Environmental Review Tribunal
Tribunal de l'environnement

ISSUE DATE: May 20, 2015 **CASE NO.:** 14-096

PROCEEDING COMMENCED UNDER section 142.1(2) of the *Environmental Protection Act,* R.S.O. 1990, c.E.19, as amended

Appellant:	Mothers Against Wind Turbines Inc.
Approval Holder:	Niagara Region Wind Corporation
Respondent:	Director, Ministry of the Environment and Climate Change
Subject of appeal:	Renewable Energy Approval for Niagara Region Wind Farm
Reference No.:	4353-9HMP2R
Property Address/Description:	Various Locations
Municipality:	West Lincoln, Wainfleet and Lincoln
Upper Tier:	Niagara Region and Haldimand County
ERT Case No.:	14-096
ERT Case Name:	Mothers Against Wind Turbines Inc. v. Ontario (Environment and Climate Change)
Heard:	January 26 - 30, 2015 in Wainfleet, Ontario.

APPEARANCES:

Parties	**Counsel/Representative**[+]
Mothers Against Wind Turbines Inc.	Priya Vittal and Linda Rogers[+]
Director, Ministry of Environment and Climate Change	Danielle Meuleman and Alexandra Mingo
Niagara Region Wind Corporation	Dennis Mahony, John Terry and Grant Worden

Participant

Shellie Correia	Self-Represented

Presenters

Jody Sadler, Naomi Brusse, Sue Atkins Kevin Dooley, Mandy Smith, Michael Jankowski	Self-Represented

DECISION DELIVERED BY MARLENE CASHIN, JUSTIN DUNCAN, AND DIRK VANDERBENT

REASONS

Background

[1] On November 6, 2014, Vic Schroter, Director, Ministry of the Environment and Climate Change ("MOECC") ("Director") issued Renewable Energy Approval Number 4353-9HMP2R ("REA") to Niagara Region Wind Corporation ("NRWC" or "Approval Holder") under s. 47.5 of the *Environmental Protection Act* ("*EPA*"). The REA is for a renewable energy project known as the Niagara Region Wind Farm, consisting of the construction, installation, operation, use and retiring of a Class 4 Wind facility with a total name plate capacity of 230 megawatts, located in the Townships of West Lincoln and Wainfleet, and the Town of Lincoln, in the Region of Niagara and Halimand County, Ontario ("Project").

[2] On November 21, 2014, Mothers Against Wind Turbines Inc. ("MAWT" or "Appellant"), requested a hearing before the Environmental Review Tribunal ("Tribunal") pursuant to s. 142.1 of the *EPA* with respect to the REA issued to NRWC by the Director. MAWT requested the hearing on the grounds that "engaging in the Renewable Energy Project in accordance with the Renewable Energy Approval will cause serious and irreversible harm to plants, animals and the natural environment" ("Environmental Test"), and "will cause serious harm to human health" ("Health Test").

[3] On December 24, 2014, MAWT also filed a notice of constitutional question. It alleged that s. 47.5 and s. 142.1 of the *EPA* violate rights to security of the person under s. 7 of the *Canadian Charter of Rights and Freedoms* ("*Charter*").

[4] A preliminary hearing took place on December 19, 2014 in Wellandport, Ontario. At that time, the Tribunal heard and determined requests for participant and presenter status. Shellie Correia was granted participant status. Sue Atkins, Naomi Brusse, Kevin Dooley, Debbie Hughes, Michael Jankowski, Jody Sadler, and Mandy Smith were granted presenter status. Ms. Hughes subsequently withdrew from participation in the main hearing. The Tribunal provided procedural directions and reasons for the decisions regarding presenter and participant status requests in an Order dated January 23, 2015.

[5] On January 21, 2015, the Tribunal heard various motions filed by the parties and a request for party status by the Haudenosaunee Development Institute ("HDI") in Wainfleet. An order providing the disposition of the motions and requests was released on January 23, 2015 by way of separate Order ("Disposition Order"). The Tribunal subsequently provided the reasons for the Disposition Order on May 15, 2015 ("Reasons for Disposition Order"). The Disposition Order directed that certain aspects of motions be brought forward to the hearing of the appeal should the parties wish to pursue them. Those matters that were deferred following the motions are addressed elsewhere in this Decision as they become relevant.

[6] The hearing was held over five days in January 2015 in Wainfleet, Ontario. Closing submissions were filed in writing by the parties.

[7] The Tribunal has considered all the evidence of the parties, participant, and presenters, and the parties' submissions, in detail. However, because of the large volume of information provided to the Tribunal, it is not feasible to produce a full synopsis of the evidence and submissions. Consequently, in this decision, the Tribunal

has only included a summary comprised of the more significant evidence and submissions provided.

[8] Pursuant to s. 145.2.1 of the *EPA*, the onus is on the Appellant to establish that engaging in the Project in accordance with the REA will cause serious harm to human health and/or serious and irreversible harm to plant life, animal life or the natural environment.

[9] For the reasons that follow, the Tribunal finds that the Appellant has failed to meet either the Health Test or the Environmental Test and has not established the necessary elements of a s. 7 *Charter* violation and, therefore, the appeal is dismissed.

Relevant Legislation

[10] The relevant legislation and *Charter* provisions are as follows:

Environmental Protection Act

> 1. (1) "natural environment" means the air, land and water, or any combination or part thereof, of the Province of Ontario;
>
> **Director's powers**
> 47.5 (1) After considering an application for the issue or renewal of a renewable energy approval, the Director may, if in his or her opinion it is in the public interest to do so,
> (a) issue or renew a renewable energy approval; or
> (b) refuse to issue or renew a renewable energy approval.
>
> **Terms and conditions**
> (2) In issuing or renewing a renewable energy approval, the Director may impose terms and conditions if in his or her opinion it is in the public interest to do so.
>
> **Other powers**
> (3) On application or on his or her own initiative, the Director may, if in his or her opinion it is in the public interest to do so,
> (a) alter the terms and conditions of a renewable energy approval after it is issued;
> (b) impose new terms and conditions on a renewable energy approval; or
> (c) suspend or revoke a renewable energy approval.

Same
(4) A renewable energy approval is subject to any terms and conditions prescribed by the regulations.

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.

(3) The person who required the hearing has the onus of proving that engaging in the renewable energy project in accordance with the renewable energy approval will cause harm referred to in clause (2) (a) or (b).

(4) If the Tribunal determines that engaging in the renewable energy project in accordance with the renewable energy approval will cause harm referred to in clause (2) (a) or (b), the Tribunal may,

(a) revoke the decision of the Director;
(b) by order direct the Director to take such action as the Tribunal considers the Director should take in accordance with this Act and the regulations; or
(c) alter the decision of the Director, and, for that purpose, the Tribunal may substitute its opinion for that of the Director.

Canadian Charter of Rights and Freedoms

1. The Canadian Charter of Rights and Freedoms guarantees the rights and freedoms set out in it subject only to such reasonable limits prescribed by law as can be demonstrably justified in a free and democratic society.

…

7. 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.

Issues

[11] The issues are:

1. Whether engaging in the Project in accordance with the REA will cause serious harm to human health.

2. Whether engaging in the Project in accordance with the REA will cause serious and irreversible harm to plant life, animal life or the natural environment.

3. Whether s. 47.5 and s. 142.1 of the *EPA* violate the right to security of the person under s. 7 of the *Charter*.

Evidence

Evidence Adduced by the Appellant

Overview

[12] With the exception of William Palmer, the Appellant did not request that any of its witnesses be qualified to give opinion or technical evidence.

Marianne Kidd

[13] Ms. Kidd is an Acting Director of MAWT. She gave evidence in support of the Appellant with respect to the Health Test.

[14] Ms. Kidd has lived with her husband and three children in Lowbanks, Haldimand County, since 2012. She and her husband own a business which, she testified, is dependent on summer tourism, located in Wainfleet Township.

[15] In her testimony, Ms. Kidd outlined a number of worries and concerns related to how the Project might affect her family, given that seven turbines will be located within 2 kilometers (“km”) of her home.

[16] Ms. Kidd's specific concerns included the possibility of a member of her family suffering health effects from the Project, and the impacts if they were forced to sell their home as a result.

[17] Ms. Kidd's testimony included information about the size of the Project, and her concerns regarding both audible and inaudible noise affecting those who live in close proximity to wind turbines. She listed sleep disturbances, stress, headaches, nausea, and tinnitus, as some of the negative health effects that may be associated with wind operations, and that are a concern for her. She said that her health has already been impacted, as she is stressed and frightened.

[18] Ms. Kidd testified that she and her husband decided to enroll their daughter, aged 4, in a school "out of bounds" of the area of the Project, despite there being another school (Anna Melick School) located closer to their home. Specifically, she said that she did not want to send her daughter to a school "surrounded by multiple turbines". Ms. Kidd also stated that the siting of some of the Project's wind turbines may cause adverse health effects for children attending the school. She noted that Anna Melick School will have one turbine located at 371 metres ("m") from the school playground boundary line, which she described as "less than the 550 m safe setback limit", and eight turbines within 2 km of the school.

[19] Ms. Kidd testified that, in addition to concerns for herself and her family, she is concerned about vulnerable people such as children and the elderly living in close proximity to the Project where, she says, their health and wellbeing is not being protected by household decision makers. Here, Ms. Kidd was referring to some of the "participating receptors" who are not subject to the 550 m setback distance between turbines and homes. She did not present any evidence regarding these receptors, other than stating that she was aware of some of them.

Lois Johnson

[20] Ms. Johnson is a resident of Wellandport, where she has lived for 30 years. She provided evidence in support of the Appellant in regard to the Health test. Ms. Johnson will have one wind turbine within 2 km of her home.

[21] Ms. Johnson holds a Metallurgical Engineering degree from McMaster University, and she has been employed as a professor at Niagara College for approximately 10 years.

[22] Ms. Johnson testified about her concerns regarding the Project's operations and the health impacts that might be anticipated as a result of the noise created by wind turbines. She noted in particular, that the Project will allow for the largest turbines yet to be used in Ontario.

William Palmer

[23] Mr. Palmer was qualified by the Tribunal as a professional engineer with expertise in public safety risks due to turbine failure and some experience in the acoustics of wind turbines.

[24] Mr. Palmer testified in relation to public safety risks from turbine failure, shadow flicker and sound/noise impact issues.

[25] In relation to public safety and turbine failure, Mr. Palmer stated that there are potential dangers related to turbine collapse, blade projectiles, ice throw and fires resulting in projectiles. Mr. Palmer provided the Tribunal with a list of turbine collapses, blade failures and fires that have occurred previously, including several in Ontario.

[26] It was Mr. Palmer's evidence that for the five years ending in November 2014, international frequency of a blade failure, tower collapse or turbine fire occurs at about 0.0002 failures per turbine year in operation. Also, Mr. Palmer testified that he has estimated that there is a combined Ontario failure rate of 0.0006 per turbine year for blade failures or turbine fires, each of which have the potential to propel components well beyond the hub height, and the blade length plus 10 m.

[27] Mr. Palmer estimated that the Project has a combined probability of failure of over 1 in 100 per year meaning that in the planned 20-year project life, the probability is 1 in 5 that some non-participating property will be impacted by a wind turbine accident.

[28] Mr. Palmer also testified that the spacing of turbines for the Project will likely result in an increase in turbine stresses and potential failure rates as a result.

[29] Mr. Palmer stated that Enercon wind turbines have suffered blade failures, collapses, and fires within the last year and that less than one year ago, on December 31, 2013, a 62 m blade fell from an Enercon E-126 wind turbine.

[30] Although Mr. Palmer acknowledged that no records are available indicating that a member of the public has been injured or killed as a result of any of the failures he has documented, he stated that he viewed that there is a risk of harm. Additionally, Mr. Palmer has documented 35 deaths of workers from falling or due to fires on wind turbines while conducting maintenance.

[31] Furthermore, Mr. Palmer stated that it was his opinion that Ontario has far more homes close to turbine sites than in the other locations. His evidence was that therefore international experience about low probability of injury from wind turbines is not directly applicable to Ontario.

[32] Mr. Palmer's evidence was that the Niagara Region Wind Farm Property Line Setback report shows that 54 of the proposed 80 turbine sites (77 of which will be used)

potentially over 70% of the turbine locations will be located closer to the non-participating neighbours' property lines than even the turbine hub height and that 82 non-participating neighbours will have a turbine at a setback of less than the 135 m hub height. As a result, it was his view that the property of non-participating neighbours will not be protected from turbine collapse, the projection of known blade parts, or the travel of burning blade parts from a turbine fire.

[33] In relation to ice throw, Mr. Palmer provided the opinion that ice pieces up to 30 centimetres ("cm") x 30 cm x 5 cm may be thrown at distances up to 100 m. Mr. Palmer testified that the increased height of the turbines for the Project, as compared to other turbines in Ontario, will likely increase the rate of ice formation at the Project. Mr. Palmer testified that at least two turbines (T16 and T48) are approved to be closer to a rail line than the turbine hub height and that another turbine (T33) is closer than hub height to Gee Road. Mr. Palmer testified that ice thrown towards these features could cause harm if a train or vehicle is passing by when ice is thrown.

[34] Additionally, Mr. Palmer testified that the 75 m setback requirement found in the *Oil, Gas and Salt Resources Act* for oil and gas pipelines was based on normal expectations of risk and not designed to take into account risks posed by wind turbines and that setback distances should be increased to improve safety.

[35] With respect to shadow flicker, Mr. Palmer testified that using plots produced by the Danish Wind Association Shadow Calculator ("Shadow Calculator") for the Project show that homes on roadways east and west of turbines will experience 30 to 60 minutes of shadow flicker in the morning or evening in the spring and fall and homes to the north will experience greater than 30 minutes of shadow flicker in the winter when the sun is low. Mr. Palmer testified that this shadow flicker can be expected to cause annoyance to residents at these homes.

[36] In relation to noise, Mr. Palmer testified that the Noise Assessment does not represent the worst-case scenario for noise, which, in his view, should be utilized for assessment purposes. For example, Mr. Palmer testified that amplitude modulation is to be expected from these turbines and a penalty of 5 dBA ought to be imposed to reflect this fact in any noise calculations which was not done in the Noise Assessment resulting in many of the turbines exceeding the MOECC's Noise Guideline for Wind Farms, 2008 ("MOECC Noise Guideline").

[37] Mr. Palmer testified that his opinions in relation to turbine safety are consistent with the potential health impacts assessed in a Health Canada document entitled "Wind Turbine Noise and Health Study: Summary of Results" ("Health Canada Summary of Results"). Mr. Palmer stated that the Health Canada Summary of Results "confirms statistically significant exposure-response between increasing wind turbine noise levels and the prevalence of reporting high annoyance."

Linda Rogers

[38] Ms. Rogers is a Primary Health Care Nurse Practitioner. She testified on behalf of the Appellant as a concerned citizen living in the area of the Project, and the mother of a son whom she describes as having "congenital and medical conditions".

[39] Ms. Rogers states that she is a current Director of MAWT, and has acted as a representative for a group called Haldimand Wind Concerns in Tribunal hearings in appeals against three other REAs in the past. She describes herself as an advocate, and remains active with the affairs of Haldimand Wind Concerns. She is also a member of a group called Wind Concerns Ontario.

[40] Ms. Rogers testified to her advocacy activities, as well as the self-study she has undertaken regarding the impacts of wind facilities on human health, with a focus on vulnerable individuals such as children. She provided numerous documents and exhibits in support of the views expressed in her witness statement.

[41] Ms. Rogers also raised concerns that the Project will have an adverse impact on groundwater and aquifers in the Project area, and in turn an impact on human health.

[42] In addition to acting as a witness in the hearing of this matter, Ms. Rogers participated in the hearing as a Representative of MAWT by cross-examining the witnesses called by the Approval Holder and the Director, and conducting the argument of a motion.

Bonnie Tuson

[43] Ms. Tuson is a resident of the Township of West Lincoln, who has lived at her current home for 18 years. One of the Project's wind turbines will be sited 1,500 m from her residence.

[44] Ms. Tuson testified for the Appellant, and her testimony focused on her concerns about the Project's effect on human health. She provided documents and exhibits in support of the views expressed in her witness statement.

[45] The majority of Ms. Tuson's evidence outlined her communications with the Approval Holder, the MOECC, and other agencies. In these communications, Ms. Tuson has questioned the siting of the Project turbines with respect to setback distances, and the effect of Ontario Regulation 359/09 ("O. Reg. 359/09") permitting participating landowners to have turbines placed on their lands at less than the standard 550 m setback from residences.

[46] Ms. Tuson also described several instances where errors had occurred with other REA applications, and that the public had pointed out the errors to the MOECC. She says these incidents are at odds with the assertion by the MOECC that it considers the best science and conducts diligent reviews in order to protect human health and the environment, when approving large wind projects in Ontario.

Loretta Shields

[47] Ms. Shields is a resident of Smithville and is a member of several nature groups in Niagara, including the Niagara Peninsula Field Naturalists, Niagara Woodlot Association and the Smithville Garden Club. She testified on behalf of the Appellant.

[48] Ms. Shields testified that she has submitted many of her concerns about the Project to the Environmental Registry, most significantly, her concerns regarding setback distances to many natural features, including wetlands and woodlands. She says that she believes the intrusion on woodlands and wetlands has the potential to affect the many habitats within these ecosystems, including bat habitats, turtle habitats, raptor habitats, Migratory Butterfly Concentration areas and migratory land bird stopover areas.

[49] She further testified to her concerns regarding the effect that construction activities will have on endangered species that reside not only in the Project area, but within 120 m of Project components, saying that construction traffic and access roads located near woodlands may lead to soil compaction and habitat disturbance, and that two endangered species are present within 120 m of proposed turbines; the Red Mulberry and Blanding's turtle.

[50] Ms. Shields states that the NRWC REA report has not provided concrete evidence of site investigations for Migratory Butterfly Concentration areas, and that she is concerned that site investigations for Migratory Butterfly Concentration areas are incomplete. Ms. Shields went on to set out her concerns regarding the threat to Monarch Butterfly population. She says that the proposed federal management plan for the Monarch Butterfly, a species of special concern, identifies wind turbines as a possible threat to Monarch populations, and that without the necessary site investigations to confirm significant habitats for Migratory Butterfly Concentration areas, the required post construction surveys will not be initiated and future analyses to

determine negative impacts will not be conducted, therefore putting migratory populations of these and other species of butterflies at peril.

[51] Ms. Shields testified that in this Project, setback requirements to wetland features and other existing conservation plans to protect and enhance wetlands within the Region of Niagara have been disregarded.

[52] Ms. Shields stated her concerns regarding the Red Mulberry, which is classified as an endangered species both federally and provincially, and which, she said, has been identified within the 120 m zone of investigation for the Project. Ms. Shields testified that this species is subject to a Recovery Strategy, and that in her opinion the public has not been informed with respect to what actions will be required to ensure this isolated population is not negatively impacted during construction and the operation of the Project.

[53] Ms. Shields testified that in her opinion mitigation measures for woodland features in this Project are general in nature, and that negative impacts and the relevant mitigation measures have not been fully considered. She said that soil compaction and habitat disturbance, particularly to the endangered Blanding's turtle habitat within the Project location have not been described. Ms. Shields went on to state that many of the adjacent lands within the 120 m zone of investigation have not been physically site surveyed, further compounding public concerns regarding the impacts to this endangered species and other natural features in the Project area.

[54] Ms. Shields testified that she believes that, despite assurances that the Ministry of Natural Resources and Forestry (“MNRF”) is working to protect Ontario’s rich biodiversity, this Project does not provide the public any assurances that the rich biodiversity within the Project area will be protected for future generations.

[55] Finally, Ms. Shields stated that she believes the Project will cause serious and irreversible harm to many natural features within the Project location.

Evidence Adduced by the Participant and the Presenters

Participant Shellie Correia

[56] Ms. Correia is a resident of West Lincoln, where she lives with her husband and son.

[57] Ms. Correia stated that the Project will place a wind turbine 550 m from her home, and that two others will be located in the vicinity of her residence.

[58] Ms. Correia's son Joey is described by a behavioural Pediatrician (Dr. Calvert), who has been treating Joey since 2007, as having complex health conditions, including Sensory Processing Disorder. Included as part of Ms. Correia's presentation, is a letter from the doctor, which described Ms. Correia's son as "vulnerable".

[59] Ms. Correia expressed her deep concern that the noise limits related to the Project will not help her son, who is vulnerable, and that she feels the need to advocate for her son in every way possible.

Presenter Kevin Dooley

[60] Mr. Dooley is a researcher and author. He provided evidence as a non-expert, and added for the Tribunal's information, that no one with his company is a medical expert or medical researcher.

[61] He testified regarding research that he has undertaken into whether motion sickness symptoms such as nausea, dizziness, and headaches can be caused by infrasound exposure, and how infrasound exposure might cause temporary illness in otherwise healthy people.

[62] Mr. Dooley's presentation, which he described as "educational" suggests that there may be a causal relationship between infrasound and potential nausea. He stated that "the implications of this hypothesis if proven are numerous and could include evidence that infrasound causes nausea and other symptoms of motion sickness".

Presenter Sue Atkins

[63] Ms. Atkins is a resident of St. Anns, and she and her husband operate a pony ride business there. Their property includes a home, barn and arena for their 29 horses, ponies and donkeys.

[64] Ms. Atkins testified that she is concerned about her health, and that of her husband and their animals, as a result of the planned Project operations near her property.

[65] A "lay down area", which is where equipment and Project components are temporarily stored during construction activities, will be located opposite Ms. Atkins' property on a 10 acre parcel of farm land. Ms. Atkins also expressed concern about what will happen to the animals that currently live on that farm.

[66] Ms. Atkins testified about her fears as to the Project's possible negative impacts on her health in particular. She has a rare benign tumor which is being monitored and which, depending on growth rate, may result in hearing loss and surgery. She has been advised to avoid stress, noise and wind.

[67] Ten wind turbines will be located within 3 km of Ms. Atkins' home, with the closest two of them being at a distance of 587 m.

[68] Ms. Atkins also expressed concerns about the safety of children visiting her property, and the possibility of them being endangered by construction and traffic activities associated with the Project.

[69] Ms. Atkins told the Tribunal that she is not asking that the Project be refused or cancelled, but that it be moved to a safer location which is not as near to so many people.

Presenter Naomi Brusse

[70] Ms. Brusse is a resident of the proposed Project area. She expressed her opinion on the Project, which supported the position of the Appellant.

[71] Ms. Brusse testified regarding her concerns that the Project transmission lines could cause harm to people, animals and the natural environment, mentioning in particular, wetlands and birds.

[72] Ms. Brusse's testimony included concerns about the visual impacts of the Project on residents in the area, concerns that the Project will have an adverse impact on groundwater and aquifers in the Project area, and concerns about the risk of harm to humans and livestock from stray voltage and electromagnetic fields.

Presenter Jody Sadler

[73] Mr. Sadler is a retired Industrial Designer and teacher. He is a resident of the Project area, who will have two turbines at the minimum set back distance of 550 m from his home.

[74] Mr. Sadler's presentation supported the position of the Appellant, and focused on possible significant harm to both physical and emotional health, as a result of the Project.

[75] Mr. Sadler gave testimony regarding design principles that should be considered when planning any type of project. His evidence suggested that due to the relatively recent history of wind turbines and the speed of technological change, it is likely that the best evidence of health effects caused by wind turbines, comes from people who live near them.

[76] He also submitted that history shows us that at one time governments allowed or advocated the use of drugs or substances that we now know to be harmful, such as thalidomide for pregnant women, or smoking. He suggested that research done in the future will show that wind turbines are causing harm to the residents who live near them.

[77] Mr. Sadler stated that given the unknowns regarding possible negative effects of wind turbines, in respect to their operation or accidents resulting from wind turbine failures, the Project should be stopped and the REA be revoked.

Presenter Michael Jankowski

[78] Mr. Jankowski is a resident of the Project area. His home is located within 5 km of another wind turbine project (HAF), which began operating in June 2014.

[79] Mr. Jankowski testified regarding his experience with the HAF wind project, and his concerns that the Project will cause harm to his family. His presentation included various documents such as a wellness log of the symptoms experienced by Mr. Jankowski's family since the HAF project began operation, and a letter from the Jankowski family doctor.

[80] In describing his experiences with the HAF project, Mr. Jankowski says that his family members have been subject to negative health consequences, not previously experienced, due to noise and vibrations from the HAF wind turbines. He stated that he

is concerned that additional turbines in the vicinity of his home will increase the negative health effects that his family has been experiencing.

[81] Mr. Jankowski stated that he supports finding renewable, environmentally friendly energy sources, but believes that wind turbines are too large and too close to people's homes as they are being designed and sited.

[82] Mr. Jankowski described the symptoms he has experienced and those of his children, in particular his 10-year-old daughter. A letter from his family doctor, Dr. Nizar Mussani, summarized the efforts that have been made to test and diagnose Mr. Jankowski and his family. In referring to Mr. Jankowski, the letter states in part, "he has been suffering from the symptoms of, vertigo, tinnitus (ringing in ears) and vibrations since June 14". Test results are described as normal in the letter, and confirm that testing is ongoing.

[83] Mr. Jankowski described his attempts to seek help from government agencies to alleviate the HAF wind turbines' effects on his health and that of his family. He noted that despite eight months of reporting his symptoms to the MOECC, he has never been contacted by them.

Presenter Mandy Smith

[84] Ms. Smith is a resident of the Project area. Her property includes provincially significant wetlands, and the properties adjacent to hers are partially deemed to be the same. She testified as to her concerns about the close proximity of one of the proposed turbines to her property, which she states will be 90.1 m from her property boundary, and about the laydown area, which she says will be within 95 m.

[85] Ms. Smith stated that the turbine that is of particular concern to her will be sited on lands that are regulated by the Niagara Peninsula Conservation Authority.
Ms. Smith's written submissions included exhibits containing, among other things, maps

that illustrate where her property is located in relation to Project elements such as turbines and roads. The maps include the designation of the subject lands.

[86] Ms. Smith outlined her concerns about the possible negative impacts of the Project on drainage, flooding, or adjacent woodland areas. She stated that Conservation Authorities address wetlands by regulating activities within wetlands to ensure that they do not interfere with natural features and hydrologic and ecological functions. They also regulate development on adjacent lands to ensure that the hydrologic function of an adjacent wetland is not affected. In this regard, Ms. Smith questions how the ecological functions on her property can have been evaluated, when no one asked for her permission to do a survey of the natural features on her property.

[87] Ms. Smith testified that it is her opinion, that if the turbine of concern is allowed to be sited as planned, it will interfere with the natural flow of water on her land that is needed for the wildlife and plant life on her property, as well as the water supply to her pond which facilitates the water usage in her home.

[88] Ms. Smith stated that her property has two plant species in particular, Shagbark Hickory and Red Oak, that do not thrive with excess moisture in the soil. She expressed her concern that the Project will cause changes to the drainage levels on her property, and adversely affect the root systems of these species.

[89] Ms. Smith also testified regarding the numerous animals and birds that use her property for habitat and breeding.

[90] Finally, Ms. Smith testified as to her concern that serious and irreversible harm will occur to the protected wetlands, on and adjacent to her property, and her wish that the Project be moved or the REA revoked.

Evidence Adduced by the Approval Holder

Darren Croghan

[91] Mr. Croghan is Vice President, Project Development for the Approval Holder. He provided factual evidence in relation to the Project.

[92] Mr. Croghan explained the details of the Project, including the number and location of turbines and associated infrastructure. Mr. Croghan also explained the assessment that went into the Project before the Director approved the REA.

[93] Mr. Croghan went on to explain the construction and safety features of the Enercon turbines to be used for the Project. In particular, Mr. Croghan explained that the Enercon E82 and E101 turbines are less prone to fire given that they have aluminum nacelles rather than fiberglass ones that are more flammable. Additionally, the turbines have direct drives rather than gear boxes containing oil. Further, the turbines are equipped with blade de-icing systems to reduce ice build-up and in the event that ice builds on the blades, the turbines are to shut down. Furthermore, the turbines are equipped with a storm control system that pitches the blades away from the wind to reduce the likelihood of damage due to high winds.

[94] In relation to noise, Mr. Croghan testified that the Project has been predicted to operate under the MOECC noise limit of 40 dBA at all points of reception within 1,500 m of turbines.

Dr. Robert McCunney

[95] On agreement of the parties, Dr. McCunney was qualified by the Tribunal as a medical doctor specializing in occupational and environmental medicine with particular expertise in the health implications of noise exposure. He provided expert opinion evidence on behalf of the Approval Holder.

[96] Dr. McCunney testified that he is a medical doctor who is board certified with the American Board of Preventative Medicine, in occupational and environmental medicine. He has an active clinical practice in Boston, where he evaluates and treats people exposed to potential occupational and environmental hazards. He is also a Research Scientist at the Massachusetts Institute of Technology. For 33 years, he has practiced Occupational and Environmental Medicine, including research and publishing of over 100 articles. He testified that he also regularly lectures at the Harvard School of Public Health on the subject of noise and hearing.

[97] Dr. McCunney testified that he co-authored a December 2009 report entitled "Wind Turbine Sound and Health Effects: An Expert Panel Review." (Colby et al, 2009). He stated that the report contains a comprehensive discussion of health issues that have been raised with respect to wind turbines, including infrasound, low-frequency sound and annoyance, among other matters, associated with living in proximity to wind turbines. Having conducted the review, the authors concluded that:

> (a) The sounds emitted by wind turbines are not unique. There is no reason to believe, based on the levels and frequencies of the sounds and the panel's experience with sound exposures in occupational settings, that the sounds from wind turbines could plausibly have direct adverse health consequences.
>
> (b) The body of accumulated knowledge about sound and health is substantial.
>
> (c) The body of accumulated knowledge provides no evidence that the audible or sub audible sounds emitted by wind turbines have any direct adverse physiological effects.

[98] Dr. McCunney also testified that he and his co-authors re-confirmed these conclusions in a recently published article entitled "Wind Turbines and Health: A Critical Review of the Scientific Literature." (McCunney et al, 2014). He said that in this latest review, he and his co-authors concluded that:

> (a) Measurements of low-frequency sound, infrasound, tonal sound emission and amplitude-modulated sound show wind turbines emit

> infrasound. The levels of infrasound at customary distances to homes are typically well below audibility thresholds.
> (b) No cohort or case-control studies (which are of the highest value in assessing causality) were located, but among the cross-sectional studies of sufficient quality, no clear or consistent association is seen between wind turbine noise and any reported disease or other indicator of harm to human health.
> (c) Components of wind turbine sound, including infrasound and low-frequency sound, have not been shown to present unique health risks to people living near wind turbines.
> (d) Annoyance associated with living near wind turbines is a complex phenomenon related to personal factors. Noise from turbines plays a minor role in comparison with other factors in leading people to report annoyance in the context of wind turbines.

[99] Dr. McCunney's evidence included general facts about sound, and a review of published research and data, that he says informed the opinions and conclusions that he expressed in his witness statement.

[100] In response to the Appellant's claim that infrasound and low frequency noise causes adverse health effects, Dr. McCunney testified that there are no studies demonstrating harmful effects to humans as a result of exposure to infrasound or low-frequency sound at the noise levels measured in the vicinity of wind turbines or in experimental studies involving noise levels several orders of magnitude higher than those noted in the vicinity of wind turbines.

[101] Regarding the issue of annoyance, which was mentioned in several witness statements or presentations as an adverse health effect, Dr. McCunney testified that,

> Annoyance associated with wind turbines is a subjective phenomenon, which appears to be related primarily to attitudes to the visual impact of wind turbines and economic benefit associated with wind farms. (Pedersen et al, 2011; 2009; 2007; 2004) Annoyance is not a health effect. Although some have erroneously referred to the World Health Organization (WHO) to claim that annoyance is a direct adverse health effect, I was unable to find "annoyance" described in any medical dictionary. I was also unable to locate "annoyance" as a disease entity in the 10th revision of the International Classification of Diseases (ICD-10). As a result, claims that "annoyance" is an adverse health effect reflect individual opinions and not the consensus of the international medical community. Moreover, a review of the constitution of the WHO (1948) and its subsequent publications do not indicate that the WHO considers "annoyance" an adverse health effect.

[102] Dr. McCunney stated that he was asked by the Approval Holder to review and consider the Health Canada Summary of Results, also cited in support of their positions, by several witnesses and presenters. Dr. McCunney noted that the authors themselves refer to the document as a preliminary discussion of unpublished results that "should only be considered final following peer-review and publication in the scientific literature". He said that the authors also note that the study results "do not permit any conclusions about causality" and "should be considered in the context of all published peer-reviewed literature on the subject." As a result, Dr. McCunney said it is difficult to draw any meaningful conclusions from the Summary.

[103] Dr. McCunney said that the Summary did report that annoyance resulting from noise, shadow flicker, blinking lights, vibration and visual impacts were found to be statistically associated with increasing levels of wind turbine noise. He said, however, that this finding is not sufficient to draw a conclusion regarding causation, as the study authors expressly noted.

[104] Dr. McCunney testified that various health complaints identified in the notice of appeal, witness statements and presentations, such as headache, tinnitus, sleep disturbance, and vertigo, are common in the general population and have numerous causes. He further submitted that, the medical activities that are necessary when a health complaint is made are, diagnosis based on accepted medical criteria and treatment, and that these steps must be undertaken before attributing causal links to any potential environmental concern such as living in the vicinity of a wind turbine.

[105] Dr. McCunney also testified that in his experience, patients' own self-assessment of causes of symptoms, although potentially helpful in the evaluation, can often be incorrect.

[106] In Dr. McCunney's opinion, the assertions contained in the witness statements of Mr. Palmer, Ms. Tuson and Ms. Rogers, and the presentation of Mr. Dooley about the potential health impacts of wind turbines, are inconsistent with the scientific literature. Dr. McCunney also testified that the health related information contained in the witness statements of Ms. Kidd and Ms. Johnson, and the presentations of Ms. Atkins, Ms. Correia and Mr. Jankowski is insufficient to reach reliable medical diagnoses, and does not provide support for causal links between health effects and living in the vicinity of wind turbines.

[107] In responding to Mr. Palmer's assertion that shadow flicker causes annoyance to people within their homes, Dr. McCunney testified that the frequency of rotation of the turbines in the Project is not high enough to trigger epileptic seizures, and that, based on his review and knowledge of the relevant scientific and medical literature, there is no reason to believe that shadow flicker will cause an adverse health effect.

[108] Dr. McCunney responded to Mr. Palmer's comments on the Health Canada Summary of Results, where Mr. Palmer stated that it "confirms statistically significant exposure-response between increasing wind turbine noise levels and the prevalence of reporting high annoyance." Dr. McCunney said that the Summary is preliminary and no meaningful conclusions can be drawn from it other than the fact that its results do not permit any conclusions about causality, which the study explicitly states.

[109] In responding to the testimony given by Ms. Rogers, Dr. McCunney was of the opinion that it appears that Ms. Rogers' major position regarding environmental noise levels from the operation of wind turbines is that they should not be greater than 35 dBA at people's residences. He stated that, in her witness statement, she referred to a position paper of "Wind Concerns Ontario" where this group recommended, among other things, that the "findings from the Health Canada [Summary of Results] … indicate that the power threshold needs to be lowered to 35 dBA, which in turn means that the setback needs to be increased to 1,300 meters." Dr. McCunney testified that Ms. Rogers did not describe the scientific basis for determination of a 35 dBA noise limit, or

a 1,300 m set back or the basis of such a limit. He stated again that the Health Canada Summary of Results is preliminary, but in any case, do not appear to support the assertions made by Ms. Rogers.

[110] Dr. McCunney said of Ms. Rogers' statement about the health of her son, that the information she provided is insufficient for a medical diagnosis and does not provide support for causal links between health effects and living in the vicinity of wind turbines.

[111] Dr. McCunney responded to Ms. Kidd's testimony that she is concerned about negative health effects associated with wind operations, including sleep disturbance, stress, headaches, nausea, and tinnitus, and her concern about the location of turbines with respect to schools and playgrounds. He said that since he neither interviewed nor examined Ms. Kidd, nor did she provide medical records, he is not able to precisely assess the potential impact of environmental noise on her or her family. However, his opinion, based on his review and knowledge of the relevant scientific and medical literature, is that there does not appear to be any merit to Ms. Kidd's concerns.

[112] In response to Ms. Kidd's concern about the impact of wind turbine noise on children and elderly persons living in homes of participating receptors, Dr. McCunney testified that he is not aware of any studies which suggest that children or elderly persons living in the homes of participating receptors are at any greater risk of harm than anyone else.

[113] In response to Ms. Kidd's concern about "low frequency tonal hums which have been heard inside of homes", Dr. McCunney confirmed his earlier testimony that he knows of no studies demonstrating harmful effects to humans as a result of exposure to infrasound or low-frequency sound at the noise levels measured in the vicinity of wind turbines.

[114] Dr. McCunney testified that Ms. Tuson, in her witness statement, raises no health-specific information and that she incorrectly characterizes what was “found” in the Health Canada Summary of Results regarding wind turbines and health outcomes.

[115] Dr. McCunney stated that he has not had the opportunity to clinically examine Ms. Atkins and Leon Atkins, Ms. Brusse, Ms. Correia, and Mr. Jankowski or other witnesses, nor had the opportunity to review their medical records. He said that it is therefore not possible to evaluate the potential impact of environmental noise on those individuals. However, he said, based on his review and knowledge of the relevant scientific and medical literature, there does not appear to be any merit to their concerns, or any evidence to support a connection between their self-reported symptoms and the operation of wind turbines.

[116] In response to Ms. Atkins’ concerns that the Project may exacerbate symptoms related to her pre-existing acoustic neuroma, which is a benign tumour of the eighth cranial nerve, Dr. McCunney says that this type of neuroma may affect hearing and/or balance. However, he says that noise is not a risk factor for exacerbating a pre-existing acoustic neuroma, and further, that Ms. Atkins has provided no medical support for her concern that noise will aggravate her condition.

[117] Dr. McCunney testified that, although Ms. Brusse states in her witness statement that stray voltage and electromagnetic fields (EMF) have an effect on human health, in his opinion, available scientific evidence does not “support a causal link between EMF and health issues at levels typically encountered by people.” (Knopper LD et al., Wind Turbines and Human Health” Frontiers in Public Health 2014; 2: 20).

[118] In response to Ms. Brusse’s suggestion that high voltage power lines create “corona ions”, to which she attributes to an increased risk of lung cancer mortality and an increased incidence of cardiovascular and respiratory illnesses, Dr. McCunney testified that “the weight and strength of the scientific evidence demonstrates that there is no significant increased risk of lung cancer mortality, or increased incidence of

cardiovascular and respiratory illnesses associated with living near high-power voltage lines."

[119] In response to Ms. Correia's concerns about the impact of noise on her son who has "developmental issues, including ADHD, anxiety and serious processing issues (mainly, but not exclusively aural)", Dr. McCunney said that he is unaware of any scientific literature that suggests that wind turbine noise would adversely affect the health of a child with these developmental disorders.

[120] Dr. McCunney also responded to Mr. Jankowski's testimony describing negative health effects on himself and his family that he attributes to the operation of the HAF project. Dr. McCunney noted that Mr. Jankowski had included with his statement, a letter from his family physician, Dr. Mussani, but that in the letter Dr. Mussani provides no diagnosis, summarizes symptoms that were reported to him by Mr. Jankowski, and includes that the results of medical examination and investigation, including blood tests and ECG, are normal. Dr. McCunney said that in his opinion, the likelihood of a person being adversely affected by noise from wind turbine nearly 4.7 km away seems "incredulous" based on the results of available scientific studies.

[121] Finally, Dr. McCunney's testimony included his response to the presentation by Mr. Dooley entitled "Infrasound & Motion Sickness", which posits a causal relationship between infrasound and potential nausea. Dr. McCunney stated that the presentation makes a number of tentative and unsupported claims, such as, for example, "the implications of this hypothesis if proven are numerous and could include" evidence that infrasound causes nausea and other symptoms of motion sickness. Dr. McCunney's opinion is that the presentation is highly theoretical, and the practical implications are far from definitively demonstrated. He restated his opinion that infrasound from wind turbines is an unlikely source of potential health effects.

Shant Dokouzian

[122] Mr. Dokouzian testified on behalf of the Approval Holder. He is the Team Leader for project development services at DNV GL, an international consulting company that provides services solely with respect to renewable energy. Mr. Dokouzian has been involved in more than 20 ice throw assessments, more than 40 shadow flicker assessments, and several overall risk assessments for wind farms.

[123] On consent of the parties, he was qualified by the Tribunal as an engineer with expertise in shadow flicker and the design, impact assessment, including risk and public safety assessment and post-construction monitoring, of wind farms.

[124] Mr. Dokouzian testified in response to Mr. Palmer's comments relating to public safety and shadow flicker.

Public Safety

[125] Mr. Dokouzian first addressed Mr. Palmer's concerns related to public safety, including tower collapse, blade projectiles, fire, ice throw, and proximity of turbines to natural gas wells and piping.

[126] Mr. Dokouzian disagrees with the claims by Mr. Palmer that, "For the 5 years ending November 2014, the international frequency of a blade failure, tower collapse or turbine fire occurs at about 0.0002 failures per turbine year in operation.", and that the frequency in Ontario is "about 0.0006 failures per turbine year in operation." Mr. Dokouzian's opinion in this regard is that Mr. Palmer's calculations are statistically unreliable, due to being generated from too small a set of data (i.e., four events over a period of 20 years). He says that he is not aware of failures occurring in Ontario, or elsewhere, at this frequency.

[127] Mr. Dokouzian also disagrees with Mr. Palmer's conclusion that over the 20 year life of the Project there is a 1 in 5 chance that a piece of a turbine will detach and will impact neighbouring non-participating properties. Mr. Dokouzian's view is that even if one accepts Mr. Palmer's alleged incidence rate, which he does not, the likelihood of this type of event happening is very unlikely. He further states that Mr. Palmer does not include any supporting modeling data for his claim, and that absent supporting data, Mr. Palmer's failure rate statistic is unreliable.

[128] Mr. Dokouzian testified that he is familiar with the turbine manufacturer and specific models proposed for the Project, and that the proposed turbines are known to be very reliable and to have a very low failure rate. He went on to testify that the wind turbine manufacturer has confirmed the suitability of the turbines for the site, and that a suitable operation, maintenance and safety program has been proposed and approved by the MOECC.

[129] In response to Mr. Palmer's assertion that the spacing of turbines for the Project will result in an increase in turbine stresses and failure rates, Mr. Dokouzian states that the spacing for the Project is not unusual and has not resulted in an increase in failures at wind farms. He states that spacing is not considered in isolation, and that a variety of other parameters are considered.

[130] Mr. Dokouzian's conclusion on turbine failure is that the Project will not pose any significant public safety risk.

Tower collapse

[131] On the issue of tower collapse, Mr. Dokouzian testified that it is a very rare event.

[132] He also testified regarding a Handbook on wind turbine risk assessment, known as the "Dutch Handbook" (recently updated in 2014) which estimated the conservative probability of tower collapse, among other events, and which in his opinion, is a very

reliable resource. The data in the Dutch Handbook estimated the expected risk of tower collapse to be 1 in 17,000 (0.000058) turbines per year. Mr. Dokouzian noted that this rate is an order of magnitude lower than the failure rate of 0.0006 proposed by Mr. Palmer.

Blade failure

[133] Mr. Dokouzian's testimony included evidence that blade failure events are rare, and blade separation (in whole or in part) is rarer still, due to improvements in blade technology.

[134] He testified that in the 2005 Dutch Handbook, the risk of blade failure was estimated to be 1 in 1,600 (0.0006) turbines per year, the overall blade failure rate had declined by a factor of three since the early 1990s, and it is projected that the rate will continue to decrease as turbine technology and industry practices evolve.

[135] Mr. Dokouzian testified that it is also important to put turbine blade "failure rates" into perspective. He noted that the incidence of "blade failure" is not the same thing as the incidence of detachment and injury, and that to calculate the likely incidence of detachment and resulting injury, one must take into consideration all of the following: (i) the probability of a blade failing, (ii) the probability of a blade or part of a blade detaching from the turbine as a result of the failure, and (iii) the probability of a person being present where the detached part impacts the ground. He stated that taken individually, the probability of each of these events occurring is very low, and that taken together, the probability of all of them occurring simultaneously is extremely remote. He testified that he is not aware of any such injury ever having occurred.

Fire

[136] In response to Mr. Palmer's testimony on fire risk, Mr. Dokouzian states that Mr. Palmer has not provided any specific assessment of fire risk at the Project, but instead,

has discussed the risk of fire generally, on the basis of six historical events, only one of which is claimed to have involved a turbine fire.

[137] Mr. Dokouzian testified that turbine fires are extremely rare for modern turbines, because modern turbines are equipped with numerous fire safeguards.

[138] Mr. Dokouzian testified that he is familiar with the Enercon E101 and E82 turbines that are proposed for the Project. He stated that these turbines are less prone to fire because they use no oil (they are direct-drive models and hence have no gearbox and no hydraulic systems) and because the nacelle is made of aluminum, which is less flammable than fiber glass, the other material that is typically used for nacelle canopy in turbines.

Ice throw

[139] Mr. Dokouzian testified that Mr. Palmer's concerns about the risk of ice throw to landowners and to trains, are general concerns only. He noted that Mr. Palmer has done no assessment of what the specific risk of ice throw might be at the Project.

[140] Mr. Dokouzian testified that in his opinion, the risk of harm from ice throw arising from the Project is very low, due to the turbine manufacturer's de-icing system, NRWC's ice fall and shed mitigation strategy, the monitoring plan and contingency measures, set out in the Project Description Report, and the distances between the wind turbines and areas with frequent human activity. Mr. Dokouzian went on to outline the mitigation measures and the monitoring and contingency measures planned for the Project.

[141] Mr. Dokouzian addressed Mr. Palmer's assertion that the turbine height will increase the risk of ice formation. Mr. Dokouzian stated that increased height can, in some weather conditions, result in a greater risk of ice formation, but that is not always the case. He said in his opinion, the risk of ice throw for the turbines proposed for the Project is appropriately mitigated by the combination of the Enercon blade de-icing

system and turbine shutdown in the event of ice formation.

[142] With regard to turbine proximity to railways, roads, and agricultural buildings on participating landowner properties, Mr. Dokouzian is of the opinion that the risk of harm from ice throw in each case is negligible.

Proximity of wind turbines to natural gas wells and piping

[143] Regarding the proximity of wind turbines to natural gas wells and piping distribution systems, Mr. Dokouzian testified that the Project adheres to Ontario setback requirements and notes that a setback in the order of 75 – 100 m to the center of the wind turbine is typical in other jurisdictions with substantial wind farm development, such as Alberta, which has a substantial pipeline presence. He noted that despite the extent of pipeline presence in Alberta, there have been no known incidents of turbine collisions with pipeline infrastructure there.

Shadow flicker

[144] Mr. Dokouzian testified in response to Mr. Palmer's concerns about "shadow flicker". He noted that a shadow flicker analysis is not required as part of the Renewable Energy Approval process in Ontario, and that there is no evidence that shadow flicker is a concern for this Project.

[145] Mr. Dokouzian stated that Mr. Palmer has not conducted a shadow flicker study of the Project, but that where a site specific shadow flicker analysis is done, some of the aspects that need to be considered are: (i) natural barriers and other mitigation factors (*e.g.*, topography, trees, etc.), (ii) cloud cover, (iii) the orientation of windows at neighboring properties, (iv) wind distribution and wind turbine down-time, (v) wind direction – turbines rotate to face into the wind, and are not always pointed in the direction of the sun, and (vi) the effect of aerosols and pollution in the air which can cause shadow flicker to diffuse over large distances. Mr. Dokouzian testified that without

considering these aspects, it is not possible to accurately assess (even roughly) the amount of exposure to shadow flicker that will be experienced by “homes on roadways east and west of turbines” as, he says, Mr. Palmer purports to do.

Responses to other witnesses

[163] Mr. Dokouzian also testified in response to Ms. Kidd’s concern about the risk to maintenance workers and others, including children, who are present within 400 m of wind turbines. Ms. Kidd had cited a recommended exclusion zone in a maintenance plan written by another turbine operator. Mr. Dokouzian stated that the document, published in 2007, is not based on a risk assessment, is very conservative, and in his experience the passage relied upon by Ms. Kidd is not representative of other manufacturers’ safety literature. He noted that while the potential risk of injury increases as one gets closer to the wind turbine, in absolute terms it remains very low.

[146] Mr. Dokouzian testified, as well, in response to Mr. Sadler’s presentation, which references statements from the website of an insurance company, G-Cube Insurance, saying that wind turbines can fail or catch on fire, often due to an “internal component failure or a buildup of material in lubricants.” In Mr. Dokouzian’s opinion the probability of the proposed turbines catching fire, and the fire spreading out of the nacelle, is extremely low. In addition, he noted that the most common failure listed by G-Cube, “Gearbox issue,” is not applicable to the Project turbines, as they are gearless. Finally, he stated that that “failures” from an insurance company’s perspective refer to mechanical conditions which prevent the turbine from operating, and do not necessarily include events which would constitute a safety risk.

<u>The Stantec Panel</u>

[147] Stantec is a third party agent hired by NRWC to conduct the required environmental studies and assessments for the Project. As part of its mandate, Stantec conducted a Natural Heritage Assessment and Environmental Impact Study

("NHA/EIS"). Stantec completed site surveys for the required Natural Heritage Assessment Report for the REA.

[148] Evidence on the Natural Heritage Assessment Report and its related site surveys, was provided to the Tribunal by way of a panel of experts from Stantec, as summarized below. Included in the evidence, was the panel's combined witness statement with supporting documents. Testifying for the Approval Holder were Chris Powell, Andrew Taylor and David Charlton.

Chris Powell

[149] Mr. Powell was qualified by the Tribunal, on agreement of the parties, as an expert in environmental planning and management, including developing and implementing natural heritage and environmental planning policies.

[150] Mr. Powell testified that he is Stantec's project coordinator for the Project, responsible for coordinating a team of technical experts to establish the turbine layout and complete the supporting technical studies for compliance with regulatory requirements. He was the senior reviewer, co-signing the NHA/EIS.

[151] Mr. Powell testified that the Project will be situated primarily on privately owned lands and within municipal right of ways through agreements with local landowners and municipalities.

[152] Mr. Powell explained that the NHA/EIS process mandated by the REA Regulation is designed to assess potential risk to the natural environment and to protect significant natural features (including woodlands and wetlands) and wildlife habitats. He noted that it is a comprehensive process that involves the following main phases: (i) a records review; (ii) a site investigation; (iii) an evaluation of significance; and (iv) an environmental impact study for any significant natural features or wildlife habitats.

[153] Mr. Powell's testimony included a review of the process of completing the NHA/EIS for the Project. He testified that Stantec consulted with the MNRF throughout the process, and that the MNRF reviewed and confirmed the NHA/EIS was completed in accordance with the requirements of the REA Regulation.

[154] Mr. Powell testified that subsequent to the NHA/EIS, additional pre-construction monitoring surveys were completed, the findings of which are found in the Pre-Construction Monitoring Report (the "PCMR"). He explained that the PCMR amends the list of significant natural features identified in the Project Area, and that the mitigation and monitoring measures outlined in the NHA/EIS apply to those natural features confirmed to be significant in the PCMR.

[155] Mr. Powell testified that where pre-construction surveys were completed, none of the potential or candidate features qualified as significant wildlife habitat, and that where permission to access specific properties was not available, the relevant features on those properties were assumed to be significant features, and mitigation will be implemented.

Andrew Taylor

[156] Mr. Taylor was qualified by the Tribunal, on agreement of the parties, as an expert in terrestrial biology and the assessment and mitigation of environmental impacts at wind farms with respect to vegetation and animals.

[157] Mr. Taylor's testimony focussed on the results of the NHA/EIS relating to the Project's potential impact on migratory birds and butterflies.

[158] Mr. Taylor testified that Stantec did not identify any candidate Migratory Butterfly Stopover areas within the Project Area during the record review stage. This was confirmed by comprehensive site investigations. Therefore, there was no need or reason to carry forward the assessment to the evaluation of significance phase of the

NHA/EIS. Mr. Taylor further testified that no targeted monarch butterfly surveys were conducted for the Project as the habitat requirements for considering a natural feature as significant Migratory Butterfly Stopover area were not satisfied.

[159] Mr. Taylor described the mitigation measures that will be implemented, despite the finding of no significant stopover areas within the Project area as follows:

> Notwithstanding the absence of candidate significant habitat relevant to migratory butterflies, Stantec has recommended mitigation measures within the NHA/EIS (which are required to be implemented under Condition A1 of the REA), that will assist in mitigating any potential impact to migratory butterflies. These measures include staking the limits of construction to preclude encroachment and minimize removal of vegetation; and seeding or replanting of disturbed areas using native species.

David Charlton

[160] Mr. Charlton was qualified by the Tribunal, on agreement of the parties, as an expert in agrology and assessment and mitigation of environmental impacts at wind farms with respect to vegetation and animals.

[161] Mr. Charlton testified regarding woodlands and wetlands generally, and the results of the NHA/EIS for the Project on those aspects in particular.

[162] Mr. Charlton testified that, through the records review and site investigations phases of the NHA/EIS, Stantec confirmed a total of 157 wetland features greater than 0.5 hectare in size that overlapped with the Project Area. These included 88 wetlands associated with 16 provincially significant wetland complexes, five wetlands associated with four locally significant wetland complexes, and 64 unevaluated wetlands (including 20 that were not previously identified). Mr. Charlton explained that all of the wetlands identified as overlapping with the Project Area were carried forward into the evaluation of significance phase of the NHA.

[163] Mr. Charlton went on to testify that in the evaluation of significance phase, Stantec took a conservative approach, and determined or assumed that all of the 157 wetlands that overlapped with the Project Area were significant.

[164] Finally, on the issue of the wetlands, Mr. Charlton testified that during the EIS stage, with two exceptions, none of the Project area will be located in, on or over any of the 157 significant wetlands identified. The two exceptions are: (i) the collector and transmission line crossing of the Welland River, and (ii) the collector line crossing of the Welland Feeder Canal.

[165] For these two areas, Mr. Charlton testified that the crossings of wetlands will be either directionally drilled at a sufficient depth below the wetland or overhead with the pole structures placed outside the wetland boundaries. Mr. Charlton's opinion is that, by installing lines in either of these ways, direct impacts on the wetland feature will be avoided. He also testified that indirect impacts, resulting from construction, operation, and decommissioning, will be minimized through the application of standard site control measures and best management practices.

[166] Mr. Charlton provided details of general mitigation measures to be taken near the significant wetland areas, and mitigation of the potential effects of the Project on wildlife associated with the wetlands (such as sediment fencing).

[167] In response to the assertions of Ms. Shields regarding certain types of wildlife habitat within identified woodlands and wetlands, such as bat habitats, turtle habitats, raptor habitats, and migratory landbird stopover areas and Migratory Butterfly Concentration areas, Mr. Charlton described the mitigation measures that have been incorporated into the REA. It is his opinion that these measures will mitigate potential negative environmental effects on these species and their habitats.

[168] Ms. Shields also raised concerns about Red Mulberry, a plant species listed under the Ontario *Endangered Species Act, 2007* and the federal *Species at Risk Act*. Mr. Charlton testified in response, that during Stantec's completion of Ecological Land Classification surveys, the species code for Red Mulberry was mistakenly recorded as being present in a woodland area near a proposed turbine location. He testified that a follow-up visit to the area by the technician, who had mistakenly entered the code for Red Mulberry, and the senior botanist, resulted in no Red Mulberry being found. It is Mr. Charlton's opinion that Red Mulberry is absent from the Project area.

[169] Mr. Charlton disagreed with the assertion by Ms. Brusse that birds may be killed by colliding with Project transmission lines, saying that it is Stantec's opinion that the transmission lines associated with the Project will not cause any significant adverse effects to birds.

[170] Mr. Charlton also testified in response to the assertion of Ms. Atkins that the Project will potentially harm horses, ponies, donkeys and livestock. He testified that Stantec commissioned Intrinsik Environmental Services Inc. ("Intrinsik") to consider, among other things, the existing literature on the potential effects of wind turbine operation on wildlife and domestic animals. Mr. Charlton stated that Intrinsik concluded that there is no evidence that wind turbines affect the long-term sustainability of agricultural animal populations, and that Stantec is therefore of the view that the Project will not adversely affect the horses, ponies, donkeys and livestock identified in the presentation of Ms. Atkins.

[171] Mr. Charlton testified that, contrary to the assertions by Ms. Rogers, and Ms. Brusse that the Project will have an adverse effect on groundwater and aquifers in the area, it is his opinion that the Project is unlikely to result in any negative impact to groundwater or aquifers. He said that potential impacts may occur through accidental spills or dewatering, but that procedures will be in place to minimize that risk. He explained that mitigation of impacts associated with spills include spills containment,

response plans, and notification procedures, as well as the identification of specific areas for fueling away from natural features and watercourses.

[172] In regard to de-watering activities, Mr. Charlton testified that mitigation measures include monitoring and regulation of dewatering rates and the implementation of practices to reduce off site impacts, such as isolation of dewatering areas, sampling of discharge and prevention of flooding.

[173] Mr. Charlton testified in response to concerns raise by Ms. Brusse that the Project infrastructure can cause stray voltage which could affect livestock and/or the water source for livestock. Mr. Charlton stated that the potential stray voltage concerns have been considered by Stantec's Professional Engineers, and based on the information provided by them, he is of the opinion that the Project is unlikely to result in any significant stray voltage beyond acceptable limits.

[174] Mr. Charlton testified that the transmission and collection lines used by the Project are not impacted by local service loading, as they are not directly connected to the local distribution system, and thus not impacted by unbalanced current flows. He further testified that the Project collector lines will be underground, thereby minimizing the potential for stray voltage, and for the transmission lines, the underground lines will be designed to minimize for stray voltage. Finally, he explained that the stray voltage potential for overhead transmission lines will be assessed during the final design, and mitigation will be implemented to ensure that any potential stray voltage does not exceed acceptable limits.

[175] The Stantec panel's evidence included a supplemental witness statement, which responded to the assertions made by presenter Ms. Smith regarding potential impacts of the Project's turbine T83 on drainage patterns, wetlands and wildlife habitat on her property. This evidence included a description of Stantec's assessment of "the potential impacts of turbine T83 and the associated Project infrastructure, including impacts on drainage patterns, wetlands and associated wildlife habitat."

[176] Also outlined in detail were the monitoring and mitigation measures incorporated into the REA, that Stantec asserts will effectively mitigate any potential negative environmental effects of the Project.

[177] The Stantec panel concluded that turbine T83 and the associated Project infrastructure will not result in any adverse effects to the Wetland, the Drainage Feature or the associated wildlife habitat.

[178] In summary, the overall opinion of the Stantec panel was that "the Project constructed and operated in accordance with all required mitigation measures will not cause any adverse effects to natural features, including significant wetlands, significant woodlands, or significant wildlife habitat, or wildlife, including migratory butterflies, migratory birds, bats, turtles, wintering raptors and their habitats".

Evidence Adduced by the Director

Denton Miller

[179] Mr. Miller is employed as a Senior Noise Engineer in the Renewable Energy Approvals Unit of the Environmental Assessment Branch of the MOECC. On agreement of the parties, he was qualified by the Tribunal as a noise engineer with specific expertise in the application of the MOECC Noise Guideline and compliance protocols for wind turbines.

[180] Mr. Miller conducted the technical engineering review for the Project for the MOECC and recommended approval of the Project to the Director.

[181] Mr. Miller testified about his understanding of the Project components, including the fact that the turbine nacelles will be mounted on towers at the following hub heights: 135 m above grade for the Model E 82 wind turbines, 135 m above grade for six of the

Model E 101 wind turbines, and 124 m above grade for the remaining 68 Model E 101 wind turbines.

[182] Mr. Miller provided an overview of the review process and criteria for approval for renewable energy approvals. He testified that O. Reg. 359/09 imposes minimum setback distances for wind turbines from noise receptors of 550 m, property boundaries, roadways, and railways.

[183] Mr. Miller also testified that the MOECC Noise Guideline sets out requirements concerning noise limits, compliance with the noise limits, and preparation of noise assessment reports. Mr. Miller testified that the MOECC Noise Guideline was developed based on existing guidelines and approval practices for other industrial and commercial facilities, a review of documentation and practices in other leading jurisdictions world-wide, and input from a range of stakeholders.

[184] Mr. Miller testified that, consistent with the MOECC Noise Guideline, among other things, the Approval Holder's Noise Impact Assessment Report identified all non-participating receptors within 1,500 m of a proposed wind turbine, a total of 2,574 such locations. Additionally, of the total of 80 proposed wind turbine locations identified, no non-participating receptors were identified under the 550 m minimum setback.

[185] Mr. Miller testified that blade swish noise from the operation of turbines is regarded as normal amplitude modulation and becomes less pronounced as one gets further away from turbines. Mr. Miller also testified that background noise will further reduce the prominence of noise detected from blade swish. Mr. Miller testified that the MOECC Noise Guideline requires no adjustments to modeled noise due to normal amplitude modulation. He testified that an assessment using A-weighted equivalent sound pressure level adequately addresses normal amplitude modulation.

[186] Mr. Miller testified that “other amplitude modulation” can result from turbine operation but such amplitude modulation is rare and is not predictable but rather, must be assessed when operation commences at turbines. His evidence was that such assessments will occur for the turbines as required by the REA.

[187] In relation to infrasound, Mr. Miller expressed his opinion, based on research studies performed to date, that levels of infrasound at houses near wind turbines is no greater than that experienced in other urban and rural environments, and that the contribution of wind turbines to the measured infrasound levels is insignificant in comparison with the background level of infrasound in the environment from other sources.

[188] Mr. Miller stated that the MOECC Noise Guideline notes that any tonal character (variation in sound pitch) associated with the wind turbine noise is generally caused by maintenance issues and that any tonality must be identified and considered according to the MOECC Noise Guideline. In this situation, according to Mr. Miller, the manufacturer’s data indicated that the Enercon turbines being used for the Project do not exhibit tonal emissions. Further, Mr. Miller testified that the REA requires acoustic audits which will address the tonal component (if applicable) from the turbines when operations commence.

[189] In relation to the placement of turbines in proximity to the Anna Melick School, Mr. Miller expressed his opinion that sound levels inside a class room should not exceed 35 dBA. It is also his opinion that, as the noise modelling assessment conducted on behalf of the Approval Holder predicts that the noise level at the school property boundary will be 40 dBA, that the sound levels inside the school will be less than 35 dBA as there is an assumption that even with a window open, there is a noise reduction of 15 dBA between the exterior and interior of a building. Additionally, in relation to children located in the school yard, Mr. Miller stated that the World Health Organization (“WHO”) has a guideline limit for community noise of 45 dBA and a

playground limit of 55 dBA from exterior noise, levels higher than the maximum predicted level of 40 dBA at the property line of the school yard.

[190] Mr. Miller also noted that the MOECC's noise limit of 40 dBA is based on a one hour averaged sound level while the WHO's target is based on yearly averaged sound level. He stated that a one hour averaged sound level is generally more conservative than a yearly averaged sound level and therefore the MOECC limit is more stringent than the WHO limit.

Discussion, Analysis and Findings

Issue 1: Whether engaging in the Project in accordance with the REA will cause serious harm to human health.

Introduction

[191] The Appellant submits that the Health Test has been met based on the evidence adduced in this proceeding. For its submissions, the Appellant primarily relies on the views expressed by its witnesses, and those of the participant and presenters, as well as the opinion evidence of Mr. Palmer who was the only witness whom the Appellant requested be qualified to give opinion evidence.

[192] Both the Director and Approval submit the Appellant have not adduced sufficient evidence to meet the Health Test under s. 145.2.1 of the *EPA*.

[193] The Appellant's appeal respecting the Health Test raises 10 issues, which will be addressed in turn. The Tribunal notes that the Appellant's sole expert witness, Mr. Palmer, and the Approval Holder's expert witness, Mr. Dokouzian, both testified in *Wrightman v. Director, Ministry of Environment*, [2013] O.E.R.T.D. No. 83 ("*Wrightman*"). The Tribunal further notes the issues in *Wrightman*, and the evidence

adduced by these two witnesses, considerably overlap with the issues raised by the Appellant and the evidence adduced by these two witnesses in this proceeding.

Sub-Issue 1(a): Will the Project as approved cause serious harm to human health, given preliminary results of the Health Canada Summary of Results and other examinations of wind turbine impacts?

Submissions

[194] The Appellant did not provide any submissions in its written argument respecting Sub-Issue 1(a). However, Ms. Rogers, in her witness statement, states that the Health Canada Summary of Results "affirms annoyance and the association with wind turbine noise exposure in a dose response relationship." She further references a study currently being conducted at the University of Waterloo, a court decision relating to wind turbines from Germany and a motion passed by the Brown County Board of Health relating to wind turbines in Issue 1(a). She maintains that the WHO's definition of human health should be used in determining whether the Health Test has been met. In Sub-Issue 1(a), Ms. Rogers implicitly asserts that these studies, as well the agency and court decisions to which she has referred, are sufficient to establish that the Health Test has been met.

[195] The Tribunal notes that the Appellant did not call an expert witness to give opinion evidence respecting health matters, and for this reason, the Tribunal finds that the evidence presented by the Appellant respecting Sub-Issue 1(a) is limited. Therefore, the Tribunal does not find it necessary to include a summary of the response submissions of the Director and Approval Holder. Suffice it to say, they both dispute the Appellant's assertion that the studies and agency and court decisions on which the Appellant relies, are sufficient to establish that the Health Test has been met.

Findings on Sub-Issue 1(a)

[196] The Tribunal first observes that, in other renewal energy approval appeal proceedings, the Tribunal has consistently applied the finding in *Kawartha Dairy v. Ontario (Director, Ministry of the Environment)* (2008), 41 C.E.L.R. (3d) 184 (Ont. Env. Rev. Trib.), that confirmation of medical conditions and their causes and implications require the diagnostic skills of a qualified health professional.

[197] The Tribunal notes that the Appellant did not adduce expert opinion evidence interpreting the Health Canada Summary of Results (other than a reference made by Mr. Palmer to one of its findings), or any of the other studies referenced by any of the witnesses who testified in favour of the Appellant's position. The Tribunal further notes that the Health Canada Summary of Results has been considered in other renewable energy approval proceedings heard both before this Summary was released in November, 2014 (see *Dixon v. Director, Ministry of the Environment*, 85 C.E.L.R. (3d) 153, ("*Dixon*")) and after (see *Gillespie v. Director, Ministry of the Environment*, 2014 CarswellOnt 18121, ("*Gillespie")*. In *Gillespie* the Tribunal found at paras. 132 and 133:

> [132] Because the Summary of Results was not interpreted by an expert, the Tribunal must ascribe limited weight to this evidence. Furthermore, as this summary provides only a set of preliminary findings that have yet to be peer reviewed, the Tribunal concludes that it has limited probative value. Even so, the findings expressly state that the investigators found no association between exposure to wind turbine noise and sleep disturbance, illness or stress, but did find an association between annoyance and several features of wind turbines, including noise, shadow flicker, blinking lights, vibrations and visual impacts.
>
> [133] As a whole, this evidence does not show an "association between exposure to wind turbines and significant adverse health effects," as claimed by the Appellants. At most, the evidence demonstrates that a number of people routinely report that they are annoyed by the presence of wind turbines. For those reporting high levels of annoyance, the preliminary findings of the Health Canada Study suggest there may be some measured physical changes indicating that those highly annoyed individuals experience stress. Whether people report annoyance because of the operation of the wind turbines and the associated noise levels, or, alternatively, because of subjective attitudes, or a combination of factors, is not clear from any of the studies put into evidence. There is little information about the relationship between the

> degree of reported annoyance and specific distance to a turbine or specific noise levels.

[198] The Tribunal finds that the Appellant adduced no opinion evidence to bring the Tribunal's analysis above into question. For this reason, the Tribunal accepts and applies the analysis and findings quoted above. The Tribunal also notes that an association with wind turbine noise exposure in a dose response relationship does not establish causation. Furthermore, as noted in *Dixon*, it was not the intention of the Health Canada Summary of Results to address causation.

[199] As for the decisions of other courts and administrative tribunals or agencies relied upon by the Appellant, the Tribunal notes that the decisions, in and of themselves, are of limited assistance because the decisions cited by the Appellant either do not make specific reference to the applicable legal context in which the decision was made, or they do not provide a detailed description of the nature and extent of the evidence on which the decision was made. More particularly, none of the decisions specifically applied the Heath Test. Furthermore, in determining whether the Health Test has been met, the Tribunal must make its determination based on the evidence adduced before it, not on an evaluation by another court or agency of the evidence placed before that court or agency.

[200] For these reasons, the Tribunal concludes that the Health Canada Summary of Results, and the findings of the other court or administrative tribunal or agencies cited by the Appellant do not constitute sufficient evidence to establish that the Health Test has been met.

Sub-Issue 1(b): Will the Project as approved cause serious harm to human health, if, as the Appellant asserts, the noise modeling calculations are incorrect?"

Overview

[201] The Appellant's notice of appeal states that "The level of sound produced by the [Project's wind turbines] is greater than the maximum permitted under Ontario regulations ("exceedances"); and as such, as indicated by those regulations, will cause serious harm to human health." The Tribunal notes that the applicable regulation is the MOECC Noise Guideline, and that participating receptors are excluded from this Regulation. Consequently, the issue raised by the Appellant in respect of the Health Test is only in respect of non-participating receptors, and, more specifically, whether the Health Test is met if noise levels exceed the noise limits set out in the REA.

[202] The Tribunal's jurisdiction to address such exceedances has already been addressed by the Tribunal in its Reasons for Disposition Order. In this Order, the Tribunal concluded that the issue of exceedance raised in the Appellant's notice of appeal is not within the Tribunal's jurisdiction to address. The Tribunal observed that it has no jurisdiction to consider circumstances or conditions which do not comply with the terms and conditions of the renewable energy approval under appeal, when determining whether an appellant has demonstrated that the Health and/or Environmental Tests have been met. In other words, if a renewable energy approval establishes a noise performance limit of 40 dBA for a non-participating receptor, then, in order to establish that the level of noise generated by a project component will cause serious harm to human health at this receptor, an appellant must demonstrate that such harm will occur at noise levels at or below 40 dBA.

Submissions by the Appellant

[203] In its final written submissions, the Appellant addresses the above finding. The Appellant observes that the onus to prove harm in a renewable energy appeal rests with the Appellant. The Appellant maintains that, "in order to prove 'how' the harm will be

manifested, it often requires examination of ‘what is’ assumed to be the essential elements that will enable the project to operate as licensed (such as sound properties and characteristics).” The Appellant submits that “What is now occurring with the narrowing of the authority for the Tribunal, is that any evidence about missing elements of the inherent properties of the project are not being fully heard.”

[204] Respecting the matter of the future operation of the Project in compliance with the REA, the Appellant makes the following submissions:

> The absolute trust that the Tribunal must place in the project being compliant with its REA is extremely worrisome.
>
> This becomes an insurmountable barrier for justice placed before an Appellant who bears the onus of proof, when evidence of errors or omissions cannot be heard fully as evidentiary foundations. Examination of proof is impended by such implicit assumptions of compliance and denies the state of a project in its current state of being. The truth of such an assumption that a project will operate within compliance when inherent properties will impede such performance without full consideration in a hearing creates a situation of erroneous conclusions and the Appellant humbly asserts is an error of law.
>
> To expand on this statement further: Assumptions of “will comply with its conditions of the REA cannot be held true if the inherent properties of the projects installation and operations are based on inaccurate data and this is not considered fully in evidence in regards to the statutory tests of harm and consequences in the relationship to health or the environment that the Tribunal has authority to consider.
>
> Consideration of applicable rules and regulations when accepted at “face value” does not provide effective mitigation or protection from harm.

Submissions by the Director

[205] The Director, in response, cites *Université du Québec à Trois-Rivières v. Larocque,* [1993] 1 S.C.R. 471 at para. 34, for the proposition that administrative tribunals have complete jurisdiction to decide the scope of issues before them, and that a decision-maker may “choose to admit only the evidence he considers relevant to the case as he has chosen to define it.”

[206] The Director further submits that:

> …not every decision to exclude evidence will rise to the level of a breach of natural justice. To accept such a proposition would subvert the wide measure of autonomy which the legislature has granted the Tribunal, and severely undermine the Tribunal's power to decide in a final and exclusive way what evidence is relevant to the issues before it.

[207] The Director asserts that the principles of administrative law must also be placed in the context of the parameters of the statutory test in an appeal of a renewable energy approval, under which the Tribunal is strictly limited to considering whether engaging in the renewable energy project in accordance with the renewable energy approval will cause specific types of harm, and therefore, that evidence which is not relevant to the statutory test cannot be characterized as crucial to the Appellant's case.

[208] Finally, the Director submits that the proper time to have made the argument that portions of the witness statements that were struck were necessary to support the Appellant's claim that the Project will cause harm, was in their written and oral reply submissions to the Approval Holder's motion. The Director notes, however, that,

> In those submissions, the Appellant did not, as they do now, argue that evidence of noise exceedance, compliance, and sound power levels is vital to their case. Indeed, those issues were not mentioned at all in their written reply submissions. To attempt now to raise a new and different defense to the Approval Holder's motion is improper, and is nothing more than an attempt to re-argue an issue already decided by this Tribunal.

Submissions by the Approval Holder

[209] The Approval Holder makes submissions similar to those of the Director that the Appellant was not denied procedural fairness, adding that,

> the Approval Holder served its notice of motion in respect of its motion to strike certain portions of the Appellant's evidence in accordance with the schedule for the proceeding. The Appellant was thus given full notice of the grounds of the Approval Holder's motion, and was afforded an opportunity to respond to those grounds, and did so.

Findings on Sub-Issue 1(b)

[210] The Tribunal has already ruled on this issue and the Parties have the reasons for the Tribunal's finding on this matter in the Reasons for Disposition Order.

Sub-issue 1(c): Will the placement of wind turbines in close proximity to elementary schools cause serious harm to the health of the children attending those schools?

Overview

[211] The Appellant argues that serious harm to the health of children will be caused by noise generated by nearby industrial wind turbines. The Appellant also alleges harm to schools can be caused by ice throw from wind turbine blades, which the Tribunal addresses separately under Issue 1(i) below.

Submissions of the Appellant

[212] The Appellant emphasizes that the WHO Guidelines for Community Noise 1999 ("WHO Community Noise Guidelines") recommends that, in elementary schools, the background sound pressure level should not exceed 35 dBA during teaching sessions, and that, for hearing impaired children, an even lower level may be needed. The Appellant notes that eight industrial wind turbines will be situated within 2 km of the Anne Melick School, and argues this makes it abundantly clear that the impact of the Project on school children was not considered at all. The Appellant emphasizes that, in particular, one of the Project's industrial wind turbines will be situated 371 m from the edge of this school's playground.

[213] The Appellant asserts that the noise levels in the Anne Melick School will be greater than 35 dBA, and submits that this will result in serious harm to the health of the children attending that school. The Appellant maintains that, when and how loud the wind turbine noise is predicted to be is an important consideration, submitting that Mr.

Miller fails to fully consider: (i) that classrooms of a school can be and are used both during the day or evening; and (ii) that teaching sessions can be and are often taken outdoors.

Submissions of the Director

[214] The Director relies on the opinion evidence of Mr. Miller, who testified that the applicable daytime noise limit for the school is 45 dBA, and that the predicted noise impact at the school is 40 dBA. He further noted that noise travelling through a structure will be attenuated or reduced by a value of 10 to 15 dBA, which would reduce noise levels to 25 or 30 dBA inside the elementary school.

[215] Mr. Miller also testified that the WHO Community Noise Guidelines recommend a limit of 55 dBA from external noise sources for school playgrounds. Mr. Miller observed, therefore, that both indoor and outdoor noise levels at the Anna Melick School conform to both MOECC and WHO guidelines.

Submissions of the Approval Holder

[216] The Approval Holder's submissions mirror those of the Director.

Findings on Issue 1(c)

[217] The Tribunal notes that the Appellant's submissions in respect of the WHO Community Noise Guideline is based on the premise that noise levels which exceed the Guideline's recommended noise limits, are seriously harmful to human health. However, the Tribunal observes that the Appellant adduced no expert evidence to support this premise. Furthermore, the concerns expressed in the WHO Community Noise Guideline regarding classroom noise levels, relates to interfering with learning. The Tribunal makes no finding whether interference with learning constitutes harm to human health or indirectly causes harm to human health. However, the Tribunal

observes that the Appellant's evidence does not address this causation question. The Tribunal also notes that the Appellant did not call any expert opinion evidence to dispute Mr. Miller's evidence that noise levels at Anna Melick School conform to both MOECC and WHO Noise Guidelines. The Tribunal observes that the Appellant's submission implicitly assumes that the noise level limits stated in these guidelines establishes that noise levels in excess of these limits are harmful to human health. However, the Appellant adduced no expert opinion to establish that this is so. For these reasons, the Tribunal finds that the Appellant has adduced insufficient evidence to establish that the Health Test has been met in respect of children attending elementary schools.

Sub-Issue 1(d) – Will the physical safety risk caused by locating Project wind turbines at non-protective setbacks from roads, railways and lot lines of non-participating residents cause serious harm to human health?

Sub-Issue 1(e): Will the physical safety risk caused by locating Project wind turbines at non-protective setbacks from the petrochemical/natural gas lines, including but not limited to corrosion, ice thrown, blade crash, etc, in the area cause serious harm to human health?

Overview

[218] As these two issues relate to public safety matters and were primarily addressed by the same two witnesses, Mr. Palmer and Mr. Dokouzian, the Tribunal addresses these two issues together.

Submissions of the Appellant

[219] The Appellant relies on the evidence of Mr. Palmer, noting that Mr. Palmer states that, for 70% of the properties of non-participating receptors, the proposed placement of the Project's wind turbines is that they will be located adjacent to these properties at a distance that is less than the hub height of the wind turbines.

[220] The Appellant asserts that Mr. Palmer gave clear and concise testimony in regard to the application of risk assessment and analysis and discussed how he arrived at his opinion for the Project.

[221] The Appellant refers to Mr. Palmer's evidence stating: "The risk of an ice throw and the calculated impact zone from the wind turbines in the Project which are placed so close to property lines, homes, roads and schools is detailed graphically in the diagram titled: Ice Throw Equivalency."

[222] The Appellant further relies on Mr. Palmer's testimony about the known incidence in Ontario of wind turbine tower collapse, ice throw, blade detachment and fires and the non- protective setbacks to address these known failures.

[223] The Appellant also notes that Mr. Palmer provided evidence respecting the Ontario setbacks for renewable energy projects to petroleum works and operations (such as gas well, well equipment and lines). The Appellant states that it is "Mr. Palmer's opinion that this setback is inadequate for Public Safety – Proximity of Wind Turbines to Natural Gas Wells and Piping".

[224] In response to Mr. Dokouzian's evidence, the Appellant asserts that Mr. Dokouzian's analysis focuses on the probability of an event occurring, i.e. if an event is likely or rare. The Appellant maintains that the adverse events to which his risk analysis refers, (wind turbine tower collapse, ice throw, blade detachment and fires), are all serious. The Appellant argues that Mr. Dokouzian's assessment of risk is focused almost solely on probability of occurrence, maintaining that his analysis ignores deterministic and probabilistic principles. In support of this position, the Appellant further submits that events such as the eight turbines collapsing in a severe storm in Brazil recently (which the Appellant states was confirmed by Mr. Dokouzian not to be a unique event), may be "unlikely", but, clearly, the consequences are very serious.

[225] The Appellant also asserts that the opinions expressed by Mr. Palmer in his reply witness statement, should be preferred to the opinions expressed by Mr. Dokouzian.

Submissions of the Director

[226] Regarding Safety (Risk) Assessment, the Director submits:

1. Mr. Palmer provided testimony about risk assessment calculations he performed respecting probability of tower collapse, blade failure, and turbine fires. He testified that he believes that there is a 1 in 5 chance that a non-participating property will be affected by a turbine failure within the 20-year lifespan of the Project.

2. Mr. Palmer described the method by which he arrived at that prediction. He testified that he compiled a list of turbine failure events in Ontario, as reported in the media, and extrapolated his numbers from this data set. In making this list, Mr. Palmer did not distinguish between different sorts of failure – blade failure, turbine fire, tower collapse – but combined them all into a single category of “turbine failure”.

3. Mr. Palmer further suggested that although there are no known reports to date of members of the public being killed by wind turbines, this is because in most jurisdictions, turbines are not located as close to homes and properties of non-participating receptors as they are in Ontario. He testified this theory is based on his experiences travelling to other jurisdictions and observing turbines in situ there.

4. The responding evidence of Mr. Dokouzian demonstrated that Mr. Palmer’s assessment of the risk of turbine failure is deficient in a number of ways. Mr. Dokouzian testified that a data set as small as the one Mr. Palmer relied on is prone to statistical error and unreliable. If Mr. Palmer’s predicted error

rate of 0.0006 were accurate, Mr. Dokouzian testified that one would expect approximately one turbine failure per year in Ontario – and there is no evidence of turbines failing at this rate in Ontario or in any other jurisdiction.

5. Making reference to a Dutch study on wind turbine risk assessment based on consideration of wind turbine installations around the world (the "Dutch Handbook"), Mr. Dokouzian testified that wind turbine failure events are very rare – with an expected risk of tower collapse of 0.000058 turbines per year, and blade failure of 0.0002 per year. Mr. Dokouzian testified that the Dutch Handbook takes a conservative approach to risk assessment, and their failure rate is very likely higher than the rate for newer wind technology, such as the Enercon turbines used in this Project.

6. Mr. Palmer testified that he believed that there would be a serious risk of ice throw from this Project. He based this conclusion on his personal observation of ice falling from shutdown turbines, reported ice throw from a turbine in Kincardine, proximity of this Project to a road, railway line, and agricultural properties, and speculation about the effectiveness of the Project's blade de-icing system.

7. Mr. Palmer's conclusions regarding ice throw were rebutted in the testimony of Mr. Dokouzian, who testified that, in his opinion, the risk of harm from ice throw arising from this Project is very low, due to the turbine manufacturer's de-icing system (which he described in detail), the Approval Holder's mitigation strategy, monitoring plan, and contingency measures, and the distances between the wind turbines and areas with frequent human activity.

8. Mr. Dokouzian testified that he is familiar with the Enercon E101 and E80 turbines which will be used in the Project, and that in his experience, they

are known to be very reliable and to operate safely in inclement weather conditions.

9. The evidence of Mr. Palmer contains a number of significant deficiencies: his assessment does not contain any technical assessment respecting the management of ice build-up for this particular model of turbine or any statistical analysis of the probability of nearby persons and property being struck by ice throw. His testimony consists of little more than simple assertions based on limited to no supporting evidence.

10. Finally, Mr. Palmer gave very limited evidence that turbine setbacks from natural gas wells and piping were insufficiently protective. He testified that the 75 m setback requirement found in the *Oil, Gas and Salt Resources Act* was based on normal expectations of risk and not designed to take into account risks posed by wind turbines. He suggested that this requirement is therefore inadequate for public safety.

11. Mr. Dokouzian testified that a setback of 75 – 100 m from natural gas pipelines is typical in other jurisdictions, including Alberta, which has both a substantial pipeline presence and a number of wind energy projects, and has no reported incidents of turbine collisions with pipeline infrastructure. Moreover, Mr. Dokouzian testified that the statutory requirement in Ontario requires the 75 m setback to be measured from the “project location”, such as a rotor blade or other infrastructure, the result of which is that the centre of the wind turbine will typically be farther away than 75 m.

12. Mr. Palmer offered nothing but speculation about the adequacy of the statutory setback requirement. The Tribunal should give this evidence little weight.

13. In previous REA hearings where Mr. Palmer has expressed similar opinions regarding noise modelling, amplitude modulation, and public safety concerns the Tribunal has consistently preferred the opinion of responding experts. The Director submits that this case is no different: the Respondents' evidence shows that the Project's noise modelling adequately address all aspects of wind turbine noise and that the risk of the turbine collapse, failure, fire, blade throw, etc. are very low and addressed through appropriate mitigation measures. In support of this submission, the Director cites: *Erickson v. Ontario (Director, Ministry of Environment)*, 61 C.E.L.R. (3d) 1 ("*Erickson*"); *Kroeplin v. Director, Ministry of the Environment*, 88 C.E.L.R. (3d) 1 ("*Kroeplin"); and Middlesex-Lambton Wind Action Group Inc. v. Director, Ministry of the Environment***,** 2013 CarswellOnt 15105 ("*MLWAG*")

Submissions of the Approval Holder

[227] The Approval Holder states that the Appellant asserts that in considering the evidence relating to public safety, the Tribunal should prefer the evidence of Mr. Palmer to that of Mr. Dokouzian. The Approval Holder asserts the opposite.

[228] The Approval Holder submits that, unlike Mr. Palmer, Mr. Dokouzian is trained in performing risk assessments for wind turbines. The Approval Holder submits that Mr. Dokouzian presented his evidence in a frank and forthright manner, and scrupulously confirmed his facts before delivering his opinion. The Approval Holder asserts that Mr. Palmer did not. The Approval Holder submits that the Appellant does not suggest that Mr. Dokouzian has in any way erred in presenting his evidence or that his evidence is somehow tainted by bias, whereas the Approval Holder submits that Mr. Palmer's evidence is tainted by bias. The Approval Holder further submits that, in these circumstances, where their opinions conflict, Mr. Dokouzian's evidence should clearly be preferred by the Tribunal over that of Mr. Palmer.

Finding on Sub-Issue 1(e) and (f)

[229] The Tribunal begins its analysis of these sub-issues, by considering the Appellant's submission respecting probabilistic and deterministic assessments, which is based on following observations made by Mr. Palmer at page 13 of his reply witness statement:

> …A probabilistic assessment that suggests a person might or might not be present, or that the component might not fall on the non-participating neighbour's property when it could, gives no assurance of public safety. …
>
> The basis of deterministic risk assessment is that if a person can be impacted by an accident, then the assumptions must consider that they are present. To resort to probablility to suggest a person may or may not be present does not represent the way electrical power generators that I have experience with are regulated. …

[230] The Tribunal need not comment on whether this approach is acceptable in conducting the type of safety assessment described by Mr. Palmer. The Tribunal does note, however, that even Mr. Palmer's safety assessment includes a probability analysis to determine the likelihood of whether an adverse event such as ice or parts throw or turbine collapse may occur. What the Tribunal must determine is whether the Appellant has established the "will cause" requirement of the Health Test has been met. In *Wrightman v. Director, Ministry of the Environment* (2014), 86 C.E.L.R. (3d) 18 ("*Wrightman*"), a renewable energy appeal proceeding in which both Mr. Palmer and Mr. Dokouzian testified, the Tribunal stated at paras. 163 and 164:

> In *Erickson*, at para. 629, the Tribunal discussed causation in the context of the "will cause" requirement in the Heath Test, stating:
>
> > With regard to the "will cause" arguments of the Parties, the Tribunal finds that there are some aspects of the case law cited by the Parties which are applicable here. For example, there is a distinction between medical (or scientific) causation and legal causation. The Tribunal is to determine whether specified harms will be caused according to the applicable legal standard, which is a balance of probabilities. That standard is not the exact same standard used by scientists, statisticians or medical experts. The Tribunal will take its direction on

> determining whether the Appellants have proven that harm will be caused according to the legal concepts of proof and causation. In doing so, it will assess the scientific evidence and consider which approaches to causation and proof were used in that evidence.
>
> The Tribunal adopts these findings.
>
> Mr. Palmer asserts that serious harm to human health will occur as a result of any of the following events: blade throw, tower collapse, damage resulting from a tower fire, ice throw, and shadow flicker distraction for drivers using Highway 402 (the "public safety events"). It is perhaps trite to observe that the Health Test does not require proof at a level of absolute certainty. Such certainty could only be established once the wind turbines are built and operating, and a public safety event occurs. Instead, an appellant must demonstrate that harm will occur on a balance of probabilities. Accordingly, the Appellants are not required to establish that there is absolute certainty that any of these events will occur. However, it is also important to note that the Director and the Approval Holder, in responding to the Appellants' case, are similarly not required to establish with absolute certainty that any of these events will not occur. *Therefore, the probability (risk) that these events will occur, is a relevant consideration when determining whether harm will be caused according to legal concepts of proof and causation.* [emphasis added].

[231] The Tribunal accepts and applies this analysis and finding. The test which the Tribunal must apply is not whether the Project meets the safety assessment standards described by Mr. Palmer, the test is whether engaging in the Project in accordance with the REA will cause serious harm to human health. Therefore, the Tribunal does not accept the Appellant's submission that, when determining whether the "will cause" requirement of the Health Test has been established, the Tribunal should assume a person will be present, where it is established that an adverse event is possible. Instead, in applying the Health Test, the Tribunal must consider both the probability that an adverse event will occur, together with the probability that a person will be impacted by such an adverse event. Therefore, where Mr. Palmer's analysis does not include consideration of the likelihood whether a person may be present when an adverse event occurs, such analysis is insufficient to establish that harm *will* occur. It can only establish that harm *may* occur.

[232] Before turning to the specific concerns raised by Mr. Palmer, the Tribunal notes, as has been submitted by the Director, that Mr. Palmer has provided similar testimony in *Erickson*, *Kroeplin*, and *MLWAG*. As noted above, Mr. Palmer also testified in *Wrightman*, as did Mr. Dokouzian, and, again, their evidence in *Wrightman* is similar to the evidence adduced in this proceeding. Although the Tribunal in this proceeding has weighed their evidence independently of the findings in these other proceedings (particularly because their evidence is not identical), the Tribunal does not find it necessary to provide a lengthy detailed analysis of their evidence in the proceeding, as most of this ground has already been canvassed in these earlier decisions.

[233] As the Tribunal found in *Wrightman*, Mr. Palmer's safety assessment is deficient, in that it does not include consideration of the probability that a person will be in the vicinity, and, therefore, impacted by the adverse events he describes.

[234] Respecting the issue of Mr. Palmer's determination of the probability of wind turbine failure, the Tribunal notes that this issue was also addressed in *Wrightman*, where the Tribunal found at paras. 179 and 180:

> The Tribunal finds, however, that Mr. Palmer's assessment did not include consideration of the 2005 Dutch study, nor did Mr. Palmer explain why a calculation of probability should be based on data respecting only wind turbines in Ontario. The Tribunal finds these to be significant deficiencies in his assessment. In this regard, the Tribunal notes that Mr. Palmer did include a calculation of probability for known international events, based on the Caithness data (116 incidents of turbine failures for 570,000 turbine years) which showed that the failure rate is approximately 0.0002 failures per year, but he did not explain why he did not adopt this probability, or factor it into his conclusion regarding what the risk of Project failure would be.
>
> In summary, for the purpose of expressing an opinion respecting the probability of wind turbine failure, the Tribunal does not accept that use of only the Ontario data, as Mr. Palmer has done, is adequate. The Tribunal accepts that the Dutch study demonstrates that the probability could be much lower than Mr. Palmer has calculated. However, the Tribunal was not provided with a full report of this study. As such, the Tribunal finds that the evidence adduced in this proceeding is insufficient for the Tribunal draw any firm conclusion regarding the probability that wind turbine failure will occur.

Based on the evidence adduced in this proceeding, the Tribunal adopts this analysis and conclusion.

[235] The Tribunal finds that Mr. Palmer did not provide a convincing rationale to support his continued reliance on the more limited Ontario dataset, when calculating his predictive failure rate. In his reply witness statement he states:

> … there are valid reasons for the Ontario failure rate to be someone higher than the overall industry failure rate such as the fact that the majority of wind turbines in Ontario are of the 80 m hub height plus variety (rather than a number of smaller turbines in Europe) and the fact that the literature does acknowledge that taller turbines and wider weather variations (as Ontario experiences) are possible reasons for a higher failure rate.

[236] However, the Tribunal notes that, as Mr. Palmer has stated above, both turbine height and wider weather variations are *possible*, but not *confirmed* reasons for a higher failure rate. In weighing this evidence, the Tribunal must also consider Mr. Dokouzian's testimony. In responding to Mr. Palmer's evidence on this point, Mr. Dokouzian testified that, because these failure events are relatively rare, a large sample size is required to derive a statistically reliable predictive failure rate. For this reason, Mr. Dokouzian expressed his opinion that the most reliable statistic is the current international rate of 0.0002, because it is derived using a large data sample. Mr. Dokouzian further testified that the actual rate of failures in Ontario does not reflect the predictive failure rate proposed by Mr. Palmer. For this reason, it is Mr. Dokouzian's view that, when calculating a predictive failure rate for Ontario, there is no justification for adopting the smaller sample size proposed by Mr. Palmer. In his written witness statement, Mr. Dokouzian also states:

> Notably, Mr. Palmer does not include any supporting modeling data for his claim. To substantiate this kind of assertion of risk, Mr. Palmer would have to engage in extensive modeling which would involve mapping the properties adjacent to the proposed turbine locations and conducting an assessment of the failure probability, taking into consideration the location and probability of human presence and infrastructure. Absent this kind of supporting data, or indeed any data at all, Mr. Palmer's claimed "failure rate" is unreliable.

[237] In weighing all the evidence, the Tribunal finds that, at best, Mr. Palmer's evidence establishes that the harm he has alleged *may* occur, not that it *will* occur. The Tribunal notes, as well, that this conclusion equally applies to Mr. Palmer's evidence respecting the proximity of wind turbines to natural gas wells and piping. In this regard, while Mr. Palmer raises a concern that setback distances are not sufficient, he does not provide any substantive analysis that harm to gas well and piping will occur, only that it can, and, therefore, may occur. Again, the only other evidence before the Tribunal on this issue is the evidence of Mr. Dokouzian, who has indicated that a setback of 75 – 100 m from natural gas pipelines is typical in other jurisdictions, including Alberta, which has both a substantial pipeline presence and a number of wind energy projects, and that there have been no reported incidents of turbine collisions with pipeline infrastructure. Therefore, the Tribunal finds that Mr. Palmer's evidence on this point is insufficient to establish that the Health Test has been met.

[238] In conclusion, therefore, the Tribunal finds that the Appellant has adduced insufficient evidence to establish that the Health Test has been met in respect of the harms referenced in Issues 1(e) and (f).

Sub-issue 1(g): Will the harm from distress caused by the special characteristics of the sound from the wind turbines cause serious harm to human health?

Overview

[239] The Appellant's submissions in respect of this issue are limited.

[240] The Appellant states that acoustical energies and other emissions or discharges, such as infrasonic barometric pressure displacement, low frequency noise, and infrasound are not regulated under the REA. The Appellant observes that Mr. Palmer provided opinion evidence regarding the factors contributing to annoyance impacts arising from many sources of the Project and how this would be assessed from an engineer's perspective, such as the specific characteristics and the qualities of acoustical emissions of the wind turbines.

[241] The Appellant further states that sleep is a biological necessity and such is essential to life and health. The Appellant also submits that annoyance and sleep disturbance and disruption are adverse health effects that will be caused by the wind turbines of the Project.

[242] In light of the brevity of these submissions, and the Tribunal's finding below in respect of this issue, the Tribunal does not consider it necessary to provide a summary of the submissions made by the Director and Approval holder.

Finding on Sub-Issue 1(g)

[243] The Tribunal notes that Mr. Palmer was qualified to give opinion evidence as an expert in public safety risks due to turbine failure with some experience in the acoustics of wind turbines. The Tribunal has considered his evidence regarding tonality, impulsiveness, and amplitude modulation, and his statements that the MOECC guidelines specifically exclude cyclical noise from wind turbines. However, the Tribunal concludes that it is unnecessary to make specific findings respecting this aspect of Mr. Palmer's evidence, because Mr. Palmer was not qualified to give evidence on the impact of this aspect of noise on human health, and the Appellant did not adduce any other expert opinion evidence on this point. Mr. Sadler did explain a potential hypothesis for explaining how these types of sound might cause certain health issues, including nausea and headaches. However, absent any expert opinion evidence regarding any health impacts caused by such noise characteristics and the seriousness of such impacts, the Tribunal finds that, at best, the evidence only raises a potential concern that harm may occur.

[244] Consequently, the Tribunal finds that the Appellant has adduced insufficient evidence to establish that the Health Test has been met in respect of the harm referenced in Sub-Issue 1(g).

Sub-issue 1(h): Will the shadow flicker from the Project wind turbines cause serious harm to human health of the residents living within the adjacent residences?

Submissions

[245] The Appellant submits that shadow flicker is not regulated under the REA, and will result "in the violation of the persons by exposure/s or a combination effect of exposure and other factors ..." The Appellant relies on Mr. Palmer's evidence respecting shadow flicker and annoyance, which is discussed in greater below in the Tribunal's findings respecting this issue.

Submissions of the Director

[246] The Director submits:

1. Mr. Palmer suggested that shadow flicker from this Project will be disruptive in the homes of non-participating residents. Ms. Atkins expressed concern about the potential effects of shadow flicker on horses. Neither tendered any evidence regarding the effects of shadow flicker on human health, and neither was qualified to give opinion evidence on the subject of shadow flicker.

2. Mr. Palmer testified that some homes in the Project area will be 600 m from a wind turbine. He asserted that this is a distance within which shadow flicker can cause disturbance within homes. Mr. Palmer then proffered shadow flicker plots he had generated through a website operated by the Danish Wind Industry Association. The Tribunal ruled that it would not rely on this information.

3. Mr. Dokouzian was qualified by the Tribunal as an engineer with expertise in shadow flicker and the design, impact assessment, including risk and public safety assessment, and post-construction monitoring of wind farms.

4. Mr. Dokouzian testified that, in his opinion, there is no evidence that shadow flicker is a concern for this Project.

5. Dr. McCunney was qualified by the Tribunal as a medical doctor specializing in occupational and environmental medicine with particular expertise in health implications of noise exposure. He testified that, based on his knowledge and his review of the scientific literature, he has no reason to believe that shadow flicker will cause adverse health effects. His evidence should be afforded considerable weight.

Submissions of the Approval Holder

[247] The Approval Holder submits that Mr. Palmer is neither qualified to, nor has he, conducted a shadow flicker study of the Niagara Region Wind Farm. The Approval Holder submits that Mr. Palmer relies on plots he produced using the Shadow Calculator, and that Mr. Dokouzian noted in his evidence, that the calculator is not a typical comprehensive tool used to model shadow flicker.

Findings on Sub-Issue 1(h)

[248] During the course of Mr. Palmer's testimony, the Tribunal ruled that, as Mr. Palmer was not qualified as an expert in conducting shadow flicker assessments, the Tribunal would not accept his evidence respecting a shadow flicker assessment which Mr. Palmer had prepared using an internet-based computer software model known as the Shadow Calculator. Mr. Dokouzian, who was qualified by the Tribunal to give opinion evidence on shadow flicker assessment, testified that the website to which Mr.

Palmer refers, states this Shadow Calculator is a rudimentary tool which provides estimations, and that is not intended to reflect actual conditions at a project site.

[249] The Tribunal also ruled that it would consider Mr. Palmer's statement that information included with the Calculator indicates that "If you live very close to the wind turbine, it may be annoying if the rotor blades chop the sunlight, causing a flickering (blinking) effect while the rotor is motion."

[250] The Tribunal must, again, observe that Mr. Palmer's evidence only indicates that shadow flicker is a potential mechanism which *may* cause annoyance. This evidence clearly does not state that shadow flicker *will* cause annoyance. Furthermore, the Appellant did not adduce a shadow flicker assessment in respect of the industrial wind turbines proposed for this Project, nor any expert medical opinion respecting the potential harm to human health which shadow flicker may pose. Consequently, the Tribunal finds that the Appellant's evidence respecting this issue falls far short of establishing that the Health Test has been met.

Sub-Issue 1(i): Will the proponents failure to follow business and government regulations pertaining to the siting of larger wind turbines result in the location of Project wind turbines being too close to non-participating residences and result in serious harm to the health of the residents of those abodes?

Findings on Sub-Issue 1(i)

[251] Although the Appellant has raised this issue in its appeal, and reiterates in its final written submissions that this is one of the issues in its appeal, the Appellant does not provide any specific submissions in respect of this issue, as distinct from the submissions raised in respect of Sub-Issues 1(a) through (h). As the Tribunal has already found that the Appellant has adduced insufficient evidence to establish that the Health Test has been met in respect of any of these other issues, the Tribunal can only arrive at the same conclusion for the same reasons in respect of Sub-Issue (i).

Sub-issue 1(j): Will the fact that 30 pairs of the Project wind turbines are proposed to be installed with less than 606 m between them, the separation distance recommended by Enercon, cause serious harm to human health?

Findings on Sub-Issue 1(j)

[252] Although the Appellant has raised this issue in its notice of appeal and although its final written submissions reiterate that this Sub-Issue is one of the issues in its appeal, the Appellant does not provide any specific submissions in respect of Sub-Issue 1(j), or indicate that it relies on any specific evidence adduced in this proceeding in support of this Sub-Issue. Furthermore, the Tribunal is unable to find, based on the evidence tendered at the hearing, that separation distances provided for will result cause serious harm to human health. Consequently, the Tribunal finds that the Appellant has not established that the Health Test has been met in respect of Sub-Issue 1(j).

Conclusion on Issue 1

[253] Based on the above analyses and findings on the sub-issues under Issue 1, the Tribunal finds that the Appellant has adduced insufficient evidence to establish that the Health Test has been met.

Issue 2: Whether engaging in the Project in accordance with the REA will cause serious and irreversible harm to plant life, animal life or the natural environment.

Submissions of the Appellant

[254] The Appellant submits that the Project as approved will cause serious and irreversible harm to plant life, animal life and the natural environment. Specifically, it says:

- that Project site investigations for Migratory Butterfly Concentration areas are incomplete, and the conclusions drawn in error will result in serious and irreversible harm to butterfly species;

- that 26% of the Project components are within 0.1 meters (4 inches) of Provincially Significant Wetlands, which will result in serious and irreversible harm to wetlands;

- that construction and operation of the Project's turbine T76 will cause serious and irreversible harm to the Red Mulberry, an endangered species listed under the federal *Species at Risk Act*; and

- that the Project's mitigation measures are general in nature and are not specific for each of the 104 significant woodlands located within 120 m of Project components, which will cause serious and irreversible harm to these significant woodlots.

[255] The Appellant submits that the footprint of the Project will cover 50,000 hectares, within the Carolinian zone, an area which includes plants and animals listed on the Species at Risk in Ontario list, significant habitats and geological formations, and important wildlife habitats. The Appellant notes that for renewable energy projects, the *Green Energy Act* trumps all existing regional conservation efforts, including those developed by the Regional Municipality of Niagara.

[256] The Appellant submits that errors and omissions have been uncovered by members of the public in regard to the Project, such as missing noise receptors, mislabeled points of reception, and the circumstances surrounding the reporting of Red Mulberry, an endangered species listed under the federal *Species at Risk Act*. The Appellant submits that the omission of the endangered Red Mulberry from the plant list of the Natural Heritage Assessment Report was not noted by the consultants assessing the results of the site investigations for the Approval holder and was not noted by MNRF

and MOECC officials in their review of the Project's NHA/EIS. The Appellant says, however, that confirmation letters signed by MNRF officials showed they were "satisfied that the Natural Heritage Assessment requirements of O. Reg. 359/09 have been met." Such errors and omissions, the Appellant submits, bring legitimacy to the public's concerns about what else has been missed or omitted in the REA as approved.

[257] The Appellant submits that, although Stantec's record review did not identify any known Migratory Butterfly Stopover areas in the Project Study Area or identify the Project Study Area as an area of concentrated butterfly migration, the specific records that were checked and the specific associations that were contacted for information related to Migratory Butterfly Stopover areas were not disclosed, as requested by the Appellant and as required.

[258] The Appellant submits that the Monarch butterfly is designated as a species of special concern by federal regulations and is on the Species at Risk list in Ontario and that, "should the habitat meet the criteria as candidate, multiple years of sampling should occur to confirm whether or not the habitat is indeed considered significant". The Appellant notes that "the absence of information on migratory Monarch populations in this study area in the Natural Heritage Information database does not necessarily mean that this area is not used by migrating Monarchs". The Appellant further submits that although Stantec's reply witness statement claims that "thorough" investigations showed that no actual candidate Migratory Butterfly Stopover areas exist in the Project area, a review of the field notes does not provide evidence to justify the claim of "thoroughness". Lastly, with regard to Monarch butterflies, the Appellant submits:

> It is unfortunate the MNR officials did not request a thorough monitoring survey throughout mid- August to the end of October to determine the extent to which these privately owned lands are used by Monarch butterflies. This would have been in line with the recommendations within the proposed *Management Plan for the Monarch butterfly in Canada*.

[259] The Appellant submits that several Project components are sited within 0.1 meters (4 inches) of provincially significant wetlands, and that 68 per cent of the proposed turbine locations have not been site surveyed for the determination of habitat use. It further submits that adjacent landowners were not asked for permission to allow Stantec employees to physically site survey lands within the 120 m zone of investigation to assess natural habitats, as was evidenced by the testimony of Mandy Smith.

[260] The Appellant submits that many of the lands upon which turbine ancillary components are proposed are on wetland areas regulated by the Niagara Peninsula Conservation Authority, with Ms. Smith's property being one of these lands, and that a total of 62 properties will require permits from the Niagara Peninsula Conservation Authority.

[261] The Appellant also asserts that proposed mitigation measures address possible siltation, but do not address overall wildlife habitat function, plant communities, hydrological connectivity, or risks to ground water recharge and discharge areas, as required by the Natural Heritage and Assessment Guide for Renewable Energy Projects.

[262] The Appellant, referencing Stantec's evidence about where hydro lines are proposed beneath the wetlands, says that the Approval Holder has failed to clarify, in quantitative terms, details of the boundaries to be used when siting Project components in or near significant wetlands.

[263] The Appellant also submits that contingency measures were not provided in the Approval Holder's Environmental Effects Monitoring Plan.

[264] The Appellant quotes in its submissions, the Natural Heritage Assessment Report for the Project, which states that 104 significant woodlands will be within 120 m of Project components. A quote from the NHA/EIS is also included, as follows:

> The constructible area for access roads and underground collector lines has been sited away from woodlands. Given access roads would be narrow, relatively flat, unpaved roads that will receive relatively little regular traffic during the operation of the Project, they are not anticipated to cause significant root zone disturbance or changes to surface water flow from existing conditions.

[265] The Appellant submits that despite this statement, it is clear that there are woodlands within a few meters of proposed Project components that are habitats for many amphibians, turtles, and bird species, and that documents disclosed show that 20 industrial wind turbines are proposed in Blanding's turtle habitat.

[266] The Appellant submits that Stantec's witness statement provides that,

> Where the Project Location runs near the boundary of a significant woodland, any associated infrastructure will be installed as far away from that edge as is practical...As a result, Project infrastructure will ultimately be located within the Project Location as far away from significant woodlands as is practical for construction purposes,

but has failed to clarify in quantitative terms what is meant by "as is practical". The Appellant further submits that Stantec's witness statement says, "in most cases, the separation distance will be greater than the minimum", but has failed to clarify what is meant by this statement, and that it is unclear in how many cases the separation distance will not be greater than the minimum, and where will this occur.

[267] The Appellant submits that the NHA/EIS did not consider the following potential impacts, as set out in the Natural Heritage Assessment Guide for Renewable Energy Projects:

> i) the potential changes to surface water hydrology for access roads within 0.1 meters of a significant woodland;
> ii) the survivability of trees located near a woodland edge (where roads will be within 0.1 meters of a significant woodland);
> iii) changes in soil moisture and compaction;
> iv) sensitivities of plant and animal species in the woodland.

[268] The Appellant asserts that the 30 m buffer recommendations for the construction of projects adjacent to woodlands, as per the Natural Heritage Assessment Guide for Renewable Energy Projects, has not been respected. It submits as well, that potential for direct and indirect disruption and changes in soil moisture and compaction have not been considered. The Appellant further submits, that soil compaction reduces water filtration, soil porosity, and the habitat of soil organisms, and that organic matter decomposition will be slower in compacted soils. The Appellant notes that subsoil compaction can be permanent and can be caused by high axle loads on wet soils.

[269] The Appellant submits that, “it is clear that rigorous studies have not been completed to provide confidence to Ministry officials that adjacent habitats will not be negatively impacted”.

[270] The Appellant submits that the Project, allowing so many components at less than the 120 m setback, represents a failure to maintain the critical buffer zone as per the Region of Niagara’s Central Wetland Watershed Plan, which it submits is integral to preserve and maintain the function and integrity of the wetlands.

[271] The Appellant submits that the environmental impacts of the Project are of grave concern as a result of the extensive intrusion of the Project components and infrastructure on the existing wetlands and woodlands of the surrounding environment, which it says threatens both flora and fauna within the very ecosystems of the Project area.

[272] The Appellant finally submits, that interference with the hydrological function of significant wetlands and incomplete consideration of landscape features within the Project area creates a very real risk to disruption and contamination of the aquifers, and that safe and clean water is a biological necessity being essential to the environment, life and health.

Submissions of the Director

[273] The Director submits that, although the Appellant raised a number of issues relating to serious and irreversible harm to plant life, animal life, and the natural environment in its notice of appeal, it called no expert evidence, and relied instead on speculation and expressions of concern by lay witnesses.

[274] The Director asserts that all of the concerns expressed by the Appellant and Presenters were addressed in the testimony of Messrs. Powell, Taylor, and Charlton of Stantec. The Director further submits that these witnesses were all qualified as experts and led extensive evidence in support of their testimony, and that their evidence should be given significant weight.

[275] Regarding the potential existence of migratory butterfly habitat in the Project area and Ms. Shields' concern regarding the adequacy of site investigations for migratory butterfly habitat, the Director relies on Mr. Taylor's testimony that a thorough records review did not identify any known Migratory Butterfly Stopover areas or any areas of concentrated butterfly migration in the Project's study area. The Director notes that Mr. Taylor also indicated that no candidate Migratory Butterfly Stopover areas were identified through onsite investigations, and, therefore, there was no need to conduct an evaluation of significance for migratory butterflies for the Natural Heritage Assessment and Environmental Impact Study. The Director also relies on Mr. Taylor's evidence that no targeted Monarch butterfly surveys were conducted, because no significant Migratory Butterfly Stopover areas were identified. The Director emphasizes Mr. Taylor's testimony that mitigation measures were nonetheless included in the NHA/EIS to alleviate any potential impacts to migratory butterflies in the area.

[276] The Director submits that in regard to Ms. Shields' concern about the sufficiency of setbacks to wetland features in the NHA/EIS, Ms. Brusse's concerns regarding the impact of the Project's transmission lines on wetlands and on birds, and Ms. Smith's testimony that she was concerned about the potential impacts of turbine T83 on

wetlands on her property and that of her neighbours, each was clearly addressed in the testimony of Mr. Charlton.

[277] The Director submits that Mr. Charlton testified that, Stantec conducted a records review and aerial photo interpretation for wetlands in the Project area, and those wetlands identified were subjected to evaluation for significance. In addition, he said that Stantec applied a conservative approach in its determination of the significance of the area's wetlands, and that Stantec then carried out the NHA/EIS. The Director further submits that Mr. Charlton testified he concluded that, while indirect impacts from construction, operation, and decommissioning remain a possibility, these impacts will be minimized through site control measures and application of best management practices.

[278] With respect to the allegation that Project components will be built within 120 m of provincially significant wetlands, the Director submits that Mr. Charlton testified that this 120 m requirement is a zone of investigation, not a setback within which Project infrastructure is not permitted. Project components may be located in this zone if an environmental impact study has been completed that determines that there will be no negative effect on the wetland, and such an environmental impact study has been completed for this Project.

[279] Regarding the Appellant's allegation that there is insufficient data to conclude that the natural environment will not be negatively impacted by the Project, because many private properties within 120 m of proposed turbines were not physically site surveyed, including that of Ms. Smith, the Director submits that Mr. Charlton testified that, in many cases, there is no real additional value in a physical inspection of the site. He said that alternative forms of investigation are acceptable for the purpose of preparing the Natural Heritage Assessment.

[280] Regarding Ms. Shields testimony about her concern that Red Mulberry had been identified within the Project's zone of investigation, and yet no mitigation measures for the Red Mulberry had been identified by the Approval Holder, the Director asserts that

this matter was clearly dealt with in the testimony of Mr. Charlton. He explained that during site surveys of area woodlots, the species code for Red Mulberry was mistakenly recorded by a field technician, and that upon discovery of the error, a senior botanist returned to the woodlot, thoroughly searched the area and could not locate any of that species, but observed some young American basswood which has a similar appearance to Red Mulberry. The Director further submits that Mr. Charlton testified that even had there been Red Mulberry present in woodlot, the Project would pose no threat to it because that woodlot, and all of its functions, is fully protected through mitigation measures already in place in the REA. The Director notes that the Appellant led no evidence to support a finding that there is any Red Mulberry located within the Project area. The Director submits that the Appellant is only speculating that the assessment prepared by the Approval Holder was inadequate, because the error was caught by a member of the public rather than Stantec or the MNRF. The Director maintains, however, that this actually demonstrates the effectiveness of the public consultation process required by the renewal energy project approval process.

[281] The Director notes that Ms. Shields testified that she is concerned that the Project's mitigation measures with respect to woodlands are too general in nature, and that construction traffic and access roads located near woodlands may lead to soil compaction and habitat disturbance. However, the Director submits, Mr. Charlton testified that the primary mitigation measure to be employed in the Project will ensure that no Project development will occur within the boundaries of the significant woodlands in the Project area, and no Project infrastructure will be located in, on, or over those features.

[282] The Director states that the Appellant takes issue with Mr. Charlton's statement that "project infrastructure will be installed as far away from that edge as is practical". The Director submits that Mr. Charlton clarified under cross-examination, that "as is practical" means balancing all of the relevant considerations on a site-by-site basis including characteristics of nearby woodlands and associated landforms, short-term construction needs, and long-term concerns.

[283] In response to the Appellant's assertion that a 30 m buffer zone surrounding Project-adjacent woodlands has not been respected, the Director relies on the evidence of Mr. Taylor who, under cross-examination, testified that a 30 m buffer zone has not been built into all of this Project's collector lines and access roads, and that the Natural Heritage Assessment Guide for Renewable Energy Projects does not require such a buffer zone in every case.

[284] The Director submits that, although Ms. Rogers and Ms. Brusse raised concerns that the Project will have an adverse impact on groundwater and aquifers in the Project area, Mr. Charlton described ongoing investigative and monitoring measures to ensure that there is no impact on the water supply, and testified that in his opinion the risk of groundwater contamination is extremely low.

[285] Further, the Director submits that although the Appellant states that this Project will cause soil compaction, leading to harm to the natural environment, it has led no evidence demonstrating this. Likewise, the Director submits, concerns were raised about the potential impacts of stray voltage from Project transmission lines on livestock, but the Appellant led no evidence in support of this allegation.

[286] The Director states that, in their submissions under the environmental branch of their appeal, the Appellant suggests that, "20 industrial wind turbines are proposed in Blanding's turtle habitat." However, the Director submits, Blanding's turtles, or even turtles more generally, are not raised anywhere in the Appellant's notice of appeal, and that this is an entirely new issue, raised for the first time at the end of the hearing. The Director asserts that the legislation is clear that appellant is not entitled to appeal any portion of the renewable energy approval that is not stated in their notice of appeal, and as such, this issue is not properly raised in final submissions. The Director cites the *EPA*, s. 142.2(2), and *Van Den Bosch v. Director, Ministry of the Environment*, 2014 CarswellOnt 5934 ("*Van Den Bosch*"), in this regard.

Submissions of the Approval Holder

[287] The Approval Holder submits that the Appellant has not met its onus of proving that the Project, operated in accordance with the REA, will cause serious and irreversible harm to plant life, animal life, or the natural environment.

[288] The submissions of the Approval Holder mirror those of the Director, and therefore, will not be repeated in these reasons. Set out below is a brief summary of the submissions of the Approval Holder.

[289] The Approval Holder says that the Appellant called no expert evidence, and that the lay evidence that was offered only amounted to expressions of concern of potential risk of harm, and fell well short of meeting the statutory Environmental Test.

[290] The Approval Holder further submits that although it bears no onus in this appeal, it led expert evidence provided by Messrs. Powell, Taylor, and Charlton which, it asserts, established that the Project will cause no material impact to the area surrounding the Project or the plants and animals that rely on it, let alone any serious and irreversible harm.

[291] The Approval Holder submits that in conducting the NHA/EIS Stantec consulted with MNRF throughout the process, and the MNRF reviewed and confirmed that the NHA/EIS was completed in accordance with the requirements of the renewable energy approval Regulation. The Approval Holder notes that the testimony of Mr. Powell regarding the NHA/EIS is that:

> In total, the NHA/EIS process involved more than 7,500 hours of Stantec professional staff time, including approximately 2,100 hours of field work. Time not spent on in-field data collection was spent on background data review, travel, extensive consultation with the MNRF and other authorities, public meetings, data analysis, impact identification, mitigation and reporting.

[292] The Approval Holder submits, that the results of the NHA/EIS were also carefully reviewed by the Director, who exhibited his confidence in the process by issuing the REA, and that the potential negative environmental effects of the Project have been assessed according to all the required procedures and guidelines as established by the O. Reg. 359/09 and the MNRF.

[293] The Approval Holder also submits, that the expert evidence establishes that the Project constructed and operated in accordance with all required mitigation measures will not cause any adverse effects to natural features, including significant wetlands, significant woodlands, or significant wildlife habitat, or wildlife.

Findings on Issue 2

[294] In an appeal such as this one, the onus is on the Appellant. In the case of the Environmental Test, the evidence must show that the operation of the Project will cause serious and irreversible harm to plant life, animal life or the natural environment. As the Tribunal stated, in *Lewis v. Ontario (Ministry of the Environment)*, [2013] O.E.R.T.D. No. 70 ("*Lewis*") at para. 54, it is not enough to show that harm may result or could result.

[295] The Tribunal makes findings on the Environmental Test on a case-by-case basis, and a circumstance that may be judged to cause serious and irreversible harm in one case will not be assumed to cause serious and irreversible harm in another, where project or other elements, such as location, may differ. Furthermore, the Tribunal must find that harm, if found, will be both "serious" and "irreversible".

[296] As set out in the summary of submissions section above regarding the Environmental Test, the Appellant makes four basic assertions:

a) that Project site investigations for Migratory Butterfly Concentration Areas are incomplete, and the conclusions drawn in error will result in serious and irreversible harm to butterfly species;

b) that 26 per cent of the Project components are within 0.1 meters (4 inches) of Provincially Significant Wetlands, which will result in serious and irreversible harm to wetlands;

c) that construction and operation of the Project's turbine T76 will cause serious and irreversible harm to the Red Mulberry, an endangered species listed under the federal *Species at Risk Act*; and

d) that the Project's mitigation measures are general in nature and are not specific for each of the 104 significant woodlands located within 120 m of Project components, which will cause serious and irreversible harm to these significant woodlots.

[297] The Tribunal's analysis and findings on these issues will be set out below using the headings: Migratory Butterfly Concentration Areas, Wetlands, Red Mulberry, and Significant Woodlots.

Migratory Butterfly Concentration Areas

[298] On the issue of potential migratory butterfly habitat in the Project area, the Appellant relies on the testimony of its witness Ms. Shields, and submits that the Approval Holder has not provided evidence that its site investigations included a proper review for migratory butterfly habitat.

[299] The Director and the Approval Holder both submit that the expert testimony of Mr. Taylor of the Stantec panel addressed this concern by outlining the steps that had been taken to reveal significant habitat relevant to migratory butterflies, and the resulting negative findings. Mr. Taylor also testified that:

> Notwithstanding the absence of candidate significant habitat relevant to migratory butterflies, Stantec has recommended mitigation measures within the NHA/EIS (which are required to be implemented under Condition A1 of the REA), that will assist in mitigating any potential impact to migratory butterflies. These measures include staking the limits of construction to preclude encroachment and minimize removal of vegetation; and seeding or replanting of disturbed areas using native species.

[300] The Tribunal finds that Ms. Shields' concerns were adequately addressed by the testimony of Mr. Taylor, particularly in light of his explanation that the NHA/EIS treated the Project area as significant, and included the mitigation measures to be undertaken to address any potential impacts.

[301] As well, even if it had been shown that an error had occurred in the preparation of the NHA/EIS regarding significant migratory butterfly habitat, the Tribunal cannot assume, without evidence, that such error will result in serious and irreversible harm being caused by the operation of the Project. In this case, no evidence has been led in this regard.

Wetlands

[302] The Appellant asserts that 26% of the Project components are within 0.1 m (4 inches) of Provincially Significant Wetlands, and that as a result, the construction and operation of the Project will cause serious and irreversible harm to the environment.

[303] The Appellant makes several other submissions regarding wetlands, including assertions that: adjacent landowners, such as Ms. Smith, were not asked for permission to allow for site surveys of their lands; proposed mitigation and contingency measures are not sufficient or have not been provided; and that there is a lack of clarification regarding boundaries where lines are proposed beneath the wetlands.

[304] Two presenters also raised concerns regarding Project impacts on wetlands. Ms. Brusse's concern was regarding the impacts of transmission lines on wetlands and

birds. Ms. Smith raised concerns about the potential impact of turbine T83 on wetlands on her property and that of her neighbours.

[305] The Director and the Approval Holder in response, assert that the evidence of Mr. Charlton, and of the Stantec panel in general, clearly addressed each of the concerns that were raised regarding wetlands.

[306] Regarding the allegation by the Appellant that Project components will be built within 120 m of provincially significant wetlands, Mr. Charlton testified that the 120 m is a zone of investigation, not a setback within which Project infrastructure is not permitted. In this case, a NHA/EIS has been conducted and has determined that there will be no negative effects on wetlands. The Tribunal accepts Mr. Charlton's evidence in this regard.

[307] The Appellant and the presenter Ms. Smith assert that no permission was sought for site investigation on wetlands on Ms. Smith's property, or on the properties of some other landowners adjacent to the Project area. They say that as a result, there is insufficient data to conclude that the wetlands will not be negatively impacted by the Project.

[308] The Director and the Approval Holder responded that Mr. Charlton had given detailed evidence regarding "alternative site visits", which is the type of method that was used in this case, for the purpose of preparing the NHA. Mr. Charlton's opinion was that in this case, standing on Ms. Smith's property would not have added anything to his understanding of the site. The uncontradicted expert evidence of Mr. Charlton is that physically entering and investigating on Ms. Smith's property would not have assisted in identifying additional features or mitigation measures necessary to reduce impacts on Ms. Smith's property. Furthermore, no evidence was adduced showing that serious and irreversible harm will accrue to wetlands as a result of the Appellant's alleged deficiency in the site investigation on Ms. Smith's property or other properties.

[309] Ms. Shields, for the Appellant, raised criticisms of the way that the NHA/EIS was conducted, stating that there was not enough detail provided about certain steps that will be taken. For instance, Ms. Shields cited a lack of clarification regarding boundaries, and, where hydro lines are proposed beneath wetlands. She also expressed concerns regarding mitigation and contingency measures for wetlands. However Mr. Charlton's testimony on hydro lines beneath wetlands, and wetland mitigation strategy in general, was that:

> 81. First and foremost, contrary to the allegations made in the Notice of Appeal, no Project "development" (i.e. disturbance of existing features) will occur within the boundaries of the significant wetlands in the Project Area. As noted above, all Project infrastructure will be located outside of these features with two exceptions where crossings of the Welland River and Welland Feeder Canal are proposed. For these two crossings power transmission lines (infrastructure) may be strung above the wetlands, and there will be no development (i.e. poles, construction encroachment) in the wetland complex. Where lines are proposed beneath the wetlands, adequate separation will be retained below the wetland and adjacent to the wetland during installation to avoid negatively impacting the wetland features. No work within the significant wetlands is proposed for the Project.
>
> 82. Second, flexibility was built into the design of the project, including identification of temporary construction areas larger than would be required to construct the project. A 20 metre wide "access road construction area" was identified within which a construction access road up to 15 metre wide and additional 5 metre laydown area could be located, although the width can be reduced where necessary or where not fully warranted. Upon completion of construction, the permanent access road will be reduced to 6 metre within this 20 metre wide area, with some flexibility as to its permanent location. Given that the Project Location will not be entirely occupied by infrastructure, flexibility is provided for the location of project infrastructure (i.e. access roads, collector lines) within the temporary construction area. Therefore, where the Project Location runs near the boundary of a significant wetland, the associated infrastructure may be installed further from the edge of the wetland than is reported in Section 6.4 of the EIS using the operational flexibility provided by the areas of the Project Location that are larger than ultimately required. While the exact location in the constructible area will be determined through detailed design and construction, the NHA/EIS identifies the minimum distance separation between project infrastructure and adjacent wetlands (Section 6.4) and other significant natural features (Section 6.5 to 6.7).
>
> 83. Third, the Project must comply with an extensive list of mitigation measures, which are incorporated in the terms and conditions of the REA. As mentioned above, the NHA/EIS recommends a number of mitigation measures (see Table 6.1 of Appendix B, and section 6.4) to address any potential effects on significant wetlands within the Project

> Area. Recommended mitigation measures can also be found in the Potential Effects, Mitigation and Monitoring Plans (Appendix D to the PDR, attached at **Exhibit "H"**), Table 3.1 of the CPR (attached as **Exhibit "I"**), and the EEMP (Appendix E to the Design and Operations Report, attached at **Exhibit "J"**). Compliance with these mitigation measures is required and enforced through Condition A1 and L1 of the REA, which requires construction, installation, operation and retirement of the Facility in accordance with the Application and supporting documents.

[310] Mr. Charlton confirmed in cross-examination that the precise methods for crossings over wetlands have not been finally determined, but that it is thought that the lines will go underground for some distance and then come up and cross on a wire linked by poles that will be positioned outside the wetland area. Mr. Charlton said that where lines are proposed to be below wetlands, the lines will be "well below the surface of the wetland". His opinion is that, given how small the two actual wetland areas are, it is not a large concern. The Tribunal finds that Mr. Charlton's evidence fully and reasonably explained how potential impacts to wetlands will be addressed.

[311] Regarding Ms. Smith's concerns about turbine T83 on drainage patterns, wetlands and wildlife habitat on her property, the evidence contained in the supplemental witness statement of the Stantec panel was as follows:

> Through the NHA/EIS and the Waterbody Report, Stantec also considered the potential impacts of T83 and the associated project infrastructure. All significant natural features were avoided in the siting of T83 and its associated infrastructure. Potential impacts resulting from the construction, operation and decommissioning of the project are indirect impacts such as dust generation, sedimentation, accidental intrusion, vegetation removal, erosion and alteration to flow patterns. These potential impacts will be minor and temporary in nature and minimized through the mitigation measures described below.
>
> **Mitigation Measures**
>
> 8. Monitoring and mitigation measures were developed and incorporated into the REA that will effectively mitigate any potential negative environmental effects on the Wetland, Drainage Feature and associated wildlife habitat. In particular, Conditions A1 and L1 of the REA require the implementation of the monitoring and mitigation measures set out in the following:
>
> - Section 6.3 of the NHA/EIS, and Table 6.2 of Appendix B of the NHA/EIS;

- the Potential Effects, Mitigation and Monitoring Plans (included as Exhibit “H” to Stantec’s January 12, 2015 Witness Statement);
- Table 3.1 of the Construction Plan Report (included as Exhibit “I” to Stantec’s January 12, 2015 Witness Statement); and
- Table 1 of the Environmental Effects Monitoring Plan for Wildlife and Wildlife Habitat (included as Exhibit “J” to Stantec’s January 12, 2015 Witness Statement).

9. Examples of the mitigation and monitoring measures that will prevent negative impacts on the Wetland, Drainage Feature and associated wildlife habitat include:

- maintaining separation between construction area activities and natural feature boundaries (approximately 90 metres);
- the installation of equalization culverts to accommodate surface water runoff from swales that extend across existing agricultural fields to convey water in a manner that minimizes erosion and avoids flooding of downstream wetlands;
- the construction of access roads at or near existing grade to minimize potential impacts on surface flow;
- the implementation of erosion and sediment controls and regular monitoring to confirm proper installation and functioning of such measures;
- ensuring all refueling and fuel storage is carried out well away from the wetlands and watercourses;
- regular monitoring of culvert installations to ensure and maintain flow conveyance, with no restrictions or ponding;
- seasonal monitoring of wetlands for any disturbance to hydrological conditions that could impact provincially significant wetland features; and
- environmental monitoring following spring run-off in the year after construction (i.e., the first year of operations) to ensure surface drainage has been maintained.

10. Finally, as noted in the Project Description Report, prior to construction of the project, all necessary permits will be obtained from the Niagara Peninsula Conservation Authority and Grand River Conservation Authority for any and all works required within their jurisdiction.

Conclusion

11. Contrary to Ms. Smith’s presentation, it is our opinion that T83 and the associated project infrastructure constructed and operated in accordance with the REA will not result in any adverse effects to the Wetland, the Drainage Feature or the associated wildlife habitat – or to any wetlands, drainage patterns or associated wildlife habitat within the Project Area; and the Project will not cause any serious or irreversible harm to plant life, animal life or the natural environment therein.

[312] The Tribunal accepts the evidence of the Stantec panel on the issue of the potential effects of turbine T83 on drainage patterns, wetlands and wildlife habitat on Ms. Smith’s property.

[313] Overall, the Tribunal finds that the Appellant has not advanced sufficient evidence to demonstrate that serious and irreversible harm will be caused to wetlands due to the close proximity of Project components to wetlands, in or adjacent to, the Project area.

Red Mulberry

[314] The Appellant submits that construction and operation of the Project's turbine T76 will cause serious and irreversible harm to the Red Mulberry in the Project area, but it led no evidence to support a finding that there is any Red Mulberry located there.

[315] The Director and the Approval Holder both assert that this matter was clearly dealt with in the testimony of Mr. Charlton. Mr. Charlton testified that, during site surveys of area woodlots, the species code for Red Mulberry was mistakenly recorded by a field technician. A subsequent search revealed no Red Mulberry, but young American basswood, similar in appearance to Red Mulberry, was observed. Mr. Charlton's opinion was that no Red Mulberry was present in the woodlot.

[316] The Tribunal accepts Mr. Charlton's expert opinion, particularly in light of his testimony that even had there been Red Mulberry present in woodlot, the Project would pose no threat to it because that woodlot, and all of its functions, is fully protected through mitigation measures already in place.

[317] The Tribunal finds that the evidence does not support the Appellant's assertion that construction and operation of the Project's turbine T76 will cause serious and irreversible harm to the Red Mulberry.

Significant Woodlots

[318] Ms. Shields, for the Appellant, testified that in her opinion mitigation measures for woodlots are general in nature, and that negative impacts and the relevant mitigation

measures have not been fully considered. She said that soil compaction and habitat disturbance, particularly to the habitat of the endangered Blanding's turtle has not been identified and described.

[319] Although the Appellant is concerned that the mitigation measures proposed to protect woodlands in the Project area are insufficient, there was no specific evidence presented to the Tribunal that the mitigation measures proposed by the Approval Holder will not be sufficient, or will cause serious and irreversible harm to the woodlands.

[320] During the hearing, two additional issues of environmental harm were raised.

[321] First, Ms. Brusse generally asserted that birds may be killed by colliding with wind farm transmission lines. However, Mr. Charlton, in his testimony states, “It is our opinion that the transmission lines associated with the Project will not cause any significant adverse effects to birds.” In the absence of further evidence, the Tribunal is unable to find that bird kills due to collision with transmission lines rises to the level of serious and irreversible harm.

[322] Secondly, in regards to the Blanding’s turtle, the Director asserts that the issue is outside the scope of this appeal, stating at paras. 110 and 111 of the Director’s written submissions:

> **(a) *Blanding’s Turtles***
> 110. In their submissions under the environmental branch of their appeal, the Appellant suggests that, “20 industrial wind turbines are proposed in Blanding’s turtle habitat.”
>
> **Closing Written Submissions of the Appellant, February 20, 2015, para. 58**
>
> 111. Blanding’s turtles, or even turtles more generally, are nowhere raised in the Appellant’s Notice of Appeal. They are an entirely new issue, raised now at the very end of the hearing process. This is improper: the legislation is clear that appellants are not entitled to appeal any portion of the renewable energy approval that is not stated in their notice of appeal. As such, this issue is not properly raised in final submissions.

***EPA*, s. 142.2(2)**
***Van Den Bosch*, para. 58**

[323] Without having to determine whether the issue is out of scope of the appeal, the Tribunal finds that, based on the limited evidence tendered at the hearing, it is unable to determine whether and to what extent the operation of the Project will harm Blanding's turtle. Consequently, the Tribunal finds that the Appellant has failed to meet its burden under the Environmental Test in relation to Blanding's turtle.

Conclusion on Issue 2

[324] In summary, based on all of the evidence before it, the Tribunal finds that the Appellant has adduced insufficient evidence to establish that the Environmental Test has been met.

Issue 3: Whether s. 47.5 and s. 142.1 of the *EPA* violate the right to security of the person under s. 7 of the *Charter*.

Introduction

[325] The Appellant's notice of appeal in respect of the *Charter* issue it has raised states at paras. 30 to 34:

> 30. The Appellant currently awaits the decision in the Divisional Court in reference to violation of the Appellants' rights under Section 7 of the *Charter* pertaining to:
>
> a. denial of natural justice and procedural fairness;
> b. the ruling of the Tribunal that it does not have jurisdiction to consider whether the Director's decision complies with the *Charter*; and
> c. the fact that the threshold for the standard of "serious harm to health" violates section 7.
>
> The appellant submits these issues at this Hearing as well.
>
> 31. In addition, the Appellant questions the right of the MOE to approve the construction of IWTs at locations closer to host residences than the mandated 550 meter setback, which is the minimum distance indicated by the Ontario Minister Of Health as "safe". There are children residing in

> several of these residences, whose rights to live in a safe environment are being superseded by financial gains to their parents. The MOE has stated that the protection of host family children is “negotiable”.
>
> 32. The Appellant has deep concern that allowing parents to arbitrarily decide to put their children in harms’ way for financial benefit has set a dangerous precedent which threatens the rights of all children living both in the Project area and in the entire province. This precedent puts said children in a position where they are in need of protection under the Child and Family Services Act, R.S.O. 1990, Chapter C.11, section 37.(2) (b) (i), in that the parents are failing to adequately protect the child.
>
> 33. The Appellant submits that maintaining this dangerous precedent, and the ensuing negative impact of this precedent in all areas of law protecting our children is in violation of the *Charter* rights of children residing in the Project area, and this province.
>
> 34. In addition, it is submitted that “The prudent approach from a public health point of view, is to take preventive actions as if causation had been proven, while at the same time to continue to search for mechanisms of action.” Living conditions shape health, they form the resources for health resiliency, for well-being and resisting illness. Losing the full use and enjoyment of your preferred housing habitat and changes to living conditions has been given in evidence at all other ERTs. The degree of harm demonstrates a serious adverse health effect. The themes of Social justice would also apply in assess risk and degree of seriousness. Social Justice is a Determinate of Health.

[326] Section 7 of the *Charter* states:

> 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.

[327] Accordingly, the Appellant asserts that the deprivation of security of the person under s. 7 of the *Charter* in this case is the exposure of children who reside on host properties, commonly referred to as participating receptors (i.e. properties where Project components will be installed and operated), to Project components that are situated at distances less than 550 m from their residences. The Appellant assert that the 550 m setback distance is the minimum distance indicated by the Ontario Minister of Health to be “safe”.

[328] In addressing the *Charter* claim, the Tribunal will first review the evidence and submissions of the Appellant. In light of the Tribunal’s finding that insufficient evidence

was led by the Appellant to support the *Charter* claim, the Tribunal does not find it necessary to include a separate detailed summary of the evidence and submissions of the Director and Approval Holder. The Tribunal will make specific reference to their evidence and submissions in its findings as necessary.

[329] Furthermore, based on the Tribunal's finding on the insufficiency of the evidence led in support of the *Charter* claim, the Tribunal also finds it unnecessary to determine the issue raised by the Director as to whether the Appellant possesses the necessary standing to raise the *Charter* issue.

[330] Before turning to a summary of the Appellant's evidence, the Tribunal will address, as a preliminary matter, a ruling made at the hearing dismissing a request by the Appellant to adduce the evidence of Pierre Jaarda.

Tribunal Ruling denying Appellant's request to call Pierre Jaarda to testify in this proceeding

Background

[331] After the commencement of the main Hearing, the Appellant sought to call an additional witness, Mr. Jaarda, and provided the Tribunal with a brief written witness statement setting out his proposed testimony. In this witness statement, Mr. Jaarda stated that there are children who reside at properties that are participating receptors, but he did not state who these children are, and he did not give their addresses. Instead, he stated that he would provide this information, but on the basis that it be marked confidential.

[332] It is not disputed that the Appellant did not provide this witness statement to the Approval Holder and Director until two days prior to the commencement of the main hearing, which fails to comply with the filing due date required under the Tribunal's Rules for reply witness statements, as specified in the Schedule the Events for this

appeal proceeding. Similarly, it is not disputed that the Appellant did not bring a motion requesting that the Tribunal exercise its jurisdiction under Rule 93 to mark Mr. Jaarda's proposed evidence as confidential.

[333] The Tribunal refused the Appellant's request to call Mr. Jaarda, stating that its written reasons for doing so would be included in this decision.

Appellant's Submissions

[334] The Appellant submitted that Mr. Jaarda was intended to be a witness brought in reply to the evidence of Dr. McCunney's witness statement, to confirm that there are children on the properties of some participating receptors. The Appellant submitted that Mr. Jaarda is a local resident in contact with families who are participating landowners, and that his testimony would give context to its *Charter* claim. The Appellant stated that if Mr. Jaarda is permitted to testify he wished to provide his testimony in confidence as allowed by Rule 211 of the Tribunal, which states:

> 211. At the request of a Party or on its own initiative, the Tribunal may order all or part of a document to be marked "confidential", where appropriate, in which case it shall not form part of the public record.

Approval Holder's Submissions

[335] The Approval Holder submitted that in order to have Mr. Jaarda testify, a motion should have been brought under Rule 93 of the Tribunal's Rules, and further submitted that providing evidence at such a late date, in addition to not being proper reply evidence, contravened the Tribunal's procedural order from the preliminary hearing that required the parties to file all evidence and documents they intended to rely upon.

[336] The Approval Holder also submitted that para. 102 of Dr. McCunney's witness statement says that he is unaware "of any studies which would suggest that children or elderly persons living in the homes of participating receptors are at any greater risk of

harm than anyone else", and that proper reply testimony would have provided evidence of "studies". The Approval Holder stated that it had some information on what Mr. Jaarda intended to testify to, and it is not what would normally be called reply testimony, but rather, substantive evidence regarding five participating receptors. Further, the Approval Holder submitted that there was no evidence advanced by the Appellant to show an effort to contact the most appropriate witnesses, those being the participating receptor landowners, and that if the Tribunal were to allow a motion under Rule 93 then the Appellant would have to show that Mr. Jaarda is the most appropriate witness on this issue.

[337] The Approval Holder further submitted that Mr. Jaarda's witness statement was received on January 19, 2015, just two days before the January 21, 2015 hearing, which it characterized "as late as it can get to bring in a new witness".

[338] Finally, the Approval Holder submitted that, should the Tribunal allow Mr. Jaarda's to testify, the participating receptor landowners should also be allowed to participate because their privacy interests are affected, as is set out in the Tribunal's Rules 84 and 85, dealing with allegations against persons who are not parties. The Approval Holder submitted that the allegation is that participating receptor landowners who have children living on their properties are irresponsible parents, and that fundamental fairness demands that the parents in question be told of the allegations against them and have a chance to respond.

Director's Submissions

[339] The Director agreed with the Approval Holder and adopted the Approval Holder's submissions. The Director additionally submitted that, when counsel for the Appellant spoke on the issue the previous day, she said she was aware of opposition to this witness, yet the Appellant did not bring a motion. The Director stated that Mr. Jaarda was not named on either of the Appellant's two witness lists dated December 2014 or January 5, 2015, nor was his name ever included on the schedule for the hearing. The

Director also stated that the first time the Director received notice that the Appellant wished to call Mr. Jaarda as a witness was on January 19, 2015, only two days before the main hearing.

[340] The Director also submitted that adding the names of five, or some other number, of children living at participating receptor landowners' properties to the evidence, would add nothing of relevance to this proceeding because simply having these children identified, without more, would tell the Tribunal nothing about any harm that can be expected from their presence on these properties.

Appellant's Reply Submissions

[341] With respect to the issue of allegations against non-parties, the Appellant submitted that "concerns are not allegations".

[342] The Appellant also stated that Dr. McCunney witness statement did not include an acknowledgment that children and persons who are elderly live in the homes of some of the participating receptor landowners. The Appellant submitted that this is a significant omission, and so it is necessary to call a factual witness to provide this evidence.

[343] On the issue of late filing of Mr. Jaarda's witness statement, the Appellant submitted that it did not have Dr. McCunney's statement until January 12, 2015, and so it could not have given notice to the other parties any sooner than it did.

Tribunal's reasons for denying Appellant's request to call Mr. Jaarda

[344] The Appellant, who is represented by counsel, has been aware from the outset of this proceeding that an allegation has been made in the appeal the Project will result in impacts to children living on the properties of participating receptors. As a result, the Appellant has been aware from the outset that it would need to prove the presence of

children on the properties of participating receptors and the serious harm to such children as a foundation for its *Charter* claim. Therefore, the Tribunal does not accept the Appellant's submission that the necessity for this evidence only became evident once the Appellant received Dr. McCunney's witness statement.

[345] Consequently the Tribunal finds that it is clear that the Appellant could and should have provided disclosure of Mr. Jaarda's proposed evidence within the due dates specified in the Tribunal's Order issued following the preliminary hearing. Had confidentiality been a concern at that time, the Appellant could have filed a sealed witness statement and brought a timely motion requesting the Mr. Jaarda's evidence be marked confidential.

[346] The Tribunal finds that the Appellant has provided no explanation or valid reason why its request to call Mr. Jaarda has been made so late in this proceeding. As his proposed evidence relates to an important issue, the Tribunal accepts the submission that the responding parties are prejudiced by not having the proposed evidence when preparing their cases in response.

[347] While the Tribunal is not fully convinced by the responding parties that Mr. Jaarda's evidence constitutes an allegation which would necessitate the filing of a Notice of Allegation, the Tribunal does accept that the Director or the Approval Holder, or both, may reasonably conclude that they need to call additional witnesses to respond to Mr. Jaarda's evidence. The Tribunal finds that this would result in inordinate delay of this hearing, which is a matter of particular concern in renewable energy appeals because they are expedited proceedings.

[348] Taking all these factors into account, particularly the Appellant's unexplained failure to comply with the Tribunal's procedural directions as set out in the Order issued following the preliminary hearing, the Tribunal finds that it should not grant the Appellant's request to allow Mr. Jaarda to testify.

Evidence Adduced by the Appellant respecting Issue 3

[349] In advancing its *Charter* claim, the Appellant has confirmed that it relies on the same evidence it adduced in respect of the Health Test. In this regard, the Appellant relies on the evidence it adduced, as well as the evidence of the participant and presenters, in support of its position that engaging in the Project in accordance with the REA will cause serious harm to human health. In addition, in its written submissions, the Appellant also cites data respecting participating receptors obtained from the Noise Assessment Report dated September 30, 2014, which was prepared on behalf of the Approval Holder and filed with the MOECC in support of the Approval Holder's application for the REA. This report was filed as evidence in this proceeding. The Noise Assessment Report data filed by the Appellant indicate both the predicted sound limit and distance from nearest turbine for each of 27 participating receptors. These predicted noise limits range from 40.1 dBA to 46 dBA, and the distances from the nearest turbine range from 280 m to 693 m.

Appellant's Submissions respecting Issue 3

[350] The Appellant's submissions regarding Issue 3 are set out in paras. 187 to 211 of its written submissions:

> 187. The consents of individuals to engage in the project which is authorized by Ontario's authority and expressed in the REA, creates the infringement of a right to security of the person. This is so as the law is applied unequally in practice in regards to protection of health (via regulations) dependent upon whether you are a participating or non-participating receptor of a renewable energy project's emissions.
>
> 188. The law currently exists in such error as it allows Ontario to apply protective regulations to be selectively applied under the EPA 47.5 with the consequence of creating collateral harm. Harm that is known to be serious and allows for exposure to those who cannot grant consent on their own behalf, to those whose consent is assumed, to those who were not properly consulted with, and/or even to those persons explicitly deny consent to exposure from the wind facility discharges and operations.
>
> **E. Deprivation is not in Accordance with the Principles of Fundamental Justice**

189. The Director has allowed the siting and noise emissions of the wind turbines in the project to be at levels of noise that will be harmful to health and does so with the consents of participating landowners.

190. Ontario is aware that members of the public have not and do not consent to such intrusion on their health and sense of well- being.

191. Ontario has no real knowledge of who will be exposed on the participating lands or the environs and even who resides on such lands. It makes lawful an activity that will put non consenting vulnerable individuals including children in harm's way.

192. Canada played an instrumental role in drafting and promoting the United Nations Convention on the Rights of the Child. Article 3 states:

> "3. States Parties shall ensure that the institutions, services and facilities responsible for the care or protection of children shall conform with the standards established by competent authorities, particularly in the areas of safety and health,"

193. The Appellants by way of this hearing are hereby giving notice to Ontario that the consent for the REA "as is", creates conditions of known harm for minor children that are residing on such lands.

194. Such legal notice by the means of this hearing is to include known and anticipated harm from exposure to a wind facility discharges for vulnerable individuals who had not provided their consent to such an intrusion on their health and wellbeing in the environs of the wind facility.

195. Children who are at risk of harm would need protection under the *Child and Family Services Act, R.S.O. 1990, Chapter C.11, Section 37.(2) (b) (i)*

196. The law has created two classes of exposure to the known harms from wind facilities. Consent from participating landowners does not extend beyond their authority and cannot be considered implicit to allow exposure to others who have the proper authority to consent on their own behalf.

197. Further Ontario does not have proper and just authority to create conditions of harm to its residents as the REA allows noise sound power levels at 40dBA and above.

198. Under the EPA in regards to siting and operations of wind facilities protective prescriptive regulations for setbacks and noise levels do not apply as detailed in the O.Reg 359/09: …

200. Under the eyes of the law every person should be equal. Charter rights are guaranteed to all persons in Canada. Security of the person is found in section 7.

201. Consent to allow created conditions of harm to yourself and person is legally permissible under O.Reg 359/09 in regards to wind facilities. The right of consent is not absolute. Nor is this ability to consent on your

own behalf able to be extended to other persons who will be impacted, or who can consent on their own authorities and behalf.

202. A collision of collective rights for “the public good” must be balanced against the rights of the individual to grant their own consent for the health of their own person.

203. The project will create intrusions in all areas of where people live, work and play. Ontario has had an increasing number of reports of adverse health symptoms since 2010 and has failed to enact any real changes in the conditions of approval for a renewable energy project powered by wind.

204. It is the oppression of individual rights under the existing laws of the EPA which is state created and permits the creation of non-trivial conditions of hazard and harm that is unjust.

205. Balancing reasonableness of interference of the individual’s security of the person from an activity that is said to serve the public good should be struck when the impacted is expected to bear the burden of exposure against their wishes at the very real risk of harm to their well- being and harm to health.

206. Lawful public purpose does not outweigh the harms to an individual and such interference is unreasonable, *Antrim Truck Centre Ltd. v. Ontario (Transportation) 2013 SCC 13 File No.: 3441:*
“The main question is how to decide whether an interference with the private use and enjoyment of land is unreasonable when it results from construction which serves an important public purpose. The reasonableness of the interference must be determined by balancing the competing interests, as it is in all other cases of private nuisance. The balance is appropriately struck by answering the question of whether, in all of the circumstances, the individual claimant has shouldered a greater share of the burden of construction than it would be reasonable to expect individuals to bear without compensation.”

207. It has been opined by the Director and the Approval Holder the concerns of the local witnesses can be and should be addressed in other judiciary venues, such as common law litigation. The Tribunal’s powers are limited under its statutory authorities and it must contain its review of the evidence brought to it under the assumption that the project will operate as approved. The tests of harm cannot become so impossible to meet as this is a failure of justice and an illusion of remedy.

208. Noise exceedance therefor would become issues for future regulation enforcement and any such instances would be an “offense”. Such “offense “enforcements have yet to be realized in Ontario and yet reports of adverse health effects and reports to the Spills Action Hotline administered by MOE continue to date. (NB: request for disclosure of current reports of adverse incidents reported to MOE were denied at this hearing)

209. The higher courts where citizens have filed for relief in regards to matters in respect to wind facilities prior to a REA being issued, have consistently stated that any such pleadings much first be sought at the

Tribunal. In laypersons terms first you must fail (as to date not one of the close to 40 Tribunal appeals in Ontario have yet been successful) before you might have a more realistic chance of success of the remedy being sought.

210. The laws surrounding renewable energy projects are creating a deprivation of a security of the person by allowing a dangerous state of harm to occur and be created under O. Reg 359.09 when protective prescriptive regulations (setbacks of 550m and sound power levels of 40 dBA) can be removed on a landowner's consent by a state created action. Such a consent impacts all person and in particular vulnerable individuals and children who reside on the lands and live in proximity to such lands. It should not require expert opinion to accept that acoustical energies, vibration, light, emissions and discharged and other operational inherent properties of a wind facility are not and cannot be contained to property boundaries. These discharges are exposing those whose consent has not been obtained.

211. In *Canada (Attorney General) v. Bedford, 2013 SCC 72,* the basic principles of fundamental justice, arbitrariness, and overbreadth are discussed. It is the law under EPA 47.5 that has allowed a legal activity (REA) to occur and that has created the changes in living conditions and to the environment that puts persons at a serious risk of harm to their health. The fundamental principle is that the consent of a participating landowner does not extend beyond their own person especially in circumstance involving intrusions to another's body senses and being. An individual may consent to a risky and dangerous environment but such a given consent does not extend to the exposure of that dangerous harm to others.

> (Extract *Bedford* p 5 of 67)
> "The applicants have also established that the deprivation of their security of the person is not in accordance with the principles of fundamental justice: principles that attempt to capture basic values underpinning our constitutional order. This case concerns the basic values against arbitrariness (where there is *no connection* between the effect and the object of the law), overbreadth (where the law goes too far and interferes with *some* conduct that bears no connection to its objective), and gross disproportionality (where the effect of the law is grossly disproportionate to the state's objective). These are three distinct principles, but overbreadth is related to arbitrariness, in that the question for both is whether there is no connection between the law's effect and its objective. All three principles compare the rights infringement caused by the law with the objective of the law, not with the law's effectiveness; they do not look to how well the law achieves its object, or to how much of the population the law benefits or is negatively impacted. The analysis is qualitative, not quantitative. **The question under s. 7 is whether *anyone's* life, liberty or security of the person has been denied by a law that is inherently bad; a grossly disproportionate, overbroad, or arbitrary effect on one person is sufficient to establish a breach of. 7."**
> **(Bolded for emphasis)**

Findings respecting Issue 3

[351] The Appellant's Notice of Constitutional Question challenges the validity of s. 47.5 of the *EPA*. This section provides the Director with the authority to issue or renew a renewable energy approval. In its written submissions, the Appellant states "The law currently exists in such error as it allows Ontario to apply protective regulations to be selectively applied under the *EPA* 47.5 with the consequence of creating collateral harm." The Approval Holder submits that the Tribunal does not have the jurisdiction to adjudicate a constitutional challenge to s. 47.5 of the *EPA*, citing *Dixon v. Director, Ministry of the Environment,* 2014 ONSC 7404 (Div. Ct.) ("*Dixon*"), para. 113. In its reply submissions, the Appellant does not specifically respond to this submission. As noted by the Approval Holder, in *Dixon*, at para. 113, the Ontario Divisional Court states:

> …The EPA did not grant the Tribunal jurisdiction to decide questions of law under EPA s. 47.5 or s. 54 of the REA Regulation. …It therefore was not open to the Tribunal to review the decision of the Director to issue a REA generally to ascertain whether the decision complied with the *Charter* – as argued by the Appellants before us – but only to review whether the project to which the REA was issued would cause serious harm to human health. The Tribunal correctly held that its power to address a *Charter* claim was limited to the matters assigned to it by EPA s. 142.1.

Accordingly, the Tribunal accepts the Approval Holder's submission that it does not have the jurisdiction to adjudicate a Constitutional challenge to s. 47.5 of the *EPA.*

[352] The Tribunal has followed the guidance of the Supreme Court of Canada in its approach to analyzing a *Charter* claim (see *Dixon, Bovaird v. Director, Ministry of the Environment*, 2013 CarswellOnt 18046 (Ont. Env. Rev. Trib.), and *Drennan v. Director, Ministry of the Environment* (2014), 85 C.E.L.R. (3d) 57, (Ont. Env. Rev. Trib.)). To summarize, s. 7 requires a claimant to prove that life, liberty or security of the person has been deprived in a manner that is not in accordance with the principles of fundamental justice. In applying this test, the Tribunal requires the claimant, among other things, to demonstrate the following:

1. proof of “serious” physical or psychological harm,
2. harm that is state imposed, and
3. a “sufficient causal connection” between the harm and the impugned state action.

[353] In *Dixon*, the Tribunal, at para. 170 stated:

> The Tribunal will make no finding as to whether the “serious harm to human health” test set out in s. 145.2.1 of the *EPA* and the threshold of “serious physical harm” or “serious and profound psychological harm” required to establish a deprivation as required in a s. 7 *Charter* claim, are the same or similar. Further, the Tribunal will not make any specific finding as to whether the test in s. 145.2.1 of the *EPA* requiring the Appellants to establish that the Project “will cause” serious harm to human health is the same as the need to establish a “sufficient connection” as required in a s. 7 *Charter* claim. However, it is abundantly apparent from the jurisprudence pertaining to both the *EPA* test and s. 7 *Charter* test, that a solid evidentiary foundation is required for both tests.

The Tribunal adopts this approach. Therefore, the first step is to consider whether there is a solid evidentiary foundation establishing that serious physical or psychological harm will occur. In reviewing the totality of the evidence adduced at the hearing, the Tribunal finds that such an evidentiary foundation is lacking.

[354] In support of the above conclusion, the Tribunal relies on its analysis and findings respecting the evidence adduced in respect of the Health Test. In summary, the Tribunal has found that, respecting all of the sub-issues raised by the Appellant, there is insufficient evidence to establish that the Health Test has been met. In this regard, the Tribunal notes that the Appellant has not adduced any expert opinion evidence from a qualified health practitioner to establish that the various mechanisms of harm alleged by the Appellant, either directly or indirectly, will cause serious harm to human health. In this regard, the only opinion evidence before the Tribunal is that of Dr. McCunney. In his written statement, he reviews the evidence adduced by the Appellant and states his opinion that “the information provided therein is insufficient to reach reliable medical

diagnoses and does not provide support for causal links between health effects and living in the vicinity of wind turbines."

[355] Regarding noise limits, in particular, the Appellant relies, instead, on guidelines such as the MOECC Noise Guideline and the WHO Night Noise Guidelines for Europe. The Appellant asserts that the noise limits set out in these guidelines are more than just protective of human health. The Appellant relies on these guidelines as conclusively establishing that noise levels in excess of these noise limits will cause serious harm to human health.

[356] The Director and the Approval Holder dispute this assertion. However, again, the Appellant called no expert opinion evidence in support of this view. The only expert opinion evidence before the Tribunal is the evidence of Dr. McCunney. In cross-examination, Dr. McCunney stated that guidelines are based on scientific literature with safety factors built into their ultimate recommendations. He, therefore, observed that one has to be careful in making assumptions as to whether harm will occur at noise levels that are above or below 40 dBA. As an example, he cited the WHO Night Noise Guidelines for Europe, pointing out chapter three of this guideline shows that, as night time noise levels drop to 45 dBA the number of significant night time awakenings drops to zero. He pointed out, however, that this guideline, in order to be more safe, adopts a level of 40 dBA. The Tribunal finds therefore, that the Appellant has adduced insufficient evidence to establish that the above-referenced guidelines confirm that exposure to noise decibel levels in excess 40 dBA will cause serious harm to human health.

[357] Turning to the evidence respecting the participating receptors, the Tribunal notes that the only evidence adduced with respect to noise are the predicted noise limits calculated in accordance with the MOECC Noise Guideline. It is undisputed that these predicted noise levels do not include a calculation of the reduction of noise level as it enters a participating receptor's residence. Absent such information, the Tribunal is

unable to draw any reliable conclusion regarding the noise level exposure at any of these participating receptors.

[358] In summary, based on the above findings, the Tribunal finds that the evidence adduced by the Appellant falls far short of the requirement to provide a solid evidentiary foundation to establish that engaging in the Project will cause “serious and profound psychological harm”. In light of this conclusion, the Tribunal finds that it is unnecessary to address whether the harm is state imposed, and whether there is a “sufficient causal connection” between the harm and the impugned state action.

[359] In conclusion, the Tribunal finds that the Appellant has not established that s.142.1 of the *EPA* violates s. 7 of the *Charter*.

Overall Conclusions

[360] The Tribunal finds that the Appellant has not established that engaging in the Project in accordance with the REA will cause serious harm to human health.

[361] The Tribunal further finds that the Appellant has not established that engaging in the Project in accordance with the REA will cause serious and irreversible harm to plant life, animal life or the natural environment.

[362] The Tribunal finds that the Appellant has not established that s. 142.1 of the *EPA* violates the right to security of the person under s. 7 of the *Charter*.

DECISION

[363] The appeal by Mothers Against Wind Turbines is dismissed.

Appeal Dismissed

"Marlene Cashin"

MARLENE CASHIN
MEMBER

"Justin Duncan"

JUSTIN DUNCAN
MEMBER

"Dirk VanderBent"

DIRK VANDERBENT
VICE-CHAIR