



Environmental Review Tribunal

Case Nos.: 13-145/13-146

Fata v. Director, Ministry of the Environment

In the matter of appeals by James Fata and 2401339 Ontario Ltd., filed December 31, 2013 for a hearing before the Environmental Review Tribunal pursuant to section 142.1 of the *Environmental Protection Act*, R.S.O. 1990, c. E.19, as amended, with respect to Renewable Energy Approval No. 8443-9BMG23 issued by the Director, Ministry of the Environment, on December 16, 2013 to Shongwish Nodin Kitagan GP Corp., and Shongwish Nodin Kitagan 2 GP Corp., as general partners of Nodin Kitagan Limited Partnership and Nodin Kitagan 2 Limited Partnership under section 47.5 of the *Environmental Protection Act*, regarding the construction, installation, operation, use and retiring of a Class 4 wind facility with a total nameplate capacity of up to 58.32 MW on Crown Land south of Smilsky and Peever, District of Algoma;

In the matter of a motion to scope the issues in the appeal and strike certain witness statements, heard via telephone conference call on February 26, 2014; and

In the matter of a hearing held on March 4, 5, 6, 7, 17, 18, 19, 20, 24 and 25, and June 5, 2014 at the City Centre Travelodge, 332 Bay Street, Sault Ste. Marie, Ontario, at the Water Tower Inn, 360 Great Northern Road, Sault Ste. Marie, Ontario and at 655 Bay Street, Toronto, Ontario.

Before:

Heather I. Gibbs, Panel Chair
Maureen Carter-Whitney, Member

Appearances:

- | | |
|--|---|
| James Fata | - Appellant, on his own behalf |
| Graham Andrews
(February 26, 2014 motion only) | - Counsel for the Appellant, James Fata |
| Raivo Uukkivi | - Counsel for the Appellant, 2401399 Ontario Ltd. |
| Patrick MacDonald
(February 26, 2014 motion only) | - Counsel for the Appellant, 2401399 Ontario Ltd. |
| Sylvia Davis and
Kathryn Chung | - Counsel for the Director, Ministry of the Environment |

Meaghan Lowe	- Student-at-law for the Director, Ministry of the Environment
Dennis Mahony, Arlen Sternberg, Geneviève Bertrand and Justin Necpal	- Counsel for the Approval Holder, Nodin Kitagan Limited Partnership, and Nodin Kitagan 2 Limited Partnership by their general partners Shongwish Nodin Kitagan GP Corp., and Shongwish Nodin Kitagan 2 GP Corp.
Christian Provenzano	- Counsel for the Participant, Michipicoten First Nation
Gillan Richards	- Representative for the Participant, Save Ontario's Algoma Region
Joanie McGuffin	- Participant, on her own behalf
Catherine Bayne	- Participant, on her own behalf
Dr. Alan Gordon	- Participant, on his own behalf
Ron Caruso, Joyce Chyrski, John Hornstein, Doris Kargl, Ellie Kuntz, Robin MacIntyre, Candace Neveau, Brian Mealey and Amy Zuccato	- Presenters, on their own behalf

Dated this 9th day of **July, 2014**.

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REASONS FOR DECISION

Background

[1] On December 31, 2013, James Fata and 2401339 Ontario Ltd. each filed an appeal with the Environmental Review Tribunal (the “Tribunal”) of a decision by the Director, Ministry of the Environment (“MOE”) dated December 16, 2013, to issue Renewable Energy Approval No. 8443-9BMG23 (the “REA”) to Shongwish Nodin Kitagan GP Corp., and Shongwish Nodin Kitagan 2 GP Corp., as general partners of Nodin Kitagan Limited Partnership and Nodin Kitagan 2 Limited Partnership (the “Approval Holder”).

[2] The REA is for a renewable energy project consisting of the construction, installation, operation, use and retiring of a Class 4 wind facility including 36 wind turbines with a total nameplate capacity of up to 58.32 MW, on Crown land south of Smilsky and Peever, District of Algoma, Ontario (the “Project”, or the “Bow Lake Project”). The English name of the Project is the Bow Lake Wind Farm; however, the Batchewana First Nation of Ojibways, who have entered into a partnership with respect to the Project, know and refer to it as *Chinodin Chigumi Nodin Kitagan*.

[3] Mr. Fata appeals under s. 142.1(3)(a) of the *Environmental Protection Act* (“EPA”), on the ground that the Project as approved will cause serious harm to human health. Mr. Fata’s notice of appeal also alleges that the REA violates his right to security of the person under s. 7 of the *Canadian Charter of Rights and Freedoms* (the “Charter”). 2401339 Ontario Ltd. (“240”) appeals under s. 142.1(3)(a) of the EPA on the ground that the Project as approved will cause serious harm to human health through interference with the Montreal River Weather Radar Station (“MRWRS”), and s.142.1(3)(b) on the ground that the Project will cause serious and irreversible harm to night migrating song birds, Peregrine Falcons and to bats. The closest turbine to Lake Superior in this Project is 6 kilometres (“km”), and the farthest away is 14 km. The Project is located approximately 55 km from Whitefish Point, where there is a bird observatory.

[4] The hearing took place over ten days in March 2014. The parties and participants filed written submissions. In addition, oral submissions took place respecting 240’s appeal on June 5, 2014. The parties asked that, if the Tribunal were to find that the test under s.145.2.1 had been met, they be allowed to give further submissions on remedy.

Relevant Legislation

[5] *Environmental Protection Act*

145.2.1 (2) The Tribunal shall review the decision of the Director and shall consider only whether engaging in the renewable energy project in accordance with the renewable energy approval will cause,

- (a) serious harm to human health; or
- (b) serious and irreversible harm to plant life, animal life or the natural environment.

Appeal by James Fata (Tribunal Case No. 13-145)

[6] In this section, reference to the “Appellant” is to Mr. Fata.

Preliminary Orders

[7] Mr. Fata’s notice of appeal alleges that the Project will cause serious harm to human health. Paragraphs 4 to 9 of the notice of appeal list how the Appellant alleges the Project will cause such harm. Prior to the hearing, the Approval Holder brought a preliminary motion relating to the scope of the involvement of participants and presenters. The Tribunal issued an Order on February 18, 2014 (the “Scoping Order”). On the issue of the scope of the hearing, the Tribunal found:

- the alleged economic impacts of a loss of tourism potential are too remote to be considered within the scope of the human health impacts of this wind Project. The economic impact arguments arising from impacts to tourism are more appropriately seen as land use planning questions; i.e., the choice of one land use over another, resulting in different economic outcomes. (para 36)
- the adequacy of consultation by the MOE during the approval process, with both First Nations and the wider community, is outside the scope of the hearing. (paras. 37, 38)
- visual impact arguments are permitted insofar as they are linked to human health. (para. 39)

[8] Following the Scoping Order, the Approval Holder brought a motion to strike portions of Mr. Fata’s notice of appeal and witness statement, along with three proposed expert witness statements, on the grounds that they refer to issues that have either been struck from the appeal, or are unrelated to harm to human health.

[9] The Tribunal heard oral arguments by all parties on February 26, 2014, and issued a disposition with reasons to follow dated February 27, 2014 ordering that:

- a) the following portion of paragraph 5 of the notice of appeal of James Fata be struck:

- “...economic losses resulting from property devaluation, loss of income due to the visual impact of IWT on the tourism industry, social exclusion during the prejudiced and unilateral consultation process...”;
- b) the witness statements of David MacLachlan, Karen Streich and Peter Burtch be struck, and that their evidence be excluded from the hearing of this appeal; and
 - c) paragraph 5 of Mr. Fata’s witness statement regarding “Property value decrease” be struck, and that evidence in respect of property value decrease be excluded from the hearing of this appeal.

[10] The reasons for the Tribunal’s disposition are as follows.

[11] The Approval Holder argued that the paragraphs it sought to strike relate to economic issues and consultation, which the Tribunal does not have jurisdiction to hear. The Approval Holder asked for clarification that the Scoping Order applies to the parties and their witnesses, as well as to participants and presenters. Further, it argued that it is inappropriate for efficiency reasons to hear irrelevant evidence.

[12] Graham Andrews represented Mr. Fata at the motion, and argued that the portions of the notice of appeal and the witness statements in question all draw a link between economic impacts/social impacts and human health. He argued that the Appellant takes a holistic view of health, that health is complex and can be affected by many different factors, and that the novelty of the issues should militate against striking the paragraphs. Mr. Andrews also argued that the Tribunal must hear the evidence to determine how it relates to the ultimate question to be determined. Further, Mr. Andrews argued that two of the Appellant’s proposed expert witnesses, Debbie Shubat and Lori Davies, would more clearly make the link between the information in the three impugned witness statements and human health.

[13] The Scoping Order of February 18, 2014 included the Tribunal’s reasons and they need not be repeated here. The parties are also bound by the Scoping Order, which clarified issues before the Tribunal in this appeal. In the reasons below, which relate to the February 27, 2014 Order, the Tribunal also relies on its February 18, 2014 reasons.

[14] Tribunals are creatures of statute. They are confined to the powers conferred on them by legislation, either explicitly or by implication (*Haida Nation v. British Columbia*, [2004] 3 S.C.R. 511 at para. 55; *R. v. Conway*, [2010] 1 S.C.R. 765; *Preserve Mapleton Inc. v. Ontario (Ministry of the Environment)* (2012), 67 C.E.L.R. (3d) 207 at paras. 67-74). The Tribunal’s role under the *EPA* is not to hear all disputes that may arise under

the Act, but only those matters that the statute assigns to it. Section 145.2.1 (2) of the *EPA*, reproduced above, defines the Tribunal's jurisdiction in REA appeals.

[15] With respect to the impugned paragraphs of Mr. Fata's notice of appeal, the Tribunal found that its Scoping Order of February 18, 2014 operates to strike the portions of paragraph 5 that deal with economic loss due to property devaluation, impacts on the tourism industry, and allegations of social exclusion during the Director's consultation process. The other impugned portions of Mr. Fata's notice of appeal were not struck as they were sufficiently related to human health, and/or their inclusion was sufficiently central to Mr. Fata's appeal that any prejudice to efficiency of the hearing process was outweighed by the prejudice that would have been caused to Mr. Fata by striking them. The Tribunal found that the Scoping Order operated to strike all of paragraph 5 of Mr. Fata's witness statement, which dealt with property value decrease.

[16] David MacLachlan was proposed as an expert witness by Mr. Fata. His witness statement deals squarely and solely with tourism in the north and its economic impacts. His opinion, for instance, states:

It is my professional opinion that tourism is one of the most important pillars of the Northern Ontario economy that directly relates to health and well being of residents in this jurisdiction. The windmill development at Bow Lake poses a significant risk to the current and future potential development of tourism opportunities in Algoma and as such ultimately affects the very health and well-being of Algoma residents who directly and indirectly depend on this sector for not only their employment but also their enjoyment of the region. Without a doubt this development will adversely affect the rate of which tourists will be attracted to the region.

[17] Peter Burtch was also put forward as an expert witness by Mr. Fata. His opinion as expressed in the witness statement is related to land use planning, specifically that the disposition of Crown Lands for the Project is not "in the best interest of the environment or the social and economic health of the people of the Algoma Region." While Mr. Burtch's witness statement includes the comment that he believes the Project will affect his personal health due to his emotional connection to the Lake Superior Coastal ecosystem, that opinion was unrelated to his field of expertise. He did not ask for participant or presenter status in order to present his personal concerns.

[18] Karen Streich was also put forward as an expert witness by the Appellant. She is an accredited Certified Management Accountant with "31 years of Federal Public Service experience in the areas of socio-economic and community development in rural, remote and Northern Communities; policy; planning; program and project development and job creation." In addition, she has been active in the tourism

business. Her witness statement seeks to discuss “social exclusion” and “unemployment and income” as social determinants of health.

[19] The Tribunal found that all three of the witness statements dealt with issues that were determined in the Scoping Order to be outside the Tribunal’s jurisdiction, and were too remote from the issue of human health to be permitted. The Tribunal considered Mr. Andrews’ submissions that the link to human health would be clearer once the evidence was heard. However, the Tribunal found that the two proposed experts whose witness statements were not challenged as being out of scope (i.e., Ms. Shubat, a community health nurse and Ms. Davies, a social worker), made no reference to the evidence of Mr. Burtch, Mr. MacLachlan, or Ms. Streich. The Tribunal was not satisfied that the proposed expert health evidence made a link between the evidence of Mr. Burtch, Mr. MacLachlan and Ms. Streich and the issue of harm to human health.

[20] The Tribunal will address its rulings on the expertise of Ms. Shubat and Ms. Davies below.

Conclusion on Scoping

[21] The relevant paragraphs from Mr. Fata’s notice of appeal now read as follows:

4. Industrial wind turbines (“IWTs”) are known to cause a range of serious health effects in approximately 5% to 30% of the population. These health effects are sleep disturbance, headache, tinnitus, ear pressure, dizziness, vertigo, nausea, visual blurring, tachycardia, irritability, depression, problems with learning and concentration, diminished health outcomes and quality of life, increased mental/psychological and spiritual stress, memory and panic episodes associated with sensations of internal pulsation or quivering when awake or asleep, excessive tiredness, loss of quality of life and the further impacts that these effects can lead to, these being increased morbidity and significant chronic disease and health effects.

5. These health effects are more likely than not caused by exposure to infrasound, low frequency noise, audible noise, visual impact, shadow flicker, stray voltage and/or electromagnetic fields, ~~economic losses resulting from property devaluation, loss of income due to the visual impact of IWT on the tourism industry, social exclusion during the prejudiced and unilateral consultation process,~~ the destruction of personal and cultural landscapes, the visual impact of the turbines as symbols of assimilation and oppression, the loss amenity (sic) and psychic healing provided by a minimally impacted environment and landscape, the loss of traditional education and recreation amenity, the destruction of conservation objectives and Vision for Lake Superior and the cumulative effect of this and other projects in the area on families and communities. The tonality, impulsive nature and lack of nighttime abatement are factors which also contribute to negative health impacts.

6. The precise mechanism(s) that cause these health effects have not been determined. However, these mechanisms either individually or

in combination cause these health effects. These effects are produced by exposure to IWTs and will be produced by exposure to the IWTs in the Project.

7. These health effects occur at sound levels starting at approximately 30 dbA, which is lower than the levels permitted by the Renewable Energy Approval for the Project. These effects are also known to occur at distances of up to 10 kilometres, which is much greater than the set-backs prescribed for the Project. The visual impacts are manifest up to 40 kilometres from the project.

8. In addition, the terrain and topography of the area surrounding the Project site consists of granite hills and ridges that create increased sound resonance and echoes. The sound will also travel unabated over water. This is an issue that has not been addressed in the reports submitted by the Approval Holder.

9. The Project is located in an unorganized township where lightning strikes and forest fires are a regular and major concern. However, the local fire department, located approximately 65 kilometres from the project site, is staffed entirely by volunteers who are untrained in the proper procedure to combat a fire in the Project, in addition to the lack of municipal water infrastructure at the Project site from which to draw water in the event of fire.

Issues

[22] The issues raised in Mr. Fata's appeal can be summarized as follows:

Whether the Project as approved will cause serious harm to human health due to

- a) emissions including sound vibrations (audible and non-audible), electromagnetic fields and low frequency sound;
- b) visual and social impacts which have psychological and physical health effects; or
- c) other issues (property access and enjoyment, fire, Charter claim).

[23] Although Mr. Fata's notice of appeal includes reference to shadow flicker, this issue was not pursued at the hearing.

[24] The Tribunal will briefly review the evidence and then turn to discussion, analysis, and findings. Mr. Fata testified in his appeal, and called two witnesses: Ms. Shubat and Ms. Davies. He also relied on the evidence of the following participants and presenters: Brian Mealey, Doris Kargl, Dr. Alan Gordon, Catherine Bayne, Robin MacIntyre, John Hornstein, Gillan Richards on behalf of Save Ontario's Algoma Region ("SOAR"), Ron Caruso, Joanie McGuffin, Chief Joseph Buckell on behalf of Michipicoten First Nation, Amy Zuccato, Ellie Kuntz, Candace Neveau and Joyce Chyrski. Ms. Kuntz, Ms. Neveau and Ms. Chyrski submitted written presentations only.

Evidence

Jim Fata

[25] Mr. Fata has lease-hold property which he uses as a hunting camp, in the vicinity of the Project (he also has a second property some distance away which is deeded Crown land). He testified as to the importance to him personally of having a quiet place to get away, and being surrounded by nature.

[26] Mr. Fata testified that, although there is logging in the area, the logging takes place over a defined period of time and does not cause ongoing noise, such as wind turbines would create.

[27] Mr. Fata argues in his Notice of Constitutional Question that the Project violates his s. 7 *Charter* right to security of the person. He argues that the “reverse onus” provision in s. 145.2.1(3) of the *EPA*, which places the onus on the appellant to prove serious and irreversible harm rather than on the proponent to prove the Project will not cause such harm, is a violation of s. 7 of the *Charter*. Mr. Fata’s submissions are covered in more detail below in the “discussion” section.

Debbie Shubat

[28] Ms. Shubat asked to be qualified to give opinion evidence as an expert in public health nursing and the interactions between wind turbines and human and community health. She has a Master of Science in Nursing degree, and was qualified as an expert community health nurse in a previous REA appeal, *Moseley v. Director (Ministry of the Environment)*, [2014] O.E.R.T.D. No. 23 (“*Moseley*”). The Approval Holder and Director opposed her qualification on the basis that her expertise does not extend to the impact of wind turbines on human health.

[29] The Tribunal declined to qualify Ms. Shubat as an expert, ruling that the subject matter of her expertise, that being nursing and community health nursing, does not qualify her to give expert opinion evidence on the impact of wind turbines on human health. As outlined by the Supreme Court of Canada in *R. v Mohan*, [1994] 2 S.C.R. 9 (“*Mohan*”), the field of expertise must be relevant to the issue to be decided, in order for the Tribunal to receive opinion evidence. The Tribunal reviewed Ms. Shubat’s witness statement and found that all of the opinions she expressed were related to the impact of wind turbines on human health. She testified that any expertise she possesses in this regard comes from self-study. Ms. Shubat was clear that, as a nurse, she is not qualified to diagnose medical conditions and would not purport to do so. Ms. Shubat proceeded to give her evidence as a lay (fact) witness.

[30] A number of documents about the impact of wind turbines on human health were attached to Ms. Shubat's witness statement as documents that she wished to rely upon. However, as Ms. Shubat was found not to have the qualifications to interpret and explain them for the Tribunal, or to put them into context within the existing scientific debate around wind turbines and human health, the articles could not be accepted for the truth of their contents and were not admitted into evidence.

[31] Ms. Shubat testified that the nursing process, a framework for helping clients reach their optimal level of functioning, consists of "five dynamic phases: assessment, nursing diagnosis, planning, implementation and evaluation". Ms. Shubat clarified that a "nursing diagnosis", which is "a clinical judgment about individual, family or community experience/responses to actual or potential health problems or life processes" (i.e., human response to life circumstances or illness), is not a "medical diagnosis", which she would not purport to make and is a controlled act under the *Regulated Health Professions Act*.

[32] Ms. Shubat stated that the World Health Organization ("WHO") definition of health is broad and includes physical, social and mental aspects of well-being. She testified that "as understanding of this relationship grows, it becomes ever more apparent that mental health is crucial to the overall well-being of individual and societies". Ms. Shubat reviewed the various determinants of health, and cited Statistics Canada to conclude that community health for the Algoma district includes

(s)ome disturbing health trends including higher rates for many health conditions (eg. overweight, obesity, diabetes, hypertension, pain or discomfort, injury hospitalization, mental illness hospitalization) as well as health behaviour (smoking and heavy drinking) compared to Ontario. According to census data for 2006 Algoma, Unorganized North Part, residents have lower incomes and higher unemployment rates compared to the province of Ontario.

[33] Ms. Shubat emphasized the importance of using the precautionary approach with human health issues. For example, she testified, there are significant gaps in current scientific knowledge on wind turbines and human health. Ms. Shubat asks how health can be protected if the noise and set-back regulations were developed prior to establishing sound scientific evidence. In this regard she cited Sir Austen Bradford Hill, who established the Bradford Hill causation criteria with which she is very familiar in her professional duties, that "all scientific work is incomplete – whether it be observational or experimental. All scientific work is liable to be upset or modified by advancing knowledge. That does not confer upon us a freedom to ignore the knowledge we already have, or to postpone the action that it appears to demand at a given time".

Lori Davies

[34] Ms. Davies requested designation by the Tribunal as an expert in social work. Ms. Davies has a Masters Degree in social work and considerable professional experience. The Approval Holder and Director had no issue with her professional qualifications as a social worker, but objected to the Tribunal qualifying her to give expert opinion evidence in the hearing on the basis that her qualification does not extend to the impacts of wind turbines on human health.

[35] The Tribunal ruled that Ms. Davies' expertise as a social worker is not sufficiently related to wind turbines and harm to human health to give the opinions she is purporting to give, and declined to designate her as an expert. In this respect the Tribunal relies on *Mohan*, as above. As with Ms. Shubat, the Tribunal also did not allow into evidence the documents Ms. Davies wished to rely on in forming her opinion, which were all outside of her area of expertise. Ms. Davies therefore gave her evidence as a lay witness.

[36] In her presentation, Ms. Davies started with the assumption that the Tribunal decision in *Erickson v. Director (Ministry of the Environment)*, [2011] O.E.R.T.D. No. 29 ("*Erickson*") established that wind turbines cause harm to human health. She, therefore, focused her presentation on how "the physical harm can easily become serious harm when factoring in mental health". She discussed family systems theory and testified that the family is recognized as an emotional unit, and that when one family member is suffering, for any reason, the impact can be magnified on other members of the family until it becomes a serious harm to human health. She discussed in particular the stressors of anxiety, depression, and the requirement to get sufficient sleep, which she testified may be impacted by noise from a wind turbine.

[37] Ms. Davies testified that, when it comes to human health, the ethical way to proceed would be for proponents to present evidence that wind turbines do not cause harm, rather than putting the burden on local residents to prove they will.

Participants and Presenters

[38] All of the participants and presenters testified to their sincere and significant concerns that the Project will result in negative health impacts to them and to their community. Their concerns include that the Project will cause noise emissions that are louder, and carried over a further distance, than predicted in the Project assessments. They are worried about health impacts of inaudible sound emissions – low frequency noise and infrasound ("LFIS"). They raised the concern of negative health effects due to the psychological impact of seeing industrial wind turbines in a landscape that

currently appears natural. This will be compounded by the fact that the northern coast of Lake Superior is an iconic Ontario landscape, cherished by not only Ontario residents but citizens of the world, which will be forever lost. Some participants and presenters expressed concern over the Project's impact on the natural environment. While this is not relevant to the ground raised in Mr. Fata's appeal, it is relevant to the appeal of 240. The Tribunal has summarized the presentations in this section, whether they relate to harm to human health or harm to plant life, animal life or the natural environment.

[39] Ms. Richards testified on behalf of SOAR, participant, which takes the position that the entire approval process related to renewable energy projects negatively impacts (and in this case, has already negatively impacted) the health of residents of unincorporated, rural Northern Ontario. She testified that human health is more than physical manifestations of ill health, and comprises "mental, physical, emotional, social and spiritual forces at work in the human psyche". Ms. Richards testified that local residents' health was harmed through: shock at discovery of Ontario Ministry of Natural Resources ("MNR") maps of intended REA projects for Algoma prior to any public information; confusion and uncertainty relating to projects in Algoma including ownership of the Project and manner of consultation; lack of understanding by government of the differences between Southern and Northern Ontario; and the impact of the REA regulations. SOAR submits that:

if the anticipation of the negative impact of the Bow Lake wind project on Algoma (as evidenced in the data collected independently by SOAR at the DP Energy/BluEarth/ Nodin Kitagan Open Houses) has caused so much emotional and psychological harm to the residents of Algoma, then the realisation of the project in its construction and operational phases will only serve to continue and deepen the harm to Algoma residents' health.

[40] Ms. Bayne, participant, testified that she presently enjoys the use of the Project area "for its physical mental health benefits, particularly the respite from traffic noise. The Project will destroy the quiet." She referred to a document discussing "quiet as an environmental value", as well as the European Landscape Convention which declares that "the landscape is a key element of individual and social well-being". Ms. Bayne believes that the Government of Ontario has proceeded into green energy "with reckless disregard for the mental health of rural residents". She testified that, as an expert in her own life, she can offer evidence of her own mental health. Ms. Bayne described the impact of the state of the land on her mental health, as well as the negative health consequences she has suffered being a self-represented litigant in the REA appeal process before the Tribunal. She testified she has "experienced sufficient

annoyance to render me physically fatigued and extremely vulnerable to mental exhaustion.”

[41] Ms. McGuffin, participant, focused on an aspect of serious harm to human health which she framed as “a harm that will be inflicted upon the human psyche by way of the alteration to a landscape that links us all to a superlative and splendid history unlike any other place on this planet.” Ms. McGuffin describes the landscape as “iconic”, which she noted is defined as a word that means imagery: “An icon is a representation, a likeness, an image, a model, an embodiment, a symbol.” She testified that the Bow Lake Wind Project, cumulatively with other wind projects in the area, “will change forever the experience of the imagery that informs our brains about this natural landscape.” She discussed the importance of safeguarding the actual natural landscapes that are featured in the iconic Group of Seven paintings of the area north of Lake Superior. Ms. McGuffin submits that serious harm to our mental health will be caused when “the images that have already been described through photographs, paintings, historical records, poems, stories, journals, diaries will only be representations of the past. Never again will people be able to place images of this ancient landscape into their minds without the addition of industrialized features.” She likens images of this particular landscape at Bow Lake as an “endemic species”, that can only be found in a particular geographic location.

[42] Ms. McGuffin refers to “nature deficit disorder” and its impact on children, recognized through such initiatives as the “Children’s Outdoor Charter” which was championed by the Honourable David Orazietti, Ontario Minister of Natural Resources at the time of the hearing and MPP for Sault Ste. Marie. She emphasized the importance of the dark Night Sky in this context, and noted that the Project’s lights will “change forever the iconography of this natural landscape imprinted in our brains” both day and night. She states that “to lose this will be a collective loss on our human psyche in the way we are affected whenever we hear of yet another species extinction.” Ms. McGuffin also raised the issue of turbines causing fires or interfering with fighting wildfires, which are a particular concern in the unorganized townships of Smilsky and Peever.

[43] Dr. Gordon, participant, testified as a fact witness with respect to the environmental impact of the Project, and specifically his concerns regarding owls and eagles. Dr. Gordon testified that he is retired from the Great Lakes Forestry Centre and the MNR, and has Scientist Emeritus status with the MNR. Dr. Gordon has many years of experience observing birds in the Project area, and testified that it is a breeding area

for raptors (hawks) including buteos, accipiters and falcons, as well as Bald Eagles. He is concerned that wind turbines will cause raptors and owls to leave the area.

[44] Mr. Caruso, presenter, states he was born and raised in Sault Ste. Marie, and uses the Project area to fish, camp and hunt. He has concerns for harm to human health (quality of life, mental and emotional health leading to physical health) as well as to the natural environment. As a city bus driver, he testified that the area in which the Project is located is his saviour and his only peace. Mr. Caruso likens placing turbines in this area to placing them in the Alps or the Rockies. On the natural environment ground, Mr. Caruso testified that, having observed trucks bringing turbine blades to the area, Mr. Caruso has well-founded concerns that the trucks will need much larger turning radii than what is described in the Project documents, resulting in clear-cutting of many more trees. He is also concerned about the amount of cement to be made and poured, impact of blasting on the tops of the hills, and impact on the lakes and wetlands of water taking for construction activities.

[45] Michipicoten First Nation, participant, raises concerns about the impact of the Project on eagles and cranes. Chief Joe Buckell stated that “our members have fished, hunted and trapped in the lands for untold generations and we fear that those lands are disappearing; and the very face of nature is being lost in the process. We deem this a threatening environmental issue as well as an infringement of our rights concerning the loss of lands and habitat within our territories.”

[46] Ms. MacIntyre, presenter, commented on both grounds of appeal. She feels

it is a constitutional right as an Ontario citizen, a landowner, a taxpayer and a resident of this region to have input on local land use, and to have a say in future use and plans for the benefit of all within this region....for me and many in my community these issues have become a huge health consideration; creating anxiety, worry and stress as we face a serious breach of contract in our expectation of rights. I personally have not had a good night's sleep since this travesty began, and I and others suffer from a sense of disenfranchisement within this process, since my government is no longer an ally in the safeguarding of public interest and ensuring local input in land use planning.

[47] Ms. MacIntyre also makes submissions on the issue of fire risk, travel safety as a result of interference with the MRWRS, and road danger due to increased precipitation runoff and erosion. Ms. MacIntyre raises concerns relating to forest dwelling birds through loss of interior habitat due to habitat fragmentation, as well as migrating birds.

[48] Ms. Kargl, presenter, testified as to emotional, social and mental stress that the Project has already caused her. She testified as to her connection to the land in the

Lake Superior area; she described her concerns that her children, who have grown and moved away, will not be able to “shed stress and worries they come home with” and that this will have a negative effect on their long term health, as well as that of others who use the area to re-energize; she is concerned her children might not come home at all anymore once the area becomes industrialized; that this Project will add to others that cumulatively will destroy the coastline.

[49] Ms. Zuccato, presenter, is a Prince Councillor and resides close to the Prince wind farm, which began operating in 2006, prior to the *Green Energy Act*. She testified as to her experiences with the existing Prince project, and raised concerns that the same sorts of problems may arise with the Bow Lake Project. She testified that the construction phase had more significant impact than was anticipated on animals such as bats and turtles. She testified that there were significant problems with draining local wetlands for dust suppression on the turbine access roads, which negatively impacted the natural environment in the area. Ms. Zuccato also testified that the wildlife in the area of Neffs Lake, including moose and deer, has disappeared. Further, she testified that public access has been blocked from recreational tourism opportunities, along public access roads.

[50] Mr. Hornstein, presenter, testified to his involvement in a project called “The North View”, which educated the local population on historical impact of the north-eastern shore of Lake Superior on television. Through this project he has become knowledgeable about and particularly aware of, the profound effect of the area upon the self-awareness of Canadians. He states that “any attempt to change it by way of a wind farm development would irreparably alter the coastline and its importance to the cultural and historical heritage of our country. Furthermore it would have a devastating psychological effect on everyone.” Mr. Hornstein believes a cost-benefit analysis should be undertaken on the Bow Lake Project, which takes into consideration the economic advantages as well as the harm to the environment and to the view of the shoreline. Mr. Hornstein testified that, his experience living in New York City has sharpened his appreciation for the fact that what makes Canadians unique is our proximity to unspoiled nature. He believes this is essential to the psychological health of Canadians, as well as being key to tourism in the area.

[51] Ms. Chyrski, presenter, states in her written presentation that “we have experienced the tragic loss throughout Southern Ontario of so many places our family frequented for spiritual and psychological repose that we can attest to the serious aversive reaction industrial wind developments stimulate in us as informed travelers.”

She requests that the Tribunal overturn the Director's decision to issue the REA "to prevent the depressingly obtrusive polluting of our cherished cultural landscapes".

[52] Ms. Neveau, presenter, states in her written presentation that she is from the Serpent River First Nation. Ms. Neveau states that the health of the Land is essential to the health of the communities, and that as an Anishnaabe person, her definition of health is physical, spiritual and emotional. She submits that seeing the turbines will be a reminder of the industrialization of the Land. Ms. Neveau states that she has already experienced the way the Prince wind farm makes her feel ill. Ms. Neveau also states that the mental and physical health of First Nations youth is tied to economic development, and that the Project will negatively affect her start-up business plans for an eco-tourism initiative which relies on natural landscapes.

[53] Ms. Kuntz, presenter, provided her testimony in writing. Ms. Kuntz is concerned that the Project will industrialize the natural environment and that restoration of the land is not possible, thereby creating irreversible harm. She points to numerous examples of human interventions damaging rivers in the past, and ineffective remediation efforts.

[54] She also expressed concerns that the Project will negatively impact Peregrine Falcons, and quotes a local news article relating that Peregrine nests were found in Lake Superior Provincial Park, as well as the success of a local Peregrine Falcon recovery program. Ms. Kuntz is concerned that the Peregrine Falcons will be put at risk of collision mortality as they migrate through the Project site.

Respondent Evidence

[55] Chief Dean Sayers, elected Chief of the Batchewana First Nation, testified on behalf of the Approval Holder. Chief Sayers is from the Rankin Reserve of Batchewana. He wished to address the Tribunal to confirm that the Batchewana First Nation is comfortable with the extent of the pre-construction work that has been done, and feels there is mutual respect between the two partners in this enterprise who each have a 50% interest. Chief Sayers testified that the Batchewana First Nation has the inherent obligation to look after the land from Bawating (the Sault Ste. Marie rapids) to Otter Head. He stated that they use the entire coastline and manage fish stocks, whitefish being the largest source of income. Chief Sayers stated that the focus of his work is protecting the Lake Superior watershed.

[56] Chief Sayers testified that the Batchewana First Nation has issued its own permits, to ensure the development is meeting its expectations. Chief Sayers discussed

the benefits that accrue to his people from this Project, and the positive impact on the community with the change in their involvement from exclusion, to active participation.

[57] The Approval Holder called as a witness Dr. Robert McCunney, who was qualified by the Tribunal to give expert opinion evidence as a medical doctor specializing in occupational and environmental medicine with particular expertise in health implications of noise exposure. No expert was called on the issue of health consequences of visual impacts, as opposed to noise exposure.

[58] Dr. McCunney testified that, in his opinion, the Project will not cause serious harm to human health. He testified that, having reviewed recent scientific literature, there is no information to suggest that noise exposure at the limits imposed in the REA and the relevant regulations (i.e., 550 metres (“m”) set-back and/or 40 decibels (“dBA”) at the closest receptor) have any adverse health effects. He also testified that “annoyance” is not recognized as a health effect, but is rather a subjective phenomenon related primarily to attitudes to the visual impact of wind turbines.

[59] Bryan Tripp, the Project Development Lead for the Bow Lake Project, gave factual evidence. He testified that there are no participating receptors associated with this Project, and the closest non-participating receptors are as follows:

There is one seasonal, unserviced hunting cabin nearly 900 metres away from the nearest Project turbine and seven other seasonal hunting cabins and camps within 1500 metres of the Project turbines. Although these eight locations do not meet all of the characteristics of a noise receptor set out in the Technical Guide for Renewable Energy Approvals published by the Ministry of the Environment (“MOE”) given that they are not serviced by any municipal services (sewer or water) or utilities and are seasonal dwellings, they were included as noise receptors in the noise assessment as a conservative measure.

[60] Mr. Tripp testified that the Approval Holder retained acoustic engineers from HGC Engineering (“HGC”) to conduct a noise assessment of the Project. He provided the report, which concluded that the noise modeling results show that the noise levels outside each of the eight locations will be below 40 dBA under conditions of average wind speed up to 6 metres per second (“m/s”), which complies with MOE’s Guidelines.

[61] The Director called no witnesses in Mr. Fata’s appeal.

Discussion, Analysis and Findings

Submissions

[62] Section 145.2.1 of the *EPA* places the onus on an appellant to establish serious harm to human health in a REA appeal. As has been consistently noted by the Tribunal, mere speculation or concern will not satisfy the legal test, and the Tribunal must have reliable evidence upon which to base its findings, on a balance of probabilities.

[63] Mr. Fata submits that he has established through the evidence that “there will be adverse emotional effects, annoyance, caused by the visual impact of the wind turbines”. He also submits that the “submissions by the Presenters and Participants is evidence of the extent to which people's personal and cultural identity is invested in the current state of the region and the degree to which the wind turbines will cause a negative and adverse emotional impact. The visual impact of the turbines will be a constant reminder of the loss they have suffered and will prevent recovery”. He submits that “these adverse effects will be augmented by the audible and LFIS noise from the wind turbines”.

[64] SOAR submits that the “focus of this Hearing has been at least as much about the impact of the REA regulations and process upon human health and the environment as the potential of industrial turbines to harm human health and the environment.” SOAR further submits that the “mandate of the Tribunal is to decide what is in the best public interest of human health.” Further, SOAR emphasizes that the “precautionary principle” should be applied, and refers to the “duty of the MOE to protect the health of Ontarians”.

[65] The Director argues that, without the assessment and support of a qualified expert, Mr. Fata's allegations remain unfounded. The Director submits that the Appellant “offered no credible evidence to show that annoyance, whether from visual or noise impacts, is an agent of disease as alleged. The Appellant put forth no evidence as to the level of visibility or noise that may be directly or indirectly associated with annoyance, much less evidence of a causal link to adverse health effects.” The Director relies on the previous Tribunal decisions in *Alliance to Protect Prince Edward County v. Ontario (Ministry of the Environment)*, [2013] O.E.R.T.D. No. 40 (“*APPEC*”) (paras 160-162 & 164-166) and *Bovaird v. Director (Ministry of the Environment)*, 2013CarswellOnt 12680 (“*Bovaird*”) (para. 313) to argue:

Indeed, no medical experts were called to speak to how the Bow Lake Project will cause any harm to human health whatsoever, let alone

serious harm. In the absence of the diagnostic skills of qualified health professionals, the evidence presented alone cannot be relied upon to make the leap between unsubstantiated concerns and the operation of the Bow Lake Project in a finding of serious harm to human health.

[66] In addition, the Director argues that Mr. Fata's attempt to challenge Dr. McCunney's credibility through reliance on the notion of lowest-observed-adverse-effect-level, which comes from the WHO Night Noise Guidelines for Europe (2009), is improper because: it was not filed in reply to Dr. McCunney's witness statement; Dr. McCunney should have had the opportunity to address such evidence during cross-examination; and Mr. Fata holds no expertise to contradict Dr. McCunney's evidence.

[67] The Approval Holder makes similar submissions, relying on *Kawartha Dairy v. Ontario (Ministry of the Environment)*, 41 C.E.L.R. (3d) 184 (Ont.Env.Rev.Trib.) at para. 21 to argue that the Tribunal has found that it should not draw conclusions on health-related issues in the absence of evidence from a qualified health practitioner.

Findings

a) Emissions (Audible and Inaudible Noise, Electromagnetic Fields, Low Frequency Sound)

[68] In a number of previous REA appeals, the Tribunal has considered allegations of human health impacts resulting from noise exposure caused by wind turbines. The Tribunal has found in each case, that the appellants did not establish on a balance of probabilities that the wind project, operating in accordance with the conditions established in its approval (and in particular the 550 m set-back and/or 40 dBA noise limit) will cause serious harm to human health.

[69] Dr. McCunney's evidence focused on the health impacts of noise emissions. He reiterated the evidence the Tribunal has heard in past cases, that there is no evidence that the level of noise projected to be emitted by the Project will have any impact on human health at a minimum set-back distance of 550 m. In this case, the closest receptor (Mr. Fata's hunting camp) is at a distance of approximately 900 m from the closest turbine.

[70] While Mr. Fata alleges that the Project will cause higher noise levels than predicted by the noise modeling conducted by HGC, he presented no reliable evidence that the assessments were incorrect or inadequate. Further, Mr. Fata relies extensively in his submissions on the WHO Night Noise Guidelines for Europe (2009). However, he has not presented evidence to show that the Project will cause any of the health consequences referred to in the WHO document related to night-time noise.

[71] In his final submissions, Mr. Fata refers to documents relied on by Dr. McCunney with respect to human health and noise, and then suggests a link between published health reports and this Project, in paragraph (j):

In exceeding the 40dBA LOAEL (lowest observed adverse effect level) set out in the Regulations for maximum night-time noise the wind turbines will cause an increased incidence of annoyance, disturbed sleep and associated/consequent adverse physiological and psychological health effects.

[72] However, there is no evidence the Project will exceed 40 dBA at any of the identified points of reception, which is where people live and sleep. The evidence is that there are no permanent dwellings in the vicinity of the Project but there are eight seasonal or hunting camps within 1,500 m of the turbines, that of Mr. Fata being 900 m away. While Mr. Fata criticized the noise report, he provided no evidence that its conclusions on the predicted noise levels at all non-participating receptors (i.e., that they will all remain below 40 dBA) were wrong.

[73] Mr. Fata disputes Dr. McCunney's statement that "annoyance" is not a health effect, by relying on passages from the WHO Night Noise Guidelines for Europe (2009). However, the underlying fact is that Mr. Fata did not establish that the Project will cause a level of noise or other emissions at the non-participating receptors that will cause a level of annoyance that could be considered serious harm to human health.

[74] Mr. Fata asks the Tribunal to revoke the REA, or in the alternative to impose conditions that prevent any turbine from being constructed within 2 km of a point of reception, or to have the turbines within 2 km of any point of reception shut off at night. However, the Appellant has provided no evidence to back up his request for a 2 km set-back; he did not explain why the Project would not cause serious harm to human health if it is located 2 km away, yet would cause serious harm to human health as currently sited (which in this Project includes a 900 m set-back at the closest point).

[75] Mr. Fata has not tendered any health evidence to counter the Approval Holder's evidence in this proceeding, that the Project will not cause serious harm to human health due to emissions including audible and inaudible noise, electromagnetic fields, and low frequency sound. The Tribunal relies on its analysis outlined in *Erickson* at paras. 838-841 and *Bovaird* at paras. 373 and 376, to conclude that Mr. Fata's concerns remain "concerns" that the Project will cause serious harm to human health, which do not satisfy the "will cause" requirement under the legislation.

b) *Visual and Social Impacts which have Psychological and Physical Health Effects*

[76] The Tribunal heard no expert opinion evidence on the issue of human health consequences resulting from visual or social impacts of wind turbines. Mr. Fata and the participants and presenters allege that they will be so psychologically affected by the visual intrusion of these large industrial machines into the natural and iconic north Superior landscape, that they will suffer serious harm to their health. Ms. Davies gave evidence that stress on an individual is magnified through its impacts on the family system, and Ms. Shubat discussed the importance of mental health and wellness, and testified that mental health is included in the WHO definition of health. Mr. Fata argues that annoyance is an agent of disease that causes adverse physiological or emotional reactions, which in turn cause adverse health effects.

[77] The Approval Holder and the Director argue that the Appellant has introduced no expert evidence on this point and therefore the Tribunal could not make a finding in his favour.

[78] With respect to the evidentiary base, the Tribunal has determined previously that “serious harm to human health” is a medical concept requiring some qualified medical opinion. In *Dixon v. Director, Ministry of the Environment*, [2014] O.E.R.T.D. No. 5 the Tribunal made the following observations with respect to serious harm in the s. 7 *Charter* context:

[71] From the *Chaoulli* decision, a number of observations can be discerned. First, the case law is clear that the level of harm, whether psychological or physical, must be “serious.”

[72] A second observation is that the comments in *Chaoulli* suggest that the term “serious” connotes a “clinically significant health condition.” Although still general in nature, the Court has provided significant and useful guidance in holding that in order to meet the threshold for a s. 7 claim, the deprivation must be serious in the sense that the claimant has a health condition that is clinically significant. This, presumably, is a diagnosis made by medical professionals. What is a clinically significant health condition, of course, was not definitively laid out by the Court, and, it can be assumed, will have to be assessed on a case-by-case basis.

[73] An understanding of what is meant by “serious” in the context of a s. 7 *Charter* claim also can shed light on the threshold needed to meet the “serious harm to human health” ground under s. 142.1 of the *EPA*. It can be assumed that there will be some parallels in analysis and thresholds between a *Charter* claim and the health ground of appeal for a REA appeal. However, future cases will have to determine whether a “clinically significant” health condition that satisfies the threshold for a s. 7 *Charter* claim would also satisfy the test for a s. 142.1 *EPA* appeal (or *vice versa*).

[79] The concept of “clinically significant” health impacts in the context of mental health appears in a document cited by the participant Ms. Bayne, from “*Toward Recovery & Well-Being: A Framework for Mental Health Strategy for Canada*; Mental Health Commission of Canada November 2009; ISBN: 978-0-9913795-0-0; at page 11:

When we speak of mental health problems and illnesses in this document, we are referring to clinically significant patterns of behaviour or emotions that are associated with some level of distress, suffering, or impairment in one or more areas such as school, work, social and family interactions, or the ability to live independently.

[80] The visual impact argument in this appeal is that individuals will suffer serious harm to human health (in the form of stress, leading to further negative health consequences, as well as due to inability to relax and recharge) due to seeing the Project components. This allegation, that the introduction of wind turbines into the landscape will cause annoyance leading to adverse health effects, very sincerely raised and felt by the individuals who spoke at the hearing, was also raised recently in the *Moseley* appeal.

[81] As found by the Tribunal in its Scoping Order, land use planning decisions are not within the jurisdiction of the Tribunal under s. 145.2.1 of the *EPA*. While it could certainly be said that 100 m high wind turbines with red blinking lights constitute an industrial use introduced into the landscape, which has been described currently as “natural” and “iconic”, the s. 145.2.1 *EPA* test is a narrow legal one and does not prohibit a change in use. The Tribunal agrees with and relies on its analysis in *Moseley*, in which the issue of visual impact was also raised:

[124] The Tribunal accepts from the testimony of the participants and presenters in this hearing that they will all more likely than not have a negative emotional reaction to the sight of wind turbines in the Goulais Bay area, where they have hitherto only experienced natural vistas and the tree line on the horizon. Several individuals have articulately described the psychological connections they will make upon seeing wind turbines: lack of voice, lack of democracy, intrusion of industry into what some see as sacred space, and “callous disregard for other non-compatible uses of the land”.

[125] At the same time, the Tribunal notes that these are subjective reactions. It is a reasonable assumption that other individuals who have not sought status in these proceedings may have a positive psychological response to the sight of wind turbines, perhaps associating them with such things as a future with lower carbon emissions, or, for participating receptors, they may symbolize financial benefits. In this regard the purpose of a REA appeal must be kept in mind. An appeal before the Tribunal is not a consultation process to gather general input from all who have an opinion, even if the concerns are valid and point to real flaws in the siting process; it is an adjudicative exercise designed to

determine, on the basis of relevant evidence, whether an appellant meets the test laid out in s.145.2.1(2).

[126] The legal test the Tribunal must apply is not whether overall well-being is diminished; it is whether the Project will cause serious harm to human health. There is no evidence in this proceeding that annoyance *per se* is a serious health effect amounting to serious harm to human health.

[82] Similarly, in this case there is no evidence that annoyance *per se* is a serious health effect amounting to serious harm to human health.

[83] Mr. Fata also alleged in his notice of appeal that the Project will violate his rights under s. 7 of the *Charter*, which provides as follows: “Everyone has the right to life, liberty and security of the person and the right not to be deprived thereof except in accordance with the principles of fundamental justice.” Mr. Fata brought no specific evidence related to the *Charter* allegation, and made no submissions specific to this point. His reply submissions clarify that he was under the understanding he was to address the *Charter* argument in the context of a remedy, should the Tribunal find the Project will cause serious harm to human health. The Tribunal finds that Mr. Fata has not established the Project will cause any violation of his s. 7 *Charter* right to security of the person.

[84] In conclusion, the Tribunal recognizes that Mr. Fata, the participants and presenters are all raising significant concerns with respect to protection of the landscape in the Project area for its long-term enjoyment as a natural environment, free of industrialization. However, the Tribunal finds that they have not satisfied the “serious harm to human health” criterion of s. 145.2.1 as there is no actual evidence of clinically significant harm.

c) Other Issues (Property Access and Enjoyment, Fire, Charter Claim)

[85] Apart from the noise impacts and visual effects dealt with above, Mr. Fata raises concerns in his witness statement relating to access to the Project area and enjoyment of his property. As noted above, the paragraph relating to property value decrease was found to be outside the Tribunal’s jurisdiction and struck following a preliminary motion.

[86] Mr. Fata testified that his current access to his hunting camp is via a logging road, and access is currently very difficult in spring when snow cover is insufficient for a snowmobile yet the ground is too wet to drive a truck. He also testified that he cannot park on the logging road and it is difficult to park at the access point along the highway. In addition, Mr. Fata raised a concern that his friend’s ashes are interred near the camp, in a location that may become inaccessible due to access restrictions contemplated by

the Project. Mr. Fata also stated that he will lose the enjoyment of his property. He states that the noise generated by the Project will prevent use of the seasonal hunting cabin as a quiet, natural place to rejuvenate and relax; it will scare off fish and wildlife, preventing his use of the property to hunt and fish.

[87] Mr. Fata's testimony on these issues amounted to expressions of concern. As noted consistently in Tribunal decisions, for an appellant to satisfy the onus of proof under s. 145.2.1(3) of the *EPA*, evidence must be called to establish the allegations. Given that "human health" is a medical concept, in most cases scientific or medical expert evidence would be required. Mr. Fata provided no evidence that would link his concerns relating to access to his property, and enjoyment of his hunting camp, to the legal ground of appeal of serious harm to human health. As a result the Tribunal finds the Appellant has not satisfied his onus on these matters in this case.

[88] In paragraph 9 of the notice of appeal, Mr. Fata raises an issue relating to lightning strikes and forest fires. He alleges the Project will cause an increased fire risk due to its location in an unorganized township, where the local fire department is a distance away, staffed by volunteers, and ill-equipped to fight a fire on the Project site. Ms. McGuffin and Ms. MacIntyre also addressed this issue in their testimony. However, neither Mr. Fata nor the presenters filed any evidence to establish that wind energy installations, or this Project in particular, will increase fire risk.

[89] SOAR submits that the REA regulations and process themselves cause a negative health impact. However, as discussed in the Scoping Order, the Tribunal's jurisdiction is narrowly circumscribed by s. 145.2.1 of the *EPA* to whether the Project will cause serious harm to human health. SOAR's interpretation, that the "approval" should be considered a "process over time", is not consistent with the wording of s. 145.2.1, which requires the Tribunal to consider whether engaging in the Project, *in accordance with the approval* will cause serious harm to human health. The wording of the section clearly refers to the "approval" as the signed approval document, with its conditions. Consequently, the human health impact of the "REA regulations and process" is outside the purview of this hearing. However, even if the Tribunal had accepted SOAR's proposition that the "approval" is a "sequential process the phases of which take place over set periods of time", which it does not, there is still no evidence of serious harm to human health.

[90] The Tribunal does not agree with SOAR's submission that the Tribunal's mandate includes "the best public interest of human health". As noted above, the Tribunal's mandate is determined by statute. The statute in this case is the *EPA*, which

is very clear about the Tribunal's mandate on REA appeals, and has been repeatedly cited throughout these reasons. As for the application of the precautionary principle, the Tribunal notes that the Director has an obligation under the MOE's Statement of Environmental Values ("SEV") to apply a precautionary approach in making decisions, such as issuing a REA. The SEV states:

The Ministry will exercise a precautionary approach in its decision-making. Especially when there is uncertainty about the risk posed by particular pollutants or classes of pollutants, the Ministry will exercise caution in favour of the environment.

[91] However, at the stage where a REA is appealed to the Tribunal, the precautionary principle does not supplant the test laid out by the Legislature at s. 145.2.1 of the *EPA*. The Tribunal in *Erickson* described it as follows at para. 521:

(T)he precautionary principle does not act to fundamentally change the nature of the test in section 145.2.1(2). The Legislature has clearly set out that the Tribunal must assess whether the harms listed will occur. In cases where that finding is made, the precautionary principle may constitute an important source of guidance in the Tribunal's subsequent exercise of discretion under section 145.2.1(4), just as it is for the Director under the *EBR* and section 47.5 of the *EPA*. In light of the clear wording of section 145.2.1(2), the precautionary principle does not allow the Tribunal to exercise discretion if an appellant only establishes that there is a threat of serious damage (using the wording of the principle). The statutory test has a higher burden, that is, "will cause serious harm". In this regard, section 145.2.1(2) is materially different from other more precautionary statutory tests in the *EPA* such as section 143(3).

[92] Finally with respect to SOAR, it relies extensively on papers by Dr. Salt and Dr. Alves-Pereira, which SOAR included with its final submissions. However, these papers are not evidence before the Tribunal and will not be considered. The Tribunal heard oral evidence, in the form of testimony at the hearing, and received documentary evidence through the witnesses, each item of which has been given an exhibit number. The Tribunal does not admit into evidence the additional documents attached to SOAR's final submissions.

Conclusion on Fata Appeal

[93] For the above-noted reasons, the Tribunal finds that the Appellant has not established that the Project, operating in accordance with the REA, will cause serious harm to human health due to emissions of sound or vibrations, visual or social impacts, interference with access to or enjoyment of property, or fire. The evidence on annoyance caused by visual impacts amounts to an expression of concern, which is

insufficient to meet the test in s. 145.2.1 of the *EPA*. In addition, the Appellant has not established any breach of the *Charter*. As a result, Mr. Fata's appeal is dismissed.

Appeal by 2401339 Ontario Ltd (Tribunal Case No. 13-146)

[94] In this section, the "Appellant" refers to 240.

Issues

[95] The issues raised in 240's appeal can be summarized as follows:

- 1) Whether the Project as approved will cause serious and irreversible harm to animal life and the natural environment, specifically to bats or birds.
- 2) Whether the Project as approved will cause serious harm to human health by interfering with the MRWRS.

1) Whether the Project as Approved will Cause Serious and Irreversible Harm to Animal Life and the Natural Environment, Specifically to Bats or Birds

Evidence

Dr. Craig Willis

[96] Dr. Willis, who testified on behalf of the Appellant, was qualified by the Tribunal on consent of all parties as an expert on bats and the interaction of bats with wind turbines. Dr. Willis has a Ph.D. in biology, specializing in bats, and is an associate professor at the University of Winnipeg, where he also holds the Chancellor's Research Chair. Dr. Willis' evidence was organized into three parts: 1) general reasons why this Project, in this location, has a high likelihood of causing irreversible harm to bat populations, especially endangered species which hibernate; 2) general flaws in the MNR *Bats and Bat Habitats: Guidelines for Wind Power Projects* ("Bat Guidelines"), and why this affects potential for irreversible harm at this site; and 3) specific problems with the Natural Heritage Assessment ("NHA") conducted for this Project, and the Monitoring and Mitigation Plan.

[97] Dr. Willis raised concerns with respect to migratory as well as hibernating bats. With respect to migratory bats, he said that most studies show that migratory species are most impacted by collision mortality with turbines. Dr. Willis noted there is a significant positive correlation between turbine tower height and mortality of migratory bats, and that "migratory routes of bats are not known in North America, but some evidence suggests large water bodies concentrate populations of migratory bats. Bats may be more likely to migrate along the shorelines of large water bodies than to cross

them which may predispose them to mortality near the shoreline of Lake Superior.” He noted that the MNR Bat Guidelines ignore migrating bats in the monitoring and habitat requirements.

[98] With respect to hibernating bats, in Dr. Willis’ view a large number of endangered little brown bats will be killed at this Project. He testified that the data shows that little brown bats represent a larger proportion of fatalities in Ontario than elsewhere, and “the bats most commonly found killed at the Prince wind energy facility about 100 km south of the Bow Lake site were endangered little brown bats (NSRI 2013)”. Further, Dr. Willis believes that mortalities due to wind turbines have a particularly serious impact on little brown bats due to the “significant potential” for bat populations to evolve resistance to white nose syndrome (WNS), and the strong potential for indiscriminate collision mortality to “delay and potentially eliminate the possibility of a population recovery for wild bats in this region”. He states:

White-nose syndrome (WNS) is causing unprecedented mortality of little brown bats, northern long-eared bats and tri-coloured bats in eastern North America because of disrupted hibernation physiology (Bleher et al. 2009, Frick et al. 2010b, Warnecke et al. 2012, 2013). The most sophisticated recent analysis suggests variation in the potential for different species to be driven to extinction by the disease (Langwig et al. 2012). Given that traits which may be important for survival (e.g., hibernation phenology) have been shown to be heritable in other hibernating mammals (Lane et al. 2011), there remains significant potential for bat populations to evolve resistance to, or tolerance of, WNS. However, any additional mortality of WNS affected species, particularly indiscriminate mortality that does not further contribute to natural selection for WNS survival traits, has strong potential to delay and potentially eliminate the possibility of a population recovery for wild bats in this region. Moreover, given the patterns of movement and gene flow of bats described above, even a relatively small rate of mortality in one location could have both local and geographically widespread implications for recovery. If even small numbers of the few survivors of WNS are killed at turbines, any genes favouring WNS survival could be eliminated from a potential contribution to population recovery.

Even in the absence of WNS, the slow life history of bats (long lifespan which can exceed 30 years in the wild, low reproductive rates of 1 young per year for little brown bats; Barclay and Harder 2003) pre-dispose their populations to human impacts and slow recovery from human impacts (e.g., Purvis et al. 2000).

[99] Dr. Willis noted the life processes of the little brown bat which make them susceptible to harm from wind projects and other human-induced mortality. He noted that in summer, female little brown bats aggregate in maternity colonies which number in the tens to hundreds of individuals. Individual bats appear loyal to a given hibernaculum or maternity colony throughout their lives.

[100] With respect to bat movement, Dr. Willis noted that foraging distances for little brown bats during summer can readily exceed 1,000 m from maternity colonies. He stated that distances travelled to hibernacula are greater: “some individuals from a given maternity colony may travel only short distances (tens of kilometres) from summer roosts to hibernacula but others may travel hundreds of kilometres”. Dr. Willis also noted that populations are interconnected through gene flow:

Most mating occurs during a behaviour called “swarming” which occurs before hibernation but in and around the entrances of hibernacula during fall and early winter. Bats appear to move among multiple swarms which may be spread across vast areas and swarms are known as sites of significant gene flow, connecting populations that might otherwise be isolated (Fenton and Barclay 1980). These patterns of population connectivity and gene flow are relevant to the potential for adult mortality in one location (e.g., due to collisions with turbine blades) to harm both local colonies and widely distributed populations.

[101] Dr. Willis testified that, although in general the Approval Holder followed MNR’s requirements for monitoring and mitigation outlined in the MNR’s Bat Guidelines, nonetheless these guidelines are significantly flawed and for many projects (including Bow Lake) following them will not protect bat populations from serious and irreversible harm. Dr. Willis listed the following reasons:

- MNR’s minimum requirement that mitigation only be considered if mortality exceeds 10 bats/turbine/year is arbitrary and not based on science and, for many projects is likely to fail to protect bat populations from irreversible harm.
- MNR’s threshold approach fails to consider that other nearby wind energy facilities are also likely to cause mortality for both local populations and migrating bats. In this case, the Prince Facility near Sault Ste. Marie is most relevant.
- The set-back distance to hibernacula are meaningless and there is no evidence to suggest that this set-back has any beneficial impact on bat populations.
- The recommended approach for identifying Significant Wildlife Habitat (“SWH”) is not suitable for dense contiguous forest present in the Project area.
- The Bat Guidelines fail to account for an association between wetlands and fresh water habitats, and roosting and foraging habitats and fail to account for

the value of living trees with hollows (vs. snags) as SWH for maternity colonies.

- The Bat Guidelines ignore migratory bats in monitoring recommendations.
- Searches required under the Bat Guidelines will have extremely low rate of efficiency due to dense contiguous forest present in the Project area and high scavenger rate.

[102] Dr. Willis explained his opinion that the Bat Guidelines' mortality thresholds are not protective of little brown bats as follows:

In Ontario between 15-27% of carcasses recovered at wind turbines are endangered little brown bats. These numbers are likely an underestimate because *M. lucifugus* are among the smallest-bodied species killed and, therefore, less likely to be recovered than larger-bodied migratory bats. A calculation assuming a similar (but conservative) proportion for the proposed Bow Lake facility (e.g., 20% of 360 bats) shows that the facility could kill more than 70 endangered little brown bats per year before mitigation is considered. This number of bats is equivalent to a large proportion of a maternity colony (indeed could represent an entire forest maternity colony). Over a 5-year period this would amount to several hundred endangered bats from populations that are already imperilled due to WNS.

[103] Dr. Willis agreed that, in light of the lack of reliable population data, "at present, there is no accepted bat fatality threshold, i.e. a rate beyond which fatality is not sustainable to the population."

[104] Dr. Willis states that "If the local population is already declining precipitously due to some other threat (e.g., WNS) the cutoff should obviously be reduced consistent with some increment or assumption about the rate of population decline." He also notes that the cutoff does not discriminate between species, and states: "Treating 'bats' as the entity to be managed and not 'bat species' is biologically nonsensical management practice." Dr. Willis is critical of the MNR Bat Guidelines' failure to take neighbouring projects into account (cumulative effects). In this case, the Prince Wind Farm is relevant.

[105] Dr. Willis outlined specific problems with the NHA prepared by the Approval Holder, and testified that in his view it underestimates the little brown bat activity on the Project site.

[106] Dr. Willis testified that the recommended approach for identifying SWH for bat maternity roosts (i.e., conducting exit counts at sunset at trees which look like bat

roosts), which was followed in preparing the NHA, “is highly unlikely to be effective in the dense, contiguous forest where this project has been proposed”.

[107] He testified that the NHA’s conclusion that the Project area does not represent SWH for bat maternity colonies cannot be supported by the data collected. In his view, a high concentration of suitable roosting trees in this area results in a low probability that the exit surveys conducted give an accurate depiction of the bat populations in the area. It is also complicated by the fact that the same bat may use various maternity roost trees throughout summer breeding season. In addition, conducting acoustic surveys in June (as was done by M.K. Ince in this case) biases sampling away from the time of year when most mortality occurs and away from species likely to be impacted by the turbines. In any event, Dr. Willis testified that the value of pre-construction acoustic surveys for predicting post-construction impacts has not yet been clearly demonstrated.

[108] Further, he stated that mortality estimates obtained from the post-construction monitoring plan recommended by the MNR could still represent significant underestimates even after correcting for searcher efficiency and scavenging due to the Project area characteristics (i.e., dense forest).

[109] Dr. Willis concluded in his witness statement:

Irreversible harm is especially likely for the two hibernating species (*M. lucifugus*, *M. septentrionalis*) which are already endangered in Ontario due to dramatic population declines from WNS – some of the fastest declines of mammal populations ever observed in the wild. In general this location includes large areas of what is likely prime summer roosting habitat for these species, as well as a known bat hibernaculum within an easy night’s flying distance for these species. It also has potential for significant impacts on bat populations due to its proximity to the shoreline of a major water body that may concentrate bats. The use of very tall turbines, which are known to cause the highest rates of bat mortality and which may attract migratory species from long distances, adds to the risk of harm to populations. The monitoring plan recommended by the OMNR guidelines has significant potential to underestimate mortality and the arbitrary mortality threshold set by OMNR to guide operational mitigation, combined with a failure to account for mortality at nearby facilities, does not represent sound wildlife management practice. Taken together, and considered alongside all of the other issues outlined above, in my view this creates a high likelihood of irreversible harm to bat populations as a result of this project.

[110] In his reply to the witness statement of Dr. Scott Reynolds, an expert witness called by the Approval Holder, which suggests that little brown bats are not particularly susceptible to turbine collision mortality according to North American statistics, Dr. Willis testified that “we know little brown bats face relatively high risk of mortality in Ontario

and in the only other wind energy facility nearby”. He stated that “even before WNS in other parts of North America they still made up a much smaller proportion of overall fatalities compared to the data we have for Ontario. It is not clear why but little brown bats face relatively high risk of mortality in Ontario but they do based on the available data.”

[111] With respect to the conclusions that can be drawn from WNS-induced smaller population sizes, Dr. Willis disagrees with Dr. Reynolds’ “density-dependent” theory of collision impacts by little brown bats. Dr. Willis’s reply witness statement noted that:

Populations face greater risk of extinction/extirpation as their sizes decline, especially when these declines are dramatic and already threaten those populations with extinction or extirpation. The fact remains that, in Ontario, little brown bats faced relatively high mortality rates from turbines before WNS. Whatever the behavioural or ecological reason for this, it means the few bats which survive WNS are still relatively likely to interact with, and be killed by turbines even if there are fewer of them left to kill. In general, Dr. Reynolds’ density-dependent argument on this point is flawed. If mortality of little brown bats was correlated with their abundance then they should be much more commonly found at wind turbines in Manitoba where they are, by far, the dominant species but they are almost never found here. Something else, which we still do not understand, is going on at wind turbines in Ontario.

[112] In commenting on the draft Operational Mitigation Plan (“Mitigation Plan”) which requires the Approval Holder to discuss mitigation options with the MNR when a Species At Risk (“SAR”) bat carcass is found, Dr. Willis asks how the decision will be made as to whether mortality represents an adverse impact. “Given the very liberal opinions in the documents about what constitutes an impact, I have serious concerns about this decision making process. As it stands there is no clear plan in place to decide when curtailment would be implemented.” In Dr. Willis’ view, it represents “a “conversation plan”, not a “conservation plan”.

[113] With respect to the mitigation measure of adjusting the turbine blade cut-in speed to 5.5 m/s, Dr. Willis agrees that a reasonable prediction based on the literature is a reduction of mortality by 40 – 70% (although this result has never been proven for hibernating species such as the little brown bat). While reduced mortality is desirable, Dr. Willis emphasized that “mortality will not be eliminated by the proposed mitigation plan and, even with the proposed mitigation, it is my opinion that this project could still lead to serious and irreversible harm to local SAR bats.”

[114] Dr. Willis posits a scenario that shows how, in his opinion, the Project will cause irreversible harm to SAR bats. The Tribunal reproduces this below in its entirety.

Consider the following scenario: Assume that the mortality rate will be similar for this project as rates reported by Dr. Reynolds for the Prince Wind Farm (Minimum mortality = 1.63 bats/turbine, maximum mortality = 3.59 bats/turbine) and that about half of these bats are little brown bats (0.815 – 1.795 per turbine). To be conservative let us also assume that Dr. Reynold's assumption about the density dependence of proportional mortality of little brown bats is correct (the data for Ontario vs. Manitoba and other places in North America suggest this assumption is flawed but I include it to be conservative). On this basis let us assume mortality rates of little brown bats might decline to about 25% of their pre-WNS levels (0.204 – 0.449 bats/turbine). Consider also that the potential for zeros in survey estimates will reduce our estimates of mortality (an issue Dr. Reynolds acknowledges). Based on the fact that only 12 of 36 turbines are to be searched, the terrain will be difficult at many turbines and searches will happen only twice weekly I would estimate that these zeros could readily lead to a 20% underestimate of mortality, raising the "true" mortality rate slightly to 0.2448 – 0.5388 little brown bats/turbine. These calculations, incorporating Dr. Reynolds' concerns, lead to a mortality rate of 8.8 to 19.4 SAR bats per year before mitigation is applied. If we assume that 5.5 m/s cut-in speed adjustment is implemented (which is by no means assured based on the mitigation plan before us – we are only assured it will be discussed) this could reduce mortality by 60% (i.e., to 3.5 to 7.8 little brown bats per year).

What are the implications for what appears to be a low rate of mortality for the colonies of bats that might live in the project area? Consider a scenario in which 2 colonies of about 70 bats each use the forest in the project area as summer roosting habitat (a realistic scenario based on my experience conducting radiotelemetry research in similar, high latitude contiguous forest habitat). If we assume these colonies are currently stable and superimpose the mortality rates above on their colonies both before and after curtailment we see declines in all scenarios that, over a 10-12 year span (a timescale relevant to colonies of long-lived bats) are, in my opinion serious and irreversible (Figure 1). Even in the best case scenario (i.e., based on the minimum little brown bat mortality rate with curtailment reducing mortality by 60%), the original two colonies would decline to 65% of their original size over this timeline. Given their highly colonial nature (see below) colonies likely reach some minimum threshold for viability (unknown but perhaps 20-30 bats) before they effectively decline to zero which means what appears to be a low rate of mortality could effectively eliminate these colonies years before their numbers decline to zero.

This is obviously a highly simplistic scenario that depends on a number of assumptions. Although my assumption about a starting number of bats roosting in the forest during summer is based on my experience, if the proponent had properly identified summer roosting habitat following a method likely to find bats we would have a much better idea of how many bats there are to start with. This is before we even consider the fact that the population of SAR bats for the area will already be declining due to mortality and lower reproductive rates (i.e., reduced recruitment rates) because of WNS. Even this very small rate of mortality (that in my view is close to a "best-case scenario" for the project) could have extremely serious and irreversible consequences for the potential of these bats to persist in the area and recover from WNS. In my view this

highlights how easily the project could cause serious and irreversible harm.

[115] Dr. Willis agrees that any definition of what would constitute “serious and irreversible harm” due to a wind project should be “biologically significant.” He disagrees with Dr. Reynolds’ view, which is that (in the context of the population of a species that is in decline such as the SAR bats due to WNS) in order for mortality at a wind project to be biologically significant, the wind project mortality would have to be such that it materially increases the rate of decline.

[116] Dr. Willis disagrees with Dr. Reynolds’ conclusion that this specific Project could not result in additional negative population growth for the local SAR bat populations on top of that caused by WNS, for the following reasons:

This is because Dr. Reynolds appears to be working under the assumption that little brown bats face low risk of mortality (they clearly don’t in Ontario based on the data), that the proponent has ruled out the forest in the project area as significant wildlife habitat for summer roosting little brown bats (they haven’t because this survey was so inadequate) and that 1,250 m from a potentially major hibernaculum represents a significant distance for little brown bats (it doesn’t).

[117] Dr. Willis considers the relevant “local SAR bat populations” to be the “bat SAR that live in the forest of the project area and the adjacent hibernacula”. He suggests using the colony level as a “vastly more sensible and defensible “conservation unit” for the SAR bats in question”. Dr. Willis’ definition of the relevant population to this analysis is a key differences in his opinion compared with Dr. Reynolds, and is therefore extensively cited below.

How to define what is a population for animals like bats is tricky even for population geneticists and we do not have a good definition of populations for any of the bat species which occur in the project area. In general terms a population is a group of organisms that live in the same area and tend to interbreed with each other more often than they tend to breed with individuals of other populations. Under this definition the bats that live in the project area probably cannot be considered a distinct genetic population – some of them will most certainly interbreed with bats outside the project area. However, nobody knows how to define what should represent a little brown bat “genetic population”. New unpublished data from my lab suggests there is more population genetic structure (i.e., local distinctiveness) for little brown bats than many of us have previously assumed. Moreover, from a conservation perspective, the highly unusual natural history and highly gregarious social system of little brown bats and other hibernating bats makes it important to consider not just a strict “genetic population” but the bats that live locally. Little brown bats are long-lived animals (individuals can live decades), show very high fidelity to both hibernacula and summer roosts (94% of about 1500 individuals we recaptured over a 20-year banding study,

surveying many different sites across a large area in central Canada were caught in the same location as they were originally captured, Norquay et al. 2013) and form long-term social relationships with individuals in their colonies. The same animals come back to the same sites year after year and roost with the same social partners (as Dr. Reynolds' excellent data from New Hampshire have helped to show). They also have low reproductive rates (1 young or less per year for little brown bats) and these reproductive rates are almost certainly declining due to WNS – Females that survive WNS likely have much less chance to reproduce.

This uncertainty about what constitutes a distinct genetic population for the bat species in question has led to the liberal use of the term “population” in bat research (including outstanding high profile work published in Science, co-authored by Dr. Reynolds - i.e., Frick et al. 2010). Sometimes “population” is used to refer to the bats of one species across vast landscapes, sometimes it is used to refer to bats in a given region, sometimes it is used to refer to the bats in one hibernaculum (e.g., Frick et al. 2010; Langwig et al. 2012). In light of this uncertainty, and given the issues raised above about their life history and social behaviour, in my view a vastly more sensible and defensible “conservation unit” for the SAR bats in question is at the colony level (i.e., the bats that associate socially in summer in a patch of forest roosting habitat or the bats that hibernate together in one cave or mine). Colonies can be clearly defined, they last for the long-term and they are co-dependent (i.e., there are benefits to individual bats of living in a group. Populations of bats will depend on colony stability.

[118] In Dr. Willis's opinion, the persistence of SAR bats in and adjacent to the Project area “could readily be compromised by even a small rate of additional annual mortality from turbines”.

[119] Dr. Willis heartily disagrees with Dr. Reynolds' opinion that wind turbines are a “relatively minor source of mortality”, which he states “borders on the astounding to me and, in my opinion, places Dr. Reynolds in a tiny minority of North American bat biologists who regularly publish on the issue in the peer-reviewed literature.” Rather, Dr. Willis finds the peer-reviewed data suggesting between 200,000 to 400,000 bats killed by wind turbines in North America during 2012 alone, is not minor. He states:

There is almost certainly no other source of anthropogenic mortality of bats (at least one that is so readily preventable) that is this large. We know that little brown bat and other hibernating bat populations are already facing staggering declines due to WNS and the best evidence we have suggests populations of migratory tree bats are also in decline. There is reasonably strong inference for this, despite the lack of population data, because it is based on several independent and very different types of evidence and different studies reviewed by Arnett and Baerwald (2013, as well as others): Large migratory flocks of bats no longer occur in North America, capture rates have declined across North America, and numbers of migratory bats submitted to diagnostic labs for rabies testing have also declined. These declines began before wind

turbines were common and wind turbines are certainly not the only cause of the declines. They reflect a range of sources. However, the fact remains that turbines result in mortality of hundreds of thousands of additional bats in North America. Dr. Reynolds' blanket statement that wind turbines do not harm bat populations flies in the face of this quantitative evidence. The encouraging thing about the turbine mortality, however, is that it is a source of mortality that can be regulated.

[120] Dr. Willis concludes his witness statement by stating that "there is a high likelihood this project will cause irreversible harm to bat populations".

Dr. Scott Reynolds

[121] Dr. Reynolds, who gave evidence for the Approval Holder, was qualified by the Tribunal on consent of all parties as an expert on bats and the impacts of wind projects on bats. Dr. Reynolds has a Ph.D. in biology, specializing in bats. He is a research fellow at Boston University and St. Paul's School, and is managing partner of North East Ecological Services.

[122] Dr. Reynolds noted that migratory hoary bats "have been documented at the Project site and are known to be disproportionately impacted by wind development sited throughout North America." He is confident the Project will not cause serious and irreversible harm to migratory bats including the hoary bat because they are abundant with a secure population.

[123] Dr. Reynolds' opinion is that this species is at a relatively low risk of turbine-based mortality, and that collision mortality is not a major risk factor that is driving population decline. He states that "the cause of the population decline is WNS. As a consequence, attempting to eliminate any incidental turbine-based mortality is unlikely to have any impact on the population's extirpation risk."

[124] Dr. Reynolds believes turbine-based mortality risk for little brown bats in Ontario is the same as the national average. His reply witness statement states:

It is noteworthy that the most current data (from the 2013 Environment Canada report), which is based on 2011-2012 surveys, indicates that little brown bats only accounted for 6.2% of the total bat mortality in Ontario, not the 27% stated from the original Environment Canada report (which was drawn from 2006-2010 data). Even cumulatively for all years, including taking into account the earlier years of data (pre-WNS), the most recent Environment Canada report shows that the overall little brown mortality in Ontario for all years accounted for only 15.5% of the bat mortalities – in line with the rest of Canada at 14.1%.

[125] Dr. Reynolds testified that little brown bats are habitat generalists and there are no features at the Project site that would serve to concentrate bat activity. Dr. Reynolds

agreed that the methodology used in the NHA to locate bat maternity roosts (i.e., exit counts) amounted to “looking for a needle in a haystack” (in the words of Brian Charlton, one of the Approval Holder’s witnesses), and agreed that there were roughly 160,000 potential tree snags and that by only searching 70 potential roosts, they only looked at 0.04% of the potential roost trees. He nonetheless pointed to the NHA acoustic monitoring to support a conclusion that bat activity on the Site is likely to be similar to bat activity in the region, and “relatively low”:

The geology, predominant habitat, and land use history of the Project site suggests that bat activity at the Project site is likely to be similar to bat activity throughout the region. The acoustic monitoring conducted at the Project site also suggests that bat activity is similar to or lower than other sampled habitats in Ontario. Given these data and the fact that the habitat within the Project site is regionally abundant, bat activity across the Project site is likely to be relatively low.

[126] With respect to Dr. Willis’s suggestion that the appropriate population unit to look at for determining serious and irreversible harm to little brown bats is the colony, Dr. Reynolds testified that “the colony is often the unit of study. It’s the unit of study that I used to do my population biology work. But I do not know of it being used as a unit of conservation as an actual management unit.” He testified that “the unit of conservation in any context I’ve seen it written or discussed is the genetic population. It’s the group of active or potentially interbreeding individuals.”

[127] His witness statement explains why he believes the colony is not the relevant conservation unit:

There does not appear to be any evidence of local genetic isolation for this species, and therefore the relevant conservation unit is not the colony. Scientifically, the relevant unit is the homogenous gene pool. The bats at the Project site, at various times in their life cycle, may interact with bats from as far away as approximately 500 km. The geographic scope of the population of which these bats are a part could easily include Ontario, Michigan and Wisconsin.

[128] With respect to Dr. Willis’ suggestion that the colony is appropriate in part due to social interactions of the bats, Dr. Reynolds replied that he does not see the connection between the social behaviour that occurs in a maternity colony and the use of the colony as a conservation unit.

[129] With respect to Dr. Willis’ suggestion that there may be a heritable resistance to WNS, and the mortality of little brown bats exhibiting this resistance would constitute serious harm to a population’s survival, Dr. Reynolds responded in his reply witness statement as follows:

Recent population estimates from the core of the WNS epidemic provide hope that some individuals may be surviving WNS and are successfully reproducing. It is possible that this is due to a shift in favorable genotypes that either reduce an individual's exposure to WNS (i.e. by selecting for dispersed hibernation rather than clustered hibernation) or resistance to WNS (i.e. through resistance to the fungus or increased fat storage during autumn). But that theory is at this point only a hopeful theory. As Dr. Willis applies this theory to the Project site, it is based on the unsupported assumptions that (i) little brown bats in the vicinity of the Project site are in fact a management unit at unique risk of turbine-based mortality, (ii) that there are multiple hibernacula near the project site that are both important and active swarming sites, and (iii) that any mortality that does occur would reduce gene flow and increase isolation of these individuals. As noted above, the existing data do not support the first two assumptions, and the third assumption is inconsistent with our understanding of the distribution of genetic variation in this species and the likely impact of this Project site on this species.

[130] Dr. Reynolds agrees that the mortality thresholds in the Bat Guidelines are not biologically based. He states that it could not be otherwise, given the lack of knowledge of bat populations. However, in his view it is “biologically rational” because the overall mortality threshold of 10 bats per turbine, “applicable to all species of bats combined, is lower than the average mortality of many wind development sites in Ontario and other nearby regions. In my view that makes it a reasonable operational threshold, in the face of the virtually complete absence of current, reliable population data”.

[131] Dr. Reynolds testified that the Bow Lake project is required to comply with more than the MNR Bat Guidelines, including the requirements of the *ESA* and the Bow Lake Operational Mitigation Plan required under the *ESA* and to be implemented by the REA. He stated that Dr. Willis did not acknowledge this fact.

[132] Dr. Reynolds had a positive view of the Operational Mitigation Plan, as it:

will require the approval of the OMNR prior to operation of the wind facility and will be maintained by a Technical Advisory Committee (“TAC”) to ensure it remains a science-based adaptive management plan. Although Dr. Willis is correct in stating that a single SAR bat mortality event only necessarily requires consultation – though that consultation may lead to operational mitigation at that stage – the Mitigation Plan states that a second SAR bat mortality event at any particular turbine will result not only in consultation, but will also automatically, at a minimum, result in immediate operational mitigation (i.e. curtailment) at that turbine. The combination of these elements will result in a conservation protocol that is not only consistent with the approach under the Alberta Guidelines but is in fact more stringent.

[133] In addition, Dr. Reynolds stated that all reasonable efforts are being made to conduct a well-designed monitoring plan. He noted the Mitigation Plan requires that

mortality monitoring be conducted twice-weekly from May through October, and daily during the month of July, at all 12 turbines in Phase 1, during the first year of operation. In his view this will address the concerns related to scavenger removal and searcher efficiency.

[134] Thus Dr. Reynolds concludes:

Given the broad distribution of this species and the existing data on individual movements and genetic structure, I continue to believe that any small potential impact of this project will have no serious and irreversible harm to the long-term viability of the genetic population of little brown bats that overlaps the Project area.

Dr. Rhonda Millikin

[135] Dr. Millikin, who testified on behalf of the Appellant, has a M.Sc. degree in applied ecology and a Ph.D. in physics and environmental sciences. As president of EchoTrack Inc., she has developed omni-directional radar acoustic technology for use in research and monitoring, and she has been responsible for conducting assessments of the risk of wind turbine developments to night migrant birds, diurnal raptors and bats. Dr. Millikin was qualified by the Tribunal to give expert opinion evidence on birds and migratory birds, and the interaction of birds with wind turbines.

[136] Dr. Millikin testified that the Project area is critical to the migration of birds, including several migrating bird species identified as being at risk, as it is located within 25 km of the union of the three major Great Lakes, which she defined as the set of land connecting Lake Superior, Lake Michigan and Lake Huron. She said that the Project is situated in a migration funneling point, and the riparian habitat near the Montreal River is an important stopover habitat for night migrant birds.

[137] Dr. Millikin noted that 73 out of 80 species identified as boreal breeding birds at the Whitefish Point Bird Observatory ("WPBO") have been recorded as migrating southwest from the Project area across the narrowing of Lake Superior. She said that Whitefish Point is one of the major concentration points for 10,000 raptors each year, including the Peregrine Falcon, a species at risk, and that habitat within 25 km of Lake Superior is highly significant for passerine migration. Passerines are landbirds that mainly fly at night, including the Canada Warbler and the Olive-sided Flycatcher, both species of special concern under the *ESA*. She noted that MNR data indicates a Peregrine Falcon nesting site 1 km to the north of the Project area, two additional nesting sites about 15 km inland from Lake Superior to the northeast along the Montreal River and another site approximately 5 km inland from Lake Superior along the Agawa

River. She also stated that all habitats very close to a Great Lake or connecting water body will be heavily used by landbirds regardless of habitat type, context or distance to another water body, and this includes habitat for the Canada Warbler.

[138] In Dr. Millikin's opinion, the installation of the Bow Lake Wind Farm will seriously interfere with critical wildlife habitat and result in the destruction of these birds and expected decline in these species. She testified that, when the taking or the loss of birds involves species at risk, any decline is significant and she said she anticipates a decline because of this take on its own. She stated that the Project would interfere with: areas of seasonal concentration of animals, where animals occur in relatively high densities for the species at specific periods in their life cycle; specialized habitat for wildlife that greatly enhances the species survival; habitat of species of conservation concern; and animal movement corridors.

[139] Dr. Millikin further noted that the distinct topography of the Great Lakes coast funnels an abundance of night migrant birds through the Whitefish Point area in the spring and fall. She stated that weather in the Project area is significant for migrating birds because it is prone to fog and raised a concern about poor visibility conditions in the fall, saying that the required lighting on the towers could attract birds inland, cause disorientation and lead to further exposure to the wind turbine blades and possible collisions. In her witness statement, she provided her opinion that

the particular combination of the pattern of fog at Montreal River, the prevailing winds along the ridge of the wind farm in fall, and the historic flyway to Whitefish point – a crossing that extends from the Bow Lake Wind Farm across the narrowest point of land to the south side of Lake Superior – that makes this proposal a serious risk. In my opinion, the combination of these factors, will cause serious and irreversible harm to night migrant birds.

[140] Dr. Millikin also provided her opinion that the Environmental Impact Statement prepared to assess the potential harm to birds was not complete and, therefore, not sufficient to determine if the risk to bird migration and bird populations can be mitigated. She said that the survey techniques used did not account for the episodic nature of migration events or the difference in detectability of species migrating at night. She made reference to a 2013 Environment Canada report, which indicated that mortality at wind farms involved mostly passerines, or land birds, 70% of which are night migrants. She stated that it is not possible to mitigate for night migration.

[141] Dr. Millikin testified that little is known about the flight of birds during the night, and therefore what increases their risk of mortality due to the operation of wind turbines.

She said that, while it is accepted that bird mortality at more modern wind facilities is generally low and can be mitigated with proper siting, concern remains for situations of unexpected exposure and incremental risk to species that are already threatened by other anthropogenic factors.

[142] In Dr. Millikin's opinion, "serious" refers to the type of harm, whether it is mortality, disturbance or displacement, and "irreversible" refers to how that serious harm ultimately affects the population.

Dr. Paul Kerlinger

[143] Dr. Kerlinger, who appeared on behalf of the Approval Holder, has M.Sc. and Ph.D. degrees in biology, with specialization in bird behaviour, ecology and research design/statistics. He is currently a principal in a consulting firm, Curry & Kerlinger, LLC, working on the impacts of wind turbines and communication towers on birds. He was qualified by the Tribunal as an expert on birds and the impacts of wind projects on birds.

[144] Dr. Kerlinger testified that an impact that results in serious and irreversible harm would be a biologically significant impact. He said this would be an impact that results in a material decline, a material acceleration of an existing decline or a fundamental destabilization of a given population of a particular species that cannot be reversed. He stated that, to recognize such an impact, one must assess how many fatalities per year would result in a material decline or a material acceleration of an existing decline of the population of a given species. He indicated that research has shown that, in general, wind energy is not having a biologically significant impact on birds. He discussed population models such as Population Viability Analysis ("PVA") and Population Biological Removal ("PBR") that are available to determine whether potential wind energy impacts are large enough to cause biologically significant impacts.

[145] Dr. Kerlinger stated that wind energy generally has not been demonstrated to cause serious and irreversible, or biologically significant, harm to bird species. He noted that, for a biologically significant impact to occur, the number of turbines on the landscape and fatalities would have to increase dramatically. He described the research that supports his conclusion that wind turbines have not been causing any serious and irreversible harm to birds in Ontario or Canada.

[146] Dr. Kerlinger provided his opinion that the potential impacts on birds, generally, that will result from the construction and operation of the Project, will be relatively minor and there will be no biologically significant impacts. It was his opinion that the Project will not cause any serious and irreversible harm to birds. He stated, in particular, that

there would be no biologically significant impacts to birds from the Project construction due to only a small amount of removal of habitat, which is not highly sensitive or rare. He said that none of the habitat within the Project area is considered important for night migrants or migrating hawks, so neither of these species types would experience any significant impacts due to any habitat loss resulting from the Project.

[147] Dr. Kerlinger testified that the operation of the Project also would have no biologically significant impacts and that bird fatality rates are highly unlikely to exceed the thresholds outlined in the REA. He further stated that the Project site is unlikely to be an important migration corridor because: the turbines are at least 5 km from the shore of Lake Superior, which is beyond the concentrating effects demonstrated at some lakeshores; the Project is not on a long or even a short peninsula that is known to concentrate migrating birds; and the Project is more than 70 km from the east end of Lake Superior, where bird concentrations might be expected to occur. He provided his opinion that he does not expect any adverse effects of significance to migrating birds as a result of the construction or operation of the Project, and no biologically significant impacts on migrating birds.

[148] It was Dr. Kerlinger's evidence that the population of migrating birds includes many millions of birds from more than 100 species – a very large population that could withstand high levels of fatalities. He stated that the Project is not located on a concentrated flight route for migratory birds, and migratory birds will not be funneled over or close to the Project location. He testified that the presence of fog will not cause the Project to have any significant impacts on migratory birds, and that the turbine structures and lighting associated with the Project will not cause the Project to have any significant impacts on migratory birds. Dr. Kerlinger agreed that passerines are in decline, as stated by Environment Canada in its publication *The State of Canada's Birds 2012*.

[149] With respect to Peregrine Falcons, Dr. Kerlinger provided his opinion that it is highly unlikely that Peregrine Falcons would be adversely affected by the Project, let alone be harmed in any serious and irreversible way. He said that Peregrine Falcons are unlikely to be present at the Project site except on rare occasions when small numbers of migrants pass. It was his evidence that Peregrine Falcons are not known to nest at or near the Project site, and that the habitat in this area is not suitable for foraging or nesting by Peregrine Falcons. He stated that the two relevant Peregrine Falcon populations to consider when assessing potential impacts would be thousands of birds, with the Great Lakes population having almost 120 nests in Ontario and the

tundra population having more than 1,000 nesting pairs in northern Canada and Alaska. He noted that, while Peregrine Falcons were classified as endangered in Ontario many years ago, the number of nesting birds is now growing rapidly and they are now classified as a species of special concern.

Dr. Dale Strickland

[150] Dr. Strickland, who is president and senior ecologist with WEST Inc., an environmental and statistical consulting firm, has B.Sc. and Ph.D. degrees in zoology and an M.Sc. degree in wildlife management. He testified on behalf of the Approval Holder. He was qualified by the Tribunal as an expert on birds and the impacts of wind projects on birds.

[151] Dr. Strickland testified that to adequately assess whether a wind project will result in fatalities, altered habitats or other impacts that are serious and irreversible, an understanding of the biological significance of the project impacts on the affected resident and migrating wildlife populations is required. He stated that, for a project impact to be biologically significant, it must have a significant, measurable effect on the demographic and/or genetic status and viability of the affected population.

[152] It was Dr. Strickland's evidence that the relevant populations of birds that may be present at the Project site extend well beyond that site because the habitat necessary to sustain a viable population of breeding birds would have to cover a fairly large region and the Project area itself is not large enough to support a demographically and genetically self-sustaining population of any species of breeding birds. He said, with respect to Peregrine Falcons, that the population exists within a continental wide context but that human managers often subdivide populations based on political boundaries or for other reasons that do not translate into a meaningful biological division in the context of a species population.

[153] Dr. Strickland stated that a very high number of migratory bird mortalities (a considerably higher number than has been recorded at any wind energy project in North America) would be required for such an impact to be biologically significant given the size of migratory bird populations. He also said that a very high number of Peregrine Falcon mortalities, and a higher number than recorded at any wind energy projects in North America, would be required for such an impact to be biologically significant.

[154] Dr. Strickland provided his opinion that he does not expect that the Project would result in any biologically significant impacts to any bird species and would not cause any

serious or irreversible harm to any bird species. He based his conclusion on a number of reasons, including the following: while collision mortality occurs, population level effects have not been detected at any wind energy facilities in North America; the Project area is not classified as an important bird area; the Project has been sited to avoid significant wildlife habitats; the potential bird habitats found within the Project are not unique to the area and similar habitats exist within the region, so any habitat loss resulting from the Project construction will not significantly affect the habitat available for bird species in the area; and the REA requires certain mitigation measures to be implemented to minimize any potential impacts of the Project on bird species or their habitat.

[155] Dr. Strickland said that he does not expect the Project to have any significant impacts on migrating birds in the vicinity of the Project, let alone any serious or irreversible harm to any migratory bird species. His conclusion was based on the following reasons: bird migration is generally expected to be widespread and to occur across large geographic areas; the Project's expected level of impact to birds, including nocturnal migrants, is low based on observed impacts at other wind facilities such as the Prince Wind Project where relatively low levels of avian mortality occurred; the Project has been sited in a location, approximately 6 km from the shore of Lake Superior, that reduces potential impact on migrating birds; the Project is not expected to act as a barrier to migratory raptors and it is anticipated that overall raptor mortalities at the Project will be equivalent to or lower than other wind facilities based on the nearby Prince Wind Project; significant numbers of migratory birds would be unlikely to fly within the blade rotor sweep of the Project turbines; and the REA requires the Project to implement an extensive mitigation plan to mitigate impacts if they do occur.

[156] Dr. Strickland disagreed with Dr. Millikin's assertion that the Project is located on a concentrated flight route for migratory birds that funnels those birds over the Project location. He noted that, while fog is thought to increase collision risk for communication towers and other structures with non-flashing lights, this has not been shown for flashing red lights installed on wind turbines. He also stated that the Project lighting would not contribute to any impacts on migratory birds.

[157] In Dr. Strickland's opinion, the Project will not result in any biologically significant impacts, or cause serious and irreversible harm, to Peregrine Falcons. He stated that a few individual Peregrines have been observed in the vicinity of the Project, but no nest sites are known to occur in the Project area and Peregrines prefer to nest on prominent cliff faces in areas with abundant prey. He said that, based on WPBO information,

Peregrine Falcon passage rates comprise less than one percent of the total raptor passage rates recorded. He further stated that the empirical evidence does not suggest that wind turbines pose significant risks to Peregrine Falcons.

Bryan Tripp

[158] Mr. Tripp, Project Developer Lead at Blue Earth Renewables, testified as a fact witness for the Approval Holder. He described the location of the Project, as well as the siting process and the steps involved in having the Project approved.

David Charlton

[159] Mr. Charlton, an ecologist with Stantec, testified on behalf of the Approval Holder. He was qualified by the Tribunal to give expert opinion evidence as an ecologist, with expertise conducting environmental assessments including NHAs and SAR assessments for wind projects. Mr. Charlton noted the location of the Project with respect to Lake Superior (the closest turbine being 6 km inland) and Whitefish Point (approximately 55 km away).

[160] Mr. Charlton disagrees with Dr. Millikin's view that the Project area represents the union of three great lakes. Rather, Mr. Charlton testified that the Project is located approximately 75 km north of the outlet of Lake Superior to the St. Mary's River and 135 km north of the outlet of the St. Mary's River to Lake Huron; Lake Michigan is further removed. He estimated that the union would be approximately 75 to 100 km south of the Project. Mr. Charlton testified as to the mixed use of the area, including electric dams on the Montreal River, the presence of the Algoma Central Railway, and that the area is selectively and heavily logged.

[161] Mr. Charlton testified that Stantec was retained with respect to the NHA in 2012. Prior work had already been done on phase 1 (12 turbines) by M.K. Ince. The NRSI was sub-contracted to M.K. Ince to do the bat work. Mr. Charlton testified that, due to the size of the Project area and rugged topography, they did helicopter reconnaissance to supplement records review information. For example, they were aware of a historic record of a bat hibernaculum approximately 1 km from the Project location, and wanted to identify other topography that might be used for this purpose. He testified that it was a very extensive investigation.

[162] Mr. Charlton testified that there was no SWH identified in the Project area, because it is all habitat. He noted there are no criteria for SWH in Ecoregion 5E (boreal/sub-boreal), due to the abundance of the habitat and lack of any known concentration areas. Mr. Charlton testified that there is no requirement for a NHA in this

region, so any work done to prepare one is over and above provincial requirements, other than Whitefish Point.

[163] Mr. Charlton testified that the only record of significant bat habitat in the general vicinity of the Project site was at an abandoned mine 1,250 m outside the Project area. No unique habitat was located within the Project area. He described the exit survey that was conducted in June and July involving 70 trees, which were identified as the best candidate bat maternity roost trees they could find. Mr. Charlton concluded there are bats, and there are maternity roosts, but that there are thousands of candidate trees. Bats do not use the same tree all the time, so he likened finding roost trees through this method to “finding a needle in a haystack”. Mr. Charlton concluded that bats in the area are not limited by habitat.

[164] Mr. Charlton stated that Stantec also conducted acoustic monitoring. He found the results “at the low range of variability”, which suggested to him “relatively low bat activity in the Project location”. Mr. Charlton commented that little brown bats were not listed as SAR when the NHA was completed, but were listed by the time the REA was issued.

[165] Mr. Charlton testified that the new requirement under the *Endangered Species Act* Regulation, O. Reg. 242/08 (“ESA Regulation”) is that the Minister of Natural Resources must approve a construction plan and operations plan, prior to starting construction and operation of the Project. He said that the construction plan has been approved by the Minister, and the Operational Mitigation Plan is under consideration.

[166] With respect to birds, Mr. Charlton testified that Stantec’s Records Review did not identify any known waterfowl stopover and staging areas or shorebird stopover areas within the Project area. He noted that Stantec was aware of migratory bird activity focused on Whitefish Point and considered it in assessing the Project’s potential impact on migrating birds. He said the Project area is located approximately 55 km from Whitefish Point, and that this separation distance is greater than that of several other wind projects in Ontario near peninsulas and similar points on the Great Lakes that share characteristics with Whitefish Point in respect of migratory bird activity. He stated that, despite the closer proximity of the wind farms to Point Pelee, and despite higher documented migratory bird concentrations in that area, post-construction mortality monitoring at those projects indicates that bird mortalities across all species of birds are below levels where population effects would be expected. He testified that, therefore, Stantec does not anticipate any negative effects from the Project on bird migration activity recorded in the vicinity of Whitefish Point.

[167] Mr. Charlton testified that Stantec conducted site investigations with respect to birds, and summarized the results of these investigations as follows:

- Stantec did not identify any candidate significant wildlife habitat for waterfowl stopover and staging areas, terrestrial or aquatic, within the Project area.
- Stantec identified small occurrences of potential candidate significant wildlife habitat in the form of wetlands, but these areas are small in comparison to the large staging opportunities provided along the Montreal River and in open water bodies such as Bow Lake and Negick Lake. Stantec did not identify any portions of Bow Lake or Negick Lake within the Project area large enough to provide significant stopover or staging habitat, and this finding was confirmed by the MNR.
- Stantec determined that no candidate shorebird migratory stopover areas exist within the Project area.
- Stantec did not observe any Peregrine Falcons, Peregrine Falcon nests or potential sites that would be suitable for Peregrine Falcon nesting.
- Stantec conducted fall migration surveys in 2012 and found that there are no significant migratory habitats and no known areas of concentrated or focused bird migration in the general vicinity of the Project area.

[168] Mr. Charlton stated that, notwithstanding the absence of candidate significant habitat relevant to migrating birds and Peregrine Falcons, Stantec recommended monitoring and mitigation measures that have been incorporated in the Environmental Effects Monitoring Plan for Wildlife and Wildlife Habitat (the “EEMP”) and are required to be implemented under the REA. He described these measures, which include: bird mortality monitoring across the Project; operational mitigation of wind turbines if bird mortality thresholds are exceeded; and habitat disturbance/avoidance monitoring for selected migratory species, such as the Canada Warbler. Mitigation measures will be implemented under the MNR’s direction as required.

[169] Mr. Charlton concluded that, given these mitigation and monitoring measures in the REA, the Project will not impact any significant bird habitat, is not located in an area of concentrated migratory bird flight, is unlikely to exceed established bird mortality rates based on results from other wind farms, and will not exceed the MNR and REA mortality thresholds.

Derek Goertz

[170] Mr. Goertz was called as a fact witness by the Director. Mr. Goertz is a renewable energy biologist at the Sault Ste. Marie District Office of the MNR whose role was biologist and Lead Reviewer for this Project. Mr. Goertz provided an overview of the REA application process and the MNR's role in that process.

[171] Mr. Goertz testified that, due to the nature of the landscape (contiguous forest with abundant bat roosting sites, known as snags), the MNR implemented more stringent criteria in determining SWH, so that if the proponent had identified even one bat exiting a roost, it would have been sufficient to be designated as SWH. However, none were identified.

[172] Mr. Goertz was asked by the Tribunal panel why the requirements are to wait for bat mortality to hit the threshold first, before mitigation. He responded that it was because there is no identified SWH for bats in the Project area, and they do not know, therefore, if there will be an effect. The idea is to identify whether there is an effect, and then whether it is significant.

[173] Mr. Goertz reviewed the different bird habitats identified during the Project application process, and noted that the Environmental Impact Study ("EIS") identifies potential negative environmental effects, mitigation strategies, and monitoring commitments for each bird habitat. He discussed the monitoring and mitigation measures in the EEMP and conditions in the REA that relate to birds.

Nikki Boucher

[174] Ms. Boucher was called as a witness by the Director. She is the acting regional species-at-risk biologist with the relevant MNR office, although she noted she is not a species expert. She testified as a fact witness.

[175] Ms. Boucher stated that northern myotis bat and little brown myotis (little brown bat) were added to the SAR list on January 24, 2013. She explained the *ESA* Regulation O. Reg. 242/08.

[176] Ms. Boucher stated there is not necessarily any bat expert on the MNR's reviewing team, and cannot confirm whether a bat expert is on the Working Group reviewing the currently proposed Operational Mitigation Plan. Most MNR biologists are generalists, she stated. Section 23.20(8) of the *ESA* Regulation lists the grounds to refuse a proposed mitigation plan.

[177] Ms. Boucher confirmed that the *ESA* process is distinct from the REA program and the Director's approval of wind farms. She also confirmed that there is "no real bar" to measure how harm to a species is minimized.

The Legal Test

[178] As noted above, s. 145.2.1 (2)(b) of the *EPA* provides that "the Tribunal shall review the decision of the Director and shall consider only whether engaging in the renewable energy project in accordance with the renewable energy approval will cause ...serious and irreversible harm to plant life, animal life or the natural environment." The Tribunal will first consider the legal test, and then apply it to the species in question.

[179] Both the Approval Holder and the Director rely on the decision of the Divisional Court in *Ostrander Point GP Inc. et al. v. Prince Edward County Field Naturalists et al.*, 2014 ONSC 974 ("*Ostrander*") (leave granted to the Ontario Court of Appeal), which states, at para. 39, that "serious harm" and "irreversible harm" should be considered separately in the analysis.

[180] In keeping with the direction from the Divisional Court, the Tribunal will attempt to consider "serious harm" separately from "irreversible harm" in this analysis. However, such a distinction is not necessarily something biologists are accustomed to making. In this case, the Tribunal heard opinions from various biologists, experts on birds and bats, as to their interpretation of serious and irreversible harm. For example, the question put by the Approval Holder to Dr. Reynolds in preparing his witness statement was: "scientifically, how do you measure serious and irreversible harm?" Dr. Reynolds' response was as follows:

In terms of how, scientifically, serious and irreversible harm should be measured: serious and irreversible harm would mean harm that is biologically significant, i.e. a population level impact. In the context of the population of a species that is in decline – such as the SAR bats due to WNS – in order for mortality at a wind project to be biologically significant, the wind project mortality would have to be such that it materially increases the rate of decline. In other words, the mortality would have to alter the trajectory of the downward slope the species is already on. The level of mortalities at wind projects has not done so to date in my view, and any incidental mortalities that may potentially occur here at the Project would not do so. Any incidental mortalities would thus not be biologically significant, and would not cause any serious and irreversible harm.

Serious Harm

[181] The Appellant relies on *Erickson* (para. 641) and *APPEC* (paras. 206, 361) in submitting that the interpretation of the word “serious” must be examined on a case by case basis, “taking into account all relevant factors and their respective importance and weight. The term “serious” should not be narrowly defined, as each wind farm may cause impacts in a unique way.”

[182] The Appellant argues that mortality constitutes serious harm. In this regard the Appellant relies on *Erickson* at para. 67, and *Ostrander* at para. 44. The Appellant submits:

There is general agreement that with respect to birds and bats, mortality is serious harm. Dr. Millikin and Dr. Strickland agreed that mortality is serious harm and mortality of a small population can be irreversible leading to extinction from the area.

Dr. Millikin provided examples of species in Ontario that are now extinct from the Bow Lake known as a range contraction – the Golden Eagle.

[183] The Appellant argues that, in interpreting “serious”, it is important to consider the ordinary meaning read harmoniously with the *EPA*. The Appellant notes that the definition of “serious” from the Merriam Webster dictionary includes:

a: not easily answered or solved <serious objections>

b: having important or dangerous possible consequences <a serious injury>.

[184] The Appellant argues that “critical to this examination is the fact that serious includes important or dangerous possible consequences. Put differently, while the *EPA* requires proof that the matter will cause serious harm, that can be expressed by stating that the REA will cause important or dangerous possible consequences to human health.”

[185] While the cited portion of the submissions deals with human health, the Appellant notes that the Tribunal has held in the past that the concept of “serious harm” has to be one that has relevance to humans as well as to plant life, animal life or the natural environment, and the Tribunal will consider the argument in this context for its analysis of the second part of the test in relation to animal life and the natural environment.

[186] The Appellant submits that “the population to be considered may vary from case to case. The provincial or national population of a species need not be the determining factor.”

[187] The Approval Holder argues that “serious harm”, from a scientific/biological perspective, is harm that is “biologically significant” for both birds and bats. The Approval Holder argues biologically significant should be defined as “an impact that results in a material decline, a material acceleration of an existing decline or a fundamental destabilization of a given population of a particular species”, or put differently, “harm that negatively impacts long term population stability”,

[188] The Approval Holder then argues that, in assessing whether an impact from a wind project is biologically significant, the first step in the assessment is to identify the “relevant population” and then to consider whether the impact will remove a large enough number of individuals from the population to negatively impact the viability of the population.

[189] The Approval Holder argues that “for little brown bats (a species in decline due to WNS), in order for mortality at a wind project to be biologically significant, the mortality would have to materially increase the rate of decline. The mortality would have to alter the trajectory of the downward slope the species is already on. The Approval Holder submits that the Tribunal accepted the analytical framework for little brown bats as a “biologically significant impact that is also irreversible”, in its decision in *Bovaird* (para. 247).

[190] The Director cites *Lewis v. Ontario (Ministry of the Environment)*, [2013] O.E.R.T.D. No. 70 (“*Lewis*”) (para. 12) and *APPEC* (paras. 361, 362) to argue that a relevant factor-based analysis must be conducted within the context of the circumstances and evidence of each case.

[191] The Approval Holder argues that Drs. Kerlinger and Strickland distinguished between serious and irreversible harm on the basis of the irreversibility of the harm. It submits that “(t)hey both stated that if a project were to cause serious harm, for example a major destabilization decline, but mitigation measures could then be applied to reverse that harm, such harm is not irreversible.”

Findings on Serious Harm

[192] The Tribunal rejects the population viability approach to interpreting “serious harm” for the following reasons. The interpretation of the phrase “serious and irreversible harm” under s. 145.2.1(2)(b) of the EPA is a legal interpretation which is squarely the Tribunal’s to make, and the Tribunal’s interpretation of the phrase is not from a scientific or biological perspective, but a legal one.

[193] A close reading of the extract from *Bovaird* that was referenced by the Approval Holder shows that the Tribunal was considering the “scientific significance” of bat mortalities on the slope of the population trajectory, in the context of “**serious and irreversible harm**” as one phrase. At this juncture, the Approval Holder is arguing that the same approach should be taken for “serious” harm alone.

[194] Dr. Reynolds, who is a bat expert and population biologist, used a population viability analysis to interpret the entire “serious and irreversible harm”, rather than “serious” harm alone.

[195] It is clear that a population-level impact that threatens a species’ survival is serious harm. It is also clear that harm could be considered serious harm even if it is not so serious that it threatens the viability of a population. Indeed, the *Birds and Bird Habitats: Guidelines for Wind Power Projects* (“Bird Guidelines”) and Bat Guidelines implicitly recognize this. Under the Bird Guidelines, mitigation measures will be required when mortality thresholds are met as follows:

Bird mortality is considered by this Guideline to be significant when a threshold of annual bird mortality exceeds:

- 14 birds/ turbine/ year at individual turbines or turbine groups;
- 0.2 raptors/ turbine/ year (all raptors) across a wind power project;
- 0.1 raptors/ turbine/ year (provincially tracked raptors) across a wind power project; or
- 2 raptors/wind power project (<10 turbines)

[196] The MNR uses the phrase “significant mortality” in these Guidelines. The fact that mitigation must be undertaken at that point is an indication that a “significant” level of mortality is considered by the Ontario government to be either “serious” or at least approaching that level.

[197] Under Dr. Kerlinger’s analysis, however, reaching the MNR guideline mortality threshold number would be nowhere near “serious harm”. He states:

Population models such as Population Viability Analysis (“PVA”), Potential Biological Removal (“PBR”) or similar models are also available for determining whether potential wind energy impacts are large enough to cause biologically significant impacts to the species in question. PBR models provided in Watts (2010) in Appendix 3 (page 38) demonstrate that many species can easily withstand annual fatality rates of 1% (or greater in some cases). To date, PVA and PBR models have not been needed for any particular wind energy projects because fatality rates and absolute fatality numbers associated with wind energy projects **have not**

come anywhere close to levels that are high enough to potentially cause population declines. (emphasis added)

[198] It must be remembered that, under the statutory scheme, a finding of “serious and irreversible harm” with respect to the second part of the appeal test is a threshold finding, which allows the Tribunal to modify or revoke an approval. It would be an absurd reading of the test if the Project could cause several times more, perhaps several orders of magnitude more, bird and bat mortality than permitted under the Bird and Bat Guidelines, without reaching the threshold of “serious harm”.

[199] The Tribunal adopts its reasoning from *Monture v. Ontario (Ministry of the Environment)* 68 C.E.L.R. (3d) 191, paras. 75 and 77 with regard to the apparent purpose of the legal test in s. 145.2.1 of the *EPA*:

With respect to section 145.2.1(2) in particular, the Tribunal finds that it is intended to act as a filter that determines whether the Tribunal will then exercise its discretion under section 145.2.1(4). It follows, therefore, that interpretations that automatically result either in screening out no appeals, or screening out all appeals, do not accord with the Legislature's intention.

...

Turning to the Director's submission that the focus of the *EPA* is on the overall environment, not the protection of an individual plant or animal, the Tribunal notes that the terms “plant life” and “animal life” are found elsewhere in the *EPA* (including the definition of “adverse effect”) and its regulations in a context that suggests a much smaller reach than the sustainability of a population at the provincial level. For example, O.Reg. 222/07 under the *EPA*, entitled Environmental Penalties, at section 10(3) defines a contravention as “serious” if it causes or may cause “localized injury or damage to any animal life”, and at section 10(4) as “very serious” if it causes or may cause “widespread injury or damage to plant or animal life”. While these sections deal with serious contraventions rather than serious harm, they do demonstrate that more analysis of the words used in section 145.2.1 will be needed from parties as more cases are brought under this new provision.

[200] The population viability approach requires assessing the relevant population. For migratory birds, it was not disputed that the migratory population “includes many millions of birds from more than 100 species that nest in a vast portion of central Canada.” Thus, for migratory birds, (and possibly although not clearly for bats), the population viability approach requires that the analysis be undertaken at a very large scale. Dr. Kerlinger suggests “the population of migratory birds that should be considered in assessing whether the Project may have any biologically significant impacts is the population that nest to the north of the Project site, throughout Ontario, eastern Manitoba, parts of Nunavut and some of northwestern Quebec.”

[201] The Tribunal finds that a population viability analysis is not an appropriate framework to determine serious harm to animal life under the statutory test. The meaning of “biologically significant” is not as clear, and although used in this case by Dr. Kerlinger in a very similar manner to population viability, it may represent a more nuanced approach. In any event, as consistently stated by the Tribunal in REA appeal decisions, the determination of serious harm must be on a case by case basis, which includes a case by case consideration of the appropriate scale and population.

[202] The Tribunal adopts the reasoning laid out in *APPEC* at paras. 203 and 204 that the population viability approach, when used for all species, is too restrictive, and the Tribunal will adopt an ecosystem approach. An ecosystem approach is consistent with the Tribunal’s findings in this proceeding with respect to scale, discussed below and within the analysis of each species at issue.

[203] One of the reasons for the case by case approach taken by the Tribunal in REA appeals is the very practical consideration that ecosystems vary in size, as do wind projects. There may be a small, micro-scale ecosystem such as a spring or seep which could be impacted by a single turbine; or an entire wind project may be located within a large ecosystem that extends well beyond the boundaries of the project. The Tribunal described the ecosystem approach in *Bain v. Ontario (Ministry of the Environment)*,

[2014] O.E.R.T.D. No. 13:

[122] The ecosystem approach has been adopted by the parties and the Tribunal when considering the factors relevant to the second branch of the *EPA* test in a number of renewable energy approval appeals (See *Monture v. Ontario (Ministry of the Environment)*, [2012] O.E.R.T.D. No. 50 at paras. 62 and 68, *APPEC* at para. 204 and *Lewis* at paras. 9 to 11). Of note, the ecosystem approach is not wedded to a particular population or geographic scale and, as was said in *Lewis* at para. 11: “the “ecosystem approach”, though based in science, is still very much a construct that can be used at many different scales.”

[204] Similarly, the appropriate land base under consideration will vary depending on the species in question; an endangered animal with precise habitat requirements that does not travel far in its lifetime (e.g., Blanding’s turtle) may require different considerations for “serious harm” than would a migrating bird that merely uses the airspace over a project area.

[205] The Tribunal addressed the issue of scale in *Lewis* at para.11 as follows:

[11] It must be remembered that the “ecosystem approach”, though based in science, is still very much a construct that can be used at many different scales. As noted below, the Tribunal will sometimes be called upon to determine which scale is most appropriate to use, whether it be

for an individual species or group of species or whether it be for an ecosystem or habitat, in considering a range of factors that relate to a case by case assessment of serious and irreversible harm.

[206] To conclude, what will be considered “serious harm” under s. 145.2.1 must be determined on a case by case basis, using discretion and weighing all relevant factors, and is not a mathematical calculation based solely on population numbers and average mortality data.

Irreversible Harm

[207] The Appellant proposes that irreversible harm is harm that will cause a continued decline to a population to extinction or extirpation from an area. With respect to wind projects, collision mortality would cause irreversible harm if it continued cumulatively over the life of the Project.

[208] The Appellant argues that the definition of “irreversible harm” supported by the Approval Holder and Dr. Kerlinger is circular and of no assistance to the Tribunal. Dr. Kerlinger’s view was that the chemical DDT, which was spread widely as a pesticide in the past and is understood to have caused eagles to become endangered with extinction due to interference with reproduction, did not cause irreversible harm to raptors because the population recovered once the chemical was banned. The Appellant’s submissions in this regard, made with respect to birds specifically but they are applicable to both birds and bats, are as follows:

196. Both of these witnesses assume that irreversible means that if you remove the input —whether that be DDT or a wind turbine —and the population survives or returns, the harm is reversible. However, the Proponents proposed definition has the assumption backwards. It is not, and cannot be, what happens if the input stops. Rather, the question must be asked, what will happen to a population if we approve the use of DDT, or approve a wind project, and the harm is permitted to continue. Will that input, whether it be DDT or a wind farm cause irreversible harm over the life of the project and beyond. What is the risk that the harm will be irreversible at some point in the future.

197. To put this in the context of the evidence heard during the hearing, Dr. Strickland agreed that it was likely that if DDT use continued, the bald eagle would have gone extinct. There is no doubt that extinction is irreversible harm. Irreversible harm to the bald eagle was prevented because the use of DDT was prohibited.

198. In other words, if the evidence demonstrates that a wind farm will cause harm that will cause a continued decline to a population to extinction or extirpation from an area, it will cause harm that is irreversible. It is in those circumstances that it is appropriate to prohibit the construction of a project.

[209] The Appellant argues that, where a population is not known, the Tribunal must do the best it can with the information it has. In this case, the Appellant argues that the Tribunal should rely on the expert opinion of Dr. Willis, to conclude that the Site is used by little brown bats and there would be an average of 1 to 2 maternity roost colonies on the Project site.

[210] The Appellant submits that the Tribunal should apply the same factors in interpreting serious and irreversible harm that was used with respect to the endangered Blanding's turtle in *APPEC*, when considering the two species of bats in this case that are endangered (the little brown myotis and the northern myotis). Those factors are: conservation status of the species; species habitat on the site and in the area; vulnerability of the population; type and extent of harm caused by the Project; vulnerability of the species to this type and extent of harm due to its life history traits; mitigation measures in the REA; and demonstrated effectiveness of the mitigation measures.

[211] The Approval Holder argues that, to be irreversible, the harm to birds or bats would have to be serious harm that "cannot be reversed"; in other words, in order for serious harm to also be irreversible, it must be "a level of harm from which a population could not recover".

[212] Both the Director and the Approval Holder submit that it is impossible to make a finding of "irreversible harm" under s. 145.2.1 of the *EPA* without population data. They quote the Divisional Court ruling in *Ostrander* at para. 47, in this regard. Where there is no data on the size of a population, as is the case with the little brown bat population, the Approval Holder argues that irreversible harm simply cannot be established:

200. The above facts are important in the analysis of whether 240 can meet the applicable statutory test. As stated by the Court in *Ostrander*, there would have to be some level of reliable data in respect of the size of the population being affected by the Project, at least enough to allow an order of magnitude of the size of population to be calculated, before any proper finding of irreversible harm could be made. The record at this hearing confirms there is no such data.

201. Therefore, even before consideration of the facts below, 240 cannot establish that any harm would be irreversible on this record. Dr. Willis himself agreed that, in light of the lack of reliable population data, "at present, there is no accepted bat fatality threshold, i.e. a rate beyond which fatality is not sustainable to the population," which is a statement of principle that also appears in the Alberta Bat Guidelines.

[213] The Director argues that the “population data is necessary to assess the magnitude of harm, such as the rate of mortality, in evaluating whether the harm alleged is irreversible.”

Findings on Irreversible Harm

[214] The paragraph referred to by the Director and Approval Holder from the *Ostrander* decision is the following:

[47] PECFN's response to this issue is to contend that requiring such data would, in effect, require PECFN to produce evidence amounting to a “scientific certainty” in order to establish irreversible harm. I do not agree. I am not suggesting that mathematical precision was necessary regarding the population size of Blanding's turtle within the appropriate geographic area. What I am saying is that there had to be some level of data respecting the population being affected by the Project in order to allow at least an order of magnitude to be calculated before a proper finding could be made on the issue of irreversible harm.

[215] The impact of this approach is that irreversible harm cannot be shown for the numerous species of plants and animals in Ontario for which the current state of the science is such that population numbers are not well enough known for an “order of magnitude” to be calculated. Given that the finding of serious and irreversible harm is a threshold finding under the *EPA*, in that the Tribunal may not make any remedial order unless it is met, these species appear to be left without protection under the appeal provisions of s. 145.2.1 of the *EPA*. The Tribunal notes that the MNR Bird and Bat Guidelines, as well as the Alberta Guidelines referenced by the Appellant in this case, recognize the current limitations of scientific knowledge and as a result take a more flexible, contextual approach to determining harm. However, the Divisional Court ruling in *Ostrander* is currently the law in Ontario and is binding on the Tribunal.

Harm to Bats

Submissions

[216] The Appellant argues that there are more little brown bats using the Project site than estimated in the NHA, that a high percentage of the bats killed by the wind turbines in this Project will be little brown bats, and that the number of little brown bats killed by the Project will have a serious impact on the population of little brown bats at the Project site, using the colony level as a measure. In sum,

additional mortality of a WNS-affected population that does not contribute to natural selection for WNS survival traits has a strong potential to delay or eliminate the possibility of a population recovery for WNS-affected bat species in the project area. Even if a small number of

WNS survivors are killed by the Bow Lake Wind Farm, any genes favouring survival from WNS could be eliminated from the gene pool, accelerating mortality in the Project Area. (para 146 submissions)

[217] The Appellant argues that “substantial conservation efforts are required to ensure that serious and irreversible harm is not caused” to this surviving population.

[218] The Appellant argues that the appropriate, and only scientifically sound, scale at which to consider serious and irreversible harm to the endangered little brown bat is the maternity colony level because “so little is known about the little brown bat and its habits”. The Appellant submits that this is a biologically sensible approach to conservation. The Appellant submits that “the genetic level of population simply cannot be applied as there is insufficient information”. Since the numbers of little brown bats are not known, the Appellant submits that the Tribunal must “do the best it can with information that you have”, and rely on the realistic scenario proposed by Dr. Willis based on “his expertise and experience conducting radiotelemetry research in similar, high latitude contiguous forest habitat”. The Appellant argues that it “is reasonable to infer that even with an extremely low kill rate at the colony level at the Bow Lake Wind Farm, serious and irreversible harm will occur.”

[219] With respect to the population of bats, the Appellant argues at para. 148 that:

Despite the absence of reliable data from the Proponent, Dr. Willis believes it is reasonable to infer there to be two colonies of approximately 70 little brown bats in the Project Area. Based on the best case scenario projection for bat mortality, these colonies would decline to 65% of their original size without mitigation. Due to the highly colonial nature of bats these colonies may fall apart and lead to the elimination of the species in the Project Area before the total population count actually reaches zero individuals.

[220] Further, the Appellant submits that there is strong support for Dr. Willis’ conclusion that more little brown bats are being killed per turbine in Ontario than elsewhere, as 38 – 50% of fatalities at the Prince Wind Farm were little brown bats. In turning to the colony scale, Dr. Willis “simply strived to find a population that could actually be determined”, given the “inability” in this case to describe the population based on the typical framework used for the study of bat populations.

[221] The Appellant submits that the Approval Holder’s expert on bats, Dr. Reynolds, confirmed that there is a threshold at which a colony of little brown bats is no longer viable; and that while little brown bats typically follow roads or other sheltered corridors and tend to fly below 4 m, they are still killed by turbines. The Appellant submits that

the Tribunal should place less weight on Dr. Reynolds' testimony, as he was not aware of a bat hibernaculum "right beside the project site as shown in the Critical Values Map".

[222] The Appellant submits that little brown bats will be killed at the Project no matter what the cut-in speed. It therefore urges the Tribunal to impose a 5.5 m/s cut-in speed on all turbines immediately from the outset of operation, "until it can be demonstrated, through independent third party review, that the cut-in speeds are not necessary on specific turbines." The Appellant argues that this approach takes a "biologically sensible approach to conservation as opposed to an approach that requires the inevitable destruction of little brown bat individuals before mitigation measures are to be triggered."

[223] The Appellant argues that meeting the Bat Guidelines alone will not prevent serious and irreversible harm to the bat population. "Simply meeting the minimum thresholds imposed by the Bat Guidelines could lead to 360 bat mortalities in the Project Area for non-endangered bats before any mitigation is required. These thresholds are arbitrary, and create a larger potential for irreversible harm to bat populations."

[224] The Appellant submits that the Tribunal should place no weight on the witness called by the Director, Ms. Boucher. She was not qualified as an expert. Ms. Boucher testified that she is not an expert in bats, and testified that MNR biologists are typically generalists. She was not aware of any MNR experts in bats who were involved in the review of the Project. Ms. Boucher testified that, despite the fact that the *ESA* Regulation requires efforts to "minimize impact", there is no way to measure in reviewing mitigation plans whether impact has been "minimized".

[225] With respect to SAR mitigation, the Appellant submits that "the final operation plan for the Bow Lake Wind Farm has not been confirmed. This is problematic because of the MNR's apparent inability to address issues with bats. Respectfully, the MNR as generalist biologists, are not qualified to consider these complex issues."

[226] The Appellant submits that "it is clear that the MNR does not have an effective manner of establishing, managing or measuring the impact of its mitigation measures yet it still approved the construction mitigation plan and it is considering the operation plan under the *Endangered Species Act*." The Appellant submits that Ms. Boucher's evidence "strongly supports Dr. Willis' expressed lack of confidence in the MNR's ability to review, critique and establish appropriate conditions that would actually be biologically sensible."

[227] The Appellant submits the following measures should be mandatory at the outset of the Project, with the possibility of easing off mitigation measures where they have been shown not to be required. The Appellant submits this follows the approach taken in the Alberta Bat Guidelines:

- Cut-in speed of 5.5 m/s on all turbines from outset of operation
- Daily carcass searches using trained dogs to maximize searcher efficiency, to measure effectiveness of mitigation measures
- Conduct further studies by independent experts to determine the location of hibernacula and maternity roosts.

[228] The Approval Holder submits that “240’s argument of serious and irreversible harm is premised on: (i) the individual maternity colony being the unit of conservation to which to apply the statutory test; (ii) the immediate Project area as being the only relevant geographic scope; (iii) there being only one to two maternity colonies in the Project area; and (iv) there being only 70 bats in a colony. There is no basis for any of those foundations of 240’s argument.”

[229] The Approval Holder and the Director submit that Dr. Willis’ scenario, where he attempted to demonstrate irreversible harm at the colony level, should be dismissed as “novel scientific theory”. The Director also argues that Dr. Willis’ suggestion that some bats might be developing heritable resistance to WNS, such that their death would have a more significant impact on little brown bat survival, should also be dismissed as “novel scientific theory”. The Director suggests the evidence should be dismissed because “Dr. Willis admitted that he had no evidence that bats with these valuable genetic characteristics live at or near the Project Area”, and his novel scientific theories have not been peer reviewed. The Director also submits that Dr. Reynolds’ evidence should be preferred over Dr. Willis’ evidence, due to the novel theory argument and due to the fact that the Tribunal has relied on Dr. Reynolds’ testimony in the past.

[230] Regarding the Bat Guidelines’ mortality threshold of 10 bats/turbine, the Director argues that the Tribunal has found in the past (in *APPEC*):

The Tribunal noted that there appeared to be no method of calculating the number of bat fatalities that would constitute serious and irreversible harm, both due to the difficulties inherent in estimating the size of bat populations and given the numerous other factors involved in estimating the impact of one type of development on a population. The Tribunal therefore declined to comment on whether such a fatality rate would constitute serious and irreversible harm to bats. The Tribunal accepted that the number of 10 operates as a red flag to the REA approval holder

and the MOE to indicate there are significant levels of mortality upon which mitigation is required to reduce to below those levels.

[231] The Director submits that the Construction and Operation Mitigation Plans filed by the Approval Holder as required by the *ESA* Regulation contain “extremely stringent conditions” with respect to little brown bats. The Director submits that “the Tribunal is to accept the mitigation plans at face value”, and is also to assume that the MNR will properly and adequately monitor compliance with *ESA* requirements and will take steps to ensure that any non-compliance is addressed (in this regard citing *Ostrander*, paras. 65 to 68).

[232] In assessing the effectiveness of the mitigation requirement to “minimize” potential impacts to SAR species, the Director submits that “a contextual approach” is required:

283. The Appellant takes issue with Ms. Boucher’s acknowledgement that there is no strict bar for assessing how a particular mitigation measure compares to others in minimizing the potential impacts to species at risk. Ms. Boucher explained that effectiveness monitoring is important to the MNR’s assessment of whether a specific mitigation measure is effective in minimizing the targeted adverse effect. It would be inappropriate to enact a “bar” or “bright-line” approach to assessing the effectiveness of mitigation measures; rather, a contextual approach is required.

Analysis and Findings on Irreversible Harm to Bats

[233] Two categories of bat species reside in the Project area: migratory bats, which travel through the area during migration season, and may roost in the area during the summer; and hibernating bats, including the endangered little brown bat, which have summer roosting sites in and around the Project area and overwinter in hibernacula, a “historical sighting” of which was identified by the NHA, just outside the Project area.

[234] The Tribunal heard that there will be some bat habitat loss due to the construction and operation of the Project. However, tree removal which will take place from November to April, outside the bat activity season, will consist of permanent removal of less than 1% of the Project site. Turbines are also being sited away from any wetland areas. Neither expert expressed any concern that bat habitat loss would be material, and the focus of the bat evidence in this hearing was therefore on harm to bats through collision mortality. The Tribunal will therefore not further consider harm to bat habitat in these reasons.

[235] Migratory bats are the most commonly killed type of bat through collisions with wind turbine blades. Both experts believe that the primary species that will be impacted by this Project in terms of numbers killed will be the hoary bat, a migratory tree bat.

[236] Dr. Willis expressed some concern regarding migratory bats, because of the disproportionate number killed and because of this Project's proximity to Lake Superior, which is a possible migratory route. However, Dr. Willis acknowledged there is very little information available about bat migration routes. There was no reliable information to find that this Project area might pose a higher risk to migrating bats than other areas of the province for which data exists, and there was no suggestion that the provincial average data for collision mortality of migratory bat species will cause serious and irreversible harm to those species. Dr. Reynolds was confident it would not cause such harm.

[237] The hoary bat is considered common within Ontario and neither expert suggested the Project, when operated in accordance with the REA conditions, would cause serious and irreversible harm to migratory bats, including the hoary bat. The Tribunal will therefore not further consider harm to migratory bats in these reasons.

[238] There are two hibernating bat species that have recently been listed on the SAR list in Ontario, due primarily to WNS, a fungus which attacks the bats during hibernation: the little brown myotis (little brown bat) and the northern myotis. Dr. Reynolds does not expect northern myotis mortality to occur at the Project for the following reasons: it is less common below 50 degrees North latitude; a low level of northern myotis activity was detected during acoustic monitoring at the Project site; and the lack of northern myotis mortality at the Prince Wind Farm, which is close to the Project site. Dr. Willis did not disagree with Dr. Reynolds' conclusion. The Tribunal will therefore not further consider harm to northern myotis in these reasons.

[239] The focus of the Tribunal's analysis will, therefore, be on the little brown bat, an endangered hibernating bat that is known to reside in and around the Project area. The Tribunal notes that most of the testimony and argument focused on the impact of the Project on the little brown bat. It is generally accepted that WNS has killed up to 95% of the little brown bat population.

[240] The two bat experts arrive at different conclusions with respect to the impact of the Project on the little brown bat because they disagree on: the number of little brown bats that are likely present on the site; the number likely to be killed by the Project; how many little brown bat deaths should be considered "incidental", "low" or "high"; the

effectiveness of the mitigation measures proposed; the cumulative impact on endangered bats over time, and the definition of the “population” that the Tribunal should be considering (i.e., the scale on which one should measure serious and irreversible harm). Both experts agree, however, that there is no way of knowing, even by order of magnitude, the little brown bat population on the Project site, in the area, or in the province.

[241] As noted above, the Divisional Court in *Ostrander* approached the analysis of “serious” harm and “irreversible” harm as two separate questions, and found that irreversible harm must be determined on the basis of some population data.

[242] The Approval Holder argues that for little brown bats, “there currently are no reliable estimates of the size of the population, even by order of magnitude”. Dr. Reynolds notes that “there are no current estimates of the little brown bat population at the Project site, the region, or elsewhere in Ontario.” Dr. Willis agrees.

[243] The Tribunal finds that the Appellant cannot establish irreversible harm to little brown bats (or bats of any species, for that matter) under the interpretation of s. 145.2.1(2) mandated by *Ostrander*, as no sufficient population data is available.

[244] As a result the Tribunal finds that, applying the analysis from *Ostrander*, it is not possible to find irreversible harm to bats, and the appeal on that issue must fail.

Analysis and Findings on Serious Harm to Bats

[245] Despite the Tribunal’s finding the the appeal must fail on the “irreversible harm” element due to a lack of the type of population data required in *Ostrander*, the Tribunal heard important, thoughtful evidence from recognized experts in the field with respect to whether the Project will cause serious harm to bats, which it will consider below in the interests of helping to advance the state of understanding of the impact of wind turbines on plant life, animal life and the natural environment.

Scale for Serious Harm to Little Brown Bats

[246] Having regard to the specific wording of s. 145.2.1, the Tribunal finds that, generally speaking, the Project area scale must be the starting point for its analysis of serious harm to animal life. This interpretation is reinforced by the fact that the NHA conducted by a proponent, which is a required step in the REA application process, is at the project scale, as is the review by the Director. Also, the MNR’s Bird and Bat Guidelines use the Project as the point of reference to determine whether or not collision mortality is significant.

[247] The Tribunal finds that it is both rational, and consistent with the REA approval scheme, that the starting point for Tribunal review of a REA is at the scale of the Project site. That said, every species requires a case by case analysis. There may be reasons why a particular species requires a smaller scale consideration (e.g., a species of plant or animal dependent on a wetland which is found in one small part of a large project area), or a larger scale consideration (e.g., a migratory bird species which only use the airspace above a project, or has a significant habitat directly adjacent to a project), or an area that straddles the project boundary. Indeed, the NHA guidance documents for proponents specifically recognize circumstances where the proponent must look for habitat, for instance, outside the project area.

[248] Secondly, the wording of the test “plant life” and “animal life”, is not the same as “species” or “population”. If the Legislature had meant for the Tribunal to consider only impacts at a provincial scale, for instance, it could have stated this explicitly. The discussion in *Monture* is helpful in this regard. In that case, the appellant argued that one bird or bat death should be considered irreversible harm to animal life. The Director took the position in that case that “plant life” and “animal life” connote an ecosystem approach (a submission since endorsed by the Tribunal; see for example *Bovaird*) and are more akin to “flora” and “fauna”, which is life belonging to a particular region. The Tribunal made the following comments at para. 77:

Turning to the Director’s submission that the focus of the *EPA* is on the overall environment, not the protection of an individual plant or animal, the Tribunal notes that the terms “plant life” and “animal life” are found elsewhere in the *EPA* (including the definition of “adverse effect”) and its regulations in the context that suggests a much smaller reach than the sustainability of a population at the provincial level. For example, O.Reg. 222/07 under the *EPA*, entitled *Environmental Penalties*, at section 10(3) defines a contravention as “serious” if it causes or may cause “localized injury or damage to any animal life”, and at section 10(4) as “very serious” if it causes or may cause “widespread injury or damage to plant life or animal life.” While these sections deal with serious contraventions rather than serious harm, they do demonstrate that more analysis of the words used in section 145.2.1 will be needed from parties as more cases are brought under this new provision.

[249] Aside from consistency with the regulatory scheme, and the wording used in the test, there is another reason why the project area is the appropriate scale as a starting point. If a project were to have a lethal impact on every member of species within the project area, yet not be found to have a discernible impact on the overall regional or continental population of a species, the “population viability” approach would lead to the absurd result of a finding of no serious harm to animal life. In other words, a project

could extirpate a species from the project area, perhaps even from the province, yet not be considered to cause serious harm to animal life. Such an interpretation would negate any protective value of the test, and would not be consistent with the following basic principle of statutory interpretation, as noted in *Sullivan on the Construction of Statutes*, 5th ed. (Markham: LexisNexis Canada Inc., 2008) and cited in *Monture* at para. 73:

Every word in a statute is presumed to make sense and to have a specific role to play in advancing the legislative purpose ... For this reason courts should avoid, as much as possible, adopting interpretations that would render any portion of a statute meaningless or pointless or redundant..

[250] The Tribunal will, therefore, consider the Project site as the starting point for the scale of the serious harm analysis, and then consider the species-specific facts relating to the little brown bat in its consideration of the appropriate scale in this case.

[251] The Director and the Approval Holder characterize Dr. Willis' proposed definition of the colony level as the appropriate bat population at issue as a "novel scientific theory" which has not been accepted by the scientific community, and therefore one that cannot be relied upon. The Approval Holder argues:

The appellant has tried to side-step the fundamental deficiency in the available evidence on little brown bat populations by shifting to a novel, untested theory that focuses instead on the conservation of individual bat maternity colonies – an idea that has not been subject to any scrutiny in the bat expert community, through published work or otherwise. Dr. Willis merely introduced the idea in this hearing as one that may be worth considering, and was quick to point out that it is contrary to the well-accepted conservation unit, which is the genetic population.

[252] The Director argues:

In *Ostrander*, the Divisional Court provided a strong reminder that novel scientific theory must be subjected to "special scrutiny". The Court stated, as a matter of law, that "[i]t is not sufficient for the purposes of relying on a novel scientific theory to simply conclude that the theory may be correct. In that situation, the theory will not have crossed the threshold of reliability for the purpose of establishing the necessary causal link between the activity in issue and the consequences said to arise from that activity. Rather, the party attempting to rely on a novel scientific theory must first establish threshold reliability before the fact finder may consider it."

[253] The Director argues that "there is nothing to indicate that the bat population at a particular summer colony could be somehow isolated or genetically or demographically unique from other colonies of little brown bats, quite the contrary." The Director notes

that each hibernaculum is made up of bats from a variety of summer colonies, which may be hundreds of kilometres apart; bats mate during swarming events that cover large areas; and not all bats are loyal to a particular hibernaculum or maternity colony.

[254] The Tribunal notes that the passage quoted by the Director from *Ostrander* was in reference to a new theory attempting to scientifically link wind turbines sound emissions and human health complaints. In this analysis on bats, the question is not one of causation, but the scale at which to apply the legal test of “serious harm to animal life”. The Tribunal finds the two situations to be quite distinct and rejects the characterization of Dr. Willis’ proposed relevant population for purposes of s. 145.2.1 of the *EPA* as a “novel scientific theory”.

[255] The Tribunal adopts the following analysis from *Lewis* at paras. 38 – 43. While the Tribunal in that case was discussing the Bald Eagle, the analysis is equally applicable to little brown bats:

38. As has been the case for other species at risk (see *APPEC* at para. 363), the Tribunal does not find that a provincial or regional scale is necessarily the appropriate one to automatically use in assessing “serious and irreversible” harm. While that may be the scale that some agencies choose to adopt in managing some species under other legislation (which is “separate” and “additional” to the *EPA*), there is nothing in the *EPA* that indicates that the “serious and irreversible harm” test can only be met at a provincial scale. Indeed, for the reasons that follow, such a narrow interpretation raises several troubling implications.

39. First, the Tribunal notes that the main difference between the two clauses in s. 145.2.1(2) is that “irreversible” appears in the environment clause but not in the health clause. The argument in favour of an automatic provincial scale for harm seems to be predicated on the “serious” adjective (which could include a notion of extent or scale) rather than “irreversible” (which seems to focus on the nature of the harm; see *Erickson* at paras. 635-641). As noted in *Erickson*, the Tribunal needs to interpret each clause in a way that makes sense. If “serious” with respect to “animal life” has to be measured only at the provincial scale, then, taking into account statutory interpretation principles, one would likely also have to measure “serious” harm to human health only at a provincial scale. Would a collapsed turbine tower falling on a person be considered to not be serious because an individual person is not significant at a provincial scale? This is one of the difficulties the Tribunal has with the simplistic interpretation that “serious and irreversible harm” to animal life can only be measured at the provincial population level.

40. Second, the Tribunal notes that an automatic provincial scale for harm to animal life would likely lead to the absurd result that the test would be impossible to meet in virtually any case, despite an extensive loss of animal life in the vicinity of a project. There are many species listed as endangered, threatened and special concern under the *ESA* due to human caused declines. In many cases, where habitat loss is a

key factor, it will be the loss of numerous local populations that, over time and space, accumulate to the point that a species declines, or in a worst case scenario, is lost forever. If each project that contributed to the loss of a species is only assessed for its impacts at a provincial scale, then little would be done to prevent serious and irreversible harm. By looking at the situation at all relevant scales, including a local level in appropriate circumstances, declines can be prevented in the first place. If a provincial scale is the only one that could be used, then the "death by a thousand cuts" scenario that has affected many species would remain unaddressed and the statutory test would be rendered virtually meaningless.

41. Third, if the Legislature had intended that the provincial scale must be applied as the sole scale, then it would have been very easy for the legislation to indicate such. Words such as "provincial population" or "at the provincial level" could have been employed. The Tribunal is reluctant to read in such modifiers to the existing statutory language, especially where doing so could lead to the absurd result that the test would become meaningless and completely impossible to satisfy for nearly all species of animal or plant life.

42. Related to the provincial population argument is the suitability of a population viability assessment ("PVA") calibrated to a minimally viable population size (which may involve a small population that can survive as opposed to a thriving population). While that conservation tool has its place, it must be used appropriately having regard to the relevant scale and the wording of the legal test (see *APPEC* at para. 203). In this case, Dr. Kerlinger makes reference to PVA and "Potential Biological Removal", but in so doing clearly uses it on a very large scale. Serious and irreversible harm, especially at a local ecosystem level (see *APPEC*), can occur well before the overall viability of a larger population is put at risk. Numerous individual local decisions may appear to be relatively insignificant at a provincial scale but over time may accumulate to create very severe consequences. Therefore, where PVA evidence is provided to the Tribunal, it will be important to examine the scale at which it is being applied and the habitat needs of the species in question.

43. Consequently, in the absence of a convincing argument that the renewable energy approval appeal test can only apply at a very large scale, the Tribunal will not so limit its application of that section of the *EPA*. Rather, this panel will continue to adopt a fact-specific case by case approach to serious and irreversible harm. There may be situations where a provincial scale may be appropriate and others where a local scale may be appropriate (for example, where a species at risk that cannot be easily successfully relocated is present, or where there may only be a small number of that species present locally). In some cases, multiple scales may be relevant. In other cases, it may not be possible or necessary for the Tribunal to make a definitive finding on the appropriate scale, if the evidence is limited in that regard and other harm factors are more determinative.

[256] Given the earlier discussion and findings on the interpretation of "serious harm", the Tribunal accepts that a reasonable scale at which to consider harm from the Project to little brown bats is at the maternity colony level. While the Tribunal accepts

Dr. Reynolds' concerns that the bat maternity colony is not an appropriate scale to determine genetic population impacts (an opinion also shared by Dr. Willis), the Tribunal is called upon to make a *legal interpretation* of s. 145.2.1 of the *EPA* including whether operating the Project in accordance with the REA will cause serious and irreversible harm to animal life. This may include, but is not limited to, determining genetic population impacts but the test is not worded in a way that restricts serious harm to only that level of harm that is present at the genetic population level. There is nothing novel about the science Dr. Willis relies on, nor is it a theory. It is his expert opinion, based on studies of bats on densely forested landscape and at this latitude, that in an area the size of the Project site, which is proximate to Lake Superior and dotted with wetlands, it is a reasonable model to assume the presence of approximately 1 – 2 bat maternity colonies, each containing approximately 70 bats. Dr. Reynolds did not disagree that these assumptions are reasonable for purposes of the wind turbine impact analysis, although he commented there is no data to support them.

[257] The Tribunal therefore accepts Dr. Willis' proposed scale of the relevant bat population for purposes of analysis of s. 145.2.1 with respect to this Project area: the Tribunal will consider whether the Project will cause serious harm to "the bats that live in the forest of the Project area and the adjacent hibernacula", using the average size and density of maternity colonies as a model to assess the number of bats in question.

Bat Activity in the Project Area

[258] Both experts agreed that currently there are no reliable estimates of the size of the little brown bat population in the vicinity of the Project, in the region, or in the Province of Ontario or beyond, even by order of magnitude.

[259] Mr. Charlton testified as to the pre-construction studies that have been conducted, leading to the NHA. The NHA concluded that the Project area does not represent SWH for bat maternity colonies, although there are no criteria for SWH in this Ecoregion.

[260] Dr. Willis and Dr. Reynolds agreed that the Project area, being dense contiguous forest dotted with wetlands, is little brown bat habitat and this species will be present throughout. They agreed that bat habitat is "regionally abundant", that little brown bats are habitat generalists, and that little brown bats would be distributed fairly evenly across the landscape.

[261] The Appellant argues that the surveys conducted for the NHA and relied upon by the Approval Holder in creating its mitigation measures do not give an accurate

representation of the bat activity in the Project area. Dr. Willis testified that the Project location “includes large areas of what is likely prime summer roosting habitat for these species, as well as a known bat hibernaculum within an easy night’s flying distance for these species. It also has potential for significant impacts on bat populations due to its proximity to the shoreline of a major water body that may concentrate bats.” He also testified that the pre-construction monitoring, conducted to gauge bat activity on the Project site, had significant flaws. For example, acoustic monitoring took place in June which is not the period of highest bat mortality, and the chance of finding a bat maternity roost using likely tree snag identification in a large contiguous forest is acknowledged to be extremely slim.

[262] The Appellant submits that Dr. Reynolds, in forming his opinion of “average” to “low” bat activity in the Project area, was not aware of “the existence of a bat hibernacula” just outside of it.

[263] The Appellant argues that, with respect to Dr. Willis’ hypothetical scenario of 1 to 2 bat maternity colonies on the Project site of 70 bats each, the numbers chosen by Dr. Willis were a realistic scenario, based on his expertise as a bat expert, including radiotelemetry studies in similar, high latitude contiguous forest habitat, and would be typical for such an area.

[264] The Approval Holder submits, on the other hand, that although Dr. Willis was critical of the pre-construction monitoring, he “did not in fact assert that the Project site is likely to be an area of high bat activity, or that there are unique features within the Project site landscape (compared to the region generally) that would serve to concentrate bat activity.”

[265] The Approval Holder argues that little weight should be placed on the Prince Wind Farm data on the basis that it is for only one year (2007); at that time (pre-WNS) little brown bats were the most abundant on the landscape; and the Prince Wind Farm is “right along the shoreline of Lake Superior” while this Project is further inland.

[266] The Tribunal finds that it can place little weight on the bat activity studies by M.K. Ince in 2012, due to the fact they were not undertaken during a known high bat activity season, and the fact that Stantec used them only as background information. The Tribunal also places little weight on the exit surveys, given Dr. Willis and Dr. Reynolds’ agreement that very few candidate maternity roosts would be identified through this method. The Tribunal finds there is no evidence to confirm that the identified “historical” record of a bat hibernaculum, approximately 1.2 km from the Project site, should be

considered active. The Tribunal relies on the opinions of Drs. Willis and Reynolds to conclude that little brown bat activity on the Project site is similar to that of the region generally, that little brown bat habitat is throughout the area, that bat activity is diffuse across landscape, and that no unique features that concentrate bat activity were identified on the Project site.

Risk of Collision Mortality for Little Brown Bats

[267] Collision mortality is the alleged cause of the harm to the relevant little brown bat population in this case.

[268] Dr. Willis testified that the data shows that little brown bats are being killed in greater numbers at wind farms in Ontario than elsewhere. He states that “(i)n Ontario between 15 to 27% of carcasses recovered at wind turbines are endangered little brown bats. These numbers are likely an underestimate because *M. lucifugus* are among the smallest-bodied species killed and, therefore, less likely to be recovered than larger-bodied migratory bats.” The 27% figure was from the earliest Environment Canada report, based on data prior to 2010. Dr. Willis testified that the number of little brown bats killed at the Prince Wind Farm (38% of all bats killed in 2008) indicates a high number are killed on this landscape.

[269] Dr. Reynolds testified that his review of post-construction monitoring reports for the Prince Wind Farm showed 50% of fatalities as little brown bats in 2007 and “up to 38%” in 2008, all pre-WNS. Nevertheless, he testified the overall rate was “low” and believes that little brown bats represent a small number of bat carcasses found at wind projects. He disagrees with Dr. Willis’ suggestion that Ontario has a higher little brown bat mortality rate than elsewhere and states it is comparable to the national average of 14.1% of all bat fatalities.

[270] The Approval Holder argues that little brown bats are at low collision risk due to the fact that they fly low to the ground during foraging and commuting. It argues that “extensive post-construction mortality monitoring” from wind projects within and outside Ontario “confirm that the mortality risk to little brown bats is low”. The Approval Holder cites the fact that 80 – 85% of bat mortalities are migratory bats; that “across North America” 6% of the mortalities have been little brown bats; that recently in Ontario the little brown fatalities have been in line with the North America average at 5.7% of the bat fatalities at wind projects (at 0.25 bats/turbine); and that “most recently, in 2013, at the 13 Ontario wind projects of which Dr. Reynolds is aware of the monitoring results, there were very few little brown fatalities.” Specifically, there were zero fatalities at six of the

projects, and of the remaining seven projects, the highest number was three bats in a year.

[271] The Approval Holder acknowledges that “cumulatively over the years in Canada from 2006 onwards, about 15% of the fatalities at the projects listed in the Environment Canada report have been little browns”, but argues that number takes into account the years pre-WNS, when the little brown was the most abundant species.

[272] As noted elsewhere, the Approval Holder argues that little weight should be placed on the Prince Wind Farm data. However, the Tribunal notes that Dr. Reynolds himself found the comparison to be useful:

21. Overall, post-construction monitoring at the Prince Wind Farm supports the conclusion that mortality levels are likely to be relatively low at the Project site, even before the implementation of any operational mitigation measures. The Prince Wind Farm is a 126-turbine facility located approximately 65 km south of the Project site in forested habitat close to the shoreline of Lake Superior. The Prince Wind post-construction monitoring surveys documented an adjusted bat mortality rate of 1.63–3.59 bats per turbine across the three years of monitoring (2006-2008: NRSI, 2009), with most of the mortality occurring during late summer (July) and the fall migratory period (August). While little brown myotis represented half of the mortality in 2007 and up to 34% of the mortality in 2008 (NRSI, 2009) at that facility, the actual number of fatalities was still quite low and these 2007-2008 results were at a time (pre-WNS) when the abundance of that species on the landscape was significantly different than today.

[273] The Director argues that Dr. Reynolds’ analysis shows Dr. Willis to be in error when he states that the collision rate of little brown bats is higher in Ontario than elsewhere in Canada. The Approval Holder argues there is no ecological reason for little brown bats to be at a higher mortality risk in Ontario than elsewhere in Canada.

[274] The Tribunal acknowledges the inconsistencies in the provincial and national data on little brown bat mortality, as described by Dr. Reynolds, and finds that it is not entirely reliable. In addition, it is unclear from the evidence how the changing little brown bat population due to WNS should be factored into older data, to make predictions about collision risks for future projects. The Tribunal finds that the collision mortality data of the adjacent Prince Wind Farm has considerable weight. It is in the vicinity of the Bow Lake Project (approx. 65 km away) and is built in the same landscape; that is, a dense contiguous forest canopy dotted with wetlands and proximate to Lake Superior. Although the Prince Wind Farm is closer to Lake Superior, both experts agreed that the Project is within easy flying distance of the lake for little brown bats. Tempering the Prince Wind Farm results is the fact that little brown bats,

due to WNS, are now much less numerous on the landscape, and Prince is a pre-*Green Energy Act* facility.

[275] The Tribunal finds that the mortality rate of little brown bats in the data from the Prince Wind Farm (50% in 2007 and up to 38% of all bat fatalities at that project in 2008, according to Dr. Reynolds' review of the Prince Wind Farm's post-construction monitoring reports) should be considered as significant. This is especially so given the high scavenger removal rate in the area and the low rate searcher efficiency for this small bat, such that real numbers killed may be even higher. The Tribunal makes two findings from this information: that the little brown bat is killed in wind turbine collisions despite the fact that it forages below the blade-swept area, and that it is a reasonable conclusion that little brown fatalities may be higher in the landscape in which the Bow Lake Project is sited, than the current provincial or continental averages. Dr. Willis' conclusion that "something is happening in Ontario" is perhaps vaguely stated, given that "bats do not respect provincial boundaries", as noted by the Approval Holder. Still, the Tribunal finds there is good reason to believe that the characteristics of the Project site, being contiguous forest dotted with wetlands, may well result in a higher-than-average little brown bat mortality rate.

[276] Dr. Reynolds believes that even the mortality numbers seen at the Prince Wind Farm are "low" and "incidental". As noted by the Approval Holder, Dr. Willis did not assert that there would, in fact, be a high number of fatalities at the Project. However, in Dr. Willis' view serious and irreversible harm to little brown bats might be caused even by a "low" number of fatalities. He described a hypothetical but scientifically reasonable scenario to illustrate the potential effect that the rate of collision mortality experienced at the Prince Wind Farm could have on a maternity colony (with 20% of 360 bat carcasses being little brown bats, resulting in the facility killing more than 70 little brown bats per year before mitigation is considered, which is the size of a forest maternity colony), which he considered to be serious and irreversible to that population. Dr. Willis listed ways that "even small rates of mortality at turbines could cause serious and irreversible harm to the bats that live in and adjacent to the project area", as being: "recovery effects" (the population will be kept at a small size and small populations are more vulnerable to multiple impacts than large ones); removal of favourable genotypes (bats with WNS resistance); social effects (little brown bats are colonial and highly social, depending on social thermoregulation. Colonies may also reach some critical minimum threshold below which they are no longer viable); and reducing population connectivity.

[277] Dr. Willis noted recent studies indicating that little brown bat mortality from WNS may be stabilizing, and he proposed a theory that this may be occurring because some little brown bats may be resistant to WNS. If true, this would increase the seriousness of each bat's death due to collision mortality on the survival or recovery of the population. On this point, the Director argues that Dr. Willis admitted he had no evidence to support the theory that little brown bats with a heritable resistance to WNS "live at or near the Project area." The Director argues that this theory is speculative and untested, and refers to para. 121 of the *Ostrander* decision to submit that "a higher standard is required before a finder of fact can admit and rely on expert evidence, especially when that expert evidence promotes a novel scientific theory". The Tribunal agrees that Dr. Willis' suggestion that some bats may be developing a resistance to WNS is a novel scientific theory which has not been peer reviewed and accepted by the scientific community at this point, and the Tribunal does not rely on it for the purposes of this analysis.

[278] Given the likely bat activity on the site, and the uncertainties among the bat experts around the impact of even a low mortality rate due to the endangered status of the species and lack of information on bat populations and biology generally, the Tribunal finds that the best way it can evaluate serious harm to little brown bats through collision mortality is by examining the mitigation conditions, their effectiveness, and the likelihood they will be implemented. This is the approach taken by the MNR in determining "significant" mortalities in its Bat Guidelines, by the Alberta Bat Guidelines, and in the Approval Holder's draft Mitigation Plan under the *ESA* Regulation.

Bat Mortality Mitigation Conditions

[279] The REA incorporates mitigation measures applicable to all bat species, as well as mitigation measures applicable to SAR bats as required by the *ESA* Regulation.

[280] The mitigation measures applicable to all species include a minimum of three years of post-construction bat mortality monitoring at a minimum of 12 of 36 turbines (Conditions H1 and H4), the overall bat mortality thresholds of the MNR Bat Guidelines in Condition H5, and mandatory measures to be taken in the event the 10 bats/turbine threshold is exceeded (Condition H6). Those measures include increasing the cut-in speed of the turbines to 5.5 m/s or feathering the turbine blades every night between sunset and sunrise from July 15 to September 30 at all turbines for the operating life of the Project, and implementing an additional three years of effectiveness monitoring. Where the mortality thresholds continue to be exceeded, condition H7 would require the Approval Holder to implement a contingency plan in consultation with the MNR.

[281] Additionally, there are mitigation measures applicable to SAR bats. Under the *ESA* Regulation, a person engaged in operating a wind facility will not be subject to the prohibitions in s. 9(1)(a) and s. 10 of the *ESA*, which prohibit killing, harming or harassing a listed species, or damaging or destroying their habitat, if the conditions set out in s. 23.20 are met. These conditions include giving notice to the MNR and preparing construction and operational Mitigation Plans.

[282] Conditions I1 to 3 require construction and operational Mitigation Plans to be approved by the MNR, pursuant to the *ESA* Regulation, as follows:

- I1. The Company shall not commence construction of the Facility prior to receiving a written notice of approval from the Minister of Natural Resources related to any construction mitigation plans submitted by the Company pursuant to paragraph 1 of subsection 23.13(12) of O.Reg. 242/08.
- I2. The Company shall not commence operation of the Facility prior to receiving a written notice of approval from the Minister of Natural Resources related to any operations mitigation plans submitted by the Company pursuant to paragraph 1 of subsection 23.20(7) of O.Reg. 242/08.
- I3. The Company shall ensure that the mitigation measures contained in the approved mitigation plans described in Conditions 11 and 12 are implemented during the construction and operation of the Facility, as applicable, subject to any agreement on alternative mitigation measures between the Company and the Ministry of Natural Resources.

[283] Section 23.20(11) of the *ESA* O. Reg. 242/08, which lays out the steps that the Approval Holder must take with respect to SAR species, provides:

- (11) The steps that a person must take to minimize the adverse effects of the operation of a wind facility on a species identified in the notice of activity form submitted under subparagraph 1 i of subsection (4) and its habitat are as follows:
1. Implementing reasonable measures in the wind facility to avoid the killing, harming or harassing of members of the species such as,
 - i. adjusting the blades of wind turbines,
 - ii. adjusting cut-in speed of wind turbines, and
 - iii. periodically shutting the turbines down during times of day or of the year when the risk of killing, harming or harassing the species is highest.
 2. Creating or enhancing habitat for the species elsewhere in the ecoregion in which the wind facility is located, if reasonable.
 3. Operating the wind facility in a manner that is unlikely to damage or destroy the habitat of the species, including adopting any techniques to minimize adverse effects of the operation of the

wind facility on the species that may be available from the Ministry from time to time.

4. If the person discovers that the steps described in paragraphs 1 to 3 or in the mitigation plan have not been effective in minimizing the adverse effects of an activity described in subsection (1) on the species, the person shall,
 - i. take such actions as are necessary to increase the effectiveness of those steps, or
 - ii. take such other reasonable steps as may be necessary to minimize the adverse effects of an activity described in subsection (1) on the species.

[284] In this case, the Minister of Natural Resources has approved the construction plan; the draft Mitigation Plan for the Operation of Bow Lake Wind Farm (“Mitigation Plan”), dated February 14, 2014 and prepared by Stantec has been submitted to the MNR for approval. It was provided to the Tribunal as an exhibit in these proceedings. Table 3.1 lays out the “Species-Specific Monitoring Plan”, as well as the “Adaptive Mitigation Plan”.

[285] The Approval Holder and Director argue that the Mitigation Plan provides sufficient protection to both species of endangered bats that are found in the Project area (little brown myotis and northern myotis) so that they will not be subject to serious harm from the Project. The requirements under *ESA* O. Reg. 242/08 are over and above those in the MNR Bat Guidelines, and by law apply to the Project whether or not they are included in the REA as conditions.

[286] The Approval Holder submits that the operational plan, in sections 3.1.1 and 3.1.2, provides that increased post-construction mortality monitoring will be conducted – including daily searches during the month of July at all turbines in year one – and that at least three years of additional acoustic monitoring will take place at multiple locations, both inside and outside of (but in proximity to) the Project site.

[287] Dr. Reynolds testified he is confident that the mitigation conditions in the REA are appropriate and protective. He stated “the Project will have one of the best science and adaptive management-based operating conditions for any wind project in North America, and this should prevent any significant impact on bats”. Dr. Reynolds commented in his witness statement that:

The operational mitigation plan focuses on identifying all reasonable measures to avoid the killing, harming or harassing of any SAR bat species. It meets the requirements of the *ESA*, and exceeds the requirements of the EEMP. The measures in the plan include increased post-construction mortality monitoring, plus post-construction acoustic

monitoring for at least three years, and the development of a Technical Advisory Committee ("TAC") to review and modify the mitigation conditions as new information and technologies become available.

[288] According to s. 2.1 of the Mitigation Plan, the results of each year of monitoring will be reviewed by a Technical Advisory Committee ("TAC"), composed of the principal investigator (a delegate of the Project operator), an MNR biologist and a third party independent bat expert.

[289] The Appellant argues that "the final operation plan for the Bow Lake Wind Farm has not been confirmed. This is problematic because of the MNR's apparent inability to address issues with bats. Respectfully, the MNR as generalist biologists, are not qualified to consider these complex issues." Further, the Appellant argues that, "even if the Proponent succeeds in staying under the minimum threshold of bat mortalities ... the number of bats killed will lead to serious and irreversible harm to little brown bats in the area."

[290] Dr. Willis agreed that increasing turbine cut-in speed would reduce bat mortalities. His main criticisms of the provisions of the Mitigation Plan were: it is a "conversation plan" rather than a "conservation plan" which does not include mandatory measures except in rare circumstances (i.e., only when two SAR bat carcasses are found at the same turbine. However, under-counting of little brown bat carcasses is likely as mentioned above); and that to truly minimize mortalities the increased cut-in speed should take effect from inception of the Project.

[291] The Tribunal notes that Ms. Boucher, an MNR employee who testified with respect to the SAR requirements, acknowledged that the MNR is unable to measure "minimization" of adverse impacts. She also testified that there is not necessarily a bat expert on the MNR panel that reviews the proposed Mitigation Plan, which suggests that the MNR places significant reliance on the Approval Holder's expert in drafting the plan.

Analysis and Findings on the Mitigation Plan

[292] The Plan states that the monitoring program has been designed to answer two questions:

1. Is operation of the Project having any adverse effect on the Species? If so, to what extent?
2. How should operational mitigation measures be implemented to maximum benefit in order to avoid or minimize any adverse effect? Specifically, when, where, for what duration, and under what conditions

(e.g. wind speed, wind direction, temperature, and precipitation) should operational mitigation such as turbine curtailment occur?

[293] The Plan's guiding principle is to "avoid or minimize any adverse effect". The Tribunal notes that is a different standard than the legal test of "serious and irreversible harm" before the Tribunal. Nonetheless, many of the difficulties encountered by the Tribunal in assessing serious harm to bats, are also evident in the Mitigation Plan's attempts to address adverse effects. For example, the Mitigation Plan intends to measure "impacts to the species" by measuring bat mortality. However, as noted elsewhere in this decision, the absolute number of bat carcasses found will not be sufficient to understand impacts to the species.

[294] The Mitigation Plan acknowledges in s. 2.1.1 that there is no way to know the population size of the species in question, and for that reason defaults to an evaluation of bat activity levels "within and outside the Project area". In this respect the Mitigation Plan takes the same approach the Tribunal has arrived at above, with respect to scale:

3. There is currently no available means to determine the specific population size (According to Kunz and Parsons (2009), determining bat population size requires genetic analysis over several generations). Bat activity levels within and outside of the Project area, assessed through the post-construction acoustic monitoring, will provide additional useful information and context in this regard.

[295] With respect to the scale question, the Mitigation Plan states at s. 2.1.1, that monitoring data will be used in consultation with the MNR "with the objective of assessing the potential for an adverse effect on the Species, and the adequacy of the Mitigation Plan to minimize or eliminate any such adverse effects". There are no specifics as to what effect will be considered an "effect on the species", although given the requirement to consult with the MNR when one SAR bat carcass is identified, it is implied that one SAR bat death is significant in determining an adverse effect on the species.

[296] After a first SAR bat carcass is found, the MNR must be notified and consulted. According to Table 3.1, "If appropriate, turbine curtailment measures in 23.20(11) will be implemented to ensure that the Project is not having any significant overall (i.e., cumulative) impact on the Species." Given that the document gives no indication as to what would be considered "appropriate", "significant", "overall", or "cumulative" impact, it is not at all clear that turbine curtailment or adjusting the cut-in speed, which are the proven effective measures to reduce collision mortality, would be implemented.

[297] The Mitigation Plan provides that, after a second SAR bat carcass at the same turbine is found, “the turbine cut in speed at the turbine will automatically at this point (i.e. upon a second mortality) be adjusted each night to 5.5 m/s *during the hours of peak bat activity* between sunset and sunrise, until September 31 of that year” (emphasis added). Thus cut in speed may be adjusted only for a few hours each night, even if a second carcass is found at the same turbine. It is only if more than two SAR bat carcasses are found at the same turbine, that the curtailment measures for the given turbine will occur all night.

[298] The expert evidence in the hearing was that bat habitat is throughout the Project area; there are no known features that would further concentrate bat populations. This fact was highlighted by the Approval Holder in its final submissions, at para. 207. Dr. Reynolds testified that the bats are likely to be distributed evenly across the landscape. Given this fact, it would appear that the collision with any particular turbine would be random chance, and it is difficult to see why the Mitigation Plan only targets the single turbine with which the SAR bat happened to collide. Similarly, it would be a matter of random chance, as to which turbine will kill the next SAR bat.

[299] The Director recognizes that bats are “diffuse across the landscape”. This fact directly contradicts the purpose of requiring a certain number of bats to die by collision mortality first, prior to mitigation. The explanation for this requirement would appear to be to identify where bats are more likely to collide; i.e., areas of concentration. While it is laudable to identify such areas through ongoing monitoring, the Tribunal agrees with Dr. Willis that it is difficult to see how making SAR bat deaths a condition precedent to the mitigation obligations, minimizes collision mortality.

[300] It is evident from reading the REA conditions that a certain number of endangered little brown bats must be killed before mitigation measures are triggered. Given that little brown bat activity on the Project site is likely similar to that of the region generally, and given the high percentage of little brown bats subject to collision mortality at the Prince Wind Farm, which is adjacent to this Project and constructed in the same landscape, the Tribunal finds that some little brown bats will be killed by colliding with the turbines over the life of this Project.

[301] Both experts agree that fewer little brown bats will be killed if cut-in speeds are increased to 5.5 m/second. This is so because both experts agree increased cut-in speeds are effective at reducing (but not preventing entirely) bat collision mortality. Both experts agree that there is no reason why little brown bat activity would be lower in the Project area than elsewhere in the region. The Tribunal is particularly concerned

that, at the Prince Wind Farm, which is proximate to the current Project and built in the same landscape, a high percentage (38% to 50%) of bat fatalities are historically the little brown bat.

[302] Given the Tribunal's finding that the appeal must fail on the basis that irreversible harm cannot be shown without population data, there is no need to make a finding on whether or not the Project will cause serious harm to little brown bats. While the Bat Guidelines and ESA Regulation requirements, adaptive management approach and inclusion of the TAC are reasonable steps to attempt to protect the SAR bats given the amount of uncertainty in this area, it is nonetheless clear that little brown bat mortality will not be minimized through the REA conditions and Mitigation Plan as currently drafted. Conditions which require some deaths before proven mitigation measures will be implemented will not "minimize" harm by collision mortality, where it is known that collision mortality will occur. The Tribunal finds that, although the document states that "best available science will be used to inform the Operational Mitigation Plan", the best available science has evidently not translated into conditions in the current draft that would effectively minimize adverse effects to the little brown bat. Two examples are readily evident: first, all experts agree that the best available science is that higher cut-in speeds reduce (i.e. minimize) bat fatalities, yet the Mitigation Plan only provides for that measure after SAR bat fatalities occur, and only in the unlikely event that searchers discover the SAR bat carcasses at the same turbine. Second, the Mitigation Plan requires monitoring to prove that certain seasons are high bat activity seasons, while high bat activity periods are already well known.

[303] The Tribunal recommends that a provision be included in the Mitigation Plan to require a cut-in speed of 5.5 m/s for all turbines in the Project during known activity periods of the little brown bat, until such time as the Project-specific data gained through post-construction monitoring establishes there is no need to do so, in the opinion of the TAC and the MNR.

Harm to Birds

Submissions

[304] The Appellant relies on Dr. Millikin's opinion to state that:

it is reasonable to conclude that there will be substantial collision events during both fall and spring migration of birds through the Project Area. On a sustained basis over the 30 year life of turbines at the Bow Lake Wind Farm, the cumulative impacts of collision mortality, disorientation, and habitat degradation caused by the Bow Lake Wind Farm, without

adequate mitigation measures present, will lead to serious and irreversible harm.

[305] The Appellant argues that there is general agreement that with respect to birds and bats, mortality is serious harm. The Appellant submits that Dr. Millikin and Dr. Strickland agreed that mortality is serious harm and mortality of a small population can be irreversible leading to extinction from the area. The Appellant submits that Dr. Kerlinger acknowledged his definition of irreversible harm, as described earlier with the DDT example, “was somewhat circular”.

[306] The Appellant argues that the MNR Bird Guidelines’ mortality thresholds are not protective for bird SAR. It argues: “Even if the thresholds for bird mortality set out in the Bow Lake REA in Condition H5 are not breached, the Bow Lake Wind Farm will cause serious and irreversible harm to bird species at risk, no matter what the baseline mortality is, including the night migrant species Olive-sided Flycatcher, Canada Warbler, and Eastern Wood Pewee.”

[307] The Appellant argues that the relevant population to determine serious and irreversible harm to birds should be on a much more localized basis than province- or continent-wide: “this is because of the impact in Ontario, demonstrating that population effects can be highly localized for the determination of serious and irreversible harm.” In this case, the Appellant notes the local conditions, in particular that there is a “significant bird funnelling point at WPBO”.

[308] The Appellant argues that “there is a heavy concentration of migratory bird routes across the Great Lakes, and the Project Area is located at a major crossing of Lakes Superior, Huron and Michigan that has the effect of “funnelling” migratory birds”. In addition, the Appellant notes that the Montreal River is a riparian habitat and an important stopover site for night migrant birds. Further, the Appellant argues that the orientation of the ridge at the Bow Lake Project area and the shoreline will further funnel migrants so that they will transit the Project area in high concentrations.

[309] The Appellant submits that the NHA/EIS (Natural Heritage Assessment and Environmental Impact Study) was inadequate as it is missing riparian and night sky habitats, the presence of night migrant species, episodic events of migration, and an insufficient number of hours devoted to migration tracking. As a result, the Appellant submits the NHA/EIS underestimated the number and variety of birds using the Project area. In this regard the Appellant submits the Approval Holder should have consulted the Whitefish Point Bird Observatory for data. The Appellant submits that documentation produced by M. K. Ince shows that firm acknowledging the weaknesses

in its own work, due to surveys taking place too early in the season. The Appellant acknowledges that Mr. Charlton testified that his firm redid any work done by M.K. Ince that it felt was necessary. The Appellant argues that the inadequate pre-construction studies result in unreliable mitigation techniques in the REA, and further argues that the Approval Holder “will not be able to develop a strategy to mitigate the impacts” of the Project to avoid serious and irreversible harm to bird populations.

[310] The Appellant argues that the Project is located in close proximity to Whitefish Point peninsula, which is heavily used by migrating birds. It argues the Project location will disrupt the migratory birds in the area and “cause prolonged harm to the migratory bird patterns along the Lake Superior shore by impacting both stopover areas and the migratory air routes used by these birds.”

[311] The Appellant argues that the Project area is especially prone to fog, which causes night migrant birds to lose visibility, become confused, and move toward light sources. The Appellant argues that 23 of the 35 turbines will be equipped with lighting, which Dr. Millikin testified is a concern during migratory periods. The Appellant argues that Dr. Kerlinger’s testimony with respect to fog was referring to “low level lake effect fog” and not the dense, high rising Montreal River fog described by locals.

[312] The Appellant argues that the Project will cause serious and irreversible harm to Peregrine Falcons. The Appellant cites the statistic that “there are only 56 breeding pairs of Peregrine Falcons in Ontario, with some 80% of those pairs in Northern Ontario”, such that the population is particularly sensitive to impacts.

[313] The Appellant argues that s. 5.1(1) of the *Migratory Birds Convention Act, 1994* (“*MBCA*”) operates to prohibit harming migratory birds, and there “is no permit available for what is known as “incidental take” or the killing of migratory birds as a by-product of construction or approval of an activity”. The Appellant submits that Dr. Millikin testified that many of the birds that will fly through the area are listed as protected birds in the *MBCA*. Specific examples are the Canada Warbler and the Olive-sided Flycatcher “which are not only protected by the *MBCA* but are species of special conservation concern.” The Appellant argues that the Director has no jurisdiction to issue an approval in light of the prohibition, and that this creates a rebuttable presumption that the Director’s approval will cause serious and irreversible harm to migratory birds.

[314] The Approval Holder listed five reasons given by their experts, Drs. Strickland and Kerlinger, as to why the Project will not cause serious harm to birds, and to migrating birds in particular:

- The “relevant populations” of migratory birds are “very large and could withstand high levels of fatalities”.
- None of the other Ontario wind projects located closer to the Great Lakes than this one have exceeded the REA thresholds for bird mortality.
- Migratory birds “are good at” avoiding turbines when flying, and many fly above the blade swept area.
- The Project location, at 6 km from the shore of Lake Superior “should help to reduce impacts to migratory birds as low-flying migrants tend to follow the Great lakes shorelines”.
- Migratory bird mortalities, if any, will be spread across many different species.

[315] The Approval Holder noted Dr. Kerlinger’s conclusion that “bird fatality rates are highly unlikely to exceed the thresholds as outlined in the Project’s REA (which are adopted from the MNR’s *Bird and Bird Habitat Guidelines*)”.

[316] The Approval Holder submits that the Project is not close to Whitefish Point, which is 55 km away. According to Dr. Kerlinger, in his studies on migration behaviour and at Whitefish Point, he “could not find any evidence that suggested that concentrations of migrants like those at Whitefish Point are present north of Lake Superior in the vicinity of the Project.” Dr. Strickland also stated “there are no known significant concentration areas for migrating hawks along the north shore of Lake Superior in spring.”

[317] The Approval Holder submits that both Dr. Strickland and Dr. Kerlinger testified that fog should not be a concern in the area. Drs. Strickland and Kerlinger both testified that, where the wind turbines are equipped with flashing red lights (as is the case with this REA), there is no increase in mortalities. They referred to studies that have shown that constant-burn white lights do attract migrating birds, but they will not be used at the Project.

[318] The Approval Holder argues that the appropriate “population” to consider for Peregrine Falcons is the “Great Lakes” population, because Peregrine Falcons “typically disperse long distances from their natal area to where they nest, often >100-300 kms”, and “thus, genes are mixed widely across large geographic areas” (citing Dr. Kerlinger statement, para. 59 – 60). Dr. Kerlinger cites “almost 120 nests in Ontario” of the Great Lakes population, not including nests on the American side of the lakes.

[319] The Director's submissions on fog and migration routes are similar to those of the Approval Holder. The Director argues that studies on the Erie Shores wind farm have found that collision mortality is the highest at a 200 m set-back from the shoreline, and is "elevated" at a 250 – 400 m set-back. The Director submits that this Project, at 6 km from the shoreline, is well beyond even the area of elevated collision mortality. Similarly, at 950 m from the Montreal River, the Director submits the Project will not impact the small number of birds that may be attracted to the Montreal River.

[320] The Director submits that the evidence of Drs. Kerlinger and Strickland directly contradicts Dr. Mililkin's opinion regarding the presence of a migration funnelling effect that will create collision fatalities. The Director submits that the Approval Holder was not required under the applicable regulatory requirements to assess the WPBO. The Director submits that no "adverse inference" should be drawn from the fact that the Approval Holder did not consider the WPBO, as urged by the Appellant.

[321] The Director argues that Dr. Millikin fails to give due consideration to the import of the mitigation measures in ensuring that any resulting harms are mitigated.

[322] The Director also argues that the *MBCA* does not apply to this case. The Director submits that there was no evidence that the construction or operation of the Project would result in the depositing of a substance into the water or area that is harmful to migratory birds, which is prohibited by the *MBCA*. In addition, the Director argues that the wind turbines themselves cannot be considered a "substance" for which a permit is required. The Director cites in this regard *Goodsman v. Saskatchewan Power Corp.*, [1997] S.J. No. 204 (Sask Q.B.), in which the Saskatchewan Court of Queen's Bench did not accept an argument that the installation of a power line amounts to depositing a "substance", and found it would be absurd to suggest that activities which cause accidental deaths of migratory birds (such as birds flying into the path of automobiles or into glass buildings) amount to killing of migratory birds "as contemplated in the *Migratory Birds Convention Act, 1994*, and regulations." (para. 7). The same conclusion was reached in *British Columbia Transmission Corp. v. Lemoignan*, [2008] B.C.J. No. 1463 (S.C.).

[323] The Director argues that the Appellant has only speculated about possible effects with the potential for harm to birds, and as such has failed to meet its onus of proof under s. 145.2.1(3).

Analysis and Findings on Serious Harm to Birds

[324] In this case, there was no evidence that the Project will cause harm to bird species through loss of habitat. The focus of the evidence and submissions with respect to birds was on serious and irreversible harm to birds through collision mortality.

[325] As discussed in the analysis above, the appropriate scale for consideration of harm is species and case-specific, but should start with a consideration of harm at the project site. The Approval Holder argues that the migratory birds flying over the Project area are part of broad front migration, including hundreds of thousands (if not millions) of birds. The Appellant argues the scale to consider for serious and irreversible harm should be a much smaller area, and should consider the migration “funnelling effect” at Whitefish Point.

[326] Given the findings below with respect to the evidence adduced to prove harm to birds, the Tribunal finds that it is unnecessary to make any findings on scale for migrating birds, in this appeal. On this point, however, we note that the Tribunal in *Lewis* determined that the local scale was appropriate in considering whether that project would cause serious and irreversible harm to a breeding pair of eagles, whose nest was located outside, but close to, the Project area.

[327] The decision in *Lewis* describes the different test undertaken by the Tribunal in a s. 145.2.1 analysis, as compared to the analysis conducted by the MNR under the *ESA* regime. Paragraph 32 sums up the findings, which the Tribunal endorses in this appeal:

To conclude on this aspect, the Tribunal finds that the work done at the REA approval stage (including any MNR sign-off regarding natural heritage features) and in other regimes (such as the *ESA* and Bald Eagle Guidelines) may be relevant information to consider under the *EPA* test, but it is not determinative because the statutory test is part of a distinct appellate process, which involves a different test than what is used by other decision-makers in reviewing applications for renewable energy approvals and other regimes.

[328] The Appellant argues that the Project will cause serious and irreversible harm over its lifetime, due to a number of factors. The Tribunal will deal with the key ones below.

[329] The Tribunal finds that it was not established that Montreal River fog will cause a high rate of collision mortality for migrating birds. The evidence is that steady-burn white lights have been shown to attract birds in low visibility conditions, but that blinking red lights, included in this Project proposal, do not cause higher collision mortality. Dr. Millikin did not dispute this characterization of the evidence.

[330] The Tribunal finds that it was not established that there are any geographic features on the Project site or in the area that would cause a “funnelling” of migratory birds such that a high number could be expected to collide with wind turbines. The evidence that higher rates of bird/turbine collisions occur within 250 to 400 m of a Great Lakes shoreline (from studies relating to the Erie Shores wind project) was uncontradicted, and the closest turbine to the Lake Superior shore in this Project is 6 km.

[331] It was not established on the evidence that the Project is sufficiently proximate to Whitefish Point to experience an elevated number of migrants. Dr. Kerlinger has done studies specifically on migration at Whitefish Point and testified that migrating birds from that peninsula do not, by and large, pass over the Project site. Dr. Millikin did not contradict this evidence and, given Dr. Kerlinger’s specific expertise and experience in this area, the Tribunal accepts his opinion in this regard.

[332] The Tribunal must consider whether the Project, *operating in accordance with the REA*, will cause serious and irreversible harm to animal life. Condition H5 of the REA includes mitigation conditions that incorporate the MNR Bird Guidelines’ mortality thresholds. This means that the Tribunal must determine whether the Project will cause such harm while complying with the MNR bird mortality thresholds.

[333] The MNR Bird Guidelines provide the following mortality thresholds at which point mitigation measures must be undertaken: 14 birds per turbine per year at individual turbines or turbine groups; 0.2 raptors per turbine per year (all raptors) across the Facility; 0.1 raptors per turbine per year (provincially tracked raptors) across the Facility; 10 or more birds at any one turbine during a single monitoring survey; or 33 or more birds (including raptors) across the Facility during a single monitoring survey. Mitigation measures and increased monitoring are required in the event that any of the thresholds is exceeded, as set out in conditions H6 to H11.

[334] The Tribunal finds that the Appellant has not established that the Project will cause higher mortality impacts than provided for under the MNR Bird Guidelines, nor has the Appellant established that the Project will cause serious harm to migratory birds at the mortality thresholds provided for in the MNR Bird Guidelines and incorporated as conditions in the REA.

[335] With respect to Peregrine Falcons, both Dr. Kerlinger and Dr. Strickland testified that the Project area is not suitable for foraging or nesting by Peregrine Falcons, and that Peregrine Falcons are not known to nest at or near the Project area. The Appellant

notes, however, that the Critical Values Map introduced into evidence does show known Peregrine Falcon nesting sites in the vicinity of the Project. The Tribunal finds that there may be Peregrine Falcon nesting sites in the area, given that this area is within their range. However, even at the known bird concentration location of Whitefish Point, 55 km away from the Project area, the WPBO data shows the Peregrine Falcons' passage rate to be less than one percent of the total raptor passage rates recorded there. Further, the evidence from other wind projects shows that Peregrine Falcons are at a very low risk of colliding with wind turbines. As noted by the Approval Holder, in the history of all of the wind projects across North America, there have only ever been two recorded Peregrine Falcon mortalities. None were recorded at the Prince Wind Farm. Dr. Millikin acknowledged that raptors only represent a small percentage of bird mortalities caused by wind farms. The Tribunal finds that the Appellant's evidence with respect to Peregrine Falcons does not rise to the level of "will cause" harm, but remains at the "possibly cause" level. Since the appellant has not satisfied its onus with respect to Peregrine Falcons in this respect, the Tribunal concludes there is no need to determine the appropriate population of Peregrine Falcons to dispose of this appeal.

[336] The Tribunal finds that the Appellant has not established that the *MBCA* applies in this case. The Appellant has not provided any case law to counter that provided by the Director, nor demonstrated the *MBCA*'s relevance to the *EPA* test.

[337] As the Tribunal has found that no serious harm to migratory birds or Peregrine Falcons has been established, there is no need to consider whether the Project will cause irreversible harm.

Conclusion on Birds

[338] For the foregoing reasons, the Tribunal finds that the Appellant has not established that serious and irreversible harm will occur to birds when the Project is operated in accordance with the REA conditions, which include the requirement to undertake mitigation measures if the mortality thresholds outlined in the MNR Bird Guidelines is reached.

2) Whether the Project as Approved will Cause Serious Harm to Human Health by Interfering with the Montreal River Weather Radar Station

Evidence

Evidence of the Appellant

Dr. Robert Palmer

[339] Dr. Palmer, who has a Ph.D. in electrical engineering, is the Associate Vice President for Research and the Tommy C. Craighead Chair and Professor at the University of Oklahoma's School of Meteorology. He was qualified by the Tribunal as an expert in weather radar and in the interaction of weather radar systems with wind turbines.

[340] In 2013, Environment Canada retained Dr. Palmer to analyze the possible effects of the Bow Lake Wind Farm on the nearby MRWRS. Dr. Palmer noted that the 36 proposed wind turbines would be located three to 10 km from the MRWRS. His witness statement included the report and presentation he prepared for Environment Canada.

[341] In his report, Dr. Palmer addressed the potential for wind turbine clutter and multi-path scattering. He stated that wind turbine clutter occurs when radar signals are scattered by unwanted targets (in this case, wind turbines), and multi-path effect occurs with the extension of the contaminated radar data beyond the area of the turbines. He noted that there would be exponentially more energy in the backscatter from a wind turbine 5 km from a weather radar station, than from a turbine 50 km away.

[342] Dr. Palmer's report provided the following background information concerning weather radar and the impact of non-stationary clutter:

Like other radars (e.g., air traffic surveillance, military), weather radars transmit a high-energy pulse of electromagnetic waves and "listen" for backscattered signals from the targets of interest. However, in addition to these targets, signals are also scattered by unwanted targets, such as buildings, aircraft, and wind turbines. It is an important goal of radar signal processing to attempt to mitigate these unwanted "clutter" targets. One of the most important tools in the signal-processing arsenal is Doppler processing.

[343] Dr. Palmer explained the use of Doppler radars to demonstrate that, due to the velocity range of turbine blades sweeping over +/- 60 m/s, any coexisting weather radar signal would be contaminated by the wind turbine clutter signal. He stated that stationary ground clutter, such as that from buildings, could be removed using digital

filters but that no such filter has been developed for wind turbine clutter in an operational setting.

[344] Dr. Palmer used a line-of-sight (“LOS”) analysis to assess the impact of the proposed wind turbines on the MRWRS. He determined that, given the close proximity of the radar to the turbines, severe contamination would occur. He testified that the lowest three to four elevation scans, out of the 24 elevation scans at the radar station, would be contaminated in the direction of the wind farm, and noted in his report that “the lowest elevation angle data are often the most important since the weather at these altitudes directly affects people’s lives and property.”

[345] Dr. Palmer compared the MRWRS with weather radars in the United States located in proximity to wind farms. He noted that the US weather radars operate at a different wavelength but have a comparable beamwidth. He added that difference in wavelength, in relation to very large objects, such as wind turbines, should be small. He also stated that US radars may not point below an elevation angle of 0.5 degrees, while Canadian radars may scan down to 0.3 degrees in summer and 0.2 degrees in winter, meaning that the MRWRS radar would point more directly towards the turbines. He noted that more wind turbine contamination could be expected due to the fact that Environment Canada’s weather radars scan at lower elevation angles.

[346] Dr. Palmer stated in his report that it is very unusual for wind farms in the US to be closer than 10 km to the radar, but did identify a wind farm of six turbines in Great Falls, Montana that was 5 – 7 km from the weather radar and a wind farm of 195 turbines in Fort Drum, New York that was 4 – 16 km from the weather radar. He noted in his witness statement that the multi-path effects caused by the Project would likely be comparable to the effects at the Great Falls Wind Farm. He stated that both the Great Falls and Fort Drum Wind Farms are good comparison sites for the proposed Project. He reported that, in the cases of both of these wind farms, “multi-path scatter is often observed significantly extending the contamination caused by the wind turbine clutter.”

[347] Dr. Palmer testified that he believed there would be multi-path contamination from the proposed Project. He noted that, in the case of the Project, there are only 36 turbines where radar data may be contaminated, meaning that the multi-path effect may be considered minor. However, he also said that the data contamination effects could extend far beyond where the wind farm is, causing more severe contamination. His report to Environment Canada concluded that “a major concern for this case is multi-path clutter, which can significantly extend the region of contamination.” He stated that

the maximum distance of multi-path effects beyond a turbine is approximately two to three times the actual distance from the radar to the turbine.

[348] Dr. Palmer provided his opinion that, although the population density of the region around the Project is low, aircraft operating in the area would rely on the MRWRS.

[349] In his testimony, Dr. Palmer discussed receiver saturation as well, noting that this occurs when the reflection of the signal from a wind turbine or another structure “swamps” the radar receiver, potentially causing damage to the radar station. If there is saturation, he stated that the radar signal would have very large amplitude, beyond the range for which radars are designed, and the MRWRS receiver would not properly sample the signal.

[350] Dr. Palmer said that Environment Canada did not engage him to conduct studies specifically related to saturation and he did not look at the issue beyond mentioning it in his report as a possible concern. He stated that he had seen no calculations analyzing the likelihood of saturation occurring at this location. In his witness statement, he made the following comments about saturation:

(e) Given the appropriate experience, software tools, and experimental infrastructure, it is possible to complete saturation calculations prior to the construction of a wind farm. However, this type of analysis could be time consuming, expensive, and there are no guarantees that the results will perfectly match the actual situation after construction.

(f) Normally, studies to determine the likelihood of saturation begin with theory, based on known electromagnetic field solutions. Then, detailed electromagnetic simulations are conducted. Finally, experimentation is used to verify the theory and simulations.

(g) It is very difficult to study the effects of saturation using a simulation. Some theoretical analysis might be possible, as suggested in the Report. The analysis is complicated by the fact that the turbines at the Bow Lake Wind Farm are in the “near field” where certain approximations cannot be made, which normally simplify the analysis.

(h) In this case, measurements are difficult given the size of the turbines and other factors.

[351] Dr. Palmer concluded his report to Environment Canada by stating that “[a]lthough difficult to verify, there is a strong possibility that the lowest elevation angles may actually experience receiver saturation.” In his oral testimony, he stated that saturation would be a difficult issue to solve, but noted that he had made no conclusions regarding saturation, and while saturation was a possible issue, it would need much more analysis. Under cross-examination, he acknowledged that he had never heard of

any saturation occurring at the Great Falls or Fort Drum Wind Farms. He also agreed in cross-examination that receiver saturation at the proposed Project would be unlikely, and that he had not recommended in his report that any further studies be done for saturation.

[352] Dr. Palmer also studied beam blockage, which occurs when a wind turbine completely blocks out radar beams and it is not possible for the radar to see behind the structure. He said that this would be a problem if a turbine were located very close to the radar but, because the closest Project turbine is greater than 3 km away, beam blockage is unlikely.

[353] In his report to Environment Canada, Dr. Palmer assessed the effectiveness of the following techniques to mitigate wind turbine clutter: curtailment; judicious siting; in-fill sensors; and signal processing. He noted, in his witness statement, that the most significant challenge with beginning construction of a wind farm prior to finalizing the details of a mitigation strategy is that mitigation techniques require time to develop. He advised that mitigation measures should be ready when wind farms are constructed, rather than afterwards. He also stated that relocating either the weather radar or the wind farm is a mitigation strategy that would be guaranteed to work, but very expensive.

[354] Dr. Palmer stated that curtailment could be used to stop blade motion during particular weather events, such as severe storms. This would allow backscattered signals from the stationary blades to be filtered using conventional methods, thus mitigating radar contamination. He said this would be the simplest and most effective mitigation scheme, relying on cooperation between the radar operator and the wind farm manager, but noted that there could be a financial impact because power generation would also be curtailed during these periods.

[355] Dr. Palmer noted in his oral testimony that contamination from clutter and multi-path effects will be eliminated if the blade motion stops completely, but added that the blades cannot be completely stopped on all models of turbines and some will continue a slow rotation with the tips of the blades moving at 5 m/s. He said that this would still be rather fast for weather radar, and typical quality control algorithms probably would not work.

[356] Another mitigation technique noted by Dr. Palmer was judicious siting, which he described as a simple method of wind turbine clutter mitigation for a wind farm that has not been designed or is not yet under construction. He reported that US Radar Operations Center has developed general guidelines for turbine placement, given that

closer turbines have more potential for adverse impact. He stated that significant negative impacts, such as multipath scatter and contamination of numerous elevation angles, can be observed where wind farms are between 3 and 18 km from weather radar, and that minimal impacts are typically observed where a wind farm is located farther than 18 km from the radar.

[357] Dr. Palmer reported that in-fill sensors can be used to provide good quality data from the farther ranges contaminated due to multi-path reflections, although data from the exact locations of the turbines will still be contaminated by wind turbine clutter. He stated that alternative options for weather radar include the use of other sensors, such as anemometers and rain gauges at the turbine sites, but the cost of such a strategy could be significant given the number of turbines in a typical wind farm. Dr. Palmer testified that this approach would involve interpolation, which he described as replacing the contaminated data with some sort of average of the uncontaminated data surrounding the contaminated area, based on signal processing. He noted that interpolation would reduce multi-path and Doppler contamination effects for widespread stratiform precipitation, but not for a small-scale convective storm.

[358] Dr. Palmer also noted in his report to Environment Canada that, with advancements in computer technology, radar signal processors have become increasingly capable of supporting sophisticated algorithms. However, while signal processing techniques are currently being explored, he said that the optimal algorithm has not yet been discovered and therefore is not yet operational.

[359] Dr. Palmer concluded his report by saying that “[s]everal mitigation schemes were presented, but the extremely close proximity (3 – 10 km) and the large wind turbine size will limit their overall effectiveness.” He stated that the mitigation strategies set out in Condition N of the REA – curtailment and interpolation – are the most obvious techniques available and should improve data quality. He noted, however, that curtailment would not help mitigate saturation if it occurs, and that interpolation fills in lost data but is less effective for small-scale weather events, such as convective storms or tornadoes.

[360] Dr. Palmer said, in his witness statement, that the most difficult part of Condition N to implement would be the implementation of the Adaptive Management Strategy, including the design and implementation of additional mitigation measures and the monitoring and assessment of those additional measures. In his oral testimony, he recommended that, while Environment Canada is an important assessor, the committee assessing the quality of the mitigation strategy should have some independent

representation as well. He also suggested that Condition N should rank the potential mitigation strategies in relation to cost and effectiveness, and that this should be listed in the REA.

[361] In cross-examination, Dr. Palmer was asked who would be in the best position to make conclusions on operational impacts on the weather radar. He responded that it should be an operational meteorologist, and referred specifically to Jim Young and Mark Seifert of Environment Canada, stating that he believed they would be qualified.

[362] Dr. Palmer further noted that in-fill radar is a possible mitigation measure but would cost approximately \$300,000, in US dollars, and would require additional time and effort on the part of Environment Canada to integrate the additional data into their databases. He added that he has not seen in-fill radar solutions implemented for weather radar.

[363] Dr. Palmer stated that he was not asked to take into account any potential wind farms to the south of the Project in his analysis for the Environment Canada report. He also noted, based on a map of Canadian weather radar stations, that there are no redundant radar signals that would make up for any data lost from the MRWRS.

Area Pilots

[364] A number of pilots testified on behalf of the Appellant. Carl Maniacco, Sasa Pejic and Dr. John Douglas Lawson were qualified as expert witnesses; and Jeff Broadbent, Dr. David Roden and Dr. Michael Kuntz testified as lay pilots.

[365] Mr. Maniacco has several decades of experience as a private and commercial pilot and as a flight instructor. He currently works as a pilot for Jazz Aviation. Mr. Maniacco was qualified by the Tribunal to give expert opinion evidence as a commercial pilot with expertise in the safe navigation of aircraft.

[366] Mr. Maniacco expressed concern about the effects that the Project will have on flight safety in the region, noting that he uses the Environment Canada weather reports and radar to plan his flights and that flight dispatchers plan flights using all available tools, including radar. He said that it is his responsibility, as pilot-in-command, to go over the flight plan and actual weather along the route, based on weather forecasts, satellite images and radar. During severe weather events, he calls his dispatcher to discuss delaying, rerouting or cancelling the flight, and frequently uses radar to avoid areas of bad weather.

[367] Mr. Maniacco stated that he is worried about the potential for wind turbines in close proximity to the MRWRS to disrupt the radar returns, causing blind spots in a large area of northeastern Ontario. He said that, without this information, it would be very difficult to make a safe and informed weather assessment, which would make flight planning difficult during weather events and impact flight safety. He noted that many airlines fly through this area, and plan their flights with minimum allowable fuel.

[368] Mr. Pejic, who has been a pilot since 1983 and a flight instructor since 2004, operates a flight training school in Sault Ste. Marie and is a senior flight instructor at Sault College. Mr. Pejic was qualified by the Tribunal to give expert opinion evidence as a pilot and a flight school instructor with expertise in safe navigation of aircraft and teaching of safe navigation of aircraft.

[369] Mr. Pejic stated that the uninterrupted functioning capabilities of the MRWRS are of critical importance to flight safety, particularly for general aviation traffic and training flights, and cover areas that he frequently uses for flight training. He noted that the decision to fly on any given day depends on readings from the MRWRS because he deals with student pilots who do not have sufficient flight experience to fly in less than ideal weather conditions. He said that students operate under Visual Flight Rules ("VFR"), meaning that they fly with reference to the ground rather than relying on instruments, and this requires that their view not be impeded by adverse weather.

[370] Mr. Pejic gave evidence that radar is imperative to know what weather is likely along a flight route, and he relies on the radar feed to the cockpit to circumnavigate thunderstorm cells, snow squalls or other hazardous weather conditions. He stated that he has often changed flight plans but, because weather can change unexpectedly en route, radar is important to flight services and cockpit resources to aid pilots and keep them safe. He noted that the nearest adjacent radar stations are hundreds of miles away, and there would be a large void in this key corridor if no image were available from the MRWRS.

[371] Dr. Lawson, a former professor and president of Algoma University College, has more than 30 years of experience as a private pilot, including more than 25 years as a Search and Rescue pilot with the Civil Aviation Search and Rescue Association ("CASARA"). He was qualified by the Tribunal to give expert opinion evidence as a pilot with expertise in analyzing, planning and executing a response for search and rescue flights and in the safe navigation of aircraft.

[372] Dr. Lawson stated that weather information from radar has had a critical role in enabling him to conduct many safe flights over rugged terrain to the north and east of Sault Ste. Marie on Search and Rescue training flights and actual searches. He noted that this area has no airports and very little open country so that there are few good options if weather conditions preclude a return to base or continuing to an alternate airport.

[373] Dr. Lawson gave evidence that conditions can change quickly and accurate forecasts are crucial to safety. He said CASARA policies put great emphasis on safety and detailed weather briefings are mandatory prior to every Search and Rescue flight. He stated that his decision whether to fly or not generally depends on the weather briefing, which relies on the forecaster's knowledge of developing weather systems based on weather radar data. He noted that he does not personally look at the radar images, but relies on the knowledge of the flight service weather briefer to interpret data and provide him with up-to-date information.

[374] Dr. Lawson testified he had participated in several actual searches for missing aircraft, which made him aware of the role that either inaccurate forecasts or wilful disregard of good information has played in these tragedies. He described the three major searches that have occurred in the past 25 years. He said that a lack of weather information, or not heeding that information, may have contributed to the loss of these aircraft. He expressed concern that, if forecasts are consistently too conservative and do not reflect actual conditions, they may lose credibility and pilots may ignore weather information.

[375] Mr. Broadbent is a lawyer whose principal office is in Sault Ste. Marie, with branch offices in Wawa and Elliot Lake. He has his own aircraft and flies regularly to his branch offices, and less frequently to Toronto, Oshawa, Ottawa and Montreal. He said he is familiar and has experience with the utility of weather services to pilots and the unique importance of the MRWRS, which he described as critically important to flight safety, particularly for general aviation traffic but also for low level commercial traffic. He testified that, since NAV CANADA closed its Sault Ste. Marie flight service station almost 10 years ago, flight service advisers, who are now located in London, have little appreciation of local meteorological peculiarities.

[376] Mr. Broadbent stated that low level flight routes between Sault Ste. Marie and other northern municipalities are important, and suggested that the route between Sault Ste. Marie and Wawa is the most used and critical route in the area because air traffic passes by way of the shore line rather than flying out over Lake Superior. He said the

minimum safety altitude is relatively higher than in other parts of the province, and there is lake effect and sudden changes in weather.

[377] Mr. Broadbent provided examples of two instances when flight service advisors have advised him that conditions were safe for VFR when they were not. On those occasions, the radar in his cockpit indicated changing conditions and flight services advisors confirmed those conditions and diverted his flight. He described the weather radar systems he has available in his cockpit, and said there have been many other times when he has relied on the radar feed in his cockpit to circumnavigate thunderstorm cells, snow squalls and other dangerous weather, noting that general, non-commercial aviation traffic cannot fly through or over such weather. He stated that weather radar is important to provide current information about where weather patterns are developing and moving.

[378] Mr. Broadbent stated that there will be a radar void if there is no image from the MRWRS, and that a functioning radar station in this location is critical to the safety of the aviation public and their passengers. He gave evidence that approximately 50 aircraft have gone missing in this area but that fewer have gone missing since the introduction of radar technology, and said the MRWRS is used to plan searches, which he has conducted with CASARA, as well as helping to prevent deaths and avoid the need for searches. He expressed concern that, if the Project results in over-warnings about weather, some pilots will disregard those forecasts.

[379] Dr. Roden works as research scientist for the Canadian Forest Service. He has flown as a commercially rated pilot in the past and still flies today, but no longer holds a commercial licence or a rating for instrument flight. He has flown extensively above the eastern shore of Lake Superior and worked in forests in that area.

[380] Dr. Roden described the weather uncertainty between Sault Ste. Marie and Wawa to which pilots must adapt due to weather created over Lake Superior. He stated that there would be further uncertainty in a decision to fly into this area without the knowledge provided by the MRWRS. He testified that, on more than one occasion, he has been unable to continue a flight due to rain showers, snow squalls, fog or thunderstorms, when the weather is clear in the Sault Ste. Marie area. He also noted aircraft that have been lost in the area in the past. He stated, under cross-examination, that he does not fly with access to radar images in the cockpit, noting that this is expensive and most private pilots cannot afford it.

[381] Dr. Kuntz, a family physician in Sault Ste. Marie, has flown in the area for over 30 years, providing medical services by flying into isolated northern communities. He is also a Search and Rescue volunteer with CASARA. He noted the rugged terrain of the area, which he called the main flight corridor for small aircraft between the east and west coasts. He noted two aircraft that had come down in the area, saying that one pilot had survived but the other had never been found.

[382] Dr. Kuntz, like most pilots, contacts the London Flight Information Centre ("FIC") prior to flying into this area. He stated that weather specialists rely on the MRWRS to give their briefings, and that pilots have access to weather radar on their home computers, but said that he does not typically use the computer. He noted that interesting local weather events occur near the Montreal River during the summer and gave the example of a 5 – 10 km wide band of fog from east to west, up to 30 km inland from the coast, which he has encountered many times in the past. He observed that radar cannot detect fog, and most small aircraft are only equipped to fly in visual conditions, so they may arrive in this area with the unknown fog in their path and need to find a new course. He suggested that a possible course of action in this situation would be to fly east around the fog, which would take them into the area where the weather radar may be compromised by the Project turbines.

Area Residents

[383] The Appellant called as witnesses two residents who live and drive in the Montreal River and Goulais River area: Gillian Richards and Carolyn Harrington.

[384] Ms. Richards resides with her husband in Goulais River and they must travel approximately 46 km to reach Sault Ste. Marie several times each week for medical appointments, shopping and other services. She stated that road conditions are directly impacted by changeable weather patterns in the vicinity of Lake Superior, and she has experienced rapid and unexpected changes in weather conditions along the coastal corridor.

[385] As a Trustee and Chair of the Goulais Bay Local Roads Board for the past decade, Ms. Richards is aware of the need for safety on roads that are regularly used by logging trucks. She noted that the steep hills, curves and rock cuts along the area roads can change the conditions suddenly, resulting in reduced visibility that creates the danger of accidents and harm for motorists. Given these geographic features, she said it is imperative to consult the weather reports coming from the MRWRS to ensure travel

safety. She stated that there can be sudden bursts of wind and snow squalls, and road closures are not uncommon.

[386] Ms. Richards gave evidence that she and her husband use electronic devices to consult the weather information available from Environment Canada, the Weather Channel and other websites whose weather reports are generated through the MRWRS. She said they check these weather reports on a daily and hourly basis to determine if it is safe to travel or to engage in recreational activities on the lake and in the highlands. She stated that they are depend on the weather forecasts for information on the air temperature, the amount and type of precipitation, visibility, wind speed, wind chill factor, and weather advisories warning of impending storms and extreme weather fronts. She noted that weather conditions at their property can be very different from even other areas close to them.

[387] Ms. Richards testified that the visitors who travel along the Lake Superior coast each year also require weather information from the MRWRS. She also noted that weather reports are important to decisions to cancel school buses and close schools. She said they use the weather information from the MRWRS to determine if the roads are closed to traffic, because automobile insurance will not be effective if they travel on a road that has been closed. Ms. Richards described accidents on the road of which she was aware.

[388] Ms. Harrington has been a seasonal resident of the Montreal River Harbour for most of her life, and has spent an increasing amount of time there since retiring from full time work. She also resides in Sault Ste. Marie. She stated that the Montreal River is located in a micro climate that features thunder squalls, winds, snow storms and thick fog. She noted that the population on the coast is sparse and services are an hour's drive away, so residents are dependent on the roads and the weather.

[389] Ms. Harrington stated that the radar images from the MRWRS allow for an actual look at the weather in this micro climate to determine specifics regarding precipitation and wind direction. She said that she relies heavily on Environment Canada's weather service, accessing it daily through the Environment Canada radar website or by phone if internet service is not available. She testified that weather must always be considered and the radar site consulted before travelling by road in the area. She noted past examples of adverse weather conditions and resulting impacts and accidents, and expressed concern that the ability of the MRWRS to provide accurate weather data will be compromised by the Project, increasing risks to the public.

Evidence of the Director

Jim Young

[390] Mr. Young has a B.Sc. degree and works as the Science Liaison for the National Weather Program – Meteorological Service of Canada (“MSC”) at Environment Canada, where he has 12 years of experience in weather radar research. He was qualified by the Tribunal as an expert in weather radar data, analysis and processing, and the impact of wind turbines on weather radar data. He stated that between October 2010 and January 2014, he had personally analyzed or led a scientific team in analyzing more than 200 different wind farm proposals.

[391] Mr. Young provided background on the MSC and its mandate to provide meteorological service whenever it is a matter of public safety or within the public interests. He said that this mandate includes forecasting daily weather conditions and issuing weather warnings, and noted that weather radars are critical tools for forecasting severe weather events such as thunderstorms, tornadoes or snow squalls. Mr. Young emphasized that only an operational forecast meteorologist employed by MSC can assess the impacts of the Project on the issuance of weather warnings in Canada. The National Radar Program is responsible for the maintenance and continuous operation of Canada’s weather radar network, which consists of 31 weather radars covering the regions across the country that are prone to thunderstorms.

[392] Mr. Young described how weather radar systems operate and noted that, while many things can interfere with the quality of data received, wind turbines present challenges due to their moving blades. He identified concerns relating to blockage, clutter and multi-path scattering. Mr. Young also raised the issue of reflectivity contamination, where Doppler radar detects rotating turbine blades as an object with velocity that cannot be filtered out, providing false information that can be misleading for forecasters under storm conditions and appears similar to heavy precipitation. He stated that the experiences of other meteorological services indicate that wind turbines in close proximity to weather radars can interfere with the ability to detect severe weather and reduce the quality of weather forecasts and warnings.

[393] Mr. Young reviewed several international guidelines [by the World Meteorological Organization (“WMO”), the European Operational Programme for the Exchange of Weather Radar Information and the US National Oceanic and Atmospheric Administration] that recommend “no-build” zones ranging from 3 – 5 km away from weather radars. He characterized these recommendations as general guidance and

said that individual wind farms need to be evaluated on a case-by-case basis in relation to local terrain and the impact of the number of turbines. He agreed that this Project is the closest location of a wind farm to a weather radar station that Environment Canada has considered.

[394] Mr. Young described how radar data processing works and discussed three common radar image products distributed to different end users, including forecasters, NAV CANADA and the general public. The Echo Top product shows the maximum height of the radar echo and is used as an indicator of the height of a thunderstorm. The Constant Altitude Plan Position Indicator (“CAPPI”) image is a two-dimensional horizontal slice, of three-dimensional volume scan data, taken at a constant height. The PRECIP product is a two-dimensional representation of the precipitation near the ground produced from Doppler and conventional data. PRECIP images show the intensity of precipitation, and an animated sequence of the images estimates the track of the precipitation.

[395] Mr. Young gave evidence concerning the chronology of Environment Canada’s review of the Project. In September 2009, Environment Canada communicated its concern to the previous proponent that, due to the proposed wind farm’s close proximity to the MRWRS, it could significantly impact forecasters’ ability to produce timely, accurate weather warnings. Environment Canada continued to articulate concerns about impact in 2010 and 2011, following an updated proposal. After the Approval Holder took over development of the Project, Environment Canada submitted an official comment in December 2012 that outlined concerns, identified mitigation strategies, and concluded that, as proposed at that time, the Project and the MRWRS would be unable to co-exist without a significant impact on users of weather information. In that submission, Environment Canada recommended against Project approval unless a workable solution for acceptable co-existence was found.

[396] Subsequent to December 2012, Environment Canada and the Approval Holder engaged in discussions about potential interactions between, and mitigation measures to apply to, the Project and the MRWRS. The Approval Holder retained Geoffrey Blackman and Dr. Isztar Zawadski to provide an assessment, and Environment Canada retained Dr. Palmer to provide an independent report. Mr. Young stated that Environment Canada concluded, based on the expert reports, that:

- there would be no significant blockage of the radar by the turbines, meaning that the scope of the impacted area would be limited to the physical area of the turbines and 10-30 km beyond due to multi-path scattering;

- the wind turbines would not affect the radar coverage of Highway 17 or Highway 556;
- no impact would be expected to the radar coverage of Highway 129, unless multi-path effects extend further than currently predicted, in which case the result would be the appearance of more precipitation, over a larger area, than is actually present; and
- due to the finding of no significant blockage, mitigation would be possible.

[397] Mr. Young noted that Dr. Palmer indicated the possibility that the MRWRS could receive saturation, but said that this did not concern Environment Canada because the weather radar station has hardware filters built in to prevent such an occurrence from damaging the radar.

[398] Mr. Young stated that Environment Canada and the Approval Holder then negotiated the conditions that are included in Condition N of the REA, and went on to review those conditions. In particular, he noted that the Exceptional Weather Event Protocol is a curtailment agreement, to be implemented while mitigation options are being determined, implemented and evaluated. The Exceptional Weather Event Protocol allows Environment Canada to request a temporary suspension of the turbine operation, which Mr. Young referred to as “feathering”, during weather events in which human life and property are significantly at risk, such as tornadoes, hail, heavy rain, wind gusts and snow fall. The criteria to be used to trigger the Exceptional Weather Event Protocol are under development by Environment Canada. He clarified that “feathering” may mean that turbine blades are still moving at a velocity of about 5 – 6 m/s, or that blades are locked and stationary.

[399] Mr. Young stated that the Exceptional Weather Event Protocol has not yet been finalized, and said that a complete stoppage of the turbines would provide Environment Canada with better assurance that the radar data would be acceptable without further mitigation. It is his understanding that all turbine blades may be locked down. He also acknowledged, under cross-examination, that curtailment is not a feasible mitigation measure with respect to low level squalls.

[400] Mr. Young testified that the Follow-Up Plan would determine whether the wind turbines affect Environment Canada’s ability to provide accurate and timely weather forecasts, and the first mitigation technique to be applied is data interpolation. He stated that ongoing mitigation monitoring would verify if mitigation measures are effective and, if not, additional mitigation measures would be required.

[401] He also said that the Adaptive Management Strategy would provide the framework to apply subsequent mitigation options, such as infill sensors, if required. He noted in his witness statement that, if mitigation steps are exhausted and prove to be insufficient, “the final solution will be to move the Montreal River Harbour Weather Radar to a location where the data contamination is manageable.” Mr. Young stated, under cross-examination, that it would take approximately one to two months to move weather radar. He also agreed that there are other wind turbine projects proposed in the region that were not considered by Environment Canada in the context of this Project.

[402] In conclusion, Mr. Young stated that the full quantitative impact to the radar data cannot be anticipated prior to the operation of the wind turbines, and that Environment Canada believes the Project will contaminate radar data generated by the MRWRS at low elevation scans, in the absence of any mitigation. He stated that some radar products, including PRECIP, would be affected by clutter in the radar data, but that products generated from higher elevation scans would not be affected. Specifically, Echo Top would not be affected and CAPPI would only be marginally affected. Mr. Young testified that, in his opinion, Environment Canada would continue to be able to produce timely and accurate forecasts as a result of mitigation steps under Condition N of the REA.

Mark Seifert

[403] Mr. Seifert has a B.Sc. degree and a Diploma in Meteorology, and is a Lead Meteorologist and Program Supervisor at Environment Canada’s Ontario Storm Prediction Centre. He has 15 years of experience as a meteorologist. Mr. Seifert was qualified by the Tribunal to give expert opinion evidence as a meteorologist with expertise in severe weather and aviation forecasting.

[404] Mr. Seifert gave detailed evidence concerning steps involved and tools used in producing a weather forecast, and concerning weather watches and weather warnings. He explained how weather radar is used in forecasting, noting that: conventional radar imagery detects precipitation and estimates its intensity, amount and maximum height; and Doppler radar imagery detects wind speed and direction at particular levels, significant wind events and rotating thunderstorms with higher probability of producing severe weather.

[405] He stated that radar imagery is most useful and heavily relied upon for forecasting weather in the short term of up to six hours, including issuing weather

warnings. He noted that, in large-scale weather events, radar is used to monitor precipitation once it is occurring and to verify previously issued warnings. He said radar imagery is less critical to issuing initial weather warnings for large-scale events, but may initiate a weather warning for small-scale weather events, such as snow squalls and thunderstorms.

[406] Mr. Seifert testified that NAV CANADA FICs use weather forecasts provided by Environment Canada, and that Environment Canada meteorologists produce Graphic Area Forecasts (“GFAs”), Terminal Aerodrome Forecasts (“TAFs”), Airmen’s Meteorological Information (“AIRMETs”) and Significant Meteorological Information (“SIGMETs”) for NAV CANADA and the aviation community. He explained how radar data is used to produce these products. He noted that approximately one-third of Ontario does not have radar coverage, and radar data is sometimes not available for different reasons. If radar is unavailable, forecasters make use of such tools as surface observations, satellite imagery, lightning data and computer models.

[407] He said that forecasters are trained to recognize and deal with degraded data, especially if it is permanently degraded. He described the ways in which degraded data can occur, and said that forecasters deal with degraded data by being aware it is there, or if it is not permanently degraded, by recognizing and accounting for it when it occurs.

[408] Mr. Seifert gave evidence that the area around Bow Lake experiences a wide variety of weather, noting that the area is prone to snow squalls, high snowfall amounts at times, and heavy rainfall. He said that: thunderstorms occur, although less frequently than in southern Ontario; fog occurs often, especially in late spring and early summer; and tornadoes are possible but very rare.

[409] He went on to describe how radar data from the MRWRS is used to generate shorter-term weather forecasts in the Bow Lake area, noting that the data used in producing forecasts for this area cannot be obtained from other radars. He said that forecasters rely on weather radar to varying degrees in relation to different types of weather events. For example, radar data is used to monitor the intensity and location of snow squalls, and often used to issue warnings for snow squalls. It is used to monitor the development of thunderstorms and determine their severity or potential to generate tornadoes, and to aid in making decisions to issue severe thunderstorm or tornado warnings. Radar data is used to monitor and verify snowfall and heavy rain events that have been forecast, and may be used to amend forecasts. It is also sometimes used to monitor and verify freezing rain events. However, radar data cannot be used to forecast or detect fog.

[410] Mr. Seifert noted that permanently degraded or false data, as expected from the “multi-path” effects of wind turbines, is often relatively weak in comparison to the reflectivity returns from real weather. He said that this kind of clutter would become washed out and not seen when real precipitation, particularly of high reflectivity, passes over or near it. He observed that where the clutter has high reflectivity, as expected from the wind turbine locations, it is easy to identify when there is little real weather occurring because it will only appear on scans from low elevations and will not move.

[411] Addressing the Project’s effect on forecasters’ ability to detect significant weather events, Mr. Seifert noted that he prepared an initial report on the potential impacts in 2010, based on a worst-case assumption of complete radar beam blockage in the low level scans. He testified that his current understanding is based on Dr. Palmer’s report and discussions with Mr. Young. On that basis, he provided his opinion concerning the potential impact on forecasting significant weather events, with no mitigation, as follows:

Summer

- Where a significant small-scale summer weather event, such as a thunderstorm, occurs directly over the wind turbine locations, the forecaster would be able to detect the presence of the thunderstorm through mid/high level scans and lightning detection. However, the degraded low level radar data would affect the ability to discern if the thunderstorm is severe or not. If there is a possibility that severe weather is occurring but some doubt, the forecaster is likely to err on the side of caution and issue a severe weather warning. This could lead to over-warning and negatively impact the accuracy of Environment Canada’s weather warnings.
- Where this type of significant small-scale summer weather event occurs to the southeast of the turbines, where multi-path scattering is expected to cause clutter, multi-path effects are not expected to significantly affect the ability to detect and issue warnings.

Winter

- No impact is expected on the ability to detect and issue warnings for snow squall formation, even without mitigation, as this occurs over Lake Superior. Where a significant small-scale winter weather event, such as snow squalls, occurs directly over the wind turbine locations, direct radar information regarding the intensity of the snow squall will not be available

due to clutter reflectivity at the low levels. However, since snow squalls are quasi-linear, reflectivities to the west of the turbines will provide a good proxy so that clutter at the turbines is not expected to have a significant effect on Environment Canada's ability to issue snow squall warnings.

- Where this type of significant small-scale winter weather event occurs to the southeast of the turbines, where multi-path scattering is expected to cause clutter, it may be difficult to distinguish between real and false returns with respect to precipitation. In these cases, the forecaster's understanding of snow squall intensity will be reduced in the affected area, resulting in forecasts that err on the side of caution and over-warn, negatively impacting the accuracy of Environment Canada's weather warnings.

[412] Mr. Seifert described the potential impact of the turbines on aviation products, with no mitigation, as follows: no significant impact expected on TAFs; with respect to GFAs and AIRMETs, a tendency to over-forecast thunderstorms at the turbine site and snow squall intensity in the area affected by multi-path scattering, but no impact expected on forecasting icing or turbulence; and a tendency to over-forecast thunderstorm intensities for SIGMETs where a thunderstorm is occurring directly over a turbine location, but no impact expected on forecasting icing or turbulence.

[413] In summary, Mr. Seifert concluded that, without mitigation, it is expected that reflectivity clutter and multi-path scattering will degrade data associated with the lower scan angles from the MRWRS at the turbine locations and to the southeast of the turbines, so that direct radar information regarding the location and intensity of precipitation may not be available. He opined that, in order to compensate for degraded low level radar data, forecasters will likely have a tendency to forecast the worst likely scenario for thunderstorms that occur at the turbine sites and snow squalls that occur in the area affected by multi-path scattering, negatively impacting the accuracy of Environment Canada's weather warnings.

Kenneth Seabrook

[414] Mr. Seabrook is the Maintenance Superintendent of Provincial Highways Management with the Northeastern Region of the Ontario Ministry of Transportation ("MTO"). In this role, he administers the Area Maintenance Contract ("AMC"), under which a single contractor performs road maintenance work year round. Prior to the

AMC, he was responsible for the work delivered by several different contractors, including snow clearing.

[415] Mr. Seabrook testified that the MTO does not use Environment Canada radar imagery from the MRWRS for forecasting events that lead to the need for road clearing operations on either Highway 556 or Highway 129 between Thessalon and Chapleau. He said that, instead, the MTO determines the need for road clearing based on the contractor doing routine patrols of these highways and from reports from the Ontario Provincial Police or MTO staff.

[416] Mr. Seabrook also stated that the MTO does use Environment Canada radar imagery for events on Highway 17 on the north shore of Lake Superior, in addition to the MTO's own Road and Weather Information System sites located near Heyden and on the Montreal River Hill. He noted that sensors in the pavement at these sites provide road information such as temperature, surface moisture readings and salt residue, and that the tower adjacent to the road sensors determines wind speeds, precipitation types and humidity levels. He said that the MTO uses this information to forecast weather events and conduct appropriate road maintenance work.

Evidence of the Approval Holder

Bryan Tripp

[417] Mr. Tripp, a professional engineer, is the Project Development Lead responsible for the overall development of the Project, including facility location, design, permitting and consultation. He provided a chronology of the Approval Holder's consultation with Environment Canada on the potential effect of the Project on the MRWRS.

Geoffrey Blackman

[418] Mr. Blackman, who has a Bachelor's degree in electrical engineering, is the Founder and Principal Consultant of Westslope Consulting, LLC ("Westslope"), a company that provides radar consulting and technical services to the wind industry. This work includes identifying impacts and outlining mitigation techniques and strategies. He was qualified by the Tribunal as an expert on weather radar and the impacts of wind projects on weather radar.

[419] Mr. Blackman stated that the Approval Holder hired Westslope to evaluate the potential effects of the Project on the MRWRS after Environment Canada expressed concerns regarding potential interference with the radar. He noted that he identified the Fort Drum Weather Station, the closest known wind project to a US weather radar, as

an ideal case study to understand the potential effects of the Project. He testified that, to his knowledge, there are no known operational impacts resulting from the wind turbines near the Fort Drum weather radar.

[420] Mr. Blackman gave evidence that an examination of empirical Fort Drum weather radar data for a period of rain activity showed that: worst case multipath echoes behind the wind turbines appear to be limited to within two times the maximum range of the turbines; Doppler contamination is limited to within the vicinity of the Project; multipath echoes are overpowered by rain (meaning that the strength of one radar signal is larger in amplitude than another) and do not appear to be an issue; and beam blockage does not appear to be an issue. He also stated that empirical Fort Drum weather radar data for a period of snow activity showed that: worst case multipath echoes behind the wind turbines appear to be limited to within three times the maximum range of the wind turbines; Doppler contamination is limited to within the vicinity of the Project; multipath echoes appear to interfere with the reporting of weak snow echoes less than or equal to 15 decibels relative to Z (“dBZ”); and beam blockage would not be a concern for the MRWRS.

[421] Mr. Blackman provided his opinion that these findings suggest the likely effects of the Project on the MRWRS, before applying any mitigation measures, would be limited to:

- multipath echoes within a 43.7 degree wedge from 101.8 to 145.55 degrees from north, for 30.6 km behind the Project turbines from 10.2 to 40.8 km, which may have a limited effect on the reporting of weak snow echoes less than or equal to 15 dBZ; and
- Doppler contamination limited to within the vicinity of the Project, extending from 3.1 to 10.2 km and 101.8 to 145.5 degrees from true north of the MRWRS.

[422] He testified that the other 316.3 degrees of radar coverage not occupied by the Project would not be affected, including the radar coverage provided by the MRWRS over Lake Superior and Highway 17.

[423] Mr. Blackman stated that multipath echoes and Doppler contamination will, if anything, produce false indications of localized precipitation at times when no precipitation is actually occurring. He said that trees in the area of the Project may decrease some multipath echoes. He also observed that, while a small number of Project turbines may produce Doppler contamination and/or multipath effects stronger

than those observed in the Fort Drum weather radar data, the effects of the Project on the MRWRS are expected to be less significant as there are 159 fewer wind turbines in the Project and the potentially affected area is smaller and limited to 37.7 km of predominantly uninhabited, forested Crown land. He stated that, based on the case study, it is not expected that interference would prevent the radar from reporting rain or thunderstorm activity.

[424] Mr. Blackman provided his opinion the MRWRS will continue to have good visibility of Highways 129 and 536, noting that Highway 556 is approximately 70 to 105 km from the MRWRS, and Highway 129 is more than 105 km from the MRWRS. He stated that the Project's effects on the weather radar were expected to be less noticeable at antenna elevation angles of 1.5 degrees and higher. He said that Westslope was not asked to study saturation, as receiver protection was not identified as a significant issue, but added that saturation was not observed in the Fort Drum data.

[425] Regarding mitigation measures, Mr. Blackman testified to his view that the data interpolation provided for in the REA would reduce multipath and Doppler contamination effects. He further stated that the mitigation strategies in Condition N of the REA are the most obvious techniques available and should improve the quality of the data.

Terry Kelly

[426] Mr. Kelly is a Principal and Managing Director of Soteira Solutions, a consulting firm that provides safety risk management advice and services to the aviation industry, including in the field of wind energy. He began his aviation career as a Search and Rescue pilot in the Canadian Forces, and has worked in other positions in the aviation industry. Mr. Kelly was qualified by the Tribunal as an expert on aviation safety.

[427] Mr. Kelly stated that the Canadian Aviation Regulations ("CAR") set out the legal responsibilities of a pilot-in-command of an aircraft, and s. 602.72 of the CAR requires the pilot-in-command to be familiar with the available weather information appropriate to the intended flight before commencing a flight. He noted that a pre-flight weather assessment is required as part of flight planning and it should be updated and supplemented throughout the flight.

[428] Mr. Kelly discussed the sources of weather information available to a pilot, including NAV CANADA, which provides a range of aviation services and products. NAV CANADA provides weather services on its Aviation Weather website and through FICs across Canada, including the FIC in London, Ontario. He noted that Flight Service Specialists at FICs communicate directly with pilots by phone, prior to a flight, or by

aviation radio to provide interpretive weather briefings and advice on planned routes, including recent and forecast changes in weather conditions and information for alternate routes. He said that NAV CANADA works with Environment Canada in disseminating weather information to pilots.

[429] Mr. Kelly described the NAV CANADA weather products commonly used by pilots, including TAFs, GFAs and aviation routine weather reports known as METARs. METARs, which are generated at least hourly and more frequently in rapidly changing conditions, reflect current weather information and may contain pilot reports of meteorological conditions ("PIREPs"). He noted that some weather information sources used for pre-flight briefing may also be available to pilots while en-route through radio communication, mobile phones or internet access.

[430] In Mr. Kelly's opinion, VFR pilots of small aircraft are strongly dependent on information they receive in NAV CANADA briefings, and typically consult weather forecast products produced by Environment Canada for NAV CANADA, including GFAs, TAFs, AIRMETs, SIGMETs and METARs. He said they typically would not consult Echo Tops, CAPPIs or PRECIPs.

[431] Mr. Kelly testified that pilots occasionally encounter weather conditions beyond their level of training, competence or expertise. He stated that, based on the weather forecasts, a prudent pilot already will have planned alternatives, including flying with extra fuel to circumvent poor weather, diverting to a different airport or aborting the flight and returning to the departure point.

[432] Based on the evidence of Mr. Young and Mr. Seifert, Mr. Kelly provided his opinion that the potential effects of the Project on the weather data from the MRWRS, even before mitigation, would have no adverse impact on aviation safety. He said that weather over-warnings would likely cause pilots to avoid areas where thunderstorms or snow squalls are forecast, reducing the possibility of an accident. He stated, in particular, that VFR flight requires a pilot to maintain visual reference to the surface of the earth, so a VFR pilot would take a severe weather watch or warning very seriously. He noted that, since a prudent pilot would avoid a thunderstorm or snow squall of any intensity, any effect of the Project on a forecaster's ability to determine the intensity of a weather system would not be a concern.

[433] Mr. Kelly further stated that, because the geographic area of potential over-warning is quite small, pilots should be able to fly around the area. He testified that he

would not normally expect pilots to be flying over this area while taking a direct route between Sault Ste. Marie and Wawa or Chapleau.

Submissions

Submissions of the Appellant

[434] The Appellant submits that, due to the close proximity of the Project to the MRWRS, the Project will interfere with ability of users, such as pilots and people living in the surrounding area, to rely on the radar data to protect their safety and security, causing serious harm to human health. The Appellant further submits that the Project's impact on the MRWRS will interfere with the ability of weather forecasters to obtain accurate information and issue accurate forecasts and this will put the lives of individuals, pilots and their passengers in jeopardy, causing serious harm to human health. The Appellant says that the area of radar coverage that the Project will impact is an important navigation corridor.

[435] The Appellant submits that, while the statutory test in s. 145.2.1(2) of the *EPA* requires an appellant to prove that a project will cause "serious" harm, that can be expressed by demonstrating that it will cause "important or dangerous possible harm, consequences, or mischief to physical, mental and social well-being". The Appellant cites the definition of human health accepted in *Erickson* at para. 629, 630 and 648, that "[h]ealth is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". The Appellant submits that this is a broad definition of health that protects the social fabric, and says interference with weather radar would not only put pilots at risk of death but also cause social harm by perpetual over-warnings of weather circumstances that do not actually exist.

[436] The Appellant asserts that there is no question that the data will be contaminated, and that saturation could be a problem, noting that Environment Canada has hardware in place to protect the MRWRS radar receiver from damage, but it does not prevent saturation from occurring. The Appellant points out that all 36 turbines will be visible by the MRWRS, and that none of the experts could confirm what impact the Project will have because they did not properly study those impacts and, according to Environment Canada, they will not even know what those impacts are until the installation of turbines occurs.

[437] The Appellant likens the approval to "testing on the human population simply because it is in a low density area", and says that the Tribunal should reject this approach because it is in conflict with the principles of the *EPA*, the common law and

common sense. It asserts that Environment Canada has never dealt with a wind farm so close to a weather radar, has no policy on how to consider applications for installations of wind farms near weather radar stations and has rejected the WMO standards for turbine construction without a proper explanation. The Appellant also states that Environment Canada has not considered the cumulative impact of future wind projects in the area that may impact the MRWRS.

[438] The Appellant notes that, while all parties agree that mitigation is required to avoid the impacts of the Project on the MRWRS, the content and manner of implementation of the mitigation has not been decided. It submits that, in considering fundamental human health and safety issues like the mitigation of known impacts on radar, the Tribunal must have some certainty about what it is being asked to consider and approve. The Appellant states that mitigation measures should be ready when construction commences on the Project, not afterward.

[439] The Appellant submits that Condition N is not a mitigation condition that can be approved by the Director or this Tribunal under applicable law because it impermissibly delegates the responsibility of acting as an approval authority to Environment Canada, giving it the final say on negotiating the terms of agreements that Environment Canada has never entered into before. It states that Condition N, as drafted, makes Environment Canada the final arbiters of the content of Condition N and therefore whether or not the Project is built, noting that Environment Canada is the same organization that approved and contributed to the drafting of the condition that is under appeal.

[440] The Appellant says that the determination of whether or not Condition N is sufficient to prevent serious harm to human health is a decision that can only be made by the Tribunal, and submits that it is beyond the Tribunal's jurisdiction to delegate this role to Environment Canada. It asserts that the Tribunal has the statutory mandate to examine the mitigation measures to ensure their effectiveness in preventing serious harm to human health.

[441] The Appellant cites *Brant Dairy Co. v. Ontario (Milk Commission)*, [1973] S.C.R. 131 ("*Brant Dairy*"), at para. 27, in support of the proposition that a statutory body, such as the Tribunal, must stay strictly within its powers and, without adequate statutory language, it cannot redelegate, to itself or anyone else, the powers conferred upon it alone to be exercised by statute or regulation. It also relies on the Ontario Municipal Board decision of *Ron Forbes Ent. Ltd. v. Bruce (County)*, (2006), 55 O.M.B.R. 227 ("*Ron Forbes*"), at para. 26-27, in submitting that if mitigation measures are of dubious

character or are ambiguous, it is an error in law to find that the serious harm arising from the interference with the MRWRS can be mitigated.

[442] Regarding the decision in *Ostrander*, in which the Divisional Court held that the Tribunal ought to have accepted a permit issued under the *ESA* at face value and assumed that its requirements would be properly and adequately monitored by the MNR, the Appellant makes a distinction. It accepts that the Tribunal should assume that, once *ESA* conditions are imposed, the MNR will perform its administrative functions and enforce them, but submits that this does not relieve the Tribunal of its responsibility to look at the mitigation conditions in the REA and determine whether they are adequate. The Appellant asserts that the *ESA* regime includes detailed regulations and specific standards, whereas in this case Environment Canada has engaged in negotiations with the Approval Holder resulting in mitigation conditions that it argues are meaningless.

[443] The Appellant further submits that Condition N, as drafted, is not a condition that can be reviewed by the Tribunal as to the effectiveness of mitigation measures because Environment Canada does not know even know what those conditions are. It says that, on the face of the record before the Tribunal, the Project cannot be permitted to proceed because it will cause serious harm to human health that cannot be demonstrably mitigated by Condition N. The Appellant characterizes Condition N as “an obligation to enter into an agreement with unknown terms” and says this is not sufficient for the Tribunal to examine the strength of the conditions.

[444] The Appellant asserts that the actual conditions in Condition N will be critical to determine whether impacts from the Project can in fact be mitigated. The Appellant observes that Condition N does not include a requirement to move the radar station, although Mr. Young testified that Environment Canada is prepared to do this to ensure that there will be no impact on the radar. It says that the content of the proposed mitigation conditions must be analyzed.

[445] The Appellant asserts that the Tribunal should quash the Director's approval of the Project and specifically refuse to give permission to construct any turbines within 18 km of the MRWRS. The Appellant asks that the construction of all wind turbines in this area be permanently stayed. In the alternative, should the Tribunal permit construction to proceed, it requests that the Tribunal impose a 5 km no build zone around the MRWRS, stating that there is no reasonable evidence upon which the Tribunal should find it appropriate to deviate from the internationally recognized standard established by agreement at the WMO. The Appellant also submits that

Condition N should be modified to limit the construction of turbines using a phasing plan that would allow a limited number of the turbines located the farthest away from the radar to be constructed first to demonstrate, for a period of three years, that any mitigation measures that are implemented are effective.

Submissions of the Director

[446] The Director submits that the Project will not cause any risk to human health, let alone serious harm. The Director notes that the Appellant must prove that the alleged harm to human health is “serious”, and that a case-by-case assessment that is readily applicable to both branches of the test is required to determine what constitutes serious harm. He says that what is serious must be interpreted according to all relevant factors, and their respective importance and weight. The Director further submits that, in subjects where the Tribunal has no expertise, it must rely on experts in the field to reach conclusions relating to serious harm.

[447] The Director asserts that the wording of the term “serious harm to human health” is not ambiguous, saying that statutory language should be interpreted according to its plain meaning, as held by the Supreme Court of Canada in the case of *Rizzo & Rizzo Shoes Ltd. (Re)*, [1998] 1 S.C.R. 27 (“*Rizzo*”).

[448] The Director states that the radar imagery and forecasts that pilots depend on will not be impacted by the Project, even without mitigation measures, and that forecasting would be impacted only in respect of radar data at ground level for thunderstorms occurring directly over the Project and snow squalls occurring within a narrow wedge approximately 40 km southeast of the Project. The Director says that, in both cases, the contaminated data would give the impression of more precipitation in the affected area than is actually there, which would result in the forecaster “over-describing” the intensity of snow squalls and thunderstorms and potentially issuing a thunderstorm warning for the area over the wind turbines when it may not have been necessary.

[449] The Director also submits that the public will still obtain timely and accurate forecasting of road conditions and weather that may impact roads, even without mitigation measures because the location of the Project in relation to the MRWRS means that all radar data west of the MRWRS will be completely unaffected. He states that Highway 17 and Lake Superior are both west of the MRWRS and, since the vast majority of weather in the region moves from west to east, inland from Lake Superior, data regarding oncoming weather heading towards or over Highway 17 will be

uncontaminated. He says that the secondary roads in the area, will also be unaffected by the Project because they are outside the range of anticipated data contamination.

[450] The Director submits that Environment Canada reviewed the potential problems with the Project and concluded that the Project and the MRWRS can co-exist subject to the framework agreement that became Condition N of the REA. He further submits that, in reaching this conclusion, Environment Canada placed a great deal of weight on the findings of Dr. Palmer that there would be no blockage to the MRWRS and that saturation was unlikely.

[451] With respect to the WMO guidelines on siting turbines, the Director says that they were considered by Environment Canada as part of its decision-making process along with other factors such as terrain. He notes that Dr. Palmer testified that Environment Canada staff are the most qualified to provide an opinion on what operational impact the Project will have on the MRWRS. The Director asserts that Environment Canada staff have analyzed the potential impacts of 200 wind farm proposals on nearby federal radar stations. He also states that, with respect to the cumulative impact of future wind projects in the region, Mr. Young said that Environment Canada would take into account all possible data contamination in the area when negotiating the final details of the agreement between Environment Canada and the Approval Holder.

[452] The Director asserts that the mitigation measures will ensure that systemic over-describing or over-warning in weather forecasting is rare or does not occur, and the Exceptional Event Weather Protocol will prevent data contamination during serious weather events. He notes Mr. Seifert's testimony that weather radar is most useful in analyzing the weather in the short term up to six hours, and not as useful for long range forecasting.

[453] The Director says that, while Mr. Young testified that the full quantitative impact to the radar cannot be anticipated prior to the operation of the turbines, the expert witnesses stated that the qualitative impact from the Project – multi-path scattering in a contained area – has been identified and the way that multi-path scattering will interfere with data has also been extrapolated. He states that the remaining issue is the degree to which the data contamination can be addressed by interpolation software or whether other mitigation measures, such as infill radar, will be necessary and that cannot be determined until the wind turbines are actually operating, which is why the Exceptional Weather Event Protocol will be in place.

[454] The Director submits that the Tribunal cannot dismiss the approval on the ground of impermissible delegation because the decision to include Condition N, and the role to be played by Environment Canada within that condition, was part of the approval process undertaken by the Director and does not fall within the scope of the Tribunal's jurisdiction under s. 145.2.1(2) of the *EPA*. He says that Condition N does not delegate the final decision of whether the Project is constructed, and under what conditions, from the Tribunal to Environment Canada, and that the Tribunal retains the authority to determine if the Project operating in accordance with its approval will cause serious harm to human health.

[455] The Director states that, because the MRWRS falls under federal legislation, the Tribunal may not assume the jurisdiction to sit on an appeal of Environment Canada's decision to negotiate the content of a framework agreement with the Approval Holder. Citing *Ostrander*, the Director submits the Tribunal must accept Condition N of the REA at face value and accept that the requirements of the agreement and its final details will be appropriately determined and monitored by Environment Canada and, based on these assumptions, consider the impact of the mitigation measures set out in the agreement on the issue of serious harm. He says that, in *Ostrander*, the Divisional Court held that the Tribunal committed an error of law by failing to give sufficient weight to the existence of a permit under the *ESA*, the conditions attached to the permit, the mandate of the MNR to monitor and enforce the permit, and the express requirement in the REA in *Ostrander* that the proponent comply with the *ESA* Permit. The Director says that accepting Condition N at face value is not a delegation by the Tribunal's powers under the *EPA* to Environment Canada.

[456] The Director also asserts that the fact that the framework agreement set out in Condition N has not been finalized does not mean that it should, therefore, be discounted. He notes that in *APPEC*, at para. 557 and 624, the fact that an alvar management plan was in draft form did not prevent the Tribunal from determining that the mitigation measures outlined in the plan would be sufficient to prevent serious and irreversible harm. The Director says that neither the *Brant Dairy* nor *Ron Forbes* cases are relevant to this appeal, because neither addresses a situation where the evidence on mitigation measures involves a government instrument outside of the scope of the Tribunal's jurisdiction to review.

Submissions of the Approval Holder

[457] The Approval Holder submits that the Appellant has not met its onus of proving that serious harm to human health will occur from engaging in the Project in accordance

with the REA. The Approval Holder says that, at its highest, the evidence raises a risk that, at times, there may be some cautious over-forecasting of rainfall or snowfall intensity, before mitigation. It adds that such an occurrence will be short-lived, affect a small, uninhabited area close to the Project, and cannot reasonably be expected to cause harm, or even the risk of harm, to human health.

[458] Consistent with the submissions provided by the Director, the Approval Holder asserts that the evidence establishes that the vast majority of the MRWRS's coverage will not be affected by any data contamination because the area of radar coverage that may be affected is limited to a discrete area southeast of the turbines and, within the discrete affected area, the type of data contamination likely to occur will be insignificant, even before applying any mitigation measures. The Approval Holder submits that the only area that may be affected is the immediate turbine locations and an area 30 km to the southeast of the turbines, which is an uninhabited forested area, and that only radar data within the three or four lowest scans will be affected and the remaining elevation scans higher than the turbines will not be affected. It observes that the air space through which planes fly will not be affected at all.

[459] The Approval Holder further asserts that: the radar will not be blocked from detecting significant storms in the area; there will be no significant impact on weather forecasting for the public; there will be no impact on the radar images for pilots and aviation forecasting will not be affected in any significant way; and radar coverage over the highways in the area will not be affected. The Approval Holder states that the evidence of all the experts shows that the Appellant's main concern, that the Project will interfere with the MRWRS so that it will not be functional to allow Environment Canada to detect and forecast storms in the area, is unfounded. It says that the Appellant has failed to show that there will even be a risk to human health, let alone serious harm.

[460] The Approval Holder submits that Condition N of the REA contains a number of mitigation requirements even though the Project is not expected to have any significant effects on Environment Canada's weather services. The Approval Holder states that Mr. Blackman and Dr. Palmer both testified that these mitigation measures will help to minimize any potential impacts from the Project on the radar data. The Approval Holder asserts that, while various details of the mitigation measures and their implementation are still to be finalized in the agreements between it and Environment Canada, there was considerable evidence regarding the substantive measures that will be included in the agreements.

[461] The Approval Holder notes that Environment Canada has confirmed that it will continue to issue accurate, reliable weather forecasts after the Project is operational, and submits that Environment Canada is in the best position to assess its ability to do so. The Approval Holder states that Mr. Young provided his opinion that Environment Canada will be able to fulfill its statutory mandate. The Approval Holder submits that, consistent with the Court's reasoning in *Ostrander* in relation to the MNR, the Tribunal should assume as part of its analysis in this case that Environment Canada, a branch of the Federal Government, will discharge its statutory duty.

[462] The Approval Holder disputes the Appellant's submission that the statutory test of serious harm to human health means "important or dangerous possible harm, consequences, or mischief to physical, mental and social well-being", and states that the Appellant is attempting to change the statutory test. The Approval Holder asserts that it is well established that the Appellant must prove that the Project will cause serious harm, and that possible harm or mischief is not the test and would not meet the onus of proof.

[463] With respect to the Appellant's submission that Condition N of the REA constitutes an impermissible delegation of the Tribunal's decision-making authority to Environment Canada, the Approval Holder responds that there is no basis for this submission. The Approval Holder states that the Tribunal retains its jurisdiction to assess all of the evidence and determine if the Appellant has met its onus of proving serious harm and that, in assessing the Project "in accordance with the REA", the Tribunal is to take into account the evidence it has received on the mitigation requirements of Condition N. The Approval Holder notes that it is not unusual for REA conditions to require that mitigation details be finalized in a future agreement or plan, and says this has never been considered to be an improper delegation of the Tribunal's authority.

[464] The Approval Holder also disagrees with the Appellant's assertion that the REA constitutes "testing on the human population", stating that there is no evidence to warrant this suggestion and that the evidence indicates there will be minimal potential impact from the Project on the MRWRS.

Analysis and Findings on the Montreal River Weather Radar Station

[465] In its claim that the Project will cause serious harm to human health due to interference with the MRWRS, the Appellant raises an issue that has not been raised before the Tribunal in past REA appeals. The Tribunal must determine, as set out in

s. 145.2.1(2)(a) of the *EPA*, whether engaging in the Project in accordance with the REA will cause serious harm to human health. The Appellant bears the onus to prove that such harm will occur.

[466] A number of principles have emerged from previous decisions on REA appeals that guide the Tribunal's application of the statutory provisions. These include the following:

- An appellant is required to prove, on a balance of probabilities, that a project will cause the harm, and evidence that raises only the potential for harm does not meet the onus of proof.
- The statutory test requires the Tribunal to assume that a project will operate "in accordance with" the REA, so that evidence of harm caused by non-compliance will not be considered relevant.
- Harm to health can be caused either directly or indirectly.
- While an appellant needs to prove that serious harm will result, it is not necessary for an appellant to prove the mechanism by which that harm will result.
- The meaning of "serious" harm will be interpreted on a case-by-case basis.
- The Tribunal accepts as appropriate the World Health Organization's ("WHO's") definition of health as a "state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (see, e.g., *APPEC* at para. 185, *Erickson* at para. 629-630, 648 and 819, and *Bovaird* at para. 313).

[467] The Appellant asks the Tribunal to interpret serious harm as "important or dangerous possible harm, consequences, or mischief to physical, mental and social well-being". Both the Director and the Approval Holder object to this interpretation. With respect to the notion of "possible" harm, the Appellant is seeking to advance an interesting interpretation of the legal test. However, given the Tribunal's findings below concerning the nature of the interference that the Project is expected to cause, it is not necessary for the Tribunal to make any findings on this proposed interpretation.

[468] The Appellant also raises the question of whether the WHO's definition of health protects against harm to the "social fabric", and whether interference with the weather radar, resulting in forecasting over-warnings, would constitute social harm. Given the

Tribunal's findings on the evidence concerning the impact of the Project on the weather radar, set out below, it is not necessary for the Tribunal to address this issue.

[469] During the hearing, the Tribunal heard extensive technical evidence concerning the operation of weather radar in general, and the potential impacts of the Project on the MRWRS. The Tribunal has considered all of this evidence, which is summarized in some detail above, and has reached the conclusions discussed below.

[470] The Tribunal accepts, based on the agreement of all three weather radar experts on this point, that the Project is unlikely to cause beam blockage. The Tribunal observes that this was the decisive issue for Environment Canada in making its determination as to whether or not it could support the proposed location of the Project in relation to the MRWRS.

[471] Based on the evidence before it, the Tribunal accepts that it is possible but not likely that receiver saturation will affect the MRWRS due to the Project, and also accepts that saturation will not create problems even if it does occur. While Dr. Palmer noted, in his witness statement, a strong possibility that the lowest elevation angles may experience saturation, he acknowledged in cross-examination that saturation at the Project is unlikely to occur. Dr. Blackman gave evidence that saturation was not observed in the Fort Drum data. Mr. Young testified that Environment Canada was aware of the possibility of saturation but was not concerned because the MRWRS has hardware filters that would prevent damage to the radar.

[472] With respect to wind turbine clutter and multi-path scattering, the Tribunal accepts, based on the agreement of the weather radar experts, that radar data contamination is expected at the site of the turbines, and in a contained area up to a distance of approximately 30 km beyond the turbines to the southeast (as shown in the image filed with the Tribunal at page 15 of Exhibit 53A, attached as Appendix A), and that the extent of the impact to the data in relation to this area cannot be anticipated prior to the wind turbines becoming operational. The Tribunal also accepts, based on the evidence of the weather radar experts, that the data contamination will affect the lowest elevation scans, described by Dr. Palmer as the three or four lowest out of a total of 24 scan elevations.

[473] The Tribunal accepts the opinion evidence of Mr. Seifert, the only expert meteorologist who provided evidence at the hearing, regarding the likely impacts of the wind turbine clutter and multi-path scattering. He testified that: during the summer, degraded low level radar data would affect a forecaster's ability to discern the severity

of a thunderstorm occurring directly over the wind turbine locations; and during the winter, multi-path scattering would reduce a forecaster's understanding of snow squall intensity if occurring in the area to the southeast of the turbines. He stated that, in each of these cases, a forecaster would likely err on the side of caution and issue a severe weather warning that could constitute an over-warning, which would have a negative impact on the accuracy of Environment Canada weather forecasts for these areas.

[474] The Tribunal also accepts Mr. Seifert's evidence that, generally, weather radar is not used to initiate weather warnings for large-scale events, but is used to: forecast weather in the short term (up to six hours); monitor precipitation in large-scale weather events once they are occurring; verify previous warnings; and initiate a weather warning for small-scale weather events, such as snow squalls and thunderstorms.

[475] The Tribunal heard evidence concerning the potential impacts on MRWRS data used for forecasting products used to ensure aviation safety. In relation to the Project's impact on aviation information based on MRWRS data, without any mitigation, the Tribunal accepts Mr. Seifert's evidence of his expectation that:

- there will not be a significant impact on TAFs;
- there will be a tendency to over-forecast thunderstorms at the turbine site and snow squall intensity in the area affected by multi-path scattering in GFAs and AIRMETs, but no impact on forecasting icing or turbulence; and
- there will be a tendency to over-forecast thunderstorm intensities for SIGMETs where a thunderstorm is occurring directly over a turbine location, but no impact on forecasting icing or turbulence.

[476] The Tribunal also accepts Mr. Kelly's opinion evidence that, even before mitigation, the potential effects of the Project on MRWRS data would not have any adverse impact on aviation safety. The Tribunal accepts his evidence and that of the other pilots who testified that prudent pilots would take adverse weather forecasts seriously, even given the possibility of over-warnings, and would avoid areas where thunderstorms or snow squalls of any intensity are forecast. Given that the geographic area potentially impacted is relatively small, the Tribunal accepts the evidence of Mr. Kelly that pilots should be able to fly around the area that may be affected by a forecast over-warning, and that prudent pilots plan for alternatives, including flying with extra fuel in case they encounter poor weather.

[477] Similarly, the Tribunal accepts Mr. Young's evidence that the Project would not affect the radar coverage of Highway 17 or Highway 556, and would only impact the

radar coverage of Highway 129 if the multi-path effects extend further than currently predicted, which would result in an appearance that there is more precipitation over a larger area than is actually present. The Tribunal also accepts Mr. Seabrook's evidence that decisions on road clearing operations for Highways 129 and 556 do not depend on Environment Canada weather radar imagery.

[478] In summary, the Tribunal heard no expert evidence indicating that the Project will cause serious harm to human health, even before mitigation is considered, due to adverse effects on either aviation safety or road safety. With respect to the concerns raised in the evidence of pilots who fly over the area and residents who drive in the area near the Project, the Tribunal observes that these were general concerns based on the assumption that the Project would result in the MRWRS weather radar imagery not functioning over a large area. The evidence has demonstrated that this is not likely to be the case, and that any impacts are likely to be limited as described above.

[479] The Tribunal, therefore, finds that the Project is likely to have some impact on the MRWRS and on the weather forecasts based on its radar data, but that the impact will be limited as described in the evidence. The Tribunal finds that the evidence available did not demonstrate that engaging in the Project in accordance with the REA will cause serious harm to human health as a result of the impact on the MRWRS, even though the evidence did indicate that the specific impact on the MRWRS will not be fully known until the Project is in operation.

[480] The Tribunal also heard extensive evidence concerning the mitigation framework agreement developed to address the Project's impact on the weather radar data, and now turns to an analysis of those conditions because of the Appellant's arguments regarding matters referred to in the framework agreement not having been finalized. The framework agreement negotiated between Environment Canada and the Approval Holder is set out in Condition N in the REA as follows:

N1. Prior to erecting any of the wind turbines at the Facility, the Company shall, in collaboration with Environment Canada, develop and, enter into the following:

- (1) an Exceptional Weather Event Protocol that ensures that the Montreal River Weather Radar Station (Weather Radar) continues to provide accurate and reliable forecasts and weather warnings for high risk weather events;
- (2) a Follow-up Plan; and
- (3) an Adaptive Management Strategy.

N2. Prior to erecting any of the wind turbines at the Facility, the Company shall enter into an Agreement Regarding the Implementation

of the Follow-up Plan, the Adaptive Management Strategy and the Exceptional Weather Event Protocol (Agreement) with Environment Canada that will set out the details of the commitments and timelines required for the Exceptional Weather Event Protocol, Follow-up Plan, and Adaptive Management Strategy. The Agreement shall include specifics of the financial assurance to be provided by the Company to ensure the implementation of the agreement.

N3. The day the first wind turbine is erected at the Facility, the Company shall begin implementing its obligations under the Exceptional Weather Event Protocol and Follow-up Plan described in Condition N.

N4. As part of the Follow-Up Plan, the Company shall, in collaboration with Environment Canada:

- (1) develop the measureable objectives and decision making criteria for defining the success of the plan;
- (2) provide for the development, and subsequently the implementation, of the data interpolation mitigation measure agreed to by the Company and Environment Canada;
- (3) verify the accuracy of the predicted adverse impacts to the Weather Radar resulting from the commercial operation of the Facility;
- (4) assess the effectiveness of the data interpolation measure(s) to mitigate the predicted adverse impacts during the commercial operation of the Facility; and
- (5) monitor the effectiveness of the Weather Radar in order to determine whether any additional mitigation measures are necessary.

N5. During the implementation of the Follow-Up Plan, should it be determined based on the Follow-Up Plan that the data interpolation mitigation measure(s) do not adequately mitigate the adverse impacts of the Facility so that the Weather Radar can continue to provide accurate and reliable forecasts and weather warnings in accordance with Environment Canada's mandate, the Company shall, in collaboration with Environment Canada, implement the Adaptive Management Strategy, which shall include the following:

- (1) the design and implementation of additional mitigation measures that are reasonably necessary to mitigate any identified adverse impacts to the Weather Radar; and
- (2) the monitoring and assessment of the effectiveness of these additional mitigation measures.

[481] As described above, the Tribunal heard evidence addressing these conditions from each of the weather radar experts. The agreement referenced in Condition N and reviewed by Mr. Young in his evidence, which includes the Exceptional Weather Event Protocol, the Follow-up Plan, and the Adaptive Management Strategy, has not yet been finalized.

[482] The Tribunal notes the concerns raised by Dr. Palmer in relation to the mitigation framework agreement: the question of whether curtailment involves completely stopping the motion of the blades to eliminate contamination from clutter and multi-path effects; his observation that interpolation would fill in lost data but be less effective in relation to small-scale weather events, such as convective storms; the difficulty in implementing the Adaptive Management Strategy; the expense and challenges of implementing in-fill radar solutions for weather radar; and the need for independent representation on the committee assessing the quality of the mitigation strategy in addition to Environment Canada.

[483] Some of these concerns may still be addressed as Environment Canada finalizes the plans. For example, Environment Canada is still developing the specific criteria to trigger the Exceptional Weather Event Protocol so it has not yet determined whether a temporary suspension of the turbine operation means that turbine blades are still moving at a velocity of about 5-6 m/s, or are locked and stationary. However, under the terms of Condition N, Environment Canada will be the decision body that determines the elements of the final mitigation measures for the Project. Mr. Young indicates that Environment Canada is confident it will continue to be able to produce timely and accurate forecasts as a result of mitigation steps under Condition N of the REA.

[484] As noted above, the Appellant argues that Condition N constitutes an impermissible delegation to Environment Canada of the Director's and the Tribunal's role as an approval authority because it allows Environment Canada to negotiate and approve the terms of the mitigation framework agreement with the Approval Holder, thereby ultimately determining if the Project may be built. The Appellant submits that only the Tribunal has the statutory mandate to decide whether Condition N is adequate to prevent serious harm to human health, and must be able to examine the mitigation measures.

[485] It is important to review the Tribunal's statutory role in a REA appeal. As set out in s. 145.2.1(2) of the *EPA*, the Tribunal

shall review the decision of the Director and shall consider only whether
engaging in the renewable energy project in accordance with the
renewable energy approval will cause,

(a) serious harm to human health

[486] It is the Tribunal's duty, then, to review the Director's decision and consider only whether engaging in the Project in accordance with the REA will cause serious harm to human health. The Tribunal may not delegate its review role or its decision as to whether engaging in the Project in accordance with the REA will cause serious harm to human health. In order to fulfil its responsibility under s. 145.2.1(2)(a), the Tribunal must consider the provisions of the mitigation framework agreement in Condition N of the REA, and determine whether it is adequate to address the issue of serious harm to human health.

[487] Therefore, the question before the Tribunal is whether accepting Condition N at face value is a delegation to Environment Canada of the Tribunal's responsibility under s. 145.2.1(2)(a) of the *EPA*. Even if the Tribunal accepts that the mitigation framework agreement in Condition N will be put in place, monitored and enforced by Environment Canada, the Tribunal is still required to consider and assess the provisions of Condition N to determine, based on the evidence received, whether the Appellant has met its onus to prove that engaging in the Project in accordance with the REA will cause serious harm to human health.

[488] The elements of the mitigation framework agreement negotiated by Environment Canada and the Approval Holder are clearly set out in Condition N. Over the course of the hearing, the Tribunal heard detailed evidence about the framework agreement, as summarized above, from Mr. Young, Dr. Palmer and Mr. Blackman. The Tribunal finds that it has received sufficient evidence to understand and assess the mitigation framework agreement.

[489] As noted by the Director and the Approval Holder, REA conditions sometimes provide for the finalization of mitigation details in a future agreement or plan. One example of such a condition is the draft alvar management plan considered in the *APPEC* decision, at para. 557 and 624. The Tribunal in that proceeding took the draft alvar management plan into account as a mitigation measure in deciding that the appellant in that case had not established serious and irreversible harm. Similarly, it is appropriate for this Tribunal panel to consider the mitigation framework agreement in Condition N. The mitigation measures in Condition N are not "uncertain" or of "dubious character", as were the measures in the case of *Ron Forbes*, cited by the Appellant. By contrast, the Condition N framework agreement is specific as to the agreements to be developed and entered into, while at the same time providing flexibility to deal with the as-yet-unknown extent of the impact of the Project on the MRWRS.

[490] Indeed, the evidence before the Tribunal demonstrates that Environment Canada's Meteorological Service of Canada possesses the unique expertise required to finalize, monitor and enforce the framework agreement in Condition N. Although this is the first time that Environment Canada has dealt with a wind farm proposed to be located so close to a weather radar station, the Tribunal heard that Mr. Young, with other Environment Canada staff, has analyzed the potential impacts of over 200 wind farms proposed near radar stations. The Tribunal notes that Dr. Palmer testified that operational meteorologists, and specifically Mr. Young and Mr. Seifert of Environment Canada, would be in the best position to make conclusions on operational impacts on the weather radar.

[491] The Tribunal finds on the basis of the evidence and testimony before it that Environment Canada has the requisite expertise and is in the best position to finalize, monitor and enforce the framework agreement. Environment Canada has taken a careful, diligent approach to considering the Project, initially expressing concern and recommending against its approval unless workable mitigation solutions could be found. Environment Canada made the decision to negotiate the terms of Condition N on the basis of the experts' conclusion that beam blockage by the turbines was unlikely. Based on that conclusion, Environment Canada determined that mitigation would be possible.

[492] Therefore, on the issue of impermissible delegation raised by the Appellant, the Tribunal finds that it is appropriate for it to rely on Environment Canada's Meteorological Service of Canada in relation to the weather radar mitigation framework agreement, given the specific expertise of that government body. The Tribunal is in no way delegating its responsibility under s. 145.2.1(2)(a) to consider and assess the provisions of Condition N and determine, based on the evidence, whether the Appellant has demonstrated that engaging in the Project in accordance with the REA will cause serious harm to human health. It is appropriate for the Tribunal to consider and rely on Environment Canada's expertise with weather radar, as it is in the best position to enter into the Exceptional Weather Event Protocol, the Follow-up Plan, the Adaptive Management Strategy and the implementation agreement with the Approval Holder, and to monitor and enforce these agreements.

[493] Given the Tribunal's finding that it is not delegating any of the powers conferred on it, the *Brant Diary* decision cited by the Appellant has no application in this case.

[494] Having considered and assessed the provisions of the mitigation framework agreement in Condition N, the Tribunal finds that the Appellant has not demonstrated that engaging in the Project in accordance with the REA will cause serious harm to human health as a result of interference with the operation of the MRWRS. The purpose of the framework agreement is to mitigate any potential for over-warnings in weather forecasting that would negatively affect Environment Canada's ability to produce timely and accurate forecasts that are available to the public and that support aviation safety products. This is reflected, for example, in the fact that Condition N3 requires the Approval Holder to begin implementing its obligations under the Exceptional Weather Event Protocol, which is intended to use curtailment to ensure that the MRWRS continues to issue reliable forecasts and weather warnings for high-risk weather events, on the day the first wind turbine is erected.

[495] As noted above, the Tribunal finds that Environment Canada's role in entering into the Exceptional Weather Event Protocol, the Follow-up Plan, the Adaptive Management Strategy and the implementation agreement with the Approval Holder is appropriate due to Environment Canada's public safety mandate and unique expertise. Given that the precise impacts of the Project will not be fully known until it begins to operate, it is important that the mitigation measures in the REA be flexible. The Tribunal finds that Environment Canada has the knowledge and experience necessary to assess and determine the most appropriate mitigation.

[496] However, the Tribunal notes Dr. Palmer's stated concerns about Condition N and recommends that Environment Canada consider and respond to these concerns in finalizing the mitigation framework agreement. In particular, the Tribunal recommends that Environment Canada include, in addition to Environment Canada staff, independent expert representation among those individuals tasked with monitoring and assessing the effectiveness of the mitigation measures, under Conditions N4 and N5. This will ensure that the type of independent expert analysis Dr. Palmer brought to the consideration of the impact of the Project will continue to benefit the public interest in the implementation of mitigation measures.

[497] With respect to the cumulative impact on the MRWRS of future additional wind farms, this is not an issue that gave rise to detailed evidence before the Tribunal. It is, therefore, unnecessary to determine the extent to which cumulative effects may be relevant to the statutory test. However, the Tribunal observes that Mr. Young testified

that Environment Canada would take into account all possible data contamination in the area when negotiating the final details of the agreement with the Approval Holder. While this Appellant has not shown that this Project will cause serious harm to human health, it is at least in part due to the fact that the major mitigation technique proposed is interpolation, which relies on uncorrupted data in the vicinity. Thus, it is foreseeable that the cumulative impact of multiple wind projects could have a serious impact on the ability of the MRWRS to accurately predict the weather.

[498] With respect to the Appellant's argument that the REA constitutes "testing" on a human population because it is in a low-density area, the Tribunal finds that the evidence does not support such a conclusion and that the Appellant has not satisfied the onus to show serious harm.

[499] In conclusion, the Tribunal finds that the Appellant has not met its onus to show that engaging in the Project in accordance with the REA will cause serious harm to human health as a result of interference with the operation of the MRWRS.

DECISION

[500] The Tribunal finds that the Appellant Mr. Fata has not established that engaging in the Project as approved will cause serious harm to human health, and that he has not established the Project will cause any violation of his s. 7 *Charter* right to security of the person.

[501] The Tribunal finds that the Appellant 240 has not established that engaging in the Project as approved will cause irreversible harm to animal life. Nevertheless, the Tribunal recommends that the Operational Mitigation Plan include a requirement to increase turbine cut-in speed to 5.5 m/s during the known activity periods of the little brown bat, until such time as post-construction Project-specific data establishes there is no need to do so, in the opinion of the TAC and the MNR.

[502] The Tribunal finds that the Appellant 240 has not established that engaging in the Project as approved will cause serious harm to human health due to interference with the MRWRS. The Tribunal recommends that Environment Canada consider and respond to Dr. Palmer's stated concerns about Condition N in finalizing the mitigation framework agreement. In particular, the Tribunal recommends that Environment Canada include, in addition to Environment Canada staff, independent expert representation among those individuals tasked with monitoring and assessing the effectiveness of the mitigation measures under Conditions N4 and N5.

Appeals Dismissed

Heather I. Gibbs, Panel Chair

Maureen Carter-Whitney, Member

Appendix A – Montreal River Weather Radar Station and Expected Multi-Path
Scattering from Bow Lake Turbines

Appendix A

Montreal River Weather Radar Station and Expected Multi-Path Scattering from Bow Lake Turbines

