) with low snow accumulations, deciduous cover and dense understory vegetation (>25 woody stems/$m^{2)}$.
6	Homogenous, even-aged stands (age class 2-6; structural stage 5 and 6) with relatively low structural complexity, low coarse woody debris (especially decay class 2) and understory, and subject to high snow accumulations (crown closure class 0-3). Infrequent riparian habitats and highly fragmented by harvesting activities, fire, or other disturbance.

FALL RAPTOR MIGRATION – DETAILED RESULTS.

The results of the fall raptor migration are summarized in the Application and the tables below provide the details of the results.

Summary of fall migration raptor survey dates and duration.

Date	Start	End	Survey Duration (hr)
Sept 13	0800	1200	4
Sept 13	1230	1630	4
Sept 16	0800	1200	4
Sept 16	1230	1630	4
Sept 17	0800	1200	4
Sept 17	1200	1600	4

Results of fall migration stand watch surveys.

Species	Date			Total observations by species
	13-Sep-06	16-Sep-06	17-Sep-06	
Sandhill crane		62		62
Northern harrier	1	1		2
Sharp-shinned hawk	4		1	5
Broad-winged hawk			2	2
Red-tailed hawk	2	5	42	49
Rough-legged hawk		1	3	4
Total obs/day	7	69	48	124

Heights above ground (estimated by the observer) were as follows:

- Broad-winged hawk (n=2) 75m
- Northern harrier (n=2) 8-400m
- Rough-legged hawk (n-=4) 25-200m
- Red-tailed hawk (n=49) 10-200m
- Sharp-shinned hawk (n=5) 50-300m

OBSERVATIONS OF BATS DURING RADAR SURVEYS

The table below presents the Audio/Visual observations and the Radar Survey Results for bats, in May and August 2006.

A/V Bat Observations								
	Station Id:	**Date:**	**Obs Time:**	**Species:**	**#:**	**Dir Fr Obs:**	**Notes:**	
	RS-01	12-May-06	1:23	Bats	2	Overhead	Visual confirmation of large and smaller bats	
	RS-01	18-May-06	1:20	Bat	1	At radar station	Bat flying around light behind radar station	
	RS-04	19-May-06	0:09	Bat	1	Overhead	visual confirmation with spotlight	
	RS-02	20-May-06	00:32	UNID. BAT	1	Overhead		
	RS-01	11-Aug-06	2321	Bat	1	Overhead		
	RS-01	12-Aug-06	0003	Bat	1	Overhead		
	RS-01	12-Aug-06	0035	Bat	1	Overhead		
	RS-03	12-Aug-06	2140	Bat	12	Overhead	Swallow sized bats	
	RS-01	13-Aug-06	2234	Bat	5	Overhead	near ground level	
			Total bats observed		**25**			

Radar Bat Observations								
	Station Id:	**Date:**	**Obs Time:**	**Species:**	**#:**	**Dir Fr Radar Obs:**	**Notes:**	
	RS-02	16-May-06	23:52	poss. Bat	1	266 m to South	horiz. distance to obs.	
	RS-02	16-May-06	23:52	poss. Bat	1	341 m to South	horiz. distance to obs.	
	RS-02	16-May-06	23:52	poss. Bat	1	352 m to South	horiz. distance to obs.	
	RS-01	17-May-06	23:13	Bat	2	179 m to NW	horiz. distance to obs.	
	RS-01	17-May-06	23:15	Bat	1	284 m to N	horiz. distance to obs.	
	RS-01	17-May-06	23:15	Bat	1	179 m to NE	horiz. distance to obs.	
	RS-01	18-May-06	0:23	Bat	1	52 m	altitude	
	RS-01	18-May-06	0:51	Bat	4	29 m	altitude	
	RS-01	18-May-06	0:52	Bat	1	52 m	altitude	
	RS-04	19-May-06	0:09	Bat	3	93 m	visual confirmation with spotlight	
	RS-01	12-Aug-06	0:36	Bat	1	69 m	altitude	also visual
	RS-01	12-Aug-06	1:23	Bat	1	289 m to East	horiz. Radar	
	RS-03	13-Aug-06	0:13	Bat	1	58 m	altitude	
	RS-03	13-Aug-06	0:57	Bat	1	324 m to NE		
	RS-01	14-Aug-06	0:20	Bat	1	46 m	altitude	
	RS-01	14-Aug-06	0:21	Bat	1	46 m	altitude	
	RS-01	14-Aug-06	0:21	Bat	1	23 m	altitude	
	RS-01	14-Aug-06	0:25	Bat	1	23 m	altitude	
	RS-01	14-Aug-06	0:28	Bat	1	40 m	altitude	
			Total bats observed		**25**			

DAILY SHADOW FLICKER INFORMATION

The site locations in the table below are the same as for Figure 6.12-11, p. 273 of the Application. Expected shadow hours take into consideration probabilities of sunshine and operational frequencies. The annual average shadow hours is equal to the total potential shadow hours divided by 365.

PEI Site Name	Valcoustics Site Name	Elevation [m]	Days per year with potential shadow [days/year]	Max shadow hours per day [hh:mm/day]	Expected shadow hours per year [hh:mm/year]	Annual average shadow hours per day [hh:mm/day]
A	R01	740	211	0:12	7:02	0:05
B	R02	750	249	0:16	9:56	0:07
C	R03	796.7	99	0:23	4:32	0:05
D	R04	904.1	136	0:49	20:15	0:15
E	R05	877.3	145	0:40	17:01	0:12
F	R06	861.9	143	0:36	15:13	0:11
G	R07	865	117	0:35	11:44	0:09
H	R08	864.1	90	0:34	8:24	0:07
I	R09	845.1	74	0:31	6:05	0:05
J	R10	824.8	46	0:15	1:22	0:02
K	R11	829.1	0	0:00	0:00	0:00
L	R12	851.1	0	0:00	0:00	0:00

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